The EU Smart Specialisation Policy (2014-20) 
Exploring European Commission and Regional Stakeholder Perspectives

A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy

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Declaration

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of the thesis is the result of work which has been carried out since the official commencement date of the approved research program; any editorial work, paid or unpaid, carried out by a third party is acknowledged; and, ethics procedures and guidelines have been followed.

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<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AMA</td>
<td>Automobile Manufacturers Association</td>
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<tr>
<td>BCC</td>
<td>Barcelona City Council</td>
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<tr>
<td>CEE</td>
<td>Central and Eastern Europe</td>
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<td>CP</td>
<td>Cohesion Policy</td>
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<td>EC</td>
<td>European Commission</td>
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<td>EEG</td>
<td>Evolutionary Economic Geography</td>
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<td>EPO</td>
<td>European Patent Office</td>
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<tr>
<td>ERA</td>
<td>European Research Area</td>
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<tr>
<td>ERC</td>
<td>European Research Council</td>
</tr>
<tr>
<td>ERDF</td>
<td>European Regional Development Fund</td>
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<tr>
<td>ERL</td>
<td>Electronic Research Lab</td>
</tr>
<tr>
<td>ESF</td>
<td>European Social Fund</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>EU-27</td>
<td>EU of 27 member states, to 2013</td>
</tr>
<tr>
<td>EU-28</td>
<td>EU-27 plus Croatia, from 2013</td>
</tr>
<tr>
<td>€</td>
<td>euro</td>
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<tr>
<td>FDI</td>
<td>Foreign Direct Investment</td>
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<td>FP</td>
<td>Framework Program</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GFC</td>
<td>Global Financial Crisis of 2008</td>
</tr>
<tr>
<td>GNP</td>
<td>Gross National Product</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>GPT</td>
<td>General Purpose Technology</td>
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<td>GVC</td>
<td>Global Value Chain</td>
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<tr>
<td>HUF</td>
<td>Hungarian Forints</td>
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<tr>
<td>ICT</td>
<td>Information and Communications Technologies</td>
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<td>IUS</td>
<td>Innovation Union Scoreboard</td>
</tr>
<tr>
<td>KET</td>
<td>Key Enabling Technology</td>
</tr>
<tr>
<td>LEAF</td>
<td>Leading, Environmental-friendly, Affordable, Family [car]</td>
</tr>
<tr>
<td>LDR</td>
<td>Less Developed Region</td>
</tr>
<tr>
<td>MLG</td>
<td>Multi-Level Governance</td>
</tr>
<tr>
<td>MNC</td>
<td>Multi-National Corporation</td>
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<tr>
<td>NEG</td>
<td>New Economic Geography</td>
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<tr>
<td>NKITT</td>
<td>National Research, Innovation &amp; Science Policy Council</td>
</tr>
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<td>NSR</td>
<td>National Strategic Reference</td>
</tr>
<tr>
<td>NUTS</td>
<td>Nomenclature des Unitiés</td>
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<tr>
<td>OAM</td>
<td>Overseas Automobile Manufacturer</td>
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<tr>
<td>OECD</td>
<td>Organisation for Economic Cooperation &amp; Development</td>
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<tr>
<td>OEM</td>
<td>Original Equipment Manufacturer</td>
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<tr>
<td>PECTS</td>
<td>Projects Territorial Specialisation and Competitiveness</td>
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<tr>
<td>PNNDRIN</td>
<td>Pannon Novum Nyugat-Dunantuli Regionalis Innovacios Nonprofit Kft</td>
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<tr>
<td>R&amp;D</td>
<td>Research and Development</td>
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<tr>
<td>RDI</td>
<td>Research and Development and Innovation</td>
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<td>RDC</td>
<td>Regional Development Council</td>
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<td>RIS</td>
<td>Regional Innovation Scoreboard</td>
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<tr>
<td>RISCAT3</td>
<td>Research and Innovation Strategy for the Smart Specialisation of Catalonia</td>
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ROP  Regional Occupational Program
RIS  Regional Innovation System
RIS3  Smart Specialisation policy
RTP  Regional Technology Plan
SEAT  Sociedad Espanola de Automoviles de Turismo S.A. (Spanish automobile manufacturer)
SF  Structural Fund
SME  Small-to-medium Enterprises
STI  Science, Technology and Innovation
SWOT  Strengths, Weaknesses, Opportunities and Threats
TFP  Total Factor Productivity
VW  Volkswagen
Abstract

This is a study about the policy design of the European Union’s Smart Specialisation policy (2014-20) in shaping regional economic development in diverse regions of Europe. Unlike earlier work in the field of economic geography that has contributed greatly to the analysis of the policy using quantitative approaches, here the focus is exclusively on providing a qualitative analysis of the strengths and challenges associated with the overarching design of the policy.

Using a case study methodology, the study first examines documentary data to explore the implications of implementation given the design of Smart Specialisation policies at the level of the EU and three regions; secondly it draws on interview data that seeks to provide parallel evidence gained from official documents about the strengths and challenges associated with the policy; and thirdly it considers how the policy may or may not improve the performance of long-term innovation outcomes in different regional contexts.

This research objective will be achieved through analysis of three elements of the policy: firstly, through addressing the implications of successful implementation of the policy given the quality of regional governance; secondly, addressing the implications of whether an MNC is embedded or disembedded within a regional innovation system (and where the MNC sits within the governance of GVC/GPN); and thirdly, the extent to which the particular characteristics of a RIS determine provide a barrier.

This study has found that under the three sets of criteria outlined, there are significant barriers to policy implementation, suggesting that less developed regions (LDR) located in Central and Eastern Europe (CEE) face governance challenges; economic constraints associated path dependence due to the historical circumstances of those countries and the role played by multinational corporations and finally the weakness of their regional innovation systems.
Introduction

This is a study about the policy design and implementation of the EU Smart Specialisation policy (2014-2020) in shaping regional economic development in diverse regions of Europe. Unlike earlier, largely quantitative work in the field of economic geography, here the focus is exclusively about providing a qualitative analysis of the strengths and challenges associated with policy development processes.

Utilising a case study methodology, the study first examines documentary data to explore the implications of RIS3 policy design at the level of the EU and the region; second interview data is examined that seeks to provide parallel evidence gained from official documents about the strengths and challenges associated with the policy design; and thirdly it considers how the policy may or may not improve the performance of innovation outcomes in diverse regional contexts. This introductory chapter explains how interest in this topic developed; describes the institutional context of the evolution of the policy; and gives a brief outline of the analytical frameworks which are drawn upon.

This topic is of interest given that, internationally, governments are seeking to find public policy solutions to try and influence regional economic development. The Smart Specialisation policy represents an innovative decentralised industrial policy experiment that has the potential to bridge the ‘core-periphery’ dynamic in Europe. The Smart Specialisation policy focuses on integrating regional and innovation policy agendas to assist regions to boost regional innovation to achieve economic growth. The new approach encourages regions to focus in on their strengths based on an analysis of regional assets and technology as well as analysis of potential partners in other regions and between businesses, public entities and knowledge institutions.

The evolution of EU regional policy demonstrates how the focus of the policy has gradually shifted from a subsidy-led approach, which was underpinned by compensation for weaknesses in lagging regions, towards a competitiveness-oriented approach favouring growth in all regions. Thus during the 1960s and 1970s, EU Regional Policy projects concentrated on redistributing wealth from wealthier regions to poor regions through traditional infrastructure led economic and social projects. Over the past two decades, with the onset of large economic and social challenges such as the global financial crisis, unemployment and poverty and climate change, the policy logic has shifted from a ‘redistributive logic’ to an overall economic strategy that is focused on a more explicit set of
economic and environmental policy objectives.

Thus, Regional policy since the 1990s is said to be increasingly informed by an ‘innovation systems’ approach to regional development where the role of ‘place’ has become increasingly important as a setting for policy design and implementation. The new emphasis of the policy is now about encouraging business innovation and climate change initiatives. Increasingly social inclusion goals have been perceived as intrinsically linked to economic goals. The embrace by the EU of the new paradigm of Regional Policy has often been linked to the development of the Lisbon strategy in the year 2000, which explicitly stated the new central aim of the policy agenda to be about increasing the competitive position of EU regions in the world economy by placing growth, jobs and competitiveness at the top of a newly constituted policy agenda.

This shift in focus is significant, as infrastructure projects led to the transformation of many less developed regions (LDRs) located for instance in Central and Eastern Europe after the fall of socialism. This study is particularly interested in whether the policy can play the same role in transforming economic fortunes and new economic pathways for these kinds of regions. This is particularly the case due to these regions experiencing the potential for ‘path dependency’ along traditional economic lines, given industrial regions located in the CEE are often dominated by large MNCs who have the potential to either contribute to regional economic competitiveness through participation in regional innovation systems, or provide a blockage to innovation and path renewal. This issue provides one of the major themes and research questions explored in this study. That is, how does the extent to which an MNC is ‘embedded’ or ‘disembedded’ within a regional innovation system impact on policy implementation?

Furthermore, while EU innovation policy is not ‘new’ and there have been many precursor innovation policies to Smart Specialisation implemented in Europe, the policy is said to have a great potential to transform regions through its Entrepreneurial Discovery Process (EDP) which is the main reform on previous policy approaches. A second theme explored in this study is the extent to which the devolved governance arrangements of the policy can be executed in centralised political environments. This has led to a second major theme and research question asking will the quality of governance at the level of place affect the policy’s chance of success?

Finally, the study will address the issue of institutional capacity at a regional level. To what extent does an institutionally weak regional innovation system militate against policy
success? This is a key question for policy implementation.

An interest in this topic was first developed in the context of the work of economic geographers Kevin Morgan (1997) Michael Storper (1997) and Michael Porter (1990) who have extensively explored the role of public policy in the establishment of regional innovation systems that may stimulate place based regional economic growth. These authors have challenged the views of liberal theory espoused by the ‘globalisation’ school (Amin & Thrift 1994) who have maintained scepticism about the capacity of regions to challenge global multinational corporations (MNCs) in determining the fate of regional economic development. This study seeks to explore this theoretical tension to assess whether the role of the Smart Specialisation policy as a public policy instrument is capable of shaping the development of a regional innovation policy at the level of place.

Knowing that there is already a substantial body of work within the economic geography discipline addressing policy design and implementation challenges associated with the RIS3 policy, the focus of this study reflects a preference for it to have practical value in adding to recent literature that suggests reform of policy design processes directed at regions associated with industrial production located in Central and Eastern Europe (CEE). CEE regions face a problem of lacking depth of formal knowledge assets (public and private R&D) (McCann & Ortega-Argiles 2013). These regions also face governance challenges with centralised political systems often militating against the decentralised model of policy development (Morgan 2017; Rodrik 2003).

Despite recognition of the importance of these, there is still a need for additional research to support these contributions to the literature. There have been few studies that have addressed the barriers to the policy being implemented in periphery regions that include detailed qualitative methods such as document analysis and interview data within regions located in CEE. A further contribution to the existing research is to encompass the views of a representative of a major multinational subsidiary in regional context. This may be considered an original contribution to the existing literature in incorporating the view of a Volkswagen (VW) plant in each region, about the extent to which the plant is being influenced by the new policy direction; away from what the liberal theorists may describe as representing an isolationist positioning to a more ‘regional’ perspective in relation to operational decisions.

In the light of all of these points, it is hoped that the context has been outlined in which this research study may be of some value.
Chapter 1

Background EU Regional Policy

Introduction

European Union regional policy accounts for the single largest part of the EU budget for 2014–20 (351.8 billion euros out of a total 1082 billion euros) and therefore is the main investment arm of the EU. Regional policy has been seen traditionally as an expression of solidarity between EU countries as the bulk of funding is dedicated to less developed regions. It helps these regions to fulfil their economic potential, despite regional disparities across the EU and within member countries. During the 1960s and 70s, EU regional policy projects concentrated on redistributing wealth from wealthier regions to poorer regions through traditional infrastructure-led economic and social projects. Over the past two decades, with the onset of large economic and social challenges, such as the global financial crisis, unemployment, poverty and climate change, the policy logic has shifted; the EU now links policy settings to an overall economic strategy focused on a more specific set of economic and environmental policy objectives. The new emphasis is more about encouraging business innovation and climate change initiatives. Additionally, social inclusion goals are now increasingly linked to economic goals.

The policy environment in Europe can be discussed under distinct policy phases. This chapter reviews the evolution of EU regional policy from 1957 to 2014 and describes how policy goals have evolved over time, and the political, economic and social context in which they were determined.


The main aim of Cohesion policy is to reduce regional and economic and social disparities across EU states and regions. The ambition to reduce development gaps between regions dates back to the foundation of the European Economic Community in 1957 with the Treaty of Rome, which declared that the signatory states were “anxious to strengthen the unity of their economies and to ensure their harmonious development by reducing the differences
existing between various regions and the backwardness of the less favoured regions”, and fostering “a harmonious development of economic activities” throughout the European Economic Community (European Economic Community 1957, Art 2 in Brunazzo, 2016, p.17). However, it has been contended that regional issues were largely addressed indirectly through a series of provisions concerning specific sectoral policies, such as agriculture, transport and state aid. In addition, the only financial instrument created to directly promote regional development was the European Investment Bank, which had among its tasks that of granting loans “which facilitate the financing of projects for developing less developed regions” (Manzella and Mendez, 2009, p.5).

During this period, there were a range of significant political and economic factors that contributed to this cautious approach in the development of regional policy when the EC was founded. The policy context was politically sensitive to ceding important responsibilities to Europe (Manzella and Mendez, 2009). This led to a perspective at the time that “creating a proper European Cohesion policy was considered at that time politically divisive, unnecessary and too ambitious” (Brunazzo p.17). In addition to this, there was at the time “a prevailing economic orthodoxy that was generally not supportive of the creation of a comprehensive regional policy at Community level.” It was a time where there was also as well as an optimistic view of the “role of the newly established public investment banks to activate dynamics of growth in underdeveloped contexts” (Manzella and Mendez, 2009, p.6).

Therefore, in this period, the “outcome of these various elements was that the regional issue was dealt with through a series of provisions which bore little, if any, resemblance to what could be termed a coherent supranational approach to regional policy” (Manzella and Mendez, 2009, p.6). For instance, at this time the European Investment Bank (EIB) was deliberately designed as an intergovernmental body, owned and governed by the Member States. Accordingly, “it’s statute was clear in assigning the Member States the final say concerning the admissibility of projects for loans, and the Bank had only functional links with the European Commission” (Manzella and Mendez, 2009, p.6). In addition to this, the exemptions regarding state aids for regional development under competition policy highlighted the extent to which Member States were autonomous from the European Commission in policy directed at supporting underdeveloped areas (Manzella and Mendez, 2009).


At the end of the 1960s and the beginning of the 1970s, increased pressure was building for
the internationalisation of an EU regional policy. This was generated by both political and economic factors. Politically, the enlargement process prompted the European Commission to promote the adoption of a new approach. The accession of Denmark, the UK and Ireland in 1973 exacerbated regional disparities and the enlarged coalition of national governments became in favour of the establishment of a common regional policy. In particular, the UK became a net contributor to the Community budget upon accession, requiring the adoption of partial economic compensation to persuade a British public that was sceptical about the benefits of European integration (Brunazzo 2016).

In addition to this, the “regional question” was “not anymore perceived to be an almost exclusively southern Italian problem with the advent of demographic, labour market and sectoral challenges increasingly being recognised to be facing all regions across Europe to varying degrees” (Manzella and Mendez, 2009, p.9). Finally, there was a “deepening of the debate on economic and monetary union, which had been launched in the late 1960s, with the outcome of this debate was an argument that compensation should be provided for all economic rigidities imposed on state budgets by the path of monetary unification” (Manzella and Mendez, 2009, p.9).

Economically, a global oil crisis over this period raised social issues to the fore within EC debates, leading to increased attention to the “close link between declining industries and specific territorial areas” (Manzella and Mendez, 2009, p. 9). The EC became convinced of the “necessity of a solidarity policy in order to help rural periphery and the least prosperous regions of the new integrated countries, mainly Ireland” (Dall’Erba, 2003, p. 2). In addition to this “the UK was also afraid of losing out to its continental competitors and of an unbalanced financial support allocated to the agricultural industries of the Member States. It then obtained in the negotiation of accession an assurance that the European regional policy would be set up” (Dall’Erba, 2003, p. 2).

The EC determined that the policy instruments established by the policy were “not working well”, leading Commissioner George Thompson to declare in the mid-1970s that “forms of community aid, useful and well justified as individual acts of policy, when looked at as a whole….appear to be widening the regional gap rather than closing it” (Thompson as cited in Brunazzo, 2016, p.17). The EC underwent a period of restructure of administrative arrangements including, in 1968, the creation of a specific Directorate General dedicated to regional policy (Manzella and Mendez, 2009).

The EC’s reform proposals were outlined in the Report on Enlarged Europe of May 1973. It was immediately clear, from the perspective of the commission at least, that the setting up of a Community regional policy needed to be “much more than a mere compensatory tool for
The report argued that reducing the differences existing between the various regions and the backwardness of the less-favoured regions was “a human and moral requirement of the first importance” (Manzella & Mendez, p.9). The report stated that “these regional imbalances comprised those that arose from the absence of modern activity or the over-dependence (…) on agriculture or declining industrial activities” which could be logically found in specific geographic areas with a preponderance of agriculture, in areas of industrial change and of structural under-employment.” (Manzella & Mendez, 2009). In the context of the review of future policy interventions, ideas that emerged included “the setting up of a Regional Development Fund granting interest rate subsidies and guarantees; the preparation of regional development plans by Member States and the Commission; the creation of a Regional Development Committee; and the setting up of a regional development company acting as an information centre for European public and private investors” (Manzella & Mendez, 2009, p. 7).

**European Regional Development Fund (1975-1979)**

In the context of the proceeding policy period, Community Structural Funds were established in 1975 with the creation of the European Regional Development Fund (ERDF); “the explicit aim [of the new policy instrument] was to reduce disparities in development between advanced and least favoured regions (LFR) of the Community by strengthening the local and regional structures of the latter” (Sharp, 2003, p.48). It aimed to assist the least favoured regions and focused mainly on productive investments, infrastructures and small business enterprises development (Dall’Erba, 2003).

In this sense, regional policy was now perceived as a “crucial instrument for the identity of a European model of society, and for the legitimacy and viability of the whole political process of integration” with the link to the European Monetary Fund also clear where it was said by the Commission that “no Member States can be expected to support the economic and monetary disciplines of the Economic and Monetary Union without Community solidarity involved in the effective use of such instruments; equally Member States must be prepared to accept the disciplines of Economic and Monetary Union as a condition of this Community support” (Manzella and Mendez, 2009, p. 19).

The legal framework of the ERDF was the outcome of lengthy negotiations between Member States and the Commission. The total agreed budget for the fund was 1.3 billion European Units of Account over a 3-year period (1975–1978), representing around 5 per cent of the Community budget. The distribution of resources to each Member State was determined on
the basis of a system of national quotas, setting out the percentage share allocated to each Member State. The shares were largely worked out on the basis of inter-state bargaining, linked to net budgetary balances, and did not have a direct, explicit link to Community regional development needs (Manzella and Mendez, 2009). It was ultimately determined that the ERDF would function according to “objective community indicators”. However, the national governments retained the right to determine eligible regions (Brunazzo 2016, p.18). In the end, “not only was the ERDF’s budget and distribution calculated on an intergovernmental basis, but Member States also retained direct control over every aspect of the Fund’s management and implementation” (Manzella and Mendez 2009, p.10).

Initially, the ERDF achieved “only modest results for three main reasons: it was considered a compensatory measure for net contributors to the Community budget; its budget of 1.3 billion euros (around 5 per cent of the Community budget) was considered too small to play a significant role; and the Council of Ministers was in charge of defining the budget on the basis of national quotas annually negotiated between the Member States, without targeting regions that were lagging behind in terms of development, leading Member State governments to dominate ERDF management” (Brunazzo, 2016, p.20). The ERDF reflected the strong role that Member States took in negotiations with governments, dominating all aspects of the process. Thus during this period, the “institutionalisation of a truly European regional policy was, therefore, far from attained” (Brunazzo, 2016, p.20).


In 1979 and 1984, two minor reforms took place. In 1979, the Commission approved a 50 per cent increase of the ERDF budget in response to the growth of regional imbalances due to the Greek accession. In the same year a ‘non-quota’ section was added, which had the political outcome of enabling the Commission to use funds more autonomously, to support development projects in areas not designated by the national governments. This reform also created the possibility of ‘integrated’ development programs, supported by different funds with a regional dimension, such as the ERDF, the European Social Fund (ESF), the European Agriculture Guarantee Fund (EAGF) and European Investment Bank loans. The new legislation also granted the Commission a strategic role in periodic reporting on the economic and social conditions of the regions, and suggesting new regional priorities and guidelines (Brunazzo, 2016). In October 1981, the Commission tabled the first set of proposals for regional policy reforms. The regulations were finally agreed upon by the Council in June 1984 and introduced several important changes, primarily aimed at increasing the
Community orientation of the policy (Manzella and Mendez, 2009).

In 1984, a second revision of EU regional policy introduced more substantial changes. The reform progressively increased the economic resources allocated to the ERDF (from about 7.5% of the European Community budget in 1984 to 9.1% in 1986). The system of national quotas was replaced by a system of indicative (minimum and maximum) ranges, although a minimum amount of ERDF funding was guaranteed to the Member States of they submitted a sufficient number of acceptable applications by a specific deadline. Integrated programs were further strengthened. The reform also allowed the Commission to initiate negotiations with Member States to finance specific national programs of Community interest. Although these reforms “enhanced the Community orientation of the policy and gave the Commission greater autonomy in deciding which regions to target, European Community Regional policy essentially remained a transfer-of-payment system until 1988” (Brunazzo 2016, p.20).

In 1986, the number of citizens living in less-developed regions (i.e. per capita GDP lower than 75% of the Community average) doubled. The accessions of Spain and Portugal occurred in 1986, a development that “was regarded with great concern by some Member States” (Brunazzo, 2016, p.20). Also at that time, Greece threatened to veto the enlargement if the EU did not adopt measures to protect its agricultural production. As a consequence, the Council of Ministers created the Integrated Mediterranean Programmes, a budgetary commitment established for seven years (1986–1992), in order to help “the southern regions of the present Community” – defined as the whole of Greece, parts of southern France and most of southern Italy – “to adjust under the best conditions possible to the new situation created by enlargement” (Brunazzo, 2016, p.20). Thus the Commission aimed to overcome a situation where Structural Funds were seen as a redistribution mechanism by redefining the objectives of the instrument towards support and structural conversion of regions in difficult economic contexts (Brunazzo, 2016).

Overall, the mid-to-late 1980s saw growing ‘Europeanisation’ over policy influences, with increased EU control of national regional aids combined with significant change to EU regional policy with the 1988 Structural Funds Regulations representing a “major breakthrough from this perspective, resulting, for the first time, in a European-wide typology of regions for which the Commission had power of initiative in area designation”. In this period, the Commission was able to “increasingly control the distribution of Structural Funds under regional policy mechanisms as well as control national regional aid approval under competition policy, leading to a perception by Member States that they were being increasingly constrained in their capacity to address their own regional problems” (Wishlade, Yuill and Mendez, 2003).
These developments signalled the evolution of EU regional policy from “a Member State controlled model, where the Commission’s role was effectively restricted to that of a treasurer signing blank cheques, policy moved to one involving a more cooperative relationship between both levels and became more grounded on Community objectives, priorities and experimentation, at least for part of the Cohesion policy budget”. In addition, accordingly the regulatory reforms, along with the agreement on the [Integrated Mediterranean Programmes], were argued to have “provided lessons, if not a blueprint, for some of the principles which were to underpin the landmark reforms of 1988” (Manzella and Mendez, 2009, p.13).


The year 1988 marked the beginning of a new era for the Community’s regional policy, often described as a “watershed moment in the evolution of EU regional policy” (Durova, 2007). “Under the leadership of its new president Jacques Delors, the importance attached to the policy by the Commission was immediately clear, with one bold objective in mind: to transform it from an essentially intergovernmental budgetary transfer to that of a genuine regional development tool, with the potential to provide effective solutions to the problems faced by the Community’s regions” (Manzella and Mendez, 2009).

In the 1980s, there were only 12 EU member states. In 1989, state socialism collapsed in Poland and Hungary, and then throughout Central and Eastern Europe (CEE). The central goal of the former Soviet bloc countries was to join Europe as fast as possible. Their economies worked as non-market systems and were nearly completely state-owned. They have been described as “debt-ridden and economically bankrupt, their environmental record ‘tragic’, and their infrastructure remaining at least half a century behind” (Berend, p.83). The income level of the region, on average, reached only 32 per cent of the EU’s average in 1995. None of these countries would be a net contributor to the EU budget and they required huge amounts of assistance. Agriculture still represented an enormous part of their economies. The agricultural population accounted for 22 per cent of the active population in CCE (Berend 2009).

European Commission President Jacques Delors argued at the time that there was more reason than ever to deepen integration. His speech reflected the thinking of a generation of European leaders who still thought of political unification and federalisation, the indivisibility of European security, and further economic integration as a “bridge towards political integration”. Delors also believed that “all the countries of Europe will benefit from
the stimulus and advantages of the single market… and that [the Community has to help] the countries of Eastern Europe modernise their economies” (Delors cited in Berend, 2009, p.84). Thus, Europe’s readiness to consider the future membership of CEE countries was not just a moral question; a new incentive, perhaps an imperative, was globalisation. In the same speech, Delors stressed that “nations cannot act alone [as there is] a growing interdependence of our economies [and] the internationalisation of the financial world [making] full national sovereignty a fiction” (Delors cited in Berend 2009, p.84).

The policy genesis of EU Structural Funds, therefore, has always combined attempts to meet both economic and social objectives. The key elements of the policy reflect the view that redistribution between richer and poorer regions across the different member states was, and is, needed in order to both support and ameliorate the effects of further economic integration (Wilson 2012). Politically, the power acquired by the Commission in the 1988 reform “did not encounter opposition from the Member States … the wealthier Member States, in particular, looked at the Commission as a guardian of efficient spending in the poorer Member States, where the bulk of Structural Funds were being spent and considered the increased importance of the Commission as a natural side-effect of the doubling of financial resources dedicated to the policy” (Brunazzo 2016, p.23).

Aiming at improving the efficiency of regional policy, the 1988 reform provided a significant increase in regional funding by doubling Structural Funds commitments, which by 1993 would amount to 30.7 per cent of the total European budget (14 billion Euro). This reform was based on five new regulations, which came into effect in January 1989. The new regulations introduced four basic principles: (Brunazzo, 2016).

- Concentration: the EU assistance shall be focused on a limited number of objectives in the least-developed regions;
- Programming: the EU assistance supports multi-annual programmes based on analysis, strategic planning and evaluation;
- Additionally: the EU funds shall be added (and not substituted) to Member States;
- Partnership: Community operations shall be established through close consultations between the Commission, the Member States concerned and the competent authorities designated by the latter at national, regional, local or other level, with each party acting as a partner in pursuit of a common goal.

Before 1988, the Structural Funds paid little attention to R&D, but with the reforms of that year, greater attention was given to innovation. In the period 1989–1993, 3.9 per cent of
spending under Structural Funds was devoted to R&D, mostly from spending under Objectives 1 and 2 (and Objective 6 when this was introduced) (Sharp, 2003). The Structural Funds RTD objective for 1989–1993 was targeted primarily at strengthening infrastructure, with many Member States using the re-direction of objectives as an opportunity to make good the inadequacies of previous funding of Regional Technological Development innovation investments and greater emphasis on stimulating the demand side (i.e. corporate R&D, especially in small and medium enterprises). In addition to this, there were significant new investments allocated to tackling the supply side of economic development, especially in terms of new facilities for public research laboratories and universities, many of which had little obvious linkage into the local economy. Although such facilities can, in the long run, bring stable highly paid employment into an area, unless they also act as the nucleus for a cluster of activities – attracting other similar laboratories from public and private sectors and spinning off specialist small firms – then their impact on the local economy can be very limited (Sharp, 2003).

In addition, the 1988 reform created a new fund directed towards Community Initiatives (CIs), accounting for about 8 per cent of the Structural Fund budget for the period 1989–1993. CIs were managed directly by the Commission and focused on issues like “economic and social conversion of the coal mining areas, the improvement of the environment, the strengthening of innovation capacity and technological development, cooperation between regions on different sides of national borders and others” (Brunazzo, 2016, p.23).

The reform of Cohesion policy in 1988 introduced new governance arrangements, which emphasised the importance of changes such as a new ‘partnership’ principle that required formal involvement of relevant regional and local authorities in program formulation and implementation. Thus, a key innovation was the creation of a multi-level governance model involving the collective participation of vertical partners (community, national, regional and local authorities) and horizontal stakeholders (business representatives, trade unions, non-governmental organisations etc) in the design and implementation of programs in accordance with a common set of organisational and functional criteria and rules (Durova, 2017). This emphasised the increasingly shared and interlinked nature of decision-making between Community, national and subnational actors, in contrast to state-centric accounts of policy-making. The reform enshrined the principle of subsidiarity, which enabled sub-national governments to participate in the making of regional policies (Bailey and De Propis, 2002).

In relation to the legal framework, in this time period, the legal basis for policy was progressed in relation to financing and the regulatory framework. The legal basis was addressed through the *Single European Act of 1987* (SEA 1987). A major revision
constitutionalised Cohesion policy by introducing the specific title ‘Economic and Social Cohesion’. The policy objective was defined as promoting the “overall harmonious development” of the community and “strengthening economic and social cohesion”, particularly by “reducing disparities between the various regions and the backwardness of less-favoured regions” (SEA 1987, Article 130a). The key policy instruments for delivering this objective were the three Structural Funds (the European Regional Development Fund [ERDF], the European Agricultural Guidance and Guarantee Fund-Guidance Section and the European Social Fund), although the Member States’ economic policies and other Community policies also contributed in a coordinated fashion (SEA 1987, Article 130b). The key task of the ERDF was “to redress the main regional imbalances in the Community through participation in the development and structural adjustment of regions whose development is lagging behind and in the conversion of declining industrial regions” (SEA 1987, Article 130c) (Manzella and Mendez, 2009, p. 15).

Thus, the 1988 reform promoted the creation of a truly European regional policy, “from an essentially intergovernmental budgetary transfer to a genuine regional development tool with the potential to provide effective solons to the problems faced by the Community’s regions” (Brunazzo, 2016). Moreover, since 1988 Cohesion policy has assumed an economic and a political dimension regarding the greater involvement in sub-national institutions in Community policy-making (Brunazzo, 2016). It is also important to note that most EU Member States had been operating regional policies since before the EEC came into being; historically, a major strand of policy has involved the use of government subsidies (state aids) to encourage investment in designated problem regions by firms. In contrast, “regional policy at the European level was a ‘comparative newcomer’ with a distinct EC regional policy (in the form of the revised Structural Funds) not emerging until the late 1980s” (Wishlade, Yuill and Mendez, 2003).


In the next policy phase (1993–1999), two subsequent reforms occurred, described as “more modest in scope” with a focus on fine-tuning the new governing principles, particularly to improve policy effectiveness and decentralise responsibilities to Member State authorities (Manzella and Mendez 2009). Politically the reforms occurred in the context of Treaty reform and had the effect of deepening integration (through the completion of the internal market and progress with Economic and Monetary Union) and two enlargements (Manzella and Mendez, 2009).
The first reform occurred in 1993, in the context of a major Treaty revision. After the completion of the internal market, the Maastricht Treaty (approved in February 1992) marked a new age in European integration by providing for the establishment of the Economic and Monetary Union (EMU). It also reinforced the priority attached to economic and social cohesion by making it a core EU objective, on par with the internal market and EMU. Community funds allocated to the poorest countries over the 1993–1999 Delors II package (154.5 billion Euros) were increased during the negotiations that occurred with the advent of this reform (Manzella & Mendez, 2009).

In this context, a new instrument, the Cohesion Fund, was introduced to co-finance infrastructure projects in the poorer Member States (Greece, Ireland, Spain and Portugal) and support them in fulfilling the EMU convergence criteria. In addition, the Maastricht Treaty required the Commission to publish a Cohesion Report every 3 years, to examine progress made towards achieving economic and social cohesion and presenting reform proposals (if deemed necessary). (Manzella & Mendez, 2009). In addition, policy objectives were restructured. Following the accession of Sweden and Finland in 1995, a new Objective 6 was introduced in consideration of the problems of sparse population. A new Financial Instrument for Fisheries Guidance was also created to assist in the restructuring of the fisheries sector. Second, spatial coverage increased from 42 per cent of the Community population to 52 per cent (most of the increase was due to the inclusion of the new German Lander), and a greater role was given to the Member States in the Objective 2 and 5b area selection process. Third, the programming process was streamlined by introducing the possibility of adopting a Single Programming Document (instead of a CSF and OP involving two decisions). Fourth, the scope of the partnership principle was broadened by specifying a role for economic and social partners in the regulation, within the framework of domestic practice.

It is important to note that in addition to the 90 per cent of funds dispersed under the CSF framework in the 1994–1999 programming period, most of the action in RTD and innovation has to come under the SME initiative (co-operation between SMEs, but including cooperation over R&D, technology transfer and with research centres). With 99 per cent of funds spent under the CSF and CIP programmes, the Commission retained 1 per cent of the Structural Funds to finance what are known as Innovative Action. The concept behind the initiative was that the regional level is the best location for developing plans and programmes relating to local/regional economic development due to the better knowledge of local factors. These were pilot projects focused on general initiatives including Regional Innovation Strategies (RIS). At the time DG X11 launched its Regional Innovation and Technology Transfer Strategies (RITTS) programmed under the 4th Framework Programme Innovation Initiative. This, unlike the RIS, was not restricted to designated regions (Sharp, 2003).
The two programs were run in conjunction with each other, with open calls for proposals to interested regions, and proposals evaluated by the Commission. Successful applications were co-funded to the tune of 50 per cent on a budget of approximately 500,000 Euros. The aim was to provide a framework within which national, regional and community authorities could work together on local/regional issues and to improve the capacity of local actors to play a constructive role in such programs. There was an increasing number of local/regional authorities who participated in such exercises and, by the late 1990s, feedback was positive. The 1999 Thematic Evaluation of the Structural Funds, for example, concluded of the pilot programmes “that they were ultimately beneficial for Objective 1 regions because it helps them to modernise institutions and triggers new thinking” (Sharp, 2003 p.51). It was felt that the impact of the programs would not be much more than that, until linked with implementation mechanisms.

The next reform took place in 1999 to cover the 2000–2006 programming period. In terms of the political context, the reforms were developed and agreed during enlargement negotiations, although “exactly when and how many of the new Member States were to join was uncertain at the time” (Manzella & Mendez, 2009, p.15). However, the EU certainly intended to continue to support the accession of the CEE countries. Enlargement bought about changes to Regional policy, allowing for the accommodation of new members whose levels of wealth were considerably lower than those of the EU15; Eastern enlargement represented a more serious challenge for the EU than previous enlargements. For instance “the richest candidate country, Slovenia, had a per capita income around 70 per cent of the EU average” (Brunazzo, 2016, pp. 25-6). This had the practical effect of meaning that most the entire territory of the candidate countries would be eligible for Objective 1 assistance (Brunazzo, 2016).

The economic context was characterised by an internationally deteriorating economic situation, resulting in high rates of unemployment across Europe. This led to the addition of a new title on employment in the Treaty of Amsterdam in 1997, and strong fiscal consolidation pressures across the EU, partly associated with the introduction of the Euro. It has been argued that the bleak economic conditions help to explain why, different from previous reforms, the share of funding allocated to Cohesion policy for the 2000–2006 period remained stable. Against this backdrop, an agreement on the reform was reached during the Berlin European Council of March 1999, allocating 213 billion Euros to Cohesion policy, 39.6 billion Euros of which was accounted for by post accession assistance (Manzella & Mendez, 2009, p.16).

The Commission’s plan for addressing these challenges included the need to maintain
Cohesion policy; pursue the reform of the common agricultural policy (CAP); strengthen growth, employment and living conditions through the EU internal policies; and to allow for the accession of new members, whilst maintaining budgetary discipline. The 1999 reform did not foresee increasing spending on the Structural Funds but was instead focused on the stabilisation of total expenditure, with “concentration, efficiency and simplification” becoming the cornerstones of this reform (Brunazzo, 2016, p.26). This included a reduction to three of the Objectives, stricter eligibility rules, and the addition of a new efficiency principle to the existing five principles. The new regulations were approved by the Council between May and June 1999. Four main aims underpinned the reforms. The first was to increase the concentration of support leading to a reduction in the number of priority Objectives (from seven to three) as well as in the proportion of the Community population eligible for support under the two territorial Objectives 1 and 2 (from 51.3% to 40.7% of the Community population) (Brunazzo 2016).


Brunazzo argued that the regulatory package approved in July 2006 represented the most radical reform of Cohesion policy since 1988. The reforms introduced under the 2007–2013 period should be viewed within the context of a mix of political, economic and financial considerations, which had profound implications for the shape and content of policy (Brunazzo 2016). Politically, an important factor was the EU’s enlargement in 2004 to incorporate 10 new Member States with significantly lower levels of income, a development consolidated by the anticipated accessions of Romania and Bulgaria. This resulted in the “politically sensitive consequence” of a budgetary shift in Cohesion policy resources from the EU15 towards the new Member States (Manzella & Mendez, 2009 p.18).

Economically, the global financial crisis (GFC) of 2008 marked a turning point in the thinking about the policy logic that had underpinned EU Regional policy since the 1960s. EU Regional policy gradually embarked on a new direction, underpinned by a new theoretical approach to regional development. The EU worked closely with the OECD to develop the new policy direction and the changed approach was centred on building innovation through establishing institutional architecture at the level of the region. There came to be a new emphasis on encouraging closer interaction between regional stakeholders to encourage competitiveness. This shift has been described as “representing a significant transition away from EU Regional Policy focused on purely redistributive aims to regional economic-development policies, not just to promote the convergence of lagging or restructuring regions, but to feed into EU-wide advances” (Begg 2010, p.80).
Another important contextual factor was the increased importance being attached to the EU growth and jobs agenda in the context of the ongoing impact of the GFC. The Commission argued at the time that “although EU Regional policy is designed as a long-term structural policy, action was required to adapt to a widely different economic context and respond to unexpected challenges” (European Commission 2014, p.271). The Lisbon Strategy, adopted in 2000, was aimed at boosting the competitiveness and knowledge-intensity of the EU economy by, for example, increasing investment in innovation. The European Council argued that in order to achieve this objective, measures at Community level should concentrate on key actions and areas such as supporting knowledge and innovation in Europe; reforming state aid policy; better regulation; developing the internal market for services; completing the Doha round of international trade negotiations; removing obstacles to mobility; developing a common approach to economic migration; and managing the social consequences of economic restructuring. The Lisbon Strategy led to a “profound reframing of Cohesion policy” (European Council as cited in Brunazzo 2016, p.28).

The Lisbon Strategy was relaunched in 2007 with a stronger focus on growth and jobs. In addition, the Gothenburg Strategy, adopted in 2001, focused on sustainable development (i.e. meeting the needs of the present without compromising the ability of future generations to meet their own needs). This was followed by a comprehensive Sustainable Development Strategy for an enhanced EU in 2006 (European Commission 6th Cohesion report). The link between Cohesion policy and the Lisbon and Sustainable Development Strategy was strengthened for the 2007–2013 programming period. New ‘earmarking’ requirements ensured that a large part of Cohesion policy funding went to support projects that contributed to the two strategies, marking a further shift towards aligning Cohesion policy with the overall policy agenda of the EU. The primary goal of reducing economic disparities, however, remained intact in the process. The bulk of funding continued to go to less-developed regions and the earmarking requirements were less stringent for these than for more developed regions (European Commission 2014). As of 2007, three new Objectives defined Cohesion policy: Convergence, Regional Competitiveness and Employment, and European Territorial Cooperation (Brunazzo 2016).

In 2009, the European Commission commissioned the influential Barca Report, which outlined how a re-launched Cohesion policy required reform of the priorities and governance of the policy (Barca, 2009). Barca reviewed EU experiments in the 10 years before 2009 that devolved economic development programming. He found that while the EU policy intention was certainly becoming well established in the policy frameworks of each Member State, there had been a deficit in strategic planning and in developing the policy, especially the coherent adoption of a place-based, territorial perspective (Barca, 2009, p. xvii):
[N]ew core priorities for the policy were needed and that a case should be made for selecting innovation as a key focus of the new direction. In this sense, place-based interventions should build on strengths and take account of weaknesses of previous experiences of Cohesion policy and attempt to replicate policies modelled on the earlier policy of establishing a European Research Area (ERA), for instance, by selecting in each region a limited number of sectors in which innovation could most readily occur and a knowledge base be built up.

The Barca Report recommended a new approach to Regional policy to make the most of the diversity of industrial agglomerations and networks. Their ‘openness’ beyond regional or national boundaries should be promoted. In the report, Barca noted there was a risk that local actors, public research centres or universities, or firms or innovation ‘intermediaries’, could seek to profit unduly from public intervention. This was in part due to a lack of information about specific targets, but Barca believed there were ways to create incentives to avoid such an outcome. The transfer of funds to Member States and regions would be made conditional “on their committing to using these incentives” (Barca 2009). The new Regional policy direction ultimately adopted many of the Barca Report recommendations and would take the form of a ‘Smart Specialisation’ development perspective based on a systems way of thinking about innovation and growth. Smart Specialisation emphasised the economic potential of a region given its place within a complex regional system (McCann & Ortega-Argiles, in Thissen et al. 2013).

The Barca Report was commissioned in the context of a growing international trend since the 1990s, towards the devolution of Regional policy to the level of place. Internationally, public policy makers were shifting from an approach that sought to reduce disparities in income and infrastructure, to reducing disparities in employment as well. Regional policy was evolving from a top-down subsidy-based group of interventions designed to reduce regional disparities, into much broader policies designed to improve regional competitiveness. This shift is often described as a shift from ‘vertical’ to ‘horizontal’ policy processes to promote regional growth over redistribution. Regional policy instruments have become much broader in scope and are increasingly being tailored to the specific requirements of individual regions. Regional strategic programs and programming have grown in prominence, reflecting a general policy shift towards support for endogenous development and the business environment, building on regional potential and capabilities, and aiming to foster innovation-orientated initiatives. At the same time, multi-level governance approaches involving national, regional and local governments, as well as third-party stakeholders such as private actors and non-profit organisations, have increased in importance. The interdependencies of sectoral policies became better recognised and the impacts on regions have facilitated cooperation. The OECD observes that as a result, Regional policy, long marginal, has now become more
central in member countries. Comprehensive regional policies are increasingly regarded as complementary to national economic and structural policies in generating growth (OECD 2010).

Along with this new devolved governance focus of Regional policy, was a trend across the OECD countries for regional development policies to focus on innovation-driven growth. The subsidy-led approach, compensating for weaknesses in lagging regions, has thus progressively evolved towards a competitiveness-oriented approach favouring growth in all regions. With this shift, regional development policies have included more integrated policy portfolios to promote the complementarity of policies in a given place (place-based approaches) and to leverage regional assets (OECD 2013b). As a result, European Cohesion policy places an increasing emphasis on innovation, and expects regions to engage in ‘smart specialisation’ strategies to support knowledge-based development (EC in OECD 2013b). Regions have thus been required to rethink their portfolio of innovation-related policies (OECD 2013b).

In this international context, the Barca Report also made the case for the region to be at the centre of policy making under the future direction of Regional policy (Barca 2009):

…in a place-based policy, public interventions rely on local knowledge and are verifiable and submitted to scrutiny, while linkages among places are taken into account … this strategy is superior to alternative strategies that do not make explicit and accountable their territorial focus, or even hide it behind a screen of self-proclaimed space-blindness, fail to integrate services, and either assume that the State knows best or rely on the choices and guidance of a few private actors. The lessons of the recent crisis reinforce this argument.

The Barca Report distinguished between policy interventions aimed at increasing income and growth (‘efficiency objectives’ in the terminology of the Report) and those aimed at reducing inequalities (‘social inclusion objectives’). Core priorities were identified and defined in order to ensure greater coherence with the place-based or territorial policy concept in three important policy areas: innovation and climate change, migration and children, and skills and ageing. The report argued that by concentrating “on a few issues of key importance for the EU and its people (that this will) create a Europe-wide critical mass of interventions on commonly agreed priorities, attract political and public attention to the measures implemented and enable the Commission to better focus its human resources and efforts and play a more strategic role” (Barca, 2009, p vii). The Barca Report laid the foundations for the 2014 reform of EU Regional policy and the development of the Smart Specialisation policy.

The 2014 reform: Smart Specialisation (2014–2020)
Over the most recent policy cycle of 2014–2020, the EU has increasingly made the allocation of ERDF funds conditional on a requirement that regions develop a Smart Specialisation strategy. The Smart Specialisation policy focuses on integrating regional and innovation policy agendas to assist nations and regions to boost regional innovation to achieve economic growth. The new approach encourages regions to develop strategies that will produce an integrated, place-based economic transformation agenda. It has four important elements: to focus policy support and investments on key national/regional priorities; to engage with challenges and needs for knowledge-based development, including ICT-related measures; to build on the strengths, competitive advantages and potential for excellence of each country/region; to support technological as well as practice-based innovation and aim to stimulate private sector investment and to get stakeholders fully involved and encourage innovation and experimentation.

Overall the Smart Specialisation policy envisages structural transformation of regional economies based on a ‘systems innovation’ analysis being undertaken in the region. Policies should be developed based on a “sound analysis of the regional economy, society and innovation structure”, and should aim to assess both existing assets and prospects for future development. The principles embodied in the Smart Specialisation concept are central to the Europe 2020 agenda, which aims to foster smart growth that is both sustainable and inclusive. The principles are now enshrined with the place-based regional development objectives inherent in the new reforms to EU Cohesion policy (Foray 2015).

It was determined that the Commission would invest around one-third of the EU budget in key areas in line with the Europe 2020 strategy of smart, sustainable and inclusive growth. To this end, 11 thematic objectives corresponding to the Europe 2020 priorities have been defined in the new legal framework. To maximise the impact of investment, Member States and regions need to concentrate EU funding on a limited number of these objectives considering the specific territorial challenges they face and their development needs (Future of Cohesion report 11). The EU has made it an imperative for regions and countries to develop Smart Specialisation strategic plans. States and regions are required to develop such policies, and then to engage in ongoing monitoring and evaluation of the progress of their policies (McCann & Ortega-Argiles 2013).

Based on the work of the EU with the OECD, the new policy encourages regional stakeholders to come together in a process of ‘entrepreneurial discovery’ to identify regional knowledge assets that can be developed and deployed across multiple global value chains. Regions are being encouraged to gain a better understanding in an area about the intersection
of global value chains (GVC) on the one hand, and increasingly mobile labour markets on the other, and being able to see that the relevance of place and opportunities for innovative production are crucial for regions to be able to build capability for value adding (Wilson et al. 2014). As the OECD indicates (OECD 2009, p. 20).

Governments are increasingly realising that investing in the regional dimension of innovation is crucial to strategies to promote growth. Research and technology driven innovation is highly concentrated but public policy can generate new dynamics of innovation... high technology regions such as Silicon Valley suggest that that innovation led public investment can drive economic modernisation and help regions move up global value chains.

Public policy interventions have traditionally supported innovation in a single business through subsidies for R&D or technology acquisition. The new policy direction reflects a turn towards theories of economic geography with uptake of a model that holds that successful innovation depends on interactions between a variety of public and private organisations and drawing on diverse skills and capabilities, including smaller and larger companies, universities, public agencies and business intermediaries. Building an innovation system at the level of place seeks to motivate all these players in the ways in which they interact with each other and tackle socio-economic or, increasingly, environmental challenges (European Union 2012a).

The Smart Specialisation concept originated in the literature that analysed the productivity gap between the US and Europe, a gap which had become evident since 1995. The transatlantic productivity differences appeared to be paradoxical, in that they became most evident precisely when they were least expected (McCann & Ortega-Argiles 2013). Out of this development emerged an ICT-related explanation of the transatlantic productivity gap, including the technological disadvantage of the EU relative to the US, best proxied by ICT-based R&D investment. What ultimately constrains the demand for human capital, in this explanation, is the combination of the diffusion of ICTs, the diffusion of innovative organisational and management practices and the diffusion of innovation through embodied technology in new capital formation. Thus, Europe was falling behind in the transmission of new knowledge, ideas and applications throughout the economy. According to McCann and Ortega-Argiles, the “transmission linkages between sectors, places and institutions were much more limited in speed and strength, thereby reducing the scale and availability of knowledge spill overs and diffusion effects”. Further to this, they argued that “while the Single Market had encouraged much progress in the area of goods markets, energy markets, transportation markets and some financial markets, in many service industries in particular, the EU market were still highly fragmented, and this fragmentation limits the flow of knowledge, ideas, new techniques and systems” (McCann and Ortega-Argiles 2013, p.1410).
In terms of reform relating to the overall administration of Cohesion policy, it is now conditional upon receiving funds that regions and Member States target EU investments to four key areas for economic growth and job creation: research and innovation; information and communication technologies (ICT); enhancing the competitiveness of small and medium enterprises (SMEs); and supporting the shift towards a low-carbon economy (European Commission, Future of Cohesion Policy Report I). This followed on from a 2-year negotiation on the reform of Cohesion policy that was concluded in December 2013.

To improve performance, new conditionality provisions have been introduced to ensure that necessary framework conditions for effective investment are in place before investment starts (ex-ante conditionality) and that the impact of cohesion funding is not undermined by an unsound fiscal and macroeconomic framework (macroeconomic conditionality). The policy will address the needs of Member States identified in the European Semester and encourage budget consolidation by helping to preserve growth-friendly expenditure. It will provide resources to undertake structural reforms, including administrative capacity building. Common provisions have been established for all EU funds supporting economic and social development (i.e. the ERDF, ESF, Cohesion Fund, European Agricultural Fund for Rural Development (EAFRD) and the European Maritime and Fisheries Fund (EMFF), to improve coordination and harmonise the implementation of what are now termed the European Structural and Investment (ESI) Funds. This should also simplify their use by recipients and reduce the potential risk of irregularities (Future of Cohesion Report ii). In his period, there will be more effective coordination between the ESI Funds and other EU policies and instruments (such as Horizon 2020, the Connecting Europe Facility and the Programme for the Competitiveness of Enterprises and SMEs), which is another important element of the reform (EU 2019).

To draw on EU funding, each Member State has to prepare a Partnership Agreement stating how they will respond to the relevant country-specific recommendations under the European Semester and to reaching the Europe 2020 objectives, and set out the arrangements for managing the funds effectively. The procedures for programming, management, monitoring and control then need to be described in more detail in national or regional programs (EU 2019). To strengthen ‘ownership’ of the programs on the ground, a new European code of conduct lays down the main principles of how Member States and regions should organise partnerships and gives guidance on how best to do this. The new legislative and policy framework encourages further expansion and strengthening of the use of financial instruments as a more efficient and sustainable alternative to traditional grant-based financing. In addition, a number of new ways of implementing policy have been developed to tackle particular territorial development challenges, such as Integrated Territorial
Investments (ITI), community-led local development (CLLD) and multi-fund programs combining finance from the ESF, ERDF and the Cohesion Fund (European Union 2019).

Conclusion

As discussed in this chapter, the goals of Cohesion policy have evolved over time. Regional policy had been seen traditionally as an expression of solidarity between EU countries, as it dedicated the bulk of funding to less-developed regions. It helped these regions to fulfil their economic potential, in the light of regional disparities both across the EU and within member countries. During the 1960s and 70s, EU Regional policy projects concentrated on redistributing wealth from wealthier regions to poorer regions through traditional infrastructure-led economic and social projects. Over the past two decades, with the onset of large economic and social challenges such as the global financial crisis, unemployment, poverty and climate change, the policy logic shifted, with the EU now linking policy settings to an economic strategy that is focused on a more specific set of economic and environmental policy objectives. The new emphasis is more about encouraging business innovation and climate change initiatives. Social inclusion goals are now increasingly being perceived as linked to economic goals.

The embracing by the EU of the new paradigm of Regional policy has often been linked to the development of the Lisbon Strategy in the year 2000, which explicitly stated that the new central aim of the policy agenda was to be about increasing the competitive position of EU regions in the world economy by placing growth, jobs and competitiveness at the top of a newly constituted policy agenda. In this context, in the most recent policy cycle (2014–2020) the Smart Specialisation policy has been developed to focus on integrating regional and innovation policy agendas to assist nations and regions to boost regional innovation to achieve economic growth.

The next chapter will provide a review of the conceptual and theoretical framework underpinning Smart Specialisation, and a survey of empirical studies that have addressed the implementation challenges associated with the new policy direction.
Chapter 2

Literature Review

Introduction

The aim of this chapter is to discuss the implementation challenges associated with Smart Specialisation policy in diverse regions of Europe: first, the theoretical underpinnings of the policy, then a review of the theoretical and empirical literature relating to policy implementation challenges. This literature coverage is valuable for the subsequent policy analysis in subsequent chapters.

The Smart Specialisation policy concept

As discussed in Chapter 1, Smart Specialisation has become a prominent policy tool in the context of EU Regional policy. The overall Smart Specialisation policy envisages the structural transformation of regional economies based on a “sound analysis of the regional economy, society and innovation structure”, which aims to assess both existing assets and prospects for future development (EC 2012a, p.9). The policy encourages regions to identify development opportunities and induce suitable structural change. It targets the integration of existing specialisations with new developing specialisations, and thus diversification into areas related to regional strongholds. For this reason, some theorists argue that ‘smart diversification’ would be a more appropriate expression for this approach (Asheim et al. as cited in Isaksen 2018). The policy also aims to build capabilities in fields in which a region has the potential to develop a unique selling proposition and competitive advantage in the near future (Foray, 2015). Such a new development path is typically initiated by an entrepreneurial vision, also termed entrepreneurial discovery, which can be understood as a result of interactions and knowledge exchange between RIS actors (Asheim et al as cited in Isaksen, 2018).

Central to the policy is the need for a devolved policy development and implementation process, focused upon the strategic interaction between public and private actors in the RIS, including researchers, policy makers and entrepreneurs (Isaksen 2018). As Landabaso has argued, “Smart Specialisation is about empowering regions to help themselves; encouraging key regional players to interact, share a vision and jointly commit efforts and resources, is of
paramount importance for the development prospects of a region” (Landabaso as cited in Cooke et al. 2012, p.21). The policy process follows a complex and iterative logic that cannot be described either as essentially "top down" or essentially "bottom up". As Foray and Hall explain, this “bi-directional dynamic process is one in which the principle of entrepreneurial discovery plays an essential role and yet so does public policy intervention, which may occur at several distinct stages in the identification, evaluation and targeted support for new, emerging lines of regional specialisation” (Foray & Hall, 2011, p.2).

As Foray and Goenaga have argued, “Smart Specialisation is a policy concept which emphasises the principle of prioritisation in a vertical logic (to favour some technologies, fields, population of firms) and defines a method to identify such desirable areas for innovation policy intervention” (Foray & Goenaga, p.1, 2013). A key concept of Smart Specialisation, described in detail in Chapter 2, is about identifying sectors that can achieve critical mass. To achieve this, policy design should take into account the concepts of regional embeddedness, relatedness and connectivity (EC 2012). Foray and Goenaga (2013, p. 1) have clarified that Smart Specialisation is not a planning doctrine that requires a region to specialise in a particular set of industries, rather a:

…robust and transparent means for nominating those new activities, at regional level, that aim at exploring and discovering new domains for constructing regional competitive advantages. Thus, rather than offering a method for determining if a hypothetical region has a ‘strength’ in a particular set of activities, e.g., tourism and fisheries, the crucial question is whether that region would benefit from and should specialise in certain R&D and innovation projects in some lead activities such as tourism or fisheries,

Foray suggests that priorities should be precise and focused, such as being limited to the involvement of a group of 10–20 firms and institutions only (Foray, 2015). The Guide also advises that priority areas should not be presented in a “too generic way….to be credible, effective and suitable for a concrete action plan, the priorities need to be expressed (…) precisely”, such as ICT-based innovation for active ageing, innovative solutions to reduce city congestion, wood-based solutions for eco-construction, etc. The Commission is particularly anxious for the new policy direction to not repeat common approaches from the past, including “spreading the money across powerful lobbies with the frequent outcome that there were too many priorities aimed at preserving the status quo rather than looking at future opportunities” as well as repeating the past policy problem of regions “imitating other regions” (EC 2012, p. 51).

The Smart Specialisation policy was developed in the context of a concern that previous policy programs promoting innovation advances – particularly in less developed regions
(LDR) – had been inadequate in quantity and quality. The Smart Specialisation policy shares many of the same features as the Constructing Regional Advantage (CRA) concept in informing European policy that promotes economic diversification of regions. Like Smart Specialisation, the CRA concept underpinned the development of Regional Innovation Strategies thorough the Regional Innovation and Technology Transfer Strategies (RTTS), Regional Technology Plans (RTP), RIS (Regional Innovation Strategies) programs of the 1990s and into the 2000s as a precursor to Smart Specialisation. The CRA policy concept has been implemented to some extent by policy makers at the regional level in the EU since the mid-1990s, often implicitly (e.g. in the form of the RIS, RITTTS and RTP strategies) and in some cases explicitly, as in platform policy initiatives in regions located in West Wales and Finland (OECDa, 2010).

However, according to Landabaso these programs did not meet economic development needs and were not adapted for the process of innovation in different regional contexts. The innovation effort by both the public sector and the private sector was inadequate. Programs were poorly adapted to the specific needs and conditions in less developed regions (due to a lack of understanding of innovation processes at the regional level), which helped to increase the ‘technology gap’ between regions and tended to perpetuate or even increase economic disparities between regions. It was increasingly understood by policy makers that a practical way to approach this problem might be to encourage regions to develop their own regional innovation strategies. These strategies “could promote public/private and inter-firm cooperation and create the institutional conditions (e.g. consensus among the key regional players) for a more efficient use of scarce public and private resources for the promotion of innovation (i.e. bigger and better spending through regional policy)” (Landabaso, 1997, p.1).

In addition, Boschma argues that the key difference between the two approaches is that the Smart Specialisation policy explores in more detail the devolved governance policy processes associated with identifying areas of economic growth (Boschma, 2013). In this sense, as Foray has pointed out, “the key input to the Smart Specialisation concept is the process of entrepreneurial discovery that details exactly how the policy process must “select and priorities fields or areas where a cluster of activities should be developed, and to let entrepreneurial discovery determine the right domains of future specialisation” (Foray et al. as cited in Boschma, p.4) Foray has argued that it is these governance processes that will improve capacity for the avoidance of vested local stakeholder interests, and enable new economic players to emerge to avoid regional lock-in” (Foray et al. as cited in Boschma, 2013, p.4).
The European Commission have developed a policy guide to assist regions with policy implementation. The *Guide to Research and Innovation Strategies for Smart Specialisation (RIS 3)* (hereafter referred to as the Guide) provides detailed analysis of the concept of Smart Specialisation (EC 2012a). Many of these ideas will be explored in the next section of this chapter. For instance, central to Smart Specialisation is the adoption of a wide view of innovation that spans economic activities and involves many sectors of civic society. A vision for major structural economic change is explicit in the policy. First, a *transition* from an existing sector to a new one based on cooperative institutions and processes (i.e. the collective research and development, engineering and manufacturing capabilities that form the knowledge base for development of the new activity). Second, *modernisation* or the technological upgrading of an existing industry, involving the development of specific applications of a Key Enabling Technology (KET) to improve efficiency and quality in an existing (perhaps traditional) sector. Third, economic *diversification*. In such cases, the Guide argues, the discovery concerns the finding of potential synergies (economies of scope and spillovers), are more likely to materialise between an existing activity and a new one (EC 2012a). A further key concept is that of economic *differentiation*, which is one of the central principles of Smart Specialisation. The key to successful differentiation is to exploit related *variety*; thus a regional economy can build its own competitive advantage by diversifying its unique, localised know-how into new related combinations and innovations. These new combinations need to be feasible and accessible, given the existing assets, so as to exploit the experience accumulated by regional actors (EC 2012a).

The Guide outlines how the Smart Specialisation policy is also about identifying sectors that can achieve critical mass. To achieve this, policy design should take into account the concepts of regional embeddedness, relatedness and connectivity. *Embeddedness* refers to the existence of industries that are in tune with the relevant socioeconomic conditions, and can rely on a trained local labour force and a history of cooperative relations with other regional actors. However, the Guide argues that by concentrating only on embeddedness, a regional development strategy may risk increasing vulnerability to changing economic conditions. Accordingly, it is important that *relatedness* is also taken into consideration. This concept describes the diversification of firms into related areas based on new and innovative techniques or processes. This is a strategy of diversifying within a specialisation, which enables firms to build on the skills, assets and capabilities within a region, while adapting and improving on them through innovation (EC 2012a).

Another key concept relevant to Smart Specialisation policies is *connectivity*, which holds that the policy should aim to link emerging knowledge-based industries to other actors within and outside the region. Face-to-face interaction in particular places is also seen as crucial in
nurturing innovation, and there are “many examples of regions that have used what can be described as social capital to create knowledge-based growth” (EC 2012a). However, the policy Guide notes that local interaction can also be negative, can create protectionism and rent seeking. Interaction can be most beneficial between different groups, and across classes and power structures. Connections to outside regions are only beneficial when ideas are internalised to the benefit of local firms. Being connected to the outside, both digitally (with information communications technology (ICTS) and physically (with transport infrastructure) may lead to a flow of human capital out of the region. Finally, the policy aims for regions to identify a “radical foundation of a new domain”. The Guide explains that the notion here is that R&D and innovation in a certain field can make previously low-growth activities become attractive with the co-emergence of R&D/innovation areas and a niche market (EC 2012a).

![Figure 2.1: Europe 2020 dimensions: integrated regional typologies](European Commission 2012a)

The Guide sees that the elaboration of an overall economic vision for a region requires an assessment of which typology captures the major features associated with Europe 2020 challenges. For the Europe 2020 smart growth typology, the Guide recommends the regional innovation framework provided by the OECD (EC 2012a), which provides a typology in which regions are grouped into three broad types: knowledge regions, industrial production...
zones and non-science-and-technology-driven regions, within which there are various sub-
categories. According to the EC, these three broad categories describe the main observed
differences in terms of relationships between knowledge, innovation and regional
characteristics. EU regions can be classified into one of these broad smart-growth groupings
according to the role played by knowledge in fostering their local innovation processes (EC
2012a).

The combination of the smart growth, sustainable growth and inclusive growth typologies
(Figure 2.1) allows for 24 possible tripartite types of place characteristics, each of which is
depicted by a different cell in the three-dimensional box of regions. Underpinning the
“systems innovation” approach to regional innovation policy is an understanding by the EU
that European regions can be categorised by three main territorial patterns of innovation with
regional specificities, an understanding of which is essential to build targeted strategies for
policy goals:

- strong knowledge-producing regions, which are either science-based or applied-
  science-orientated – indigenous innovation takes place in scientific networks, local
  conditions support the creation of knowledge, local diffusion, transformation into
  innovation and widespread local adaption
- regions specialised in a smart technological application or smart and creative
  diversification – high product innovation rates and high creativity exist to translate
  external basic knowledge and applied science knowledge into innovation
- imitative innovation regions with local knowledge and innovation intensity –
  creative actors identify where knowledge is lacking outside their region and seek to
  adapt the existing innovation (EC 2012a).

According to the EU, for knowledge-producing regions there is a need to foster R&D
incentives to attract inventors, innovators and highly skilled labour. Incentives for creative
applications through cooperative research activities or the search for new technological
solutions are best suited for the smart technological specialist regions. For the imitative
innovation regions, support of the development of creative projects with multinational
corporations may best foster the economic base. Thus, the EU is concerned that “knowledge
cannot be equated with innovation”, which emphasises the importance of the knowledge-
producing regions in European R&D. To the EU, these regions are critical in achieving R&D
breakthroughs, whereas regions with low levels of R&D should perhaps be investing in
intangible assets to make their contribution to innovation outcomes (EC 2012a).
For instance, in relation to “intangible assets” the Smart Specialisation policy emphasises a wide view of innovation – innovation may occur anywhere and everywhere, in different forms, and not just as high-technology development in metropolitan areas (EC 2012a; OECD 2013b). This concept of innovation encourages policies to go beyond the simplistic notion of innovation as solely about investment in research or the manufacturing sector, to include innovation as about building competitiveness through design and creative industries, social and service innovation, new business models and practice-based innovation. According to the EC, all regions have a role to play in the knowledge economy, provided that they can identify comparative advantages and have the potential and ambition for excellence in specific sectors or market niches (EC 2012a, p. 34).

The EC’s ‘systems innovation’ approach and wide view of innovation encompasses innovation in services and in the public sector, in addition to innovation in the manufacturing sector, which most other policies target. It also encompasses innovation based on different types of knowledge, leading to different modes of innovation: (a) the ‘STI’ (Science, Technology, Innovation) mode, based on analytical knowledge/basic research (science push/supply-driven approach) and synthetic knowledge/applied research (user-driven approach), emphasising product and process innovations; and (b) the ‘DUI’ (Doing, Using, Interacting) mode, based on synthetic and symbolic knowledge (market/user-driven), emphasising competence building and organisational innovations (EC 2012a).

According to the Guide, this broad concept of innovation means that public policy outcomes are complex and difficult to measure over time (EU 2012a, p. 34):

> Innovation is an ever-changing phenomenon. It takes place in a dynamic and mix of legislation, user needs, consumer demand, marketing strategies and new technologies and organisational practices drive innovation in manufacturing and service sectors as well as in social enterprises and the public sector.

Public policy interventions have traditionally supported innovation in a single business through subsidies for R&D or technology acquisition. The broad systems view of innovation, as promoted by the Smart Specialisation policy, focuses instead on the interactions between a variety of public and private organisations, drawing on diverse skills and capabilities, including smaller and larger companies, universities, public agencies, business, and innovation and financial intermediaries. Innovation measures would therefore seek to motivate all of these players, and improve the ways in which they interact with each other and the collaboration modes they use to tackle socioeconomic or, increasingly, environmental challenges (EC 2012a, p. 34) Thus the ‘innovation’ public policy intervention is “more than the sales of an innovative product, reduced process costs or enhanced labour productivity” (EC 2012a). Firms may gain new partners, implement organisational change or acquire new
methods or competence. There may be spillover to other firms and society from the diffusion of new technologies or organisations’ practices. The Guide encourages regions to seek to encourage investors to invest in riskier innovative ventures or they may attempt to raise the awareness of young people about careers in science and technology and innovation, to ensure a future supply of skilled personnel (EC2012a).

Finally, the Smart Specialisation policy has at its core a commitment to GVC/GPN analysis at the level of the region. This acknowledges that greater innovation outcomes at the level of the region requires analysis of the fragmentation of production; the mapping of regional capabilities; proactive GVC governance and transfer of knowledge across public and private domains; and effective monitoring of value creation and capture at the regional level (Todvea & Rakhmatullin, 2016).

The concepts underpinning the Smart Specialisation policy framework have been developed over many years in the context of different strands of theory within the economic geography discipline. The next section summarizes key developments within the theoretical literature.

**Theoretical underpinnings of Smart Specialisation**

The Smart Specialisation policy envisages structural transformation of regional economies based on a ‘systems innovation’ analysis being undertaken in the region. The regional innovation system (RIS) concept is grounded in the literature on innovation systems. There are different variants of such systems, including, in addition to regional, national, technological and sectoral innovation systems. The theoretical foundations of these approaches are found in models of interactive innovation, evolutionary economics and institutional schools of thought. Consequently, system approaches conceptualise innovation as the outcome of non-linear, collaborative and cumulative learning processes that are shaped by formal and informal institutions at various spatial scales (Isaksen et al., 2018).

The systems innovation approach builds on the ideas developed by these economic geographers and an extensive body of empirical research that has examined learning, innovation and the role of institutions in regional development. This theoretical framework synthesises ideas and insights from a range of literature sources within the economic geography discipline, including economic agglomeration theories on industrial districts as well as institutional theory and, most recently, evolutionary economic geography (EEG). It also includes theoretical insights from business studies literature that explore the global value chain/global production chain (GVC/GPN) debate and the role of embedded and disembedded multinational company (MNC) within a RIS.

A RIS can be thought of as the institutional infrastructure supporting innovation within the
production structure of the region. The two central components of a RIS are the knowledge generation sub-system (consisting of universities and other research-generating bodies) and the knowledge exploitation sub-system (consisting of firms and industries). Regional innovation performance is often attributed to how well (or badly) these two sub-systems are aligned and perform (Cooke et al. cited in Marques & Morgan 2018). This understanding provides a sophisticated approach to encouraging innovative advances and challenges conventional models of innovation based on a science or technology innovation paradigm. Science and technology innovations are considered insufficient to address the system innovation that new social challenges and mission-led agenda seem to require (Jensen et al. as cited in Marques & Morgan, 2018).

**Economic agglomeration theories on industrial districts**

The RIS notion emphasises the superiority of place-based, customised and broad innovation system policies over spatially blind and narrow R&D policies. The RIS approach is also closely connected to other territorial innovation models, such as innovative milieus, industrial districts, learning regions and clusters. Since the 1980s people have used these models to offer deep explanations for the uneven geography of innovation, and the endogenous factors and processes that shape the knowledge generation and innovation capacities of regions. These concepts build on Alfred Marshall’s early ideas on the innovation-enhancing effects associated with the geographical concentration of firms (as a particular form of localisation economics) and share a common interest in explaining how socio-institutional and cultural factors at the regional level enable or constrain localised circulation of knowledge and economic coordination (Marshall as cited in Isaksen et al. 2018). Marshall first developed the concept of an ‘industrial district’ in 1890 to explain spatially concentrated industrial development in different place-based contexts. He argued that “the leadership in a special industry, which a district derives from an ‘industrial atmosphere’, had shown more vitality than might have seemed probable in view of the incessant changes of technique” (Marshall as cited in Simmie 1997, p.18).

The neo-Marshallian School that emerged in the 1980s, led by the work of Piore and Sabel, looked at the features of economic development in selected industrial districts of Europe. The central argument of Piore and Sabel challenged the widespread belief that firms are independent entities, and that small firms are linked in competitive markets, whereas large firms are organised as oligopolistic hierarchies constituting entire industries. They argued that these were neither an exhaustive nor accurate description of current configurations. In addition, they argued that firms, particularly those organised in industry-embracing hierarchies, were saturating markets with traditional, standardised mass-produced goods – which mass production systems, typically, cannot supply. In response, consumers were
demanding more specialised and differentiated goods (Piore and Sabel, 1984).

Piore and Sabel maintained that the response of some firms to these changed circumstances was the development of flexible specialisation. “Flexible specialisation” refers to a strategy of permanent innovation: firms accommodate ceaseless change, rather than try to control it that is based on “flexible multi-use equipment, skilled workers, and the creation, through politics, of an industrial community that restricts the forms of competition to those favouring innovation” (Piore and Sabel, 1984, p.17). Flexible innovation amounts to a revival of craft forms of production that were marginalised in the first industrial divide usually referred to as ‘The Industrial Revolution.’ According to Piore and Sabel, the spread of flexible specialisation represented a major change to industrial organisation of economies leading to craft-based industries from Italy, Germany and Japan, “to support what they argued to be a new paradigm” (Piore and Sabel, in Simmie 1997). There have been many empirical studies arising out of the Piore and Sabel seminal work, including for instance Michael Storper’s study of the high-fashion areas of Paris, that illustrate the main characteristics of flexible specialisation (Storper, 1993).

Learning, innovation and the role of formal and informal institutions in regional development

Kevin Morgan has argued that “learning and innovation are now considered pivotal for ensuring competitiveness and prosperity of regional economies. Innovation – understood in the broad sense to include product, process and organisational innovation in the firm or institution – is increasingly seen to have a spatial dimension: practical innovations and technological developments take place somewhere” (Morgan 1997, p.492). Thus, as Morgan also notes, since 2000, “the concept of innovation has assumed a central role in theories of economic development and is now seen as a driving force [and]… innovation capacity is now seen as an important variable in explaining uneven development, and spatial considerations are seen as relevant to understanding technological change” (Morgan 1997, p.492).

Morgan argues that in relation to the concept of innovation and its application to economic development within a regional innovation system, that it important to understand the role of social capital within the dynamics of a system. He argues that a RIS is shaped by a variety of formal and informal institutional routines and social conventions and that there has been a growing interest within economics in the role and nature of social institutions, the most elemental form of a business institution is a production routine that is “a habitual pattern of behaviour embodying knowledge that is often tacit. As Morgan explains, Putman has defined the concept of social capital as standing in contrast to “notions of physical capital and human
capital, which are tools and training, respectively that enhance individual productivity” (Putman as cited in Morgan 1984, p17). According to Putman, social capital includes organisations such as networks, norms and trust that facilitate coordination and cooperation for mutual benefit (Putman, 1993). Morgan argues that the concept of social capital has enhanced the benefits of investment in physical and human capital leading to the concept coming to be seen as a vital ingredient in economic development around the world” (Morgan, 1997, p.502).

As Doeringer and Terkla and Freeman have indicated, ideas about the role of therefore of social capital and tacit knowledge have formed part of a wider argument about the role of intangible or invisible factors in economic development (Doeringer & Terkla; Freeman as cited in Morgan 1997, p.502). Lundvell has also argued that it is accepted that intangible assets – knowledge, competence, skill, organisational culture – are important to development, but difficult to measure, and that social capital has played a major role in the economic success of Germany, for instance where there can be found strong relationships between educational institutions and firms (Lundvell 2006).

Storper has maintained that it is the role of social capital that explains why regional economies have become important players in the global economy in shaping development (Storper, 1993). This view is in contrast to that of the ‘globalist school’ who maintain that “globalization and localization, far from being mutually exclusive processes, are actually much more interwoven than is generally acknowledged because foreign direct investment is often attracted to and has a reinforcing effect upon, ‘innovation clusters’ in a targeted country” (Morgan 1997). Storper argues that the concept of social capital applied to the connection between organisational and technological learning explains a successful model of regional economic development. He argues that localised input-output relations or traded interdependencies constitute webs of user-producer relations essential to information exchange and that untraded interdependencies (e.g. labour markets, norms and values, public or semi-public institutions, regional conventions) attach to the process of economic and organisational learning and coordination (Storper, 1997). Storper asserts that “untraded assets are a central form of scarcity in contemporary capitalism, and hence a central form of geographical differentiation in what is done, how it is done, and in the resulting wealth levels and growth rate of regions” (Storper 1997, p.5).

In addition to the ‘relational perspective’ (and emphasis upon social capital to the success of a regional innovation system) outlined in the theoretical literature reviewed so far, there is also an emphasis in the literature on the importance of formal regional institutions to operationalise the policy in the generation of learning and knowledge transfer to encourage
economic development. For instance, Michael Porter has maintained that “competitive advantage is created and sustained through a highly localised process and the differences within national economic structures, values, cultures, institutions and histories contribute profoundly to competitive success” (Porter 1990, p.19). Porter argues that role of the home nation is as strong as ever and, while globalisation of competition might appear to make the nation less important, it makes it more so. According to Porter “with fewer impediments to trade that shelters uncompetitive firms and industries, the home nation can take on growing significance simply because it is the source of the skills and technology that underpin competitive advantage.” (Porter, 1990, p.19). He argues that while firms compete, it is governments which create the market conditions to allow firms to exploit the inherent competitive advantage of each economy. This contribution to the literature starts from the premise that there should be a microeconomic, productivity and output-related conceptualisation of regional competitiveness (Porter 1990).

As with firms, Porter (1990) states that regional competitiveness and productivity are equal terms: a region’s standard of living (wealth) is determined by the productivity with which it uses its human, capital and natural resources, and therefore the appropriate definition of competitiveness is productivity. He has developed a model of how regions may improve their competitiveness in localised clusters and explains that a ‘competitive diamond’ of factors influence a country’s competitive performance in international markets. Interactions in the competitive diamond are more intensive and therefore more effective when firms operate in close proximity. He argues that globally, the most successful firms are likely clustered ones as there exists a relationship between domestic or regional rivalry in technological terms and therefore the ongoing presence of competitive advantage of an industry. In this context, Porter maintains that the local operating environments of firms can play an important role, for example, in the diffusion of new product and process technologies. He ultimately argues that the geographic concentrations of rival firms enhance the benefits of strong competition (Porter, 1990).

Mariana Mazzacato has emphasised that generating an effective innovation system is not just about spending on R&D, but also about establishing a set of institutions at the level of place to allow new knowledge to diffuse throughout the economy. She maintains that regions need a systems perspective that links the role of the individual actors, and linkages between actors. (Mazzacato, 1994). She argues that “the state should assist in establishing horizontal systems of diffusion to establish open innovation systems that enable the breaking down of barriers between public and private collaboration.” This she argues they “must also bridge … the knowledge gap that exists to explain how state investments catalyse, influence and connect
to the growth of business organizations on which we rely, ultimately, to deliver new technologies on a broad scale” (Mazzacato 1994, p. 194). Henry Chesbrough, has also highlighted the importance of companies looking beyond their own organisations for new sources of innovation and he emphasises the need for new models of R&D, and the shifting roles of internal central R&D labs and their external relationships with entities such as university research centres (Chesbrough 2017).

**Evolutionary economic geography**

Evolutionary approaches emphasise the importance of history as an explanation for the persistent patterns of uneven regional development. According to Dosi and Nelson, the “spatial distribution of economic activity is an outcome of largely connected and path-dependent historical processes” (Dosi & Nelson as cited in Kogler 2015, p.1). Despite this, according to Scott and Storper, “although local technological trajectories may be, for the most part, rigid and path dependent, pockets of innovation can enable the opportunity for places and regions to elevate their knowledge, production and innovativeness under particular circumstances”(Scott & Storper as cited in Kogler 2015, p.1).

Tödtling and Trippl have pointed out that in this context, in more recent years, studies have begun to focus on the conditions and factors that drive new regional path development and RIS transformation (Tödtling & Trippl, 2013). According to Isaksen and Trippl, this new body of research “connects the RIS approach with evolutionary economic theories on path dependence to examine how RIS promote or hinder economic diversification and moves (it) beyond overly micro-focused and firm-focused models of evolutionary economic geography, by advocating a broader, more comprehensive view on regional industrial path development” (Isaksen and Trippl 2016, p.80). Isaksen points out that these studies (Strambach 2010; Tödtling and Trippl; Asheim et al. 2016; Isaksen and Trippl 2016) have tended to focus on firms and their innovation activities, and on a wide range of actors, institutions and policy actions in a region (Isaksen et al, 2018 pp 4-5).

According to Martin and Trippl (Martin and Trippl 2018, pp. 13-14):

> While path renewal places most emphasis on policy-supported intensification of knowledge creation and re-combination between firms, new path creation puts main emphasis on science-driven modes of innovation, for which the organisational support structure and knowledge infrastructure of the RIS is vital. Subject to the organisational and institutional endowment, the degree of related variety and the openness towards external knowledge sources, different RIS require different policies to stimulate new path development. This implies that the role of policy is mostly to identify, facilitate and strengthen combinatorial knowledge dynamics between firms and the knowledge infrastructure of the RIS
As Isaksen et al explain, “while more recent conceptualisations of RIS vary, it is generally agreed that these systems are made up of three core elements, that is, actors, networks and institutions.” They argue that key actors of RIS are the firms and industries located in the region as well as organisations that belong to the knowledge and support infrastructure such as research institutes, educational bodies and knowledge transfer agencies (Isaksen et al, 2018):

 Networks that facilitate knowledge flows and interactive learning between these actors are seen as eminently important for dynamic innovation activities to unfold. The ‘functioning’ of RIS is seen as being influenced by an institutional framework of formal rules and informal norms. A central argument in the RIS approach is that innovation does not take place in isolation, it includes interactive learning in localised innovation networks that are embedded in specific socio-cultural settings. It is also emphasised that RISs are open systems in which organisations source knowledge through extra-regional production and innovation networks.

Isaksen and Trippl argue that different characteristics of RIS can be found in different regions as they “exhibit distinctive development potentials and challenges.” (Isaksen & Trippl 2016, p. 80). They argue that therefore “path dependence” of alternatively “new path development” directly or indirectly “builds on the situation in dynamic core regions with organisationally thick and diversified RIS.” (Isaksen & Trippl, 2016, p. 80). However, new research on RIS with implications for the success of the Smart Specialisation policy have highlighted the importance of distinguishing between system-based and actor-based policies in different types of RIS, which could constrain new path development. System-based policies aim to improve the functioning of a RIS by targeting system failures, whereas actor-based strategies support entrepreneurs and innovation projects by firms and other stakeholders. Isaksen et al argue that these strategies will only have a limited effect when applied alone, and need to be combined to effectively support structural change in different types of RIS (Tödtling & Trippl as cited in Isaksen 2018).

Lawton Smith et al have maintained that the studies have “tended to overlook the important role of agency for regional economic change” and that entrepreneurship is suggested as a driving force behind regional evolution and new path development (Lawton Smith et al cited in Isaksen et al, 2018, p.16). Furthermore it is maintained by other studies that there needs to be more consideration of multi scalar policy in research on new path development and RIS (Lawton Smith, Trippl, Waters and Zukauskaite in Isaksen, 2018). Finally, Isaksen maintains that “evolutionary approaches can improve our understanding of how historically shaped factors contribute to our understanding of the development of regional industries and the configuration of RIS through work on the role of institutional characteristics of regions on the complexity of RIS systems.” In this way, the importance of understanding the interplay
of local and global knowledge flows and links, including in peripheral regions and the role that RISs play in accessing and anchoring global knowledge is emphasised (Isaksen, 2018).

The global value chain/global production network framework

The global value chain/global production network (GVC/GPN) framework is a powerful tool for understanding the changing economic geography of the world and the challenges facing companies integrated into these networks”(Gereffi 1999; Humphrey & Schmitz, 2004; Humphrey, 2006 cited in Blazek 2016). Over the past 25 years, there has been considerable debate over the role of GVC/GPN frameworks in the global economy and they are at the centre of a number of policy debates on regulation of global trade, incentives for foreign direct investment (FDI), or stimulus policy interventions for economic development (Gereffi 1999; Henderson et al. 2002; Todeva & Rakhmatullin 2016) A key argument of the GVC/GPN framework approach is that a "sizeable part of the world’s production is organised by large enterprises that command networks of suppliers at different tiers providing various intermediate goods, and that these networks are governed by different modes of governance” (Blazek 2016). Todeva & Rakhmatullin argue that the “fragmentation of production and the international outsourcing of tasks and dispersion of activities across countries have led to the emergence of complex and borderless production systems, driven by MNCs, where states and global corporations are entangled in complex scenarios for long-term growth” (Todeva & Rakhmatullin 2016, p.3).

Thus, the “globalization school” argues that the decisions of MNCs on where they conduct activities – such as R&D and production – determine to a large extent where economic activities agglomerate in certain places (Hudson as cited in Amin & Thrift 1994). Internationally controlled markets determine regional economic trajectories, rather than regional stakeholders (Wilson et al. 2014). Globalisation has eroded differences between places through the international reach of its technological and socioeconomic forces. Locations seem to be emptied of their particular characteristics and local actors fundamentally lose the capacity to shape regional destinies (Ascani et al. as cited in 2012). The magnitude of these processes has led to commentators conceiving of the globalized world as a ‘flat world’ (Friedman cited in Ascani et al. 2012) and as constituting ‘the end of geography’ (O’Brien as cited in Ascani et al.2012).

Thus globalisation has led to a spatial division of labour and a spatial division of innovation emerging where “the MNC is able to split its activities into units and then localise and disperse those units in the most favourable places for them as regards work and industrial culture” (Massey; Aydalot as cited in Simmie 1997, p.3). This has generated a core-periphery
international economic divide to occur where it is said that “some regions of the global network have much autonomy, but the further they lie from the centre, the more the regions are locked into the international division of labour. In this sense, regions start to resemble the old Fordist branch centres” (Amin & Robins as cited in Simmie 1997, p.3). This dynamic has led to the observation that for Eastern countries, a key task is to widen the circle of beneficiaries of an FDI-led growth pattern, to increase the benefits of domestic actors while maintaining and increasing the competitiveness of their economies. MNCs in CEE countries control up to 80 per cent of productive assets, yet they still only employ no more than 30 per cent of the labour force and it is far from certain as to whether the segments of society not directly employed by the MNCs actually directly benefit from this economic model (Bruszt & Vukov 2015, p. 29).

In relation to the automotive industry, Grabher argues that under this regional economic development model, an associated tightly integrated supplier network characteristic of this sector will militate against a differentiated regional sectoral structure. Grabher maintains that for investors in the automobile industry, the economic and social industrial context of Eastern Germany has provided an almost ideal field for experiment with the most advanced management practices and production techniques where in plants, the European versions of the new management techniques of lean production were implemented and further, that while that development may end up in the decentralisation of competencies and hence some local autonomy at the operative level, that the plants will continue to be a part of a European network of production plants that is controlled by western headquarters” (Grabher as cited in Amin & Thrift 1994). He argues that this sort of external control will be replicated within the regional supplier network of the East German plant: although the demand for flexibility and logistic competence favours local supplier autonomy on the operative level, a considerable share of the eastern German supplier firms will probably remain at the level of second-tier or sub-suppliers belonging to western patent firms which, in turn, are largely dependent on a few large western first-tier suppliers (Grabher as cited in Amin & Thrift 1994). He notes that the dependence of these production complexes on the strategies of a single automobile corporation makes these regions equally vulnerable to external shocks and observes that these dynamics many end up in very few prospects for self-sustaining regional development in LDRs. He predicts that the end result for ‘periphery regions’, which have inherited institutional and social networks, is that “it will take a long time to create the cultural and institutional foundations for a new entrepreneurship which taps into local resources and strengths” (Grabher as cited in Amin & Thrift 1994, p. 21).

Before addressing the key components of the GVC/GPN literature, it is useful to distinguish between the terms ‘value chain’ and ‘production networks’. Analysis that takes the entire
chain of productive activities into account has been variously referred to as value-chain, commodity chain, activities chain, production network, value network and input-output analysis (Sturgeon et al. 2008). Sturgeon maintains that it is important to note that while these terms have a great deal in common, an important distinction should be made by contrasting the various ‘chains’ to the various ‘networks’, where a chain maps the vertical sequence of events leading to the delivery, consumption and maintenance of goods and services – recognising that various value chains often share common economic actors and are dynamic in that they are reused and reconfigured on an ongoing basis – while a network highlights the nature and extent of the inter-firm relationships that binds sets of firms into larger economic groups (Sturgeon et al. 2008).

In relation to GVC analysis, Gereffi et al note that “international trade in goods and services should not been seen as solely, or even mainly, as a multitude of arm’s-length market-based transactions….where an important part of global trade is conducted within multinational enterprises or through systems of governance that link firms together in a variety of sourcing and contracting arrangements” and also argue that “firms are predominately located in developed countries and include not only multinational manufacturers, but also large retailers and brand-name firms (and) that these lead firms play a significant role in specifying what is to be produced, how and by whom” (Gereffi et al. 2001, p.1). The value-chain view of global economic integration highlights that for many industries, access to international markets is not achieved merely through designing, making and marketing new products. Instead, it involves entry into international design, production and marketing networks consisting of many different firms. Understanding how these value chains operate is very important for developing country firms and policymakers because the way chains are structured has implications for newcomers (Gereffi et al., 2001). Gereffi et al distinguish between buyer-driven and producer-driven value chains in highlighting the role of retailers and brand-name companies (the buyers), such as Gap and Nike, in structuring global trade in labour-intensive fashion products, and the role of producers such as Ford and Compaq in structuring global production in capital-and technology-intensive industries (Gereffi et al. 2001).

In this context, research has identified mechanisms and processes integrating particular GPNs with particular regions, such as types of strategic coupling—respectively decoupling and recoupling (Blazek, 2009). As Mackinnon has highlighted, the central concept of strategic coupling highlights the dynamic processes by which relational assets are matched to the strategic needs of lead firms within GPNs, with regional institutions playing a key role in this process (Mackinnon 2012). Mackinnon argues that a key characteristic of dynamic growth regions is that they are “typified by organic forms of implicit coupling based on the co-evolution of regional assets and lead firms in GPNs.” He argues that FDI in developing
regions, on the other hand, “continue to be characterised by a lack of local linkage and power asymmetries between TNCs and regional institutions (resulting in corporate capture in some cases), pointing to a strong degree of path dependence in the relations between these regions and GPNs” (Mackinnon 2012, pp. 241-2).

Coe et al have also focused on the strategic coupling of GPNs and regional assets, which they argue to be an interface mediated by a range of institutional activities across different geographical and organisational scales (Coe et al. 2004). Coe et al contend that regional development will ultimately depend on the ability of this coupling to stimulate various processes of value creation, enhancement and capture (Coe et al. 2004). However, they demonstrate with their case study of BMW that the developmental impact of the coupling process is highly variable and contingent, and not automatically beneficial for the region. They argue that regional development does not take place on a level playing field and, therefore, for the processes of value creation, enhancement and capture to benefit economic development in particular regions, the balance of power between the different actors involved is a crucial variable. Hence, they maintain that governance structures in different territorial contexts are variable and the possibilities for developmental policies to impact on a region’s assets will differ. Therefore, in newly industrialised countries, national policies set the dominant framework for regional development, with regional institutions often weakly developed or missing, whereas in countries with a more decentralised structure, regional institutions attempt to develop their bargaining power vis-à-vis focal firms in the context of nation state governance structures and inter-regional competition (Coe et al. 2004).

As Gereffi has argued, while governance issues are important and have attracted a lot of attention among GVC scholars, the research on economic upgrading has been at least as important because many of the people who use the GVC framework have a very strong economic development focus (Gereffi 2014). The concept of ‘industrial upgrading’ suggests that a key way for firms to maintain or increase their competitiveness in an increasingly globalised economy is to upgrade their production. Upgrading involves engaging in the production of higher value-added products, employing more efficient production strategies, and/or increasing the skill content of activities by firms (Humphrey and Schmitz; Kaplinsky; Porter as cited in Pavlik & Zenka 2011). In the GVC approach, the concept of industrial upgrading refers to the “process by which economic actors – nations, firms, workers – move from low-value to relatively high-value activities in global production networks” (Gereffi as cited in Pavlik & Zenka 2011). These processes operate at different geographic scales: within factories, within inter-firm enterprise networks, within local or national economies, and within macro regions at the international scale (Gereffi as cited in Pavlik & Zenka 2011).
Industrial upgrading is vital for creating opportunities to enhance value and thus for economic development (Henderson et al. 2002).

As Gereffi explains, the challenge of economic upgrading in GVCs is to identify the conditions under which developing as well as developed countries and firms can “climb the value chain” from basic assembly activities using low-cost and unskilled labour to more advanced forms of ‘full package’ supply and integrated manufacturing (Gereffi 2014). Humphrey and Schmitz have identified four different types of upgrading: process, product, functional and inter-sectoral. Process upgrading refers to the introduction of more efficient production methods and better technology leading also to the improved quality of produced goods and increased flexibility of producers. Product upgrading involves moving to the production of more sophisticated and higher value-added products. Functional upgrading is the process during which firms acquire new functions generating higher incomes or abandon old functions generating low incomes in the value-chain. Its goal is to increase the overall skill content of a firm’s activities. Inter-sectoral upgrading takes place when a firm uses its acquired production knowledge to move horizontally into new sectors (Humphrey & Schmitz). Additionally, Dunn et al point out that more recently the concept of channel upgrading has been developed, which refers to firms entering new higher value-added end markets in the value chain in order to lower their risk and increase sales volumes through diversification and receive higher prices for their products (Dunn et al. as cited in Pavlik and Zenka 2011).

Gereffi has pointed out that the automotive industry represents a “typical example of producer-driven networks in which large industrial companies organise and co-ordinate investment-based vertical production networks of component suppliers” (Gereffi as cited in Pavlik and Zenka 2011, p.562). In addition to this, a specific network organisation and coordination may be influenced by the differences in the competitive strategies of the individual carmakers in different regions and markets and by the specific socio-political, cultural and institutional environment in which they operate (Coe et al. as cited in Pavlik and Zenka 2011).

The role of the MNC in RIS

The GVC/GPN debate sits within the ‘globalisation school’ who (as was maintained earlier) have often discounted the role of the region as it has been maintained that the role of MNCs and the flow of people, products, information and capital have generated a borderless, flat world in which distance ceases to play any role at all (Ohman; Friedman; Amin and Thrift
cited in Mattes, 2010). Common to this argument was that there is a global economy that that
is dominated by large MNCs. The decisions of these MNCs and where they conduct such
activities such as R&D and production, has determined to a large extent where economic
activities agglomerate in particular places (Simmie, 1997).

However, as Hird and Thomas suggest, since the 1980s, localisation approaches have
emphasised that national borders remain the basic constituents of modern societies and that
economic and social actions are moderated by a dominant home bias (Hird & Thompson as
cited in Mattes 2010). In the 1990s, a strong theme in the literature emerged that has
maintained that “for regions to develop competitiveness in the global market place with
innovation advances that they ‘must face two directions at once’ and build and maintain their
own distinctive regional innovation systems capable of generating continuous change whilst
simultaneously competing in global markets full of regions and firms attempting to do the
same thing.” (Simmie, 1997). This two-way vision is described as the ‘global/local interface’
(Simmie, 1997) or ‘glocalisation’ (Robertson as cited in Mattes 2010). This perspective
maintains that it not sufficient to look for ‘middle ways’ between globalisation and
localisation, but regard them as a ‘complex of interrelated tendencies’ which needs to be
looked upon in an integrative framework (Dicken et al. as cited in Mattes 2010).

In this context, MNCs are perceived of as crucial actors in a global knowledge-based
economy as they are able to ‘transfer’ knowledge across national borders without sacrificing
the advantages of inter-organisational coordination” (Heidenreich 2012). Yet companies are
not territorially disembedded, footloose organisations that are able to transfer knowledge
across borders. They are important arenas for the creation of knowledge, especially by
combining the advantages of organisationally coordinated cross-border production and
innovation strategies with the advantages of local proximity and the use of specific regional
and national factors. As Heidenreich points out, in this context, the R&D units of MNCs are
often regionally embedded in a home country and one or more host countries. These external
contexts can be important bases for the global innovativeness and competitiveness of the
company. Therefore, Heidenreich calls into question the evidence on the ‘non-globalisation’
of innovation and questions the assumption that MNCs are footloose companies operating in
a globally interlinked economy. On the contrary, he argues that “they resemble a millipede
whose subsidiaries represent multiple feet in different regional and national arenas”
(Heidenreich 2012, p.2).

The national and regional embeddedness of MNCs is an increasingly important topic in
various streams of international business research (Heidenreich et al., 2012) because MNCs
have to disembled their capabilities from their original context in order to transfer them to
foreign subsidiaries. They may also use locally embedded competences in the wider corporate network. The concept of embeddedness stresses the independencies between actors and the environment as socially interrelated action spheres (Granovetter; Polanyi; Uzzi as cited in Mattes 2010). Disembeddedness is defined as the absence of such links and as a lack of institutional fit between an MNC and the regional environment. In contrast to regional embedding, disembeddedness provides the chance of maintaining a higher degree of interdependence, of concentrating more on the inner-corporate network and resources (Zander & Solvell cited in Mattes 2010), and of not being reliant on upon one particular regional setting (Mattes 2010).

In the debate on the embeddedness of MNCs, the role of the societal context has been conceptualised in international business studies in three different ways: as the result of political decisions; as inter-organisational networks; or as institutions (Heidenreich 2012). Mattes argues that “their choice, thereby, is whether to draw upon new knowledge and to use locally available goods (so called collective competition goods) in general and their innovation projects.” (Mattes 2010, p. 80). Thus they constantly strive for a balance between embeddedness and disembeddedness, whereby disembeddedness is defined as the absence of embeddedness (Mattes 2010). Heidenreich has argued that a major advantage of the regional and national embeddedness of MNCs is that they may facilitate learning processes with companies in the proximity (customers, competitors, suppliers and service providers). In addition to inner-organisational forms of learning and knowledge exchange between headquarters and subsidiaries, MNCs can thus rely on external competences. These external learning processes are supported by institutions that shape the cooperation between heterogeneous actors and that provide (what he terms) collective competition goods, for example qualified employees, basic research, advanced technological competences, consensual relations with employees or network brokers.

According to Heidenreich (2012, p.10).

This institutional environment also shapes the technological competences and market positions of subsidiaries. At the core of corporate innovation strategies is thus the ability of internationally distributed organisations to combine two different forms of learning: first, organisational learning within and beyond national boundaries; second, institutionally stabilised learning and external partners, usually within the same national or regional context. MNCs thus translate the relationship between globalisation and regionalisation that is characteristic of a globalised economy into an organisational challenge; the challenge of combining inner-organisational and institutionally embedded learning with external partners.
A major insight provided by the debate on embeddedness is that an MNC is not only linked to its multiple environments by personal relations, networks and non-economic motives, but by social institutions that are a crucial factor in corporate embeddedness. These institutions systematically shape the perception of organisational challenges, of the best and most appropriate organisational strategies and the available resources. These are dynamically reproduced by skilled social actors, for example MNCs (Heidenreich 2012). As Mattes argues, the idea is that MNCs and their subsidiaries can be embedded in a relevant regional innovation system. Key to the RIS approach is the idea that regional economic action can not only result from a cluster of firms co-locating in a particular setting, but also, institutional infrastructure of scientific, political and intermediary subsystems complement these clusters in a RIS approach (Mattes 2010). In this context, she argues that firms therefore constitute the subsystem focusing on the application and exploitation of knowledge, and the institutional framework becomes occupied with knowledge generation and diffusion and that RIS can therefore be understood as the aggregation of organisations and the related formal, but also informal institutions, all of which constitute the scientific, industrial, political and intermediary-related subsystems (Mattes 2010).

Heidenreich’s definition of a RIS consists of, first, firms in the main industrial cluster in a region including their support industries; second, an institutional infrastructure must be present (i.e. research and higher education institutes, technology transfer agencies, vocational training organisations, business associations, finance institutions), which hold important competence to support regional innovation (Heidenreich 2012). This definition stresses that regional innovation systems are not only integrated through their production and value chains (e.g. by supplier and buyer networks) but also by formal and (informal) communities. Immarino et al. have argued that the potential strengths of these systems consist of the capability to provide collective resources for the regional embeddedness of MNCs, especially in Germany and the UK (Immarino cited in Heidenreich). Immarino et al point out that “examples of these regional collective goods are access to specialised technological knowledge, information about new markets, the vocational training of qualified and motivated human resources adapted to the needs of the regional industry, and also the stabilisation of regional networks and patterns of cooperation between regional companies, schools, universities, technology transfer, R&D facilities and political and administrative arrangements, by forms of local governance” (Immarino as cited in Heidenreich, 2012, pp.19-20). Further, Heidenreich has maintained that the regional embeddedness of companies is also based on institutions that may stabilise inter-organisational networks and contribute to the provision of ‘local collective competition goods’. In contrast to the national level, these institutions are often closer to the specific companies, sectors and networks in the region,
thus increasing the possibility of providing goods and services targeted to the needs of specific companies. Therefore he argues that these network-based, institutional and cultural dimensions of regional embeddedness may contribute to the regional agglomeration of companies (Heidenreich 2012).

**Empirical research on Smart Specialisation policy implementation challenges posed by quality of governance**

The Smart Specialisation policy represents an ambitious attempt at devolved programming with respect to the scale of resources involved and the demands placed on public sector institutions such as the regional state, which is expected to orchestrate a collaborative economic search process (‘the entrepreneurial discovery process’) and craft more inclusive governance arrangements to enhance the diversity of ‘voice’ (Foray in Morgan 2016).

According to Capello and Kroll the policy has represented a profound structural revolution in the way innovation policies are conceived because it seeks to discover a broad range of innovation types in a region and to dispense with the notion of ‘picking winners’ on an industrial basis, thus doing away with a previous approach whereby centralised planning methods identify industrial development priorities. The strategy calls instead for public-private partnership processes of ‘entrepreneurial discovery’ and learning – a bottom-up approach based on the self-discovery of entrepreneurial capability. Entrepreneurial discovery is an endogenous process to identify local potential and local need, and seeking “a consistent match between investments in knowledge and human capital and the industrial and technological vocations and competences of territories” (Capello & Kroll, 2016, p.35). They argue that regional innovation policies have to be implemented in a certain territorial framework and specifically in a socially and politically negotiated environment (Capello & Kroll, 2016).

In order for the Smart Specialisation policy to work effectively, Marques and Morgan (2016) suggest that inclusive economic institutions need to be supported by, and support, inclusive political institutions that distribute political power in a pluralist manner (Marques & Morgan, 2016). Tripp et al argued that “the degree to which formal competences and power (autonomy) to design regional innovation strategies (and crucially, the financial resources to independently implement them) are decentralised is a key determinant of strong policy and governance capabilities of RISs” (Tripp et al Healy, 2018). In this sense, even in regions where a Smart Specialisation approach could in theory be viable and productive, barriers and complexity at the level of local policy and governance may keep this from happening.
Pronesti has maintained that policy and governance challenges for Smart Specialisation-type policy approaches include a lack of match between functional and political-administrative regions; lack of political inclination to admit bottom up-participatory processes; lack of capability to design and implement strategic regional innovation policies and lack of capability to engaged actively in processes of regional entrepreneurial discovery.” (Pronesti, 2019).

In this context of these challenges, Smart Specialisation should take into account the quality of sub-national governance arrangements and institutions when considering the capacity for effective implementation (Morgan 2017; Rodrik, 2003). The quality of regional and local government is considered a critical factor when considering the potential impact of the policy in European regions (European Commission 2014; Rodriguez-Pose & Garcilazo 2015). Regional institutions in Europe have been found to be key shapers of economic performance. In particular, it has been demonstrated, in the case of European Cohesion Fund investment, the returns to investment do not necessarily come from the amount of investment itself but from the quality of government in the region receiving it, and from how government affects implementation (Rodriguez-Pose & Garcilazo 2015).

Rodriguez-Pose & Garcilazo suggest the policy focus should include an institutional component – to promote transparency and accountability and dealing with corruption as ways to improve government quality – as an essential part of the strategic planning process. They maintain that the implementation of one-size-fits-all policies may not yield the desired results. Basic elements of any development strategy should take into account place-based institutional conditions and learning, and the consistent improvement of institutional quality. Rodriguez-Pose has argued that “smart specialisation places considerable emphasis upon the role of local actors in the entrepreneurial discovery process of the policy design (and as such) there needs to be an empowerment of local decision makers and openness to the reality that many different and contrasting institutional arrangements may be needed in order to achieve sustainable development” (Rodriguez-Pose 2013, p.1044).

Morgan has argued that quality of governance could lead to a significant challenge to implementation as presented by the so-called “regional innovation paradox” confronting less developed regions (LDRs) (Morgan 2016, p.578). Although LDRs have a greater need for innovation-related investment, they also have a lower capacity to absorb public funds earmarked for innovation, compared with economically more advanced regions. This weaker absorptive capacity in LDRs reflects a combination of mitigating factors, including old industrial structures and low-value-added activities in the regional economy, as well as weak and sometimes corrupt public administrations. According to Morgan, “the Smart Specialisation policy makes unprecedented demands on public sector bodies to nurture more
collaborative forms of economic search and craft more inclusive forms of regional governance.” (Morgan 2016, p. 578).

A vast amount of research has been conducted into the particular challenges facing LDRs to implement regional innovation policies. The argument is that place-based region policy frameworks being implemented in CEE regions are likely to face difficulties because they require high-level capacity for cross-sectoral and cross-level coordination and for extracting and feeding local knowledge into the planning process. Many researchers argued that this situation was due to CEE states often having weak administrative capacity, centralised policy making, mistrust, politicised decision making and clientelism (Gorzaelak 1996; Bachtler & Mendez 2013, Bachtler & McMaster 2008; Paraskevopolous & Leonardi in Dabrowski 2012; Morgan 2016). For instance, Dabrowski found that in situations where a central government has control over the contents of a regional plan (e.g. in Hungary and the Czech Republic) it has defied the purpose of strategic planning tailored to regional specificities (Dabrowski 2012).

There are many more recent studies identifying governance barriers found in CEE states. In relation to North East Romania, Healy (2016) argued that central government priorities dominated the regional agenda, with a nationally driven science-led approach that took precedence over priorities that may have been established by the regional authority. Weak regional institutions led to a strong plan being developed that “signalled the region’s” economic strategy, but where implementation was ultimately determined by central government priorities. Cooke (2016) in his case study analysis of policy implementation challenges in three regions of Portugal found that power levels within the Portuguese state conspired against de-specialisation aspirations in Algarve. Regions were concerned that regional administrations were weak and disempowered in the MLG framework, meaning that they could not determine an alternative strategy to the one being imposed upon them from above. For instance, he found that “most important for Algarve, perceiving itself as regionally ‘locked-in’ to tourism of the narrowest kind was to have its own Regional Innovation Agency for delivery of RIS3 outcomes in Algarve so as to pursue a diversification strategy based on the aspirations of the region, rather than referencing specialisation as mandated by the EU or Member State” (Cooke 2016, p.1509).

In addition, Capello and Kroll argue that first, the diverse structure of governance in European Union Member States has led to a situation in which Smart Specialisation policy processes and strategy implementation has been assigned to widely varying sets of spatial levels of governance. They maintain that, while the European Commission has worked
towards achieving a certain level of uniformity, its influence remains limited as the final decision on remits in national governance set-ups lies with the individual Member States. As a result, for instance, most Member States tended to develop their Smart Specialisation policies centrally and were less inclined to support new, bottom-up approaches “reflecting either a lack of conviction in the utility and efficacy of the decentralised processes in a specific governance context, or a straightforward political inclination towards centralist, top-down governance” (Capello and Kroll, 2016, p.1397).

Morgan argues that even though regional innovation programs have been evolving for 25 years, the Smart Specialisation program is the most ambitious iteration with respect to the scale of resources “involved and the demands placed on public sector institutions like the regional state, “which is expected to orchestrate a more collaborative economic search process (the entrepreneurial prices of discovery process) and craft more inclusive governance arrangements to enhance the diversity of voice.” (Morgan 2016, p.578). Morgan argues that in old industrial regions where political power is monopolised by a single party, it is often the case that the nurturing of novelty is that much more challenging. He claims that that one of “the greatest challenges facing the implementation of the Smart Specialisation policy is that it expects the public sector to be more agile, creative and experimental when the ‘age of austerity’ is eviscerating public sector budgets and undermining the competence and confidence of public bodies, especially in the LDRs that are more dependent on the public sector.” (Morgan 2016, p.578). He ultimately questions the capacity for the policy to be able to challenge the path dependence of old industrial regions (Morgan 2016).

Studies based on large surveys of regional perspectives have found that while political efforts seem to support processes of entrepreneurial discovery that are already underway in a number of Central European regions, the future success of the policy may depend on increased political support in that respect. Kroll for instance, argues that the RIS3 policy agenda has yet to be translated from political into entrepreneurial practice in many peripheral regions, particularly in the East (Kroll 2017). He asserts that there is currently little evidence that the original Smart Specialisation concept’s arguably most important promise of better connecting regions through distributed development and application of technologies would stand a great chance of being realised soon. This he maintains is due to the dominant presence of public research (in traditional roles) in processes of consultation generally; actors from civil society and relevant firms in the periphery are underrepresented as they are too focused on processes of consultation rather than implementation, and too limited their perceived ability to change policy substantially and/or leverage private funding (Kroll, 2017, p.17). Similarly, Iocabucci has examined a broad range of regional strategies and argues that weaknesses include many undergoing “the selection of very broad areas of specialization,
lack of analysis of relations between the sectors, missing consideration of complementarities with other regions, and identification of a large number of specializing domains, some of which are only poorly founded in regional potentials and assets” (Iocabucci cited in Trippl et al 2018).

**Empirical research on Smart Specialisation policy implementation challenges posed by the characteristics of RIS**

There is mounting evidence that the Smart Specialisation policy also will face challenges in the implementation phase in LDRs, which are likely to find the economic challenges difficult due to unfavourable research and innovation systems characterised by” organisational thinness (weak institutions) lock-in to declining sectors and outdated technologies, fragmented systems that inhibit networking and knowledge exchange, and a weak capacity to drive transformative change”(Coenen et al. 2015; Healy 2016). Regions with unfavourable RIS have less potential to diversify into new industrial areas due to unfavourable economic structures and a weak endowment of knowledge organisations (Boschma cited in Trippl et al 2016). They may also have low capability to use funds due to a weak capacity to absorb change; for instance, they often do not have an innovation ecosystem based on the triple helix model (Marques & Morgan 2018).

Capello and Kroll argue that in LDRs that lack local preconditions for innovation, the policy emphasis upon moving towards a ‘practice-based innovation’ (or DUI – learning by Doing, Using and Interacting – mode), will face difficulties in these regions as they typically have few or no research institutions and high-tech clusters. The authors found that this risk was most evident in LDRs as these areas have difficulty in identifying their smart specialisation, simply because they do not have a relevant critical mass in any domain, they lack connectedness, entrepreneurial spirit, size in terms of market potential, industrial diversity, quality of local governance and a critical mass of capabilities to develop collective learning processes. They argue that this has made the identification of local technological domains a difficult process (Capello & Kroll, 2016).

McCann and Ortega-Argiles also assert that one of the greatest challenges facing the application of modern regional innovation policies across EU regions concerns regions with very limited innovation-related assets. They argue that “some regions, for example, contain no research institutes; whole other regions, particularly in Eastern Europe, as yet exhibit only a very limited capacity for developing an innovation system, as they are constrained by institutional and governance issues, and by technological issues” (McCann and Ortega-
In addition, Veugelers maintains that the tendency towards policy homogeneity and therefore “will produce wrong policy priorities in particular places; for example, in weaker economies aiming to catch up with more advanced parts of Europe the main priorities should relate to the absorption and adaptation of existing frontier technologies rather than initiatives aimed at fostering features such as creativity” (Veugelers 2015 in McCann and Ortega-Argiles 2016, p.1410).

In the case of path renewal (new industrial pathway) in old industrial regions, Coenen (2015) has argued that the infusion of new technology alone is often not sufficient to diversify regional economies; changing industry characteristics such as firm routines and encouraging institutional adaptation are also important and overlooked means of advancing innovation. In relation to the low capacity of LDRs to absorb state funding of innovation programs, Oughton et al (2002) suggest that resolution of the paradox requires policies that: “(i) increase the innovation capacity of regions by working on both the demand and supply side of the system to increase both private and public sector investment in innovation activity; and (ii) integrate technology policy and industrial policy by encouraging expenditure on innovation activity within mainstream industrial policy programmes” (Oughton et al 2002).

Despite the wide view of innovation promoted by the Smart Specialisation policy, it is argued that the policy is still very science, technology and innovation (STI)-centric and that this model of innovation is deemed to be inappropriate for highly fragmented innovation systems in which the dominant features are public R&D institutes and FDI production-oriented facilities as well as weak governance at the level of place leading to poor implementation outcomes (Marques & Morgan 2016). According to Radosevic and Stancova, the policy needs to be less STI-centric, and more attuned to the heterogeneity of local conditions, and in the specific case of regions on the periphery, more openness to incorporation of FDI into policy prescriptions is needed (Radosevic & Stancova in Marques & Morgan 2016).

LDRs are often rural, thus orientation of regional development policy around knowledge spill-overs to local industry is difficult to achieve because smaller regional universities face a lack of scale and a need to specialise, which works against the policy objectives (Charles 2016). There are some exceptions to this situation. For example, in the old industrial regions in the north east of England, long-term bottom-up initiatives have generated an innovation ecosystem despite the centralising tendencies of funding R&D found in the national innovation system (Coenen 2006). Although the Smart Specialisation policy has recognised the extent to which universities are a critical asset for regions in developing an innovation ecosystem (European Commission 2011), for most LDRs, the policy is said to make ‘heroic assumptions’ about the institutional capacity for LDRs to design and deliver such a sophisticated regional innovation policy (Marques & Morgan 2016).
Tödtling and Trippl point out that there is no “ideal model” for innovation policy. They argue that empirical investigations demonstrate that preconditions for innovation, innovation activities and processes, and networks differ strongly between central, peripheral and old industrial regions. They maintain that the RIS approach allows for such differences by analysing the strengths and weaknesses of the various subsystems, clusters and the interdependencies within the region and beyond. Therefore, the innovation systems approach highlights the extent to which system failures can prohibit innovation and learning in a region; for instance, in relation to “system failures such as ‘organisational thinness’, ‘lock in’ or ‘fragmentation’” (Tödtling & Trippl, 2013, p.297). They argue that although regions often exhibit combinations of such innovation problems and learning barriers, some become more dominant than others in specific types of regions. In peripheral regions, the main problems are a low level of R&D and innovation due to a dominance of SMEs in traditional industries, weakly developed firm clusters, few knowledge providers and a weak endowment with innovation support institutions. In ‘old industrial regions’, although there may be many firms, dominant clusters and relevant organisations, they are often strongly oriented on old industries and technological trajectories leading to “lock in”. In metropolitan regions, often a specialised industrial pattern including complementary knowledge bases and innovation networks may be lacking (Tödtling & Trippl 2005).

Innovation policy may attempt to tackle these various system deficiencies, whereas the RIS literature regards the region as the preferred level to design and implement such policies. According to Balland et al (2017), the Smart Specialisation policy should help EU regions to develop new technologies, and has argued that regions can overcome this diversification dilemma by developing complex new technologies that build on local related capabilities. Balland et al found that relatedness had a positive effect on technological diversification within regions (Balland et al, 2017). Thus, as Tödtling and Trippl have argued there is a need for policy strategies that are customised to the specific organisational and institutional structures and knowledge bases of a RIS (Tödtling & Trippl in Isaksen & Trippl et al 2016).

With the Smart Specialisation policy emphasis on the need to avoid simple imitation of successful policies pursued in other regions and “one-size-fits-all” strategies, varieties of innovation problems and barriers must be taken seriously, using a differentiated innovation policy approach (Trippl et al 2016) In peripheral regions, the key challenge is to strengthen and upgrade the regional economy by fostering “catch up learning”. Adequate policy measures might include the attraction of external companies and attempts to embed them into the region. Firms should be linked to external clusters and knowledge providers and to higher-level spatial innovation systems (national, European). In old industrial regions, innovation policy needs another orientation: the renewal of old sectors and the support of
innovation activities, and an upgrading of the knowledge base. Policy should focus on industrial and technological diversification and on the reorganisation of existing firms, networks and institutions. In metropolitan regions, policy should encourage the growth of internationally linked knowledge intensive clusters and foster science-based and radical interventions. Public authorities might draw attention to the fragmented state of the RIS by developing policies to enhance communication and interactive learning within the system. Thus, policy makers can develop strategies to avoid the pitfalls of an ‘ideal type’ regional innovation system policy approach (Tödtling & Trippl 2005).

Trippl et al argue that the density and degree of specialisation of the organisational structure of RISs (i.e. the number, variety and ‘quality’ (capability and performance) of firms, industries and knowledge and support organisations) will influence how smart specialisation is adopted in a region. Differences in historically grown economic structures, the degree of heterogeneity in the industry mix, and varying firm capabilities to innovate and move into new fields, mean that regions can differ markedly in their innovation and diversification capacity and thus in terms of opportunities for selecting priorities that are in line with Smart Specialisation. They argue that these include its apparent overemphasis on a linear model of innovation of science and technology-led innovation with a focus on high-tech sectors (Cooke 2012; Marques & Morgan 2016); a focus on imitative innovation (Capello & Lenzi 2013); and a strong orientation towards framing priorities alongside watering down of selected priority choices to more general categorisations” (Cooke, 2012; Capello & Lenzi 2013; Iacobucci 2014; McCann & Ortega 2011 in Healy 2016).

Trippl et al further argue that existing empirical approaches fail to take into account conceptual insights into system failures regarding organisational and institutional thinness in relation to misconfiguration of RIS in relation to knowledge bases, and RIS structures for different forms of path development. They argue that there is still a tendency to measure narrowly defined RIS as analytical (R&D-based) knowledge and the STI mode of innovation, and that there is a need to consider different types of knowledge and innovation modes and more broadly defined RIS in empirical research and also to consider the transformative potential of RIS; that is, their capacity to support new path development. According to Trippl et al, “there is a need to develop new measures and indicators to be used in quantitative research, and new qualitative case studies to capture how Smart Specialisation can assist with a process of achieving diversified specialisation or specialised diversification amongst heterogeneous European regions” (Trippl et al 2016, need).

According to Trippl et al, compounding this problem is the measurement of innovation activities in regions to identify less-developed RISs: the Regional Innovation Scorecard
(European Commission 2014) and the typology of regions suggested by the OECD (OECD 2011 in Trippl et al 2016). They argue that the Regional Innovation Scorecard is arguably based on a low number of indicators and data is missing for many regions. In addition, there is a bias towards measuring R&D-driven innovation activities. Many of the indicators are narrow and targeted towards measuring analytical knowledge, the STI mode of innovation and narrowly defined RIS. This approach also fails to identify what system failures or system deficiencies might prevail in a region, including the degree of regional specialisation in cases where a region is dependent on an industrial mono-structure, has fragmentation problems or a lack of positive lock ins. Similarly, the OECD typology does not take into consideration the heterogeneity existing within determined ‘innovation environments’ such as what factors are determining the transformative capacity of a RIS or what factors are resulting in a lack of such capacity, for instance, in the case of industrial production zones (Trippl et al 2016).

Within this picture, a sub-stream of empirical research has emerged addressing the particular challenges facing regions located within the CEE. This focuses on particularities of RIS in post-socialist countries and regions, developing countries and cross-border areas (Radošević 2002; Blázek & Zizlova 2010; Asheim & Vang 2006; Trippl 2010; Lundquist & Trippl 2013 in Isaksen et al 2018). Regions located in CEE countries, for the most part, considered to be economically lagging in Europe, with many socialist-industrialised regions being associated with economic, social and environmental degradation (European Commission; Lux in Dyba et al. 2018). By the fall of socialism, CEE regions were more industrialised, but still said to be less developed as they lacked innovation in technology and processes (Berend; Chojnicki et al. in Dyba et al. 2018). In addition, high levels of specialisation between CEE countries led to overspecialisation and investment in obsolete technologies, a hallmark of ‘old industrial’ regions, thus withering the competitiveness of CEE countries amidst globalisation (Berend in Dyba et al. 2018).

However, socialist policies and a ‘forced industrialisation strategy’ during socialism, while producing many of the territorial problems facing CEE countries, are not sufficient in themselves to explain the creation of ‘old industrial regions’, with economic structures characteristic of these countries also said to be related to globalisation and widened spheres of competition. Thus Dyba has argued that while the traditional infrastructure investment focus of EU Cohesion Fund policy is a historically important determinant in the long process of transforming CEE economies and has played an important role in regional development in CEE regions, helping to overcome path dependence in some regional economies, the recent regional policy paradigm represents an opportunity for CEE regions to move into a more advanced economic standing within GVC competition (Bachtler, Yuill, Tödtling, Trippl, Barca, Vanthillo, Verhetsel in Dyba et al. 2018).
Thus, the Smart Specialisation policy is seen as a promising tool for CEE regions to support higher R&D spending, deliberative innovation strategies and better cooperation between business and research or education institutions (Dyba et al. 2018). The new policy emphasis is seen as assisting CEE regions to overcome the problem of Western mega-suppliers forming the top of automotive supply chains in these regions, to enable the development of high-value-added locally owned first-tier suppliers capable of transforming into innovative firms (Rugraff 2010). However, despite the promise of the policy in assisting CEE regions to upgrade their innovative capacity, empirical research derived from the business studies literature reminds us that significant challenges still face LDRs in transforming their regional economies in attempting to upgrade and value add to local firms within GVP networks.

Phillip Cooke has argued that policy makers should understand the important role of MNCs in shaping regional knowledge-based economic development, given the increasing outsourcing of R&D from large corporations. In this sense, regions should try and influence location and decision making of R&D by large corporations, to help shape and exploit knowledge-production processes and innovation systems in the context of globalisation (Cooke & Picculuga 2009). For countries located in CEE, attracting the settlement of research facilities owned by MNCs to regions will enable functional upgrading of knowledge capacity processes and hence the capacity to break out of their peripheral status in the global economy (Smaho 2012).

Capello and Kroll (2016) maintain that repositioning of peripheral regions in international value chains, however desirable, can often not be controlled by policymakers from within these regions alone. Typically, the only link to the international economy is based on local MNE subsidiaries acting under headquarter directives and embedded in global corporate strategies. Consequently, they are not usually specifically interested to become engaged with a region’s local government or its strategies. Even if they were to become involved, any internationalisation strategy built upon their activities would remain vulnerable to more general corporate plans, as they can at any time be closed down or relocated following considerations entirely out of control of the regional government (Capello & Kroll 2016).

Within the automotive sector, the global value chain (GVC) organisation of the company Volkswagen demonstrates how a core–periphery dynamic may be established in relation to the placement of R&D facilities across Europe. Research carried out by the Volkswagen Group has always been largely centralised, with the corporate research division at the company’s Wolfsburg headquarters providing support for all Volkswagen brands. The individual brands also maintain smaller research departments, which together form a research network, with the Wolfsburg headquarters as its hub. In addition, the Electronic Research Lab (ERL) in Palo Alto, California, carries out research in the field of electronic systems and
makes the results available to all of the corporate brands. The R&D activities of the various brands concentrate mainly on development efforts. Each brand has its own development department – Volkswagen in Wolfsburg, with a design branch in Potsdam; Audi in Ingolstadt (the electronics centre) and Neckarsulm (the lightweight-vehicle construction centre); Skoda in Mladá Boleslav, Czech Republic; and SEAT in Martorell, near Barcelona, Spain (Schmid and Grosche 2008).

According to Schmid and Grosche (2008), the Shanghai Volkswagen Automotive Technical & Design Center in Shanghai has been developing models for the Chinese market for several years. The Shanghai site, the Technological Centre in Tokyo and ERL in Palo Alto also serve as outposts and pass on information to the corporate research division in Wolfsburg. In this sense, Volkswagen would only need to change strategy in relation to the organisation of the GVC in terms of the centralised configuration of research if new innovation clusters were established elsewhere or problems arose that made it difficult to carry out research in Germany (Schmid & Grosche 2008). Indeed, a baseline mapping exercise of advanced manufacturing capacity in European regions undertaken on behalf of the European Commission, found that ‘top layer’ advanced manufacturing capacity in the automotive industry is largely concentrated in regions located in Western Europe and Spain (Technopolis 2014).

Given the vertical nature of MNC GVC strategy, it is maintained by many GVC scholars that it is not feasible for regions that are characterised by a unfavourable structural features of economies (outside global economic cores) that are dominated by lower tier suppliers, have guaranteed demand (often in large volume) for standard goods produced with well-known technology, and do not tend to conduct activities such as market research to aspire to an industrial upgrading strategy (Blazek 2016; Tödtling & Trippl 2005). It may be that public policies aimed at stimulating socioeconomic development by supporting innovation (e.g. via the promotion of cooperation between firms and academic R&D institutions) are to a large extent misleading. Instead, given the narrow profit margins of lower tier suppliers, as well as their limited growth potential stemming from their modest capabilities and consequent low-road strategies of competitiveness, upgrading is not relevant to these firms (Blazek 2016; Tödtling & Trippl 2005).

Pavlik and Zenka measured industrial upgrading at the plant level with their analysis of the Czech automotive industry between 1998 and 1996. They concluded that industrial upgrading in this time period was highly selective and uneven and mainly to do with product and process upgrading, rather than functional upgrading. The study showed that despite government incentives, the development of automotive R&D was very limited in foreign
subsidiaries and that the vast amount of foreign investors did not develop any R&D functions in their Czech subsidiaries. As a result, processes tended to reinforce the peripheral position of the Czech automotive industry in European value chains and production networks, rather than improving it. The authors argue that for the future success of the Czech automotive industry (and industrial upgrading), Czech-based automotive firms will need to maintain or improve their position in European and global automotive production networks and value chains through upgrading their production processes, products and competencies. This process will depend on the strategies and decisions of foreign TNCs that control the majority of the Czech automotive industry and its key players in the absence of effective state-led industrial or economic policies (Pavlik & Zenka 2011).

Morris has also pointed out that a key policy issue for developing countries, is around the possibility of getting vertical firm cooperation (from the lead firm within the GVC) in order to upgrade and move into new more highly value-added activities. He argues that research has demonstrated that countries that complacently stand still within their existing value chain are vulnerable to the possibility of producers downgrading them. Hence, their best defence should be to embark on a process of functional upgrading in order to occupy some parts of the design-intensive activities in the chain (Morris 2001, p.128).

However, Tokatli argues that ‘upgrading’ should not necessarily be the only strategy for seeking an improved economic development outcome for poorer regions (Tokatli, 2013). She showed, on the basis of her study of firms in the apparel industry (especially the case of the high-value garments producer Mithat), that: (Tokatli, 2013, p.998)

firms’ trajectories are not unidirectional, such as moving into higher value-added activities while leaving lower value-added ones, but instead that firms are branching in several directions without leaving their other profitable activities, thus giving rise to more and more complex production networks. Therefore, in practice, overlaps, multiplicity and myriads of combinations of repositioning trajectories are common. Moreover, upgrading activities can differ vastly in scale and nature (e.g. introduction of incremental versus radical changes) and, consequently, there is much more continuity than the categories used in GVC/GPN research might suggest

Tokatli argues that given the diverse and complicated ways that manufacturing firms try to improve their positions within the global apparel industry (or at least try and avoid allowing their positions to worsen), it is clear that the concept of upgrading “as conventionally conceived” has some serious conceptual limitations (Tokatli 2013). Accordingly, Smith maintains that there is a need to recognise the embeddedness of firm and sectoral changes within the context of political economies as well as state and no-state institutional actions (Smith et al. in Tokatli 2013). Tokatli argues that “there is an integration between the study of the vertical dimension of GPNs with the horizontal dimension, namely, with the “on-the-
ground places and territories that constitute the interconnected global economy, as the
intersection of vertical and horizontal forces that drives economic development and that
instead of just looking at vertical ascension within a GVC, we need to integrate a GVC/GPN
approach with institutional theories of regional innovation systems and related concepts”
(Tokatli 2013). In this way, Tokatli argues that the repositioning strategies of firms rest not
only on a firm’s internal capabilities and its path dependency, but also on the nature of the
GVC/GPN in question and the broader context in which the firm is embedded, such as
national and regional innovation systems (Tokatli 2013).

Oztagen adopted a GVC approach to address the different forms of chain relations established
by lead automotive firms with suppliers in Turkey and found that suppliers based in Bursa’s
components industry increased their competencies in design and product development. In
particular he found that when firm-level efforts and systems of innovation are aligned with
strategies of global led firms in producer-driven value chains, peripheral production nodes
are more likely to overcome the upgrading challenges they face in the global economy and
maintain their competitive advantage in global chains. This indicated that suppliers in
peripheral places, such as Turkey, have room to undertake higher value competencies and
break power asymmetries in the value chain. His research implies that value chains are
continuously constituted, transformed and reproduced through evolving power relations and
that therefore governance structures in GVCs are not stable. Instead he finds that “local
suppliers in the periphery may find ways to mitigate the asymmetric distribution of power
between themselves and the lead firms, and may change the mode of GVC governance.”
(Oztagen 2011, p. 91). He argues that firm-level efforts need to be complemented by regional
and national systems of innovation, which will promote competence development. Systems
of innovation will help firms to establish strategic links with leading research and
development institutions and provide firms with technical support, well-educated researchers
and technical staff (Oztagen 2011).

Mattes combined an institutionalised RIS approach and an interaction-oriented notion of
embeddedness to derive a more precise and project-related concept of regional embeddedness
in her study of the degree to which MNCs relate through interactions within four subsystems
of a RIS, and the degree of embeddedness of the MNC within them. She found that on this
general level, MNCs face a dilemma between embedding and disembedding. Embedding
themselves in a region allows them to draw upon external knowledge and competencies. As
knowledge and expertise are important resources for corporate innovation, and as both factors
are not exhaustively available internally, they may also be obtained in local universities and
scientific institutes. At the same time, regional embeddedness also poses a threat to the MNC.
Mutual interdependencies between large companies and their regional surroundings emerge,
and MNCs are endangered to lock into existing structures (Heidenreich 2004; Grabher 1993 in Mattes, 2010, p.84):

As soon as many of the regional actors orient themselves towards the MNC’s needs, regional variety gets lost, and drawing upon the available LGCs does not provide an innovative input for the company. Regional embeddedness is thus not necessarily a positive characteristic in that it may result in lock-in situations, dependence upon the regional economic situation and may narrow the scope of locally available variety. Therefore, MNCs also aim at regional disembedding in order to avoid these effects. At the same time, not adapting too strongly to its regional surroundings allows the subsidiary to maintain the global focus and integrate more easily into its company group. In this manner, MNCs face a dilemma between acting, on the one hand, as disembedded, so-called "footloose companies" on global scale, and on the other hand, embedding themselves in the regional infrastructure. Regional embeddedness is thus by no means an automatic phenomenon, but resides upon a mix of strategic choices and path-dependent evolution: companies can decide on which region they focus and whether they are willing to invest into strong connections to the regional surroundings or rather maintain a broader, more global orientation.

Heidenreich and Mattes argue on the basis of four regional and organisational case studies that strong forms of embeddedness of MNCs are not always the best option for involved companies, and that likewise, for regional policy, a specific focus on MNCs may be risky. Solvell in her study on multi-home-based corporations links the debates on clusters and MNCs by analysing the choice between globalisation and localisation strategies as the dilemma between ‘insiderization’ and ‘outsiderization’. Insiders in a cluster can tap locally bound capabilities and gain access to local networks, but require a certain autonomy within the corporate network, outsiders can benefit from the advantages of global coordination and can exploit globally available capabilities, technologies and opportunities. Global markets are seen as central for MNCs’ cost position, while insider positions in clusters are central for their innovation processes. Multi-domestic and transnational corporations can exploit either the insider or the outsider advantage. By co-locating divisional headquarters, R&D and design functions in multiple home bases, the multi-home-based corporation attempts to mitigate the dilemma of increased insiderization in host clusters, leading to increased outsiderization of subsidiary units within the overall MNC (Heidenreich & Mattes as cited in Heidenreich 2012).

On the basis of in-depth interviews in German and British MNCs, Immarino et al analyse three different dimensions of the regional embeddedness of these companies: the interdependence of regional and organisational knowledge creation; the influence of the regional environment on corporate R&D strategies; and the types of industrial and scientific patterns of cooperation between the subsidiaries and other companies within and beyond the group. Their research findings reveal that MNCs “make use of and provide skills to the local
labour market and benefit from the presence of regional universities and research infrastructure. Regional partners, especially in higher education, the regional availability of scientists and R&D resources as well as regional cluster and network initiatives significantly influence the regional embeddedness of MNCs.” Thus that decentralised development activities facilitate their interaction with the environment.

Narula and Guimon draw several political conclusions about the debate on corporate embeddedness (Narula & Guimon as cited in Heidenreich 2012, p.22):

FDI by MNCs might play an ambivalent role in national innovation systems: they contribute either to the upgrading of domestic clusters or to the reduction of its long-run potential (e.g. by the ‘crowding out’ of innovative domestic firms or the downgrading of a foreign subsidiary’s R&D mandate). The role of MNCs in the upgrading of national innovation systems also depends on the level of domestic innovative capabilities. Only when these local competences are sufficiently developed can regions profit from the competencies of foreign MNCs by integrating them in local clusters.

They observe that this finding is particularly important for new Member States of the EU, as the role of foreign subsidiaries in these countries is significantly higher than in Western and Southern European countries. The authors conclude that innovation policies in the new member states should focus mostly on the embeddedness and upward evolution of existing MNC operations by creating linkages between the MNC subsidiary and local organisations and clusters. Finally, they recommend that countries should try and attract “‘demand-driven’ rather than ‘supply-driven’ R&D.” This they see as being achieved by upgrading human capital and public R&D as the most important focus (Hancke; Narula & Guimon, as cited in Heidenreich 2012).

Smart Specialisation and overcoming the regional innovation paradox post 2014-20

McCann and Ortega-Argiles find that in the economically weakest regions with less robust governance arrangements, and in particular, in Eastern Europe, Smart Specialisation has often proved very challenging placing pressure on fragile or limited institutional frameworks, but at the same time they argue that also this also offers real opportunities for institutional learning and the upgrading of governance capabilities in the longer term. They argue that the policy has already proved to be an important narrative for beginning to overcome various institutional blockages in LDRs and bringing about changes to policy making both within and beyond the sphere of technological matters. They argue that there should be attempts to find ways to better utilise policy resources to help with institutional upgrading and enhancing the quality of governance in these regions is also a key priority in order to better foster smart
innovation-driven growth and also wider aspects of sustainable and inclusive growth (McCann and Ortega-Argiles 2016).

Other studies corroborate McCann and Ortega-Argiles’ (2016) study. Tripl et al through a meso-level analysis, examined a variety of regions drawn from across Europe and the ways by which organisational and institutional features of a RIS shape smart specialisation practices in less-developed, intermediate and advanced regions. Drawing on research from 15 European regions, they showed that the implantation of the policy faced challenges in all three types of regions, but ultimately that policy has supported policy learning and system building efforts in LDRs and facilitated policy re-orientation and system transformation in more advanced regions. They found that regions with functioning mechanisms for policy alignment in MLG settings will be in an advantageous situation, whilst those where such mechanisms are largely absent could be expected to face severe coordination challenges. In relation to LDRs, they found that the future success of the policy will depend on efforts to further strengthen RIS building processes by enhancing the absorptive capacity of firms, integrating research organisations into regional development processes and improving the institutional structures (Trippl et al 2018).

Tripl et al additionally have addressed the issue of uncertain funding and budgetary commitments associated with the policy itself, creating a fragile environment for implementing strategies fashioned at the regional level. The apparent lack of appropriate tools to deliver the RIS3 ambitions was a source of concern across regions analysed. Supporting the evolution of a Smart Specialisation toolbox should be a key priority for applied research in the future. Trippl et al 2018 argue that implementation may also be impeded by the presence of misaligned funding streams and the identified lack of resources dedicated to the delivery of RIS3 strategies. This is exacerbated by complex governance systems for innovation, reflecting vertical and horizontal coordination challenges that may also negatively affect the implementation of the policy. (Trippl et al 2018).

Henderson and Morgan have also argued that policies such as the Smart Specialisation policy with its emphasis upon helping regions to help themselves through initiatives designed to mobilise local knowledge in a process of collective social learning which will assist in the process of institutional change and social capital, and the integration of technology policy and industrial policy, by placing innovation promotion high on the regional development agenda (Henderson & Morgan cited in Oughton et al 2002), Additionally, Musico et al maintain that resolving this paradox will require an ongoing investment in the machinery of governance to increase regional innovation capacity. This they argue would include the
“upgrading” of ministries and agencies to strengthen their strategic management capacity (notably a shift from direct financial aid to demand-side policies), as well as fostering the emergence of partnerships to manage “innovation platforms” and structure fragmented business capacities to deliver on the Smart Specialisation policy priorities (Musico et al 2015).

Kroll adds to the findings of McCann and Ortega-Argiles (2016), Oughton (2002) and Musico et al (2015) in maintaining that Smart Specialisation has the capacity to rejuvenate and reorient policy practice towards a more effective, stakeholder-driven approach, but calls for more contextual sensitivity when developing and implementing the policy. He argues that the extent to which the policy has induced policy change varies considerably across regions, distinguishing between ‘starters’ (mainly Eastern European regions, where governance principles were difficult to implement due to traditional planning cultures and centralist governance systems), ‘active beneficiaries’ (mostly Southern European regions, where the hard institutional framework proved to be more suitable to the introduction of bottom-up approaches) and ‘drivers’ (mainly Central and Northern European regions, where Smart Specialisation processes induced amendments of governance practices). Like McCann and Ortega (2016) Kroll concludes that an LDR’s capacity to reliably identify and commercially exploit specific societal challenges needs to be strengthened and greater administrative learning, professional capacity building and concrete political commitment will be needed (Kroll, 2017).

Hassink and Marques propose, in relation to governance, that a vertical multilevel governance model is necessary, in addition to a horizontal (regional) model of coordination and collaboration. They maintain that regional innovation policy should be an integral part of the multilevel governance approach to innovation and they further argue that the effectiveness of innovation policy, particularly in structurally weak regions, “results from the interaction between these scales of activity and they should remain independent scales of activity” (Hassink & Marques 2014, p.2). In Eastern Germany, where there are strong regional governance arrangements in place, regional actors have been activated by the devolved governance arrangements under the Smart Specialisation policy, with sub-national mobilisation in European MLG arrangements increasing due to increased incentives from the European Commission, which has led to an openness of input and participation (Salegeanu 2015). Overall, implementation of the Smart Specialisation policy remains politically sensitive to regional institutional capacity, with early indications from policy practice suggesting that strategies do not necessarily create anything new, but can help improve what there is. Across regions, however, there is a strong openness by regional policy makers.
towards the new agenda. While regions with a ‘less robust’ background report higher expectations and relatively more substantial advances, all regional policy remains a cumulative process in which huge gaps in governance quality and capacity building across the EU will not be easily bridged (Kroll et al. 2014).

Capello and Kroll argue that the future success of the Smart Specialisation policy will stem from its capacity to embrace a wider concept of territorial development than one narrowly defined by the concept of industrial renewal. They further suggest that this wider concept should embrace the exploitation of intangible assets, supporting development strategies based on resources such as natural and cultural capital assets, rather than a return to a ‘space-blind’ strategy focused on agglomeration economies and the innovation potential of large cities as the main priorities. They argue that the design of Smart Specialisation policy needs to be rethought to envisage the development of all ‘places’ with new awareness and institutional sensitivity. This might involve a focus on supporting medium and medium-large cities, which are widespread in Europe and are potentially productive areas rich in specific, not fully exploited territorial capital assets and unexploited agglomeration economies. They suggest that this could involve an outcome where there is a future “dual focus on the development of large cities (mainly with efficiency, market-based approaches) and of peripheral and rural areas (mainly with cohesive, public-driven resource development)” (Capello & Kroll 2016, p. 1401).

Nauwelaers provides some important practical recommendations for the future operationalisation and implementation of the Smart Specialisation policy resulting from her examination of strategies submitted to the European Commission. She argues for future reform in the way that the policy intersects with other innovation policies (such as Horizon 2020) and the design of policy evaluation mechanisms. For instance, in relation to entrepreneurial process of discovery, analysis of strategies submitted to the EC did not appear to indicate that participative governance was achieved, and there was little evidence of advanced methodological approaches or evidence-based guidance to position innovation ecosystems in global value chains. There seems to have been a gap in the availability of suitable indicators and processes for monitoring and evaluating policy mixes for RIS3, according to Nauwelaers, and there is still room for improvement (e.g. harnessing synergies with Horizon2020 policies and the large number of EU support programs available) (Nauwelaers, 2014).

Nauwelaers argues that although the focus of attention of RIS3 is on the effective use of public research and innovation investment to optimise the contribution of the European
Regional Development Fund to the Europe 2020 Growth Strategy, this investment is only one component of a wider set of regional, national and European policy programs and instruments aiming at similar growth goals. She suggests that by linking those policies across governance levels to optimise their impact, especially if better harmonisation of strategic tools early in the policy formulation process can be achieved. One of the key aspects of the Smart Specialisation approach is a broad view of innovation. Transforming this into a successful policy strategy process reaches beyond traditional R&D policy, addressing the role of (higher) education with a broad human capital agenda, science, technology, entrepreneurship, industrial policies and FDI in fostering structural change (Nauwelaers, 2015). She further maintains that for LDRs to transform their economies and overcome the regional innovation paradox, they must provide MLG coordination evolving from silo-driven to outcome-driven; good dialogue will be of utmost importance for efficient and effective policy implementation with positive interactions. More robust, systematic and systemic policy evaluations focusing on the transformative role of RIS3 and allowing different approaches for the different priorities are needed. She suggests that peer review methods can provide valuable contributions where policy learning requirements are particularly high, and argues that future ongoing impacts will be maximised by combining the valuable aspects of experience gained so far in peer review exercises conducted under the auspice of the OECD and the European Union (Nauwelaers, 2015).

Many studies have suggested that the problem of weak regional institutional settings in LDRs located in CEE states might be resolved by increasing EU control mechanisms, including strengthening the ex-ante conditionality criteria to further encourage national ministries to strengthen the regional dimension, encouraging the use of intermediary bodies in implementation processes and encouraging quality governance within the new policy direction in the future (Potluka 2010, Molle 2015, Healy 2016; Bachtler & Ferry 2015; Rodriguez-Pose & Garcilazo 2015). However, a recent enquiry into a reform agenda to cohesion policy post-2020 indicated that given that regional policy (and the Smart Specialisation agenda) is governed by a shared management framework within the MLG system that emphasises cooperation between the EC and Member States in determining priorities, it would be difficult to move away from the functioning of subsidiarity as it has historically operated to a system of increasing use of ex-ante conditionality or finance instruments to impose a rigid policy agenda. Instead, Bachtler et al. (2016) suggest that flexibility in the system should be encouraged and a results-orientated framework implemented to ensure that the emphasis remains on negotiation, as opposed to imposition of the policy agenda on Member States and regions.
Bachtler suggests that there needs to be a shift to a greater empowerment of regional and local authorities in the future in dialogue with the EU over the new emphasis upon ‘competitiveness and cohesion’ in the future, thus enabling a better dialogue with the business community and public citizens in response to the challenges of effective policy implementation; investment in building greater institutional capacity especially in relation to leadership and human resources as well as the introduction of an EU-wide Technical Assistance programme for all levels of government to facilitate co-operation networks between different levels of government; a stronger commitment to human capital support, and finally a recognition of the different territorial opportunities and challenges for frontier, intermediate and lagging regions to deliver the structural transformation agenda through a process of differentiated support in the designation of regions, financial allocation of resources and the design of strategies (Bachtler et al. 2017; Capello & Kroll 2016 ).
Chapter 3
Research process

Introduction
This study is an investigation of the challenges associated with the design and implementation of the European Union Smart Specialisation policy over the 2014 to 2020 period European Commission. (2012a). Documentary data were drawn from relevant publicly available EU and Member State sources, and supplemented by interviews with European Commission staff and regional policy stakeholders. This chapter describes the research process, the theoretical framework for interpreting the data and the research methodology.

The theoretical perspective underpinning the qualitative research study informed the methodology. The methodological approach, including the strategy, plan of action, and process and design, informed the choice and use of particular methods.

Theoretical perspective
This research was shaped by a ‘basic set of beliefs that guide action’ (Cresswell 2007, p. 19), in this case, a pragmatic worldview focused on the outcomes of the research – the actions, situations and consequences of inquiry – rather than antecedent conditions (Cresswell, 2007). Pragmatism includes the notion that there is no commitment to any one system of philosophy and reality; that individual researchers have a freedom of choice in relation to methods, techniques and procedures of research that best meet their needs and purposes; that truth is not based in a dualism between reality independent of the mind and within the mind; and that research always occurs in social, historical, political and other contexts (Murphy as cited in Cresswell, 2007).

Methodology
The research design shapes the choice and use of particular research methods (Burns 2000); in this thesis, case study research is used to explore the issue through the use of one or more cases within a bounded system. By contrast, as Creswell acknowledges, some other researchers see case study research as a method rather than a methodology, whereas others
present it as a comprehensive research strategy that investigates a phenomenon in its real-life context, relating it to theory and seeking to understand what, in theoretical terms, the empirical phenomenon is a case of (Denzin & Lincoln; Yin as cited in Cresswell, 2007).

The use of case studies in qualitative research is often justified on the grounds that it appears to offer in-depth contextual insights by taking into consideration “environment characteristics, resource constraints and cultural traits” (Thomas in Fletcher & Plakoyiannaki, 2010, p.306). Fletcher and Plakoyiannaki argue that case study research is seen as valuable in enabling researchers to reach a deeper cross-cultural understanding of investigated phenomena. They argue that this approach enables the minimising of cultural bias and ethnocentric assumptions (compared to the practice of using survey instruments) and it has therefore been used extensively in studies that have examined comparative and cross-cultural phenomena, as is the context that this method is being used in this study (Fletcher & Plakoyiannaki, 2010).

Methodological literature reflects different ontological orientations associated with this kind of research practice; to situate the case study research approach selected for this study, it is necessary to distinguish between those who take a positivistic approach to case study research (Eisenhardt; Yin as cited in Fletcher & Plakoyiannaki, 2010) and those who view case study research through the “lens of critical realism or interpretivism, and who acknowledge its emergent nature and power to build logical argumentation for theory building and theory testing purposes” (Hillebrand; Kok; Biemans as cited in Fletcher & Plakoyiannaki, 2010. p. 308). The positivistic approach, for instance, asserts that case studies can be exploratory, descriptive or explanatory, whereby deep insights are sought and gained through a process of theory generation through techniques such as pattern matching, rather than theory testing (Yin 2003). Alternatively, through the lens of critical realism or interpretivism, an in-depth case study approach enables comprehensive descriptions of the investigated phenomena and their context (Fletcher & Plakoyiannaki, 2010). This study takes an interpretive approach using inductive processes of analysis that are highly iterative and linked to data (Eisenhardt as cited in Fletcher & Plakoyiannaki, 2010).

**Number of case studies**

In designing case study analysis, distinction should be made between single and multiple case designs. Yin suggests that there are three types of case-study design: a holistic single case, an embedded single case with multiple units of analysis, and multiple cases with one or multiple units of analysis (Yin as cited in Fletcher and Plakoyiannaki, 2010). Case study research explores a bounded system (*a case*) or multiple bounded systems (*cases*)
through detailed in-depth data collection involving multiple sources (e.g. observations, interviews, audio-visual materials, documents). This form of research results in case descriptions and case-based themes. This research adopts a collective case study design, within which a single issue is selected, with multiple case studies to illustrate it (Cresswell 2007). This intent of adopting this design is to provide a strong basis for theory building as according to Eisenhardt and Graebner, “multiple case studies can enable comparisons to clarify whether an emergent finding is idiosyncratic to a single case or consistently replicated by several case studies and [therefore can] create robust theory because propositions are more deeply grounded on varied empirical data” (Eisenhardt & Graebner as cited in Fletcher & Plakoyiannaki, 2010, p.13).

**Selection of case studies**

Sampling is a complex issue in case study research as there are many variations of sampling strategies and much confusion about what each technique entails (Coyne as cited in Fletcher & Plakoyiannaki 2010). Patton has identified 18 different sampling strategies that may be employed in case study research, two forms of random sampling (simple random samples, and stratified and cluster samples) and 16 forms of purposeful sampling, recommending that the selection of cases involve purposeful not random selection (Patton as cited in Fletcher & Plakoyiannaki 2010). There are many types of purposeful sampling identified by Patton including theoretical/theory-based/operational-construct, convenience, extreme/deviant/ outlier, intensity, maximum variation, homogenous, typical, critical, snowball and criterion approaches. Purposeful sampling is distinguished from random sampling by enhancing sampling as ‘purposeful’ and providing ‘information-rich’ cases: those from which one can learn a great deal about issues of central importance to the purpose of the inquiry (Patton as cited in Fletcher & Plakoyiannaki 2010).

This study used a purposeful sampling approach in the selection process in selecting regions. This approach uses the networks of a selected participant, who is originally determined by criteria of (a) representing local views of key stakeholders at the level of the region, and (b) providing a perspective from the EC. A second criterion applied was that each region selected have a subsidiary of the automotive firm Volkswagen located within it.

The sampling method aimed to achieve a consistency of analysis and thematic integration in the empirical investigation of whether global decisions about production operations affect whether the Smart Specialisation policy could be designed and implemented effectively in a given regional context.
Selection of unit of analysis

The definition of the unit of analysis is a fundamental element of case study research. In this study, the unit of analysis is a geographical unit that is an EU-defined regional entity representing a cross section of less-developed, transitional and developed regions as determined by the EU; selected regions were recipients of EU Regional funds (ERDF).

Regions across the EU are categorised into ‘Objectives’, depending on their economic situation. During the two funding periods that are the focus of this project (2014–20) funds were allocated according to whether the regions (classified by their GDP level) were ‘less developed’, ‘transition’ or ‘more developed’ (Figure 3.1):

- less developed regions – GDP per capita is less than 75 per cent of the EU-28 average
- transition regions – GDP per capita is between 75 per cent and 90 per cent of the EU-28 average
- more developed regions – GDP per capita is above 90 per cent of the EU-28 average.

Figure 3.1: Classification of EU regions from 2014–20 (EC 2018)
Regions were selected to include in the study to provide data on how the Smart Specialisation policy was designed and implemented in different economic contexts. Like Cooke’s empirical study addressing the implementation challenges of the Smart Specialisation policy across diverse regions of Portugal, it was intended that each case study region would provide a “distinctive path dependence, technology or industry mix, or ‘paradigm’ and regional ‘regime’ representing diverse stakeholder interests” (Cooke, 2016, p. 1499).

The following regions were chosen as case studies:

- Western Transdanubia – less developed
- Bratislava – transition
- Catalonia – more developed.

Research problem

This study has selected diverse regions across the economic categories of less developed, transitional and more developed regions. Interview participants were chosen from the quadruple helix stakeholder groups drawn from RIS across regions. The aim of the research is to highlight the capacity of regions to implement the policy given the particular “path dependence, technology mix and regional regime representing diverse stakeholder interests” similar to that of Cooke’s empirical study that addressed the challenge of implementation of Smart Specialisation across diverse regions of Portugal (Cooke, 2016, p.1499). However, this study is uniquely addressing the particular challenges of policy implementation in regions that have a strong industrial tradition, particularly in heavy industry associated with automotive production. In this way, the study incorporates an additional theme related to multinational embeddedness and disembeddedness. This additional theme will enable the study to highlight and capture the tension between the influence of multinational global value chain decisions and there intersection with policy interventions (Smart Specialisation) in impacting on regional economic development.

This study used qualitative methods to theorise in making predictions about how a key supranational policy instrument may be able to generate a new economic growth model for regional development. The study is located within the economic geography discipline and works within the theoretical and empirical tradition of that discipline (Morgan 1997, Porter 1990, Storper 1997) who have highlighted the importance of institutions such as knowledge assets, clusters and physical networks at the level of place in generating an
Because the Smart Specialisation policy phase commenced in 2014, this study aimed to capture primary data, thus providing projected insights into the implementation challenges associated with the policy that the current literature has not yet covered. There is a growing body of empirical studies that have addressed in the particular challenges faced in policy implementation confronting LDRs, and this study aims to add additional value to these studies. Thus the study will add to a growing literature addressing the particular challenges confronting LDRs located in CEE in seeking to transition to the knowledge economy.

This study includes interviews with regional stakeholders from Volkswagen, the well-known multinational player in the automotive industry. The automotive industry is a major global industrial player in regional economic development. Volkswagen is headquartered in Germany and has subsidiary activities all over Europe (and elsewhere), including plants based in Western Transdanubia, Catalonia and Bratislava. Volkswagen was selected over other multinational automotive producers because it has a specific mode of global value chain governance that makes it unique for examining the different production sites situated in each region, and the implications for specialisation and diversification strategies under the Smart Specialisation policy.

**Volkswagen global value chain strategy in the context of the global automotive industry**

The Volkswagen Group has a highly centralised approach to coordination of its GVC, with centralised research and development facilities and a centralised management structure. The Volkswagen Group has a relatively low level of internationalisation in its Board of Management and Supervisory Board, compared with other major automotive companies. Volkswagen has several international R&D sites, but most of its core R&D activities continue to take place in Germany or Europe, so the company does not have global R&D active in all of the world’s important markets (Schmid and Grosche, 2008).
However, there are regional exceptions to the centralised nature of the Volkswagen global value chain strategy. With the active support of the Hungarian Government, the Audi Hungary site has demonstrated that the Volkswagen Group can also cultivate their foreign subsidiaries by devolving additional responsibilities in the value chain, in research and development or high-value production activities. In this way, it is sometimes envisaged by Volkswagen that foreign subsidiaries can develop into centres of excellence, assume a leadership role in the corporate network and make good use of their unique strengths beyond their location. Importantly, the Hungarian Government has encouraged the clustering of R&D activities in Western Transdanubia – Nokia, Ericsson and Siemens all have facilities grouped together in the one location to create a site for high-quality value creation. In addition, eleven other automotive plants have been attracted to this cluster of high-value activities and located at the intersection of Hungary, Austria and Slovakia (Schmid and Grosche 2008).

The GVC configuration of Volkswagen’s R&D activities has important implications when considering the design of Member State and regional RIS3 policies. Innovation in ‘design’ work in line with the European Automobile Manufacturers Association recommendations within its A Manifesto for a Competitive European Automotive Industry tend to focus on priorities that may only be relevant to regions located in the R&D investment sites, such as eco-innovations to encourage the development of eco-friendly and environmentally friendly vehicles as part of the European Green Vehicles Initiative. Regions located elsewhere would therefore not benefit from RIS strategies.

This study contributes a perspective on Smart Specialisation policy design processes and
likely impact of the policy regionally from the perspective of a key corporate player from a traditional industrial development model (Volkswagen). This study aimed to explore the tension between global forces and local policy in shaping development at the level of place across diverse regions.

**Aim of the research study**

The study is guided by three research questions. The questions aim to assist in the aim of investigating the extent to which the policy will be able to be implemented effectively in all regions. As was outlined in Chapter 1, previous EU innovation policies have tended to be focused at developed regions. A key research objective is to analyse whether the policy can be delivered effectively in all regions of Europe, given factors such as quality of governance; characteristics of RIS and the role played by a multinational within the regional context.

**Research questions**

What opportunities and challenges are faced in the implementation of the Smart Specialisation policy at the level of the region in terms of the:

a) quality of regional governance?

b) characteristics of a regional innovation system?

c) role of a multinational corporation in a region in the context of the global value chain/global production network?

Two data collection methods were used:

a) documentary analysis of key EU Member State and regional documents relating to EU regional and industrial policy instruments

b) interviews with key public servants based at the EC and stakeholders based in the three regions representing different stakeholders as represented within quadruple helix representative groups.

**Documentary data**

According to Bowen, “document analysis is often used in combination with other qualitative research methods as a means of triangulation – the combination of methodologies in the study of the same phenomenon.” (Bowen, 2009 p.28). In this way, the qualitative researcher “draws upon multiple (at least two) sources of evidence; that is, to seek convergence and corroboration using different data sources and method (and) apart from documents, such
sources might include interviews, participant or non-participant observation, and physical artefacts” (Bowen, 2009, p.28). Bowen further states that by triangulating data, the researcher can produce a confluence of evidence that breeds credibility. Finally he maintains that “triangulation helps the researcher guard against the accusation that a study’s findings are simply the artefact of a single method, a single source, or a single investigator’s bias.” (Bowen, 2009, p.28). By this study’s use of both interview and documentary data, it attempts to triangulate different data sources in the manner that Bowen envisages.

Bowen also highlights how, as a research method “document analysis is particularly applicable to qualitative case studies – intensive studies producing rich descriptions of a single phenomenon, event, organisation or program. Non-technical literature, such as reports and internal correspondence, is a potential source of empirical data for case studies; for example, data on the context within which the participant operates.” (Bowen, 2009, p.29). In this way, it is argued that documents can help the researcher “uncover meaning, develop understanding, and discover insights relevant to the research problem” (Bowen, 2009, p.29).

The documentary analysis in this research is not intended to support or validate observational or oral data. In this way, the advice of Atkinson and Coffey is followed who have maintained that “documentary materials are presented as data in their own right and it is intended that the data enshrines a distinctively documentary versions of social reality that contains their own conventions that inform production and circulation and should therefore be given ‘equal weight’ to the interview data.” (Atkinson & Coffey cited in Silverman 1997).

In this study, official documents published by public organisation were used as a resource to assist with understanding the policy narrative contained within documentary sources explain how the Smart Specialisation policy was designed and how it will be implemented. Documents were selected for analysis to gain an understanding of the consultation methodologies and economic evidence used in policy processes in designing policy strategies. Only official documentary sources were selected for document analysis, with the intention to supplement and contrast the ‘official narrative’ with the ‘unofficial’ views of local stakeholders from the case study regions using semi-structured interviews.

The documents analysed are publicly available documents relating to EU regional policy over the time period 1999–2020. This time period was selected to capture the change in focus of EU regional policy away from the previous approach focused mainly on redistribution and towards an approach focused on an efficiency imperative, which has occurred since the global financial crisis (GFC) of 1999. The document are from official government sources, including from the EU, EC and from the Hungarian, Spanish and
Slovak governments. Table 3.1 lists documents used in the study and provides justification for why they were chosen. All documents were chosen to highlight, contextualise and provides analysis of the most recent policy phase, the Smart Specialisation policy. They were chosen because they were searched for on EU and Member State government websites on the basis that they would provide recent analysis of the state of innovation policy across different levels of government relevant to the policy period being examined (2014-20). Translated materials were cross checked by native speakers of the language. In relation to demonstrating external validity, we know that case-study research attempts analytic generalisation in which the investigator tries to generalise a particular set of data to some broader theory. External validity is difficult to prove as it is a “presentation, interpretation and investigation of detailed information on a single unit developing idiographic interpretations” (Burns 2000, pp. 328-9).

Table 3.1 Documents and data analysed

<table>
<thead>
<tr>
<th>European Commission</th>
<th>Operational implementation guide for Smart Specialisation policy, provides data on program methodology</th>
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<tbody>
<tr>
<td>Industrial Policy in an Enlarged Europe, European Commission, 2002</td>
<td>Industrial strategy articulating changed focus of industrial policy to decentralised approach and importance of industry to post-GFC economic recovery</td>
</tr>
<tr>
<td>Some Key Issues in Europe’s Competitiveness- Toward an Integrated Approach, European Commission, 2003</td>
<td>Industrial strategy articulating changed focus of industrial policy to decentralised approach and importance of industry to post-GFC economic recovery</td>
</tr>
<tr>
<td>Fostering Structural Change: an Industrial Policy for an Enlarged Europe, European Commission 2004</td>
<td>Industrial strategy articulating changed focus of industrial policy to decentralised approach and importance of industry to post-GFC economic recovery</td>
</tr>
<tr>
<td>An Integrated Industrial Policy for the Globalisation Era Putting Competitiveness and Sustainability at Centre Stage, European Commission, 2010</td>
<td>Industrial strategy articulating changed focus of industrial policy to decentralised approach and importance of industry to post-GFC economic recovery</td>
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<tr>
<td>A Stronger European Industry for Growth and Economic Recovery, European Commission, 2012</td>
<td>Industrial strategy articulating importance of industry to post-GFC economic recovery</td>
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<tr>
<td>Title</td>
<td>Description</td>
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<tr>
<td>Re-industrialising Europe to Promote Competitiveness and Sustainability, European Commission, 2014</td>
<td>Industrial strategy articulating importance of industry to post-GFC economic recovery and strategic response</td>
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<tr>
<td>For an Industrial Renaissance, European Commission, 2014</td>
<td>Industrial strategy articulating importance of industry to post-GFC economic recovery and strategic response</td>
</tr>
<tr>
<td>CARS2020: Action Plan for a Competitive and Sustainable Automotive Industry in Europe, European Commission, 2014</td>
<td>Industrial policy strategy articulating strategy to address the decline of the car industry in Europe</td>
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<tr>
<td>Western Transdanubia</td>
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<tr>
<td>European Structural and Investment Funds; Hungary, European Commission, 2016</td>
<td>Economic statistics on regional GDP/head in Hungary and Structural Funds eligibility 2014–2020</td>
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<tr>
<td>ERAWATCH Country Reports 2012; Hungary, European Commission 2012</td>
<td>Report on political developments impacting upon the quality of governance in Hungary</td>
</tr>
<tr>
<td>Nyugat-Dunantul Intelligens Innovacios Szakosodasi Strategia, Pannon Novum Nyugat-Dunantul Intelligens Regionalis Innovacios Nonprofit Kft, 2013</td>
<td>Smart Specialisation strategy providing an analysis of policy governance arrangements, characteristics of RIS and economic priorities of the regional Smart Specialisation strategy in Western Transdanubia, Hungary</td>
</tr>
<tr>
<td>National Smart Specialisation Strategy, Nemzeti Innovacios Hivatal, 2014</td>
<td>Report providing an analysis of policy governance arrangements, characteristics of RIS and economic priorities of the national Smart Specialisation strategy in Hungary</td>
</tr>
<tr>
<td>The Gyor Automotive District: Monographies of the Gyor Automotive Industrial District as the New Trend and Means of Spatial Development Research, Universitas Gyor Non-Profit Ltd, 2014</td>
<td>Economic and industrial profile data on the history of automotive production in the city of Gyor, Western Transdanubia, Hungary</td>
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<tr>
<td>Bratislava</td>
<td></td>
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<tr>
<td>RIS3 Peer Review Report: Slovak Republic, European Commission, 2014</td>
<td>Report providing an analysis of policy governance arrangements, characteristics of RIS and economic priorities</td>
</tr>
<tr>
<td>Through Knowledge towards Prosperity-Research and Innovation Strategy for Smart</td>
<td>Smart Specialisation strategy providing an analysis of policy governance arrangements, characteristics of RIS and</td>
</tr>
<tr>
<td>Source</td>
<td>Description</td>
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<tr>
<td>Specialisation of the Slovak Republic, Slovak Republic 2013</td>
<td>economic priorities contained within the Smart Specialisation strategy</td>
</tr>
<tr>
<td>‘Bratislava Region: The Slovak Cradle of Prosperity’, Slovak Spectator, Nicholson and Bagota, Bratislava, 2007</td>
<td>Newspaper article including a description of the industrial characteristics of the Bratislava region</td>
</tr>
<tr>
<td>The Automobile Industry in Central Europe, World Economic Outlook Reports, International Monetary Fund, 2006</td>
<td>IMF Report providing historical context and data on automotive industry production in Central Europe</td>
</tr>
<tr>
<td>‘Industrial Policy in an enlarged Europe’, Ministry of Economy, Slovak Republic, 1999</td>
<td>Data on recent history of Slovakia’s changing focus of industrial policy interventions to encourage innovation</td>
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<tr>
<td>National Reform Programme of the Slovak Republic 2010, Slovak Republic, 2010</td>
<td>Report describing recent history of Slovakia’s changing focus of industrial policy interventions to encourage innovation</td>
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<tr>
<td><strong>Catalonia</strong></td>
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<tr>
<td><strong>RIS3CAT: Research and Innovation Strategy for the Smart Specialisation of Catalonia, Generalitat de Catalunya, 2014</strong></td>
<td>Smart Specialisation strategy providing an analysis of policy governance arrangements, characteristics of RIS and economic priorities</td>
</tr>
<tr>
<td>‘SEAT generates 1.2% of Catalan GDP and Industry Employment’, Generalitat de Catalunya, 6th July, 2015</td>
<td>International government communication providing analysis of automotive industry investment contribution to Catalan economy</td>
</tr>
<tr>
<td><strong>European Structural and Investment Funds: Spain, European Commission, 2016</strong></td>
<td>Economic statistics on regional GDP/head in Spain and Structural Funds eligibility 2014–2020</td>
</tr>
<tr>
<td><strong>Annual Report Catalan Economy: Outperforming in an Uncertain Global Economy, Generalitat de Catalunya, 2017</strong></td>
<td>Report providing statistics showing key sectors of economic strength in economy</td>
</tr>
<tr>
<td><strong>Catalonia: the Strength of an Outward-Looking Country, Generalitat de Catalunya, 2017</strong></td>
<td>Report providing economic and social statistics showing key sectors of economic strength in economy</td>
</tr>
<tr>
<td>‘Driving Growth? The Future of Europe’s Car Industry’ (CNBC, 18th April, 2016)</td>
<td>Newspaper article providing statistics demonstrating economic and social contribution of SEAT to Catalan economy</td>
</tr>
<tr>
<td><strong>Surprising SEAT: Annual Report, SEAT, 2016</strong></td>
<td>Report providing an analysis of the SEAT investment contribution to Catalan economy</td>
</tr>
<tr>
<td><strong>Universities and RIS3: the case of Catalonia and the RIS3CAT Communities, European Commission, 2016</strong></td>
<td>Report providing data on role of knowledge assets in the Catalan RIS</td>
</tr>
<tr>
<td><strong>The Barcelona Urban Lab: An Experience of Innovation Public Pre-Procurement, Barcelona City Council, 2016</strong></td>
<td>Report providing data on local government policy initiatives complementing the Smart Specialisation policy framework</td>
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</table>
Interview data

As a complement to documents gathered around EU regional policy, semi-structured interviews with key informants were conducted. These interviews enabled the research to share informants’ unique specialised local knowledge (Burns 1996). Further, the purpose of interviewing is to capture perspectives of, for instance, a policy program, participants and staff or associated stakeholders (Patton 1980).

A total of twenty-four participants were interviewed. Eighteen interviews were used for data purposes. Six “supplementary” interviews were conducted to provide additional expert insight into the Smart Specialisation policy. These interviews were also tape recorded but they were not used in relation to providing data for the study. The additional six interviews were conducted with two academics (Scotland), three European Commission representatives from the European Commission connected with the policy as it related to Saxony (Germany), and one European Commission representative connected with the policy as it related to Eindhoven (Holland). Three interviewees were desk officers based at the European Commission (Directorate General Regional Development) as well as fifteen participants drawn from the three case study regions selected for this study; Catalonia, Bratislava and Western Transdanubia. Participants were selected through use of the snowball sampling technique and were sought from a cross section of key institutional domains in regions to ensure reliability and validity. A semi-structured interview style was adopted using a standardised questionnaire. The first interviews were organised with EC representatives and regional stakeholders nominated by EC representatives whose contact details were also publicly available. The nature and aims of the research were explained to potential participants via an official letter and an interview schedule sent to them. The length of the interview, confidentiality and anonymity were discussed. Assurance was given to participants that personal identifying information would not be revealed in any way without their prior consent. All interviews except one interview were conducted in English language. One interview was conducted
in Slovak with a translator present.

The length of the interviews ranged from 1 to 3 hours. All participants were interviewed in their offices or in a restaurant setting. The interviews commenced in February 2015 and were completed by November 2015.

The data of interview participants served the following purposes:

a) It provided access to past events and situations where the researcher was not present.

b) It complemented documentary data sources with accounts and views on policy design processes at the regional level.

c) It ensured a greater understanding of EU Regional policy development and design processes and perspectives relating to potential strengths and weaknesses of these processes.

Table 3.2 lists the groups and organisations that were sampled.

**Table 3.2: Quadruple Helix groups and organisations (PNNDRIN 2013)**

<table>
<thead>
<tr>
<th>Quadruple Helix</th>
<th>Groups</th>
<th>Organisation</th>
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<tbody>
<tr>
<td><strong>Science</strong></td>
<td>Higher education</td>
<td>University</td>
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<td></td>
<td>Research institute</td>
<td>College</td>
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<td></td>
<td>Knowledge centre</td>
<td>Regional &amp; sectoral knowledge centre</td>
</tr>
<tr>
<td><strong>Government</strong></td>
<td>Government and departments</td>
<td>Ministries</td>
</tr>
<tr>
<td></td>
<td></td>
<td>National government offices</td>
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<tr>
<td></td>
<td></td>
<td>Regional government</td>
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<tr>
<td></td>
<td></td>
<td>County or local government offices</td>
</tr>
<tr>
<td><strong>Economy</strong></td>
<td>Enterprises</td>
<td>Large and small to medium enterprises (SMEs)</td>
</tr>
<tr>
<td></td>
<td>Technology transfer</td>
<td>Innovation and technology transfer offices</td>
</tr>
<tr>
<td></td>
<td>organisations</td>
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</tr>
<tr>
<td><strong>Civil society</strong></td>
<td>Interest representation</td>
<td>Interest representation bodies (e.g. national and</td>
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<tr>
<td></td>
<td>bodies</td>
<td>county chambers of commerce and industry)</td>
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<td></td>
<td>Clusters</td>
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<td></td>
<td>Trade associations</td>
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</tbody>
</table>
Table 3.2 lists characteristics of the participants in terms of their professional roles. The participants are divided into four categories. The first category were European Commission policy officers involved in the policy design, evaluation and implementation of the Smart Specialisation policy. The second were regional stakeholders drawn from the three case study regions. These participants worked in organisations reflected in the Quadruple Helix groups identified by the Smart Specialisation policy as being part of the design and implementation of the policy. The third category consisted of corporate representatives of subsidiaries of the case study firm Volkswagen. The fourth were academic experts in European regional policy. In order to preserve the anonymity of the participants, they were de-identified.

Table 3.3: Participants in study

<table>
<thead>
<tr>
<th>Current or past role</th>
<th>Code</th>
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<tbody>
<tr>
<td><strong>European Commission</strong></td>
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<tr>
<td>Desk officer, DG Regio</td>
<td>EUpolicy1</td>
</tr>
<tr>
<td>Desk officer, DG Regio</td>
<td>EUpolicy2</td>
</tr>
<tr>
<td>Evaluation Unit, DG Regio</td>
<td>EUpolicy3</td>
</tr>
<tr>
<td><strong>Western Transdanubia</strong></td>
<td></td>
</tr>
<tr>
<td>Manager, Innovation Hub</td>
<td>Innopol</td>
</tr>
<tr>
<td>Manager, Automotive industry centre</td>
<td>Autind</td>
</tr>
<tr>
<td>Academic</td>
<td>Regdevac</td>
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<tr>
<td>Automotive industry executive</td>
<td>Autex</td>
</tr>
<tr>
<td><strong>Slovakia</strong></td>
<td></td>
</tr>
<tr>
<td>Academic</td>
<td>Autacad</td>
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<tr>
<td>Automotive industry executive</td>
<td>Autex1</td>
</tr>
<tr>
<td>Automotive industry executive</td>
<td>Autex2</td>
</tr>
<tr>
<td>Government policy officer</td>
<td>Govpol</td>
</tr>
<tr>
<td><strong>Catalonia</strong></td>
<td></td>
</tr>
<tr>
<td>Academic</td>
<td>Academic1</td>
</tr>
<tr>
<td>Academic</td>
<td>Academic2</td>
</tr>
<tr>
<td>Government policy officer</td>
<td>Catlangov1</td>
</tr>
<tr>
<td>Government policy officer</td>
<td>Catlangov2</td>
</tr>
<tr>
<td>Automotive executive</td>
<td>Autex1</td>
</tr>
<tr>
<td>Automotive executive</td>
<td>Autex2</td>
</tr>
<tr>
<td>Council executive</td>
<td>BCcouncil</td>
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</tbody>
</table>
Interviews with both the EC and regional stakeholders were designed to ensure exploring a range of opinions and representations on the issue of Smart Specialisation implementation in regional context. For instance to investigate the extent to which participants felt about regional political context and how this may have impacted on the entrepreneurial process of discovery; the main characteristics of the RIS and how it was operating from a stakeholder perspective and what the view of the areas of specialisation chosen by the policy meant to their sense of the successful implementation of the policy given the industrial characteristics within the region. Given that this study is not an evaluation of the policy, questions were designed to instead seek a sense of how the different aspects of the policy design were likely to play out regionally, given therefore, the political, economic and institutional arrangements at the level of place.

Interview questions were derived from the Guide to Research and Innovation Strategies for Smart Specialization, (2012a). The design of the questions was organised around the research aims and objectives. Each interview was a directed conversation using the same set of questions; however, three different interview questionnaires were prepared, one tailored to EC policy officers, another to stakeholders at the level of the region and a third to corporate representatives of Volkswagen subsidiaries. The questions were specific around the key themes of the research questions and related to perceived strengths and barriers to implementation of the policy around three key lines of enquiry: (a) the role of politics and governance in determining robust policy process; (b) the economic characteristics of the region in enabling transformation; and (c) the extent to which the existence and organisation of knowledge assets in the region were going to assist with the policy vision.

Of the 18 informants that were interviewed. 16 interviews were tape recorded. In two interviews notes were taken to record key points. The recording of the data was seen as integral to the research process and care was taken to ensure that the interview was recorded, where a participant consented. In relation to the legitimacy and credibility of the research design, all interviewees were provided with a copy of the research questionnaire before the interview took place to ensure that the limitations of the data were known and discussed before the interview. This approach is argued to lend “political credibility and legitimacy to the data being collected; there is a careful process of collecting the same information from everyone who is interviewed” (Patton 1980).

The verbatim responses of 16 people being interviewed was recorded. Since the raw data of interviews are quotations, the most desirable data to obtain is a full transcription of
interviews. In order to achieve full immersion in the data, it was decided that 16 interviews would be fully transcribed. In choosing to interview key participants, the study was able to draw upon a number of perspectives on historical events, as well as on current and future challenges and analysis of the policy design process. The interview data complemented the documentary data sources and provided regional stakeholder perspectives about the procedural and methodological implications of evolving EU regional policy approaches.

A constructed matrix with the research questions was used to organise the data under subheadings. Codes were developed and coding was conducted for each interview transcript, paragraph by paragraph. Subheadings were created for each paragraph and the key message or theme of the paragraph identified. The data was then sorted under one of three research question-derived core categories: (a) politics and governance, (b) economic model, or (c) regional assets. Then subcategories were generated; for instance, in relation to the core category of ‘politics and governance’, a key subcategory was ‘principle of subsidiarity a barrier as ERDF regulations weak’.

In this way, the approach to analysis borrowed from the principles of classical Grounded Theory in that the coding processes were used to generate a theoretical model from the analysis of social processes. Specific concepts were identified in the transcripts. The concepts were labelled and then organised into categories, consistent with open-coding procedures. Following this process there was an exploration of how each of the categories related to one another; this enabled the transformation of categories to subcategories and the identification of broader thematic categories based on the data. Selective coding enabled conceptual ideas to emerge, which integrated the existing categories.

**A theoretical framework for analysis of data**

This study used a qualitative content data descriptive approach for analysis of data. This approach is a useful method of text analysis that has been developed within empirical social sciences and further as a medium of expression as to enable the researcher to “construct indicators of worldviews, attitudes, opinions, prejudices, stereotypes and compare these across communities” (Bryman & Burgess 1999). This study used Stake’s suggested forms of data analysis and interpretation in case study research (Stake cited in Creswell 2009). Stake describes “a process of categorical aggregation, where the researcher seeks a collection of instances from the data, hoping that issue-relevant meanings will emerge which then results in the research establishing patterns and which enables the researcher to look for a correspondence between two or more categories.”
(Stake in Cresswell 2009, p.154). Following on from Stake and Yin’s suggestion, the search used a constructed table that demonstrated the correspondence between two or more categories to enable a cross-case synthesis, which was a useful analytic technique when examining multiple cases (Stake; Yin in Creswell 2009). This process then enabled the researcher to look for similarities and differences among the cases and to develop naturalistic generalisations from analysing the data, to apply to a population of cases (Creswell 2009).

As this study is seeking to provide a theoretical contribution, it does not seek to emerge with “findings”, but rather will use Grounded Theory in seeking to contribute to a theoretical understanding of the interaction between a key public policy framework and the economic model underpinning it, and how this interaction has played out in regional context. According to Barney Glasier (Glasier 1978, p.4):

A Grounded Theoretical approach differs from an empirical approach in that for the Empiricist “they know what they know [and] it’s empirical and descriptive and his knowledge is non-theoretical.” A key difference in emphasis is that for the Empiricist they tend to work with deductive preconceived logic applied to understanding data. In relation to understanding the data, it is understood that the Empiricist will seek full scholarly coverage based on the literature available. Alternatively, a Grounded Theoretical analytical approach derives or induces logic from data and then applies it to the data, after ideas emerge.

The theoretical framework described in 2 was used to document, analyse and compare data between the EC and the three regions.

**Importance and contribution to new knowledge**

Economic geography is the study of the location, distribution and spatial organisation of economic activities. The disciple of economic geography is strongly dominated by a methodological approach that has tended to favour quantitative methods. That is, neoclassical theorists following in the tradition of Alfred Weber tend to focus on industrial location and use quantitative methods. Since the 1970s, two broad reactions against neoclassical approaches have significantly changed the discipline: Marxist political economy, and the NEG school, which takes account of social cultural and institutional factors in the spatial economy. This study will contribute to the less-used methodological qualitative approaches.

This study will contribute to the literature that is currently available on the policy design processes associated with the Smart Specialisation policy. It is not the purpose of the study to develop a whole new theoretical position on how the Smart Specialisation policy can be better designed and developed. It is hoped that the study will advance theoretical and conceptual constructs about policy design, processes and methodology, so as to contribute to
an understanding of the barriers that may be faced in the implementation of the policy cycle. It is hoped that it will advance theoretical and conceptual constructs about what political, economic and institutional factors may impact on policy design and implementation processes. It is also hoped that the case study research may enable a greater understanding of the differences between core and periphery regions in relation to their capacity to develop regional innovation systems for economic transformation at the level of place.
Introduction

Smart Specialisation is not a new policy concept. It extends existing innovation strategies based on 15 years of refining of programs mainly targeted at advanced regions across Europe. Advanced regions have already been engaged in similar strategic exercises, such as precursor programs in the 1990s and 2000s: the RTP (Regional Technology Plans), RIS (Regional Innovation Strategies) and RITTS (Regional Innovation Technology and Transfer Strategies) programs and more recently the Regions for Economic Change initiative and the Regional Innovation Monitor. However, the difference with Smart Specialisation is that the European Commission made the development of Smart Specialisation strategies a pre-condition for ERDF (European Regional Development Fund) investments. European Union Member States and regions are obliged to have Smart Specialisation strategies in place before Operational Programmes supporting investments are approved. Therefore, EU Innovation policy applies to all regions regardless of the level of economic development. This has significant implications for the successful implementation of the policy in less developed regions (LDR).

This chapter presents and interprets documentary and interview data: the first section analyses data sourced from key documents relating to the EU Smart Specialisation policy from the EC, and the second section provides analysis of new interview data gathered in parallel. Interview informants were key policy actors within the EC. Three informants were drawn from the Directorate-General Regional and Urban Policy (DG Regio) and are coded as follows: EC Policy Officer (Smart Specialisation implementation) EUpolicy1; EC Policy Officer (Evaluation Unit) EUpolicy2; and EC Policy Officer (Smart Specialisation implementation) EUpolicy3. All informants were asked for their perceptions of the strengths and challenges associated with Member States and regions designing and implementing Smart Specialisation policies.
Quality of governance

As was outlined in Chapter 2, recent academic studies have suggested that the successful implementation of the Smart Specialisation policy can depend on the effectiveness of governance arrangements found at the level of the region. For instance, Boschma argued that although Smart Specialisation policy shares many of the features of precursor policy programs, the key difference is that Smart Specialisation policy explores in more detail devolved governance processes involved in identifying areas of economic growth. He argues that a key input to the concept is the entrepreneurial discovery, which details exactly how the policy process must select and prioritise areas where a cluster of activities should be developed, and determines the domains of future specialisation. This he argues enables the avoidance of local vested interests and allows new economic players to emerge, thus avoiding regional lock-in (Boschma 2013).

A key documentary source developed by the EC to assist Member States and regions in the design and implementation of the Smart Specialisation policy is the Guide to Research and Innovation Strategies for Smart Specialisations (RIS3) (2012) (hereafter, ‘the Guide’). The Guide indicates that the common governance model used in decentralised governance processes in policy design – the Triple Helix model limited to the involvement of industry, education, research institutions and government – is “is no longer enough” in the context of the new policy direction. It recommends the development of a new governance model – a Quadruple Helix model – in which innovation users or groups representing demand-side perspectives, and consumers and relevant non-profit organisations representing citizens and workers, should all be taken on board in the design of Smart Specialisation policies. Importantly, this model includes both market and civil society actors. The types of organisations that need to be involved are public authorities, universities and other knowledge-based institutions, investors and enterprises, civil society actors and international experts who can offer benchmarking and peer review services (EC2012a, p.34).

The Guide recommends the involvement of multiple stakeholders at a regional level in the policy design process, to ensure that with the determination of strategic priorities, “a truly inclusive governance structure should be able to prevent capture by specific interest groups, powerful lobbies or major regional stakeholders”. The involvement of more diverse stakeholders is critical to the policy as “their knowledge and commitment [are] key to identifying priority areas and knowledge-based investments that are most likely to deliver growth and jobs in the regions, as well as the identification of more strategic cross-border and trans-regional cooperation to achieve critical potential and related variety.
Entrepreneurial actors should include whoever is best placed to discover the domains of R&D and innovation in which a region is likely to excel given its existing capabilities and productive assets” (EC2012a).

The extent to which the entrepreneurial process of discovery may be implemented effectively in all or just some regions is a key question in this research project. The EC appears to acknowledge the potential problem for effective coordination of the policy at a local level that is posed by uneven governance quality across regions. Thus the Guide states that when Member States and regions develop their policies, ‘one size’ does not fit ‘all’ local circumstances (EC2012a, p.10). According to the Guide, the Smart Specialisation concept is intended to be used in all regions “even though some are more advanced in terms of knowledge production” (EC2012a, p.35). Further, the application of the concept in a regional context must be approached with care because the economic and institutional context varies considerably between and within European regions; therefore the development of Smart Specialisation strategies needs to take into account geographically specific characteristics, to help generate growth in all regions (EC2012a, 14).

For instance, it is noted that the entrepreneurial process of discovery will work differently in each region and in some places, usually in core cities, “the process will be quite evident” due to the high density of innovators and entrepreneurs. However, the EC anticipates that the process is likely to be much harder in regions characterised by low population, a small number of sectors and large dominant firms, but with few external links. In these regions, the Guide suggests that links between local universities and strong public-private partnerships are the types of strategies that may ensure the policy works. The regional context is also the appropriate context in which to decide who is best-placed to lead the policy process, which should involve “analyses, experimentation, debates and decision-making” and should occur with the wide participation of actors and experts within and outside the region. This is a “time consuming process” that should be seen as an investment rather than a burden (EC2012a, p.36).

As has been outlined, the EC have acknowledged the degree of difficulty for some regions to coordinate a sophisticated entrepreneurial discovery process that would enable entrepreneurs and key players within Quadruple Helix representative groups an effective voice in determining policy priorities in both technologies and new industries. Documentary sources and interview data collected in the implementation phase of the policy support the early prognosis of the EC relating to concerns about the potential of the policy to succeed where regional governance systems are weak and undeveloped. For instance, documentary sources such as the 2014 EC report addressing the impact of the new policy on regions Sixth Report on Economic, Social and Territorial Cohesion (hereafter, ‘the Sixth Cohesion Report’).
contains early observations of governance barriers and observes that, in the context of an early review of strategies submitted to the EC, the design and implementation of Smart Specialisation is very much dependent upon effective governance arrangements both in terms of the presence of “efficient institutions and high-quality, reliable public service and legal certainty (are) a major precondition for economic success” [and that] “…weak administrative and judicial capacity as well as legal uncertainty constitute key impediments in addressing economic development challenges” (EC 2014h, p. 161).

Factors relating to quality of governance include the extent to which regions have a high degree of self-rule (and fiscal autonomy), and the ease of doing business and levels of corruption within a region. Thus, the quality of governance varies substantially across EU Member states and regions (Figure 4.1), and by a wide range of indicators, some Member States and especially the less-developed ones, have low-quality systems of governance, which hinders social and economic development and therefore limits the potential impact of EU Regional policy (EC 2014h).

The Sixth Cohesion Report concludes that a lower standard of governance can thus have an impact on the effective implementation of Regional policy, both directly and indirectly. It can reduce expenditure if programs fail to invest all the available funding, lead to a less coherent or appropriate strategy for a country or a region and (potentially) to the selection of lower quality projects or a lack of applications from higher quality projects. A lower standard of governance may also result in funds having reduced leverage, because the private sector may be less willing to co-finance investment.

A poor-quality governance system is not the same as one that is corrupt or fraudulent, although it may be both. Nor does it necessarily involve illegalities. Shallow decision-making process, badly organised public consultations, a focus on short-term electoral gain over a longer term development strategy, and frequent changes in policies and priorities can be perfectly legal, but they nevertheless tend to undermine the impact of Cohesion policy. EU concern about the quality of governance in regions has direct relevance to the Smart Specialisation policy, which places a lot of emphasis on regional stakeholders formulating the economic plan for the region. In response to increased concern by the EU about improving the quality of governance at the level of regions, considerable funds (€3.7 billion of ESF (European Social Fund) have been dedicated to improving institutional capacity and the efficiency of public institutions and public services at national, regional and local level over the 2007–2013 period (EC 2014h).

A major aim of the EU accession process is to ensure that the rule of law, equality before the law and the principle of non-discrimination are firmly entrenched in the legal framework and
practices of countries before applying for entry, and are monitored after they join. A significant agenda item in this regard is the need to strengthen institutional and administrative capacity so as to foster economic growth and employment outcomes. The quality of governance at a regional level (efficiency of regional and local authorities) is important in relation to economic and social development goals, and a lower quality of governance may reduce the capacity of a region to implement effective regional economic development goals.

A regional index constructed by the University of Gothenburg Quality of Government Institute (European Quality of Government Index) has been helpful in enabling an assessment of the quality of government in Member States and regions that are recipients of EU Regional Structural Funds. The results of a 2010 and 2013 survey utilising the index found that the perceived quality of government was lowest in less-developed regions such as Romania, Bulgaria and Hungary, implying that these regions may be stuck in a low-administrative, low-growth trap. The findings have led to an increased focus on whether low quality of government hinders economic development (EC 2014h).

Academic research also suggests that the policy faces significant implementation challenges, particularly in LDRs. For instance, the inclusive economic institutions required by the policy need to be supported by inclusive political institutions that distribute political power in a pluralist manner and implementation capacity must therefore take into account the quality of sub-national governance arrangements and institutions (Morgan 2017).

Thus both policy and academic sources conclude that the quality of regional and local government is critical when considering the potential impact of the Smart Specialisation policy in European regions (EC 2014; Rodriguez-Pose & Garcilazo 2015). Many empirical studies have also highlighted specific governance challenges associated with implementation of the Smart Specialisation policy in CEE countries, which often have weak administrative capacity – centralised policy making and clientelism (Gorzalek 1996; Morgan 2016). One study found that central governments with control over the contents of a regional plan undermine the capacity for strategic planning tailored to regional specificities (Dabrowski 2012).

The informants in this study corroborated the documentary data and empirical research findings. They observed that the centralised nature of CEE government policy administrations have complicated Multi-Level Government (MLG) negotiations, and the EC is reluctant to interfere with how members structure their states in relation to the establishment of regional entities. ECpolicy3 provided a recent example of Poland’s national cultural program as an example of a tendency towards centralised program development that sits outside the regional programming agenda of the Commission:
All of the Member States in the East, because they don’t have a regionalised set up… they are all centralised states… except for Poland, which is starting to develop a strong regional structure, so you will find in Poland that they will have mostly regionalised operational programs not national sectoral programs… but in Poland you still have a national cultural program that we fund… cultural heritage… but it’s not really integrated in a way… so we are not happy about that, but what can you do… right… this is the principle of subsidiarity and so we, the European Union, cannot force the Member States on how they structure their states and how they administer their states.

Informants pointed out that centralised governmental processes often found in CEE Member States have consolidated weak administrative capacity in the regions. This development has undermined the level of sophistication of the Smart Specialisation plans being submitted.

ECpolicy1:

I would say that across the board… the capacity is weak [in CEE regions] to come up with sophisticated strategies… OK, I mean you look at the Eastern European regions, you could say, the capacity is weak to come up with sophisticated plans because of weak administrative capacity, they haven’t been around for long, they don’t have a strong regional set up.

There was, however, a sense from ECpolicy1 that there was an increasingly strong willingness to engage with the Smart Specialisation concept in CEE regions, and that understanding different regional political contexts was important. For instance, s/he observed that in Eastern German regions there was a strong willingness to engage with the concept, whereas in Western European regions, there was ambivalence towards it. The enthusiasm was thought to be due to a stronger incentive to ‘catch up’ economically with the rest of Europe.

ECpolicy1:

In the Eastern German regions… you have much more of a critical awareness of the usefulness of the concept of Smart Specialisation… maybe because there has been all of this discussion already… you know… on wasting public funds… and they have tried a couple of things already you know, and so we have seen with all of the East German regions… particularly from Saxony, but also the others, a very strong willingness to engage with this concept… well, and in terms of the rest of the East, and so forth, you know, you can see Poland is growing now right?

Despite this, Slovakia and Poland are now being seen as having a strong engagement and commitment to the new policy direction. ECpolicy1 indicated that the “entrepreneurial process of discovery” and the requirement by the Smart Specialisation policy for local stakeholder commitment is now being actively sought at the level of regions. For instance, s/he observed that in Slovakia, governance processes for determination of EU research and innovation investments had been dominated previously by sectional interests (e.g. university departments seeking technology upgrades associated with assistance to the automotive
But now Slovakia has had a big turnaround… we said that they didn’t have a strategy and we need you to elaborate on it… and turn it around and apparently what we find out now, is that they have an excellent strategy… so there you can really see the promise and in many of the Polish regions you can really see the progress too as well… because they are really applying this concept of entrepreneurial discovery by involving stakeholders… and really trying to find out what are the opportunities from a business perspective… for this particular region… so I think that it really depends on where you come from and what your interest is… so in the Polish case, the interest is that as a region you want to be taken seriously… and there was a directive via the national government to the regions… and in the case of Slovakia… it is relatively small and I think there was political change, so is a change now…

Thus, while some CEE regions are now seen to be engaging well with the entrepreneurial discovery process, others are seen as having significant work to do to lift administrative capacity within regions, to properly design and implement the new policy. *ECpolicy1* indicated that in Bulgaria, a lot of work was being done to assist with capacity building around regional governance processes to increase the number of business projects being developed in the region, and decrease the tendency towards submitting regional project proposals for infrastructure upgrades:

Because you also have to see that there is a lot of money chasing few projects… you know they still have, in the Eastern countries, fewer than five projects… this is why so much money goes into gold-plating infrastructure… you don’t see business projects so much, because they don’t engage in the entrepreneurial process of discovery… its people sitting in the ministries running the program. That is why in Bulgaria we have to work with the World Bank to get something going with this process… because the administration doesn’t have the capacity.

*ECpolicy1* further observed that countries with stronger regional entities were easier to negotiate with around policy design:

If you are in a situation like Spain, France and Germany where you have strong regional entities… then of course we would prefer to deal with those regional entities because that is the whole thing about Regional Policy …it is place based and it is not designed at a national level… right… and so we can’t really force… and also these countries are so small, you know, I mean a country like Slovenia… it is smaller than a German region… in terms of population and in terms of size… like a region.

Informants, however, also emphasised that despite the hope that regions would be predominant actors in the development and implementation of Smart Specialisation policies, the new focus on devolved policy development underpinning Regional policy logic had implications for the principle of subsidiarity that has historically favoured regional autonomy and underpinned MLG processes between the EC, member states and regions in negotiations
over policy design and implementation. This principle was associated with the ideas of decentralisation and that social problems should be dealt with at the most local level consistent with their solution. In a practical sense, for the EU this has always meant that the Commission has tried to play a supporting function, performing those tasks that cannot be performed at the local level. The principle of subsidiarity has played an important role in the political rhetoric of the EU concerning the relationship between its governing bodies and Member States. Given the shared management and legal framework where the Member States develop their own Smart Specialisation plans, coupled with ERDF regulations that are non-specific in many places, negotiations have tended to continue to favour Member States and regions. ECPolicy1:

So what is very important in the European context is that the problem is that you have the concept, but then you have to make the concept fit to what is already there, which is the whole legal framework... a sort of shared management framework where you basically have the Member States and it is the Member State prerogative to decide what they spend the money on... and what kind of projects that they spend the money on, within a framework... that’s drawn up by the institutions, that is here within this regulation... then you have what we call a ‘negotiation’ where you have the Member State drawing up a program... where you can say “We don’t like this”... we would like you to not spend so much money here but more... here, and then they say no and... you know, you go back and forth and sometimes you find a compromise, but sometimes if they come with their lawyers there is not much we can do... you know, they will say... “But it says in the regulations that we can do...” and there is not much we can do.

According to EUpolicy1, after a year of negotiations under the Smart Specialisation policy agenda, Member States and regions still hold a lot of political power in the determination of ERDF projects in MLG arrangements through their political representation on the European Council. Thus, policy officers reported finding it difficult to challenge national governments on ensuring that the new policy does not lead to business-as-usual with political projects having precedence over projects that are in line with the objectives of the new policy. ECPolicy3 noted that it was his role to negotiate with regions, and to scrutinise and sign off on Smart Specialisation plans. In doing so, he noted that power still sits with Member States and regions over the content of the plans, due to their capacity to exercise leverage through political representatives at the Council. He observed that the European Parliament and Council was where the real political power was centred, and Commission policy officers trying to implement the policy were powerless to ‘stand up’ to these representative bodies to enforce the new policy direction:

It is hard for the geographic desk in the house here to really stand up... to these national governments or regional governments... it is easier to stand up to a regional government then it is to a national government... because the national government has channels through Council and they can complain directly to the Commission... and they say... people are telling us that we can’t do this... but why?
As ECpolicy3 noted, the new policy logic has overturned an entrenched system of sometimes overtly political determination of policy objectives, and that the policy officers could find themselves with political power overriding the EC policy program, such as in a recent negotiation with Estonia, which changed its policy completely after a political regime change:

So yes, it is possible to add some themes, but not for political reasons. We want it to be evidence based… so you know, if they have a new minister and they want to suddenly fund … and they want to do totally different things. Then they will come back to you and they say, “No, no… we now want to do something totally different…” but the problem is that we want it to be long term and for it to be long term, then you need to have a sound methodology base.

ECpolicy1 also highlighted the extent to which EC policy officers were not politically able to ensure that funds from the ERDF would go to regional entities, as these are distributed to Member States, not regions. Member States distribute the funds to regions, often to programs developed at a national level:

… and then they come back to us and here is how they have to account once a year, for every expenditure that they make with the funds… on the basis of expenditure categories such as R&D… it is money that goes into the Commission and it is money that is being redistributed… according to population you know, et cetera and GDP back to the regions… and member states, and you can see that the limits of our power is that we cannot for instance force Slovakia… to spend the money in programs that are geared towards the need of particular regions, right… so they can say… no, we have national sectoral programs right, and we have one program that is geared towards regional needs specifically… so… .It’s up to them.

A further issue relating to governance is the capacity of the Commission to exert influence over Member States and regions on policy design, given the legal base of the Smart Specialisation policy. EC policy officers rely upon Regulation (EU) 1301/2013 of the European Parliament and of the Council of 17 December 2013 on the ERDF (hereafter referred to as the ‘ERDF Regulations’) to define legal parameters, within which EU Member States and regions negotiate Smart Specialisation strategies (need source). Commission informants suggested that ERDF Regulations needed to be rewritten in places, in order to ensure that the EC has more leverage in negotiations over details of Smart Specialisation plans submitted by Member States and regions. For instance, informants indicated that they thought that many Member States and regions were not following the policy vision in relation to the “identification of priority economic areas.” (European Commission, 2012, p. 51).

The ERDF Regulations are silent on some important areas of procedural detail with ECpolicy2 pointing out that to give policy officers the capacity to negotiate with Member States and regions with the aid of more specific details in the regulations. She pointed to a
recent problem in negotiation: that of being unable to require resources to be concentrated on
a limited number of sectors, because regions have identified broad priorities that cover much
of their industrial base, in order to avoid making choices. A key problem is that the ERDF
Regulations refer to the need for the “concentration of resources on a limited number of
sectors”, but do not define ‘limited’. The lack of specific detail around the entrepreneurial
discovery process is also a problem. Procedurally, no detail is given in the ERDF Regulations
as to how many stakeholders in the business world are included, for instance, so the Member
State or region can have, in theory, a highly consultative process and become obliged to
broaden the number of sectors they concentrate on, rather than limit themselves to a sector
or sectors where a competitive advantage can be identified:

…that means that they should exclude some industries… but what the Germans tend
to do, including a bit in Saxony, is that they have a very hard time excluding anybody… but this is the whole plan… the whole point… is to limit yourself where
you have competitive advantage… so in Saxony… they want to be big players in all
of the Key Enabling Technologies (KET) but maybe they can’t be....and at the end
of the day… when it comes to the regional negotiations… they send us a document
saying that this is our Smart Specialisation strategy….this is the process, this is
people we work with, this is the entrepreneurial process of discovery… of course it
is down to this in the end, can we nail them down? I mean, what we can do? Well,
at the end we can say… your SWOT is too generic… you have selected 10 or 12
areas where you think you have a competitive advantage or areas that you want to
invest in… can you provide us with documents where you show us the evidence
base for this? Like a SWOT or a study? And this is what we did with the Germans
and of course they send you stuff because they have done their homework and…
they send you stuff, but at the end of the day… you still end up with too many
priorities.

The Sixth Cohesion Report also corroborates informant perspectives on the issue of the
challenges of an MLG system that has tended to favour the power of Member States in
negotiations, and has questioned how the new Smart Specialisation policy direction can be
pursued given potential regional governance constraints (EC 2014h). Early indications on
reforms in this area have demonstrated that many Member States and regions have found it
difficult to formulate well-defined specific goals. Many draft programs have continued the
practice of “expressing vague general aims” and “listing a large number of possible actions”
so as to maintain maximum flexibility in the selection of projects at a later stage. Also, the
EC expressed concern about the quality of partnership agreements. In many cases it has been
found that dialogue with regional stakeholders was absent and that the European Code of
Conduct on Partnership had not been applied by Member States.

ECPolicy2 considered Bremen to be an example of where the ERDF Regulations were silent
on what percentage of funds need to be earmarked for research and the need for the research
to be basic research, rather than applied. ECPolicy2:
Take an example like Bremen… and it is now a Bundesland [Federal state] with its own legislative powers… but in fact it is a city and nothing else… it is a city with a little bit of territory… outlet at the sea… and so they get a small budget, but they still insist that they want to have eight priority areas… that are all relevant for them… and where they want to invest in the area, they get… and a lot of the funding is going upstream… so a lot is going into upgrading research infrastructure and of course this is applied research, not fundamental and pure research, because we don’t want to fund that… so what we really need is the downstream investment and if you go to the Regulations… and they have thematic objectives they can pick… and 80 to 50 per cent of the money thematic objectives that are all kind of innovation related… because these are strategic from a European Commission point of view, they are related, they are key drivers of growth… they are related to the Europe 2020… so… 50 to 80 per cent of the money goes to these goals… so it gives it an importance, right? …but it doesn’t really say how much money that they need to spend on research…

The ERDF Regulations also mean that EC policy officers are not able to oversee programs funded under €50 million. According to ECpolicy1, this has meant that only projects that are worth over €50 million are subject to negotiation, “but anything below €50 million is considered below the radar and they can spend it on anything they want to do in line with the Operational Plan”. This s/he said, undermines the growth of SMEs. ECpolicy1 also observed that this key overarching policy objective is undermined by the desire of regions to continue to fund large corporations based in the region. Their capacity to do so under the ERDF Regulatory legal framework has meant that large companies are able to be funded just below the €50 million required for reporting to the Commission, so scrutiny of the investments by EC policy officers is not triggered:

I know that there is… a strong interest from the governments to use the EDRF… to keep these companies there because it is tax income… it is jobs but it is not something that is really rooted into the economy… unless they start having R&D labs or they develop local suppliers, but if that doesn’t happen, then it makes one person rich and gives a couple of jobs to some, a couple, of people… and that’s it and that’s all that stays.

ECpolicy1 gave an example of negotiations with Poland on funds going to large firms, to illustrate this point. Poland wanted to give IBM a large amount of money to set up operations and pay staff salaries. The EC policy officer indicated in negotiations that this investment was contrary to the ERDF Regulations and the intent of the RIS3 policy, but against his ‘guidance and advice’ to the region, funds were eventually expended on this, as it was ultimately presented in the sectoral Operational Plan as a digital investment submitted under the threshold €50 million and hence allowable:

… we argued… no, no, we don’t cover operational costs… of an enterprise… and they argued… no, this is an investment, because we work in the area of digital and digital is all about investment in human resources… so the Member State wants to support this, but we don’t want to support this… and then they will maintain that it
is a major project … but usually they know… so they keep it below the threshold so we can’t do anything.

In addition to this, ECpolicy1 felt that ERDF Regulations needed to be more specific about what sort of SME should be created, given the strong focus on developing SMEs. Although the ERDF Regulations (Article 14) specify that SMEs “can include social economy enterprises (which) should be understood…as covering micro, small and medium enterprises”, there is no specific legal base for the type of SME to be funded. This specificity would ensure that funds were not being expended on, for instance, small operators in tourism rather than the promotion of entrepreneurship. It was explained by ECpolicy1 that grants allocated to SMEs are required to be linked to a rationale, but the rationale is very generic. It is difficult for EC policy officers to reject a range of proposals that may not actually conform with the intention of policy design principles.

… looking at SME competitiveness for instance… promoting entrepreneurship and developing new business models and supporting advanced capacities for product and service development, whatever that means… could be anything and supporting the capacity of SMEs so if you want to fund a tourism SME so as to have more customers and so you can have higher quality and more services….then you would point to Article 3D and say, “I want to fund it under that”… and yes, we would support it.

ECpolicy1 and ECpolicy2 both identified a weakness of the ERDF Regulations relating to the intervention logic of the monitoring system. While the EC Evaluation Unit is involved in negotiations around the indicators and the monitoring system established by Smart Specialisation strategies, there was concern that this area of the policy was still a “work in progress”. The early detail of indicators and monitoring systems viewed by the EC policy officers had led to the observation that this was an area needing more clarity to be properly evaluated according to outcomes. EUpolicy1:

Under Smart Specialisation, Member States select their own result indicators… and we just make sure that these indicators are capable of measuring the change that they want to do and this is where our Evaluation Unit comes in, that they look at all the programs… in the negotiation phase and they look at all the indicators and in this negotiation phase we have a big discussion about indicators… but then again, at the end of the day, you can only encourage member states to choose better indicators… you cannot force them.

ECpolicy2 also indicated that Member States and regions struggled with the development of result indicators for the various policy interventions in their RIS3 plans and how these might be measured. She pointed out that cluster initiatives and bringing products to market and measuring economic success, for instance, would be difficult given the complexity of processes involved, and the indicators needed to be developed to assist in measuring these
kinds of interventions:

I think that the monitoring situation is certainly something that we need to look at… for instance, I just received a question [from a region] how we monitor, for instance, in relation to cluster development changes… and should this be or how would this be measured in a qualitative [or] quantitative way,…

However, ECpolicy1 pointed out that the ERDF Regulations do give the Commission some power to leverage outcomes with Member States in the use of an audit:

I have just had in the case of Latvia this exact situation… you discuss our interpretation what they can and what they cannot do… based on the regulation for the ERDF and the common regulation for all of the funds… which is complicated and basically from a legal standpoint allows you to do anything… pretty much anything and any lawyer will tell you everything is eligible, right? And our power extends to the adoption of the program and then we still have a word in the selection criteria and that’s it and then they go spend the money… and then we have annual reporting and we can look into things on the basis of that annual report and then well you know, the stick is always that there will be an audit… so the audit… so the auditor will come and they will look into the projects selected… why have they been selected and is this consistent with the program objectives? Is this consistent with your selection criteria? And does it make sense from a cost benefit analysis perspective… so you have this… you have the auditor looking into these things.

The Sixth Report also detailed concern at the Commission level over the effectiveness of Smart Specialisation being potentially undermined by the possibility of weak governance arrangements at the level of place. The report notes that in relation to the implementation of the new Smart Specialisation policy, there is a risk of ‘business as usual’ thinking. Therefore the EC has introduced a range of safeguard measures to attempt to reinforce the policies intent and ensure the active involvement of local actors. Thus, in relation to governance arrangements established to oversee implementation of the policy, integrated mechanisms for monitoring and evaluating the strategies are strongly recommended.

In addition, peer review processes are built into the implementation framework. To make the policy effective and results orientated, the Commission has argued that it is the role of public servants to ensure that the plans are detailed and specific on objectives. The EC indicates the importance of strong negotiations around evaluation methods such as results indicators to be integral to the success of the new policy direction. In this sense, the ongoing negotiations (are crucial) to develop robust strategies, identify a small number of key investment priorities, set ambitious targets, and ensure that micro and macro conditions maximise the impact of the investment co-financed under Cohesion policy (EC 2014h, p. 27). As has been discussed in this chapter, the perspectives of Commission informants, however, suggest that negotiations would be greatly aided by strengthened ERDF Regulations to assist them in meeting the policy objectives.
Innovation performance across Europe

Along with the governance challenges facing implementation of the Smart Specialisation policy, are great regional disparities in the quality of innovation systems found across Europe. Chapter 2 provided a review of recent empirical research studies that have argued that the policy will face further challenges in the implementation phase in LDRs that commonly have undeveloped RIS in place, characterised by “organisational thinness, lock-in to declining sectors and outdated technologies, fragmented systems that inhibit networking and knowledge exchange, and a weak capacity to drive transformative change” (Coenen et al. 2015; Healy 2016; Tripl et al 2016; Marques & Morgan 2018). In addition, Capello and Kroll (2016) have argued that LDRs “lack … local preconditions for innovation and that therefore the policy emphasis upon moving towards a ‘practice-based innovation’ (or DUI-learning by Doing, Using and Interacting- mode), will face difficulties in these regions as they typically have few or no research institutions and high-tech clusters” (Capello & Kroll 2016, p.1395). McCann and Ortega-Argiles have also pointed out that “one of the greatest challenges facing the application of modern regional innovation policies across EU regions concerns regions with very limited innovation-related assets”. Some regions, for example, contain no research institutes; “whole other regions, particularly in Eastern Europe, as yet exhibit only a very limited capacity for developing an innovation system, constrained by institutional and governance issues as well as by technological issues” (McCann & Ortega-Argiles 2016, p.1410).

The Sixth Cohesion Report confirms a picture of low innovation assets in LDRs based in CEE countries, finding that Sweden, Germany, Denmark and Finland are the most innovative economies in Europe (Figure 4.2). The European Union found that countries in the top two innovation groups perform positively across the board and have relatively high R&D expenditure, although many of them are still far from the Europe 2020 target. Private R&D investment is consistently larger than the share of public investment, particularly in the first group of innovation leaders. Scientific and technological excellence is transformed into knowledge-intensive jobs and exports, a benefit of the close relationship between academia and industry (EC 2014h).
Figure 4.1: Changes in performance and relative innovation intensity in Member States (European Commission 2014h)

Compared to the top performers, countries such as Italy, the Czech Republic and Hungary are a step behind as they are “dragged down by low private investments” (EC 2014h). However, within the group of moderate innovators, these countries are developing rapidly and are catching up with the consistent innovators. It has therefore been determined by the EU that “further efforts to improve innovation would particularly benefit Romania, Bulgaria and Latvia”, which are in the group of modest innovators (EC 2014h).

The Sixth Cohesion report finds that, in general, regional performance tends to be in line with national performance. Most of the regional innovation leaders and innovation followers are located in countries identified as such in the Innovation Union Scorecard (IUS) and similarly for the regional moderate and modest innovators. Innovation leader regions are located in just eight EU Member States: Denmark, Finland, France, Germany, Ireland, the Netherlands, Sweden and the UK. Excellence in innovation is concentrated in relatively few parts of Europe. Regions in Bulgaria, Croatia, Greece, Poland and Romania are assessed as having the worst performance (EC 2014). The report notes that there are some variations in regional performance within countries. Fourteen countries have regions in two performance groups and four – France, Portugal, Slovakia and Spain – have regions in three performance groups.

The report notes that most of the highly innovative regions (innovation leaders and high-performing innovation followers) have high scores on most indicators (e.g. human resources, R&D expenditure, entrepreneurship, and product and process innovations). Regional performance depends to a significant extent on a well-developed system of public financial
support for innovation, with many companies receiving some form of support. This suggests that public funding can compensate for a lack of private funding in stimulating innovation activity. Overall, the report finds that there is a wide diversity of regions in the EU in terms of innovation performance. This reinforces the notion that innovation has a strong regional dimension. Given this wide variation, programs for supporting innovation, including Cohesion Policy programs, need to take explicit account of the local and regional context when devising the kind of support to provide (EC 2014h).

The Guide points out that regional asset analysis is crucial for providing an evidence base for the prioritisation process in formulating Smart Specialisation policies. It suggests that nations and regions, in undertaking analysis of the regional assets they have within their bounds, should undertake a thorough analysis of the specific regional context that involves “assessing the existing assets, evaluating major regional strengths and weaknesses, identifying bottlenecks of the innovation system and also key challenges both for the economy and society”. Apart from supply-side considerations being addressed by the policy in determining sector priorities, the Guide also indicates the need for an analysis to be undertaken of ‘demand-side’ considerations. These include human capital assets, investment needs, and social, cultural and legal issues. Thus, local actor involvement through regional governance processes (and the entrepreneurial process of discovery) is important, as is the capacity for nations or regions to undertake an analysis of local context (local assets and capabilities) in shaping their policies:

Nations and regions should not only be making an assessment of regional assets looking ‘inside’ the region, but also make their strategic decisions taking into account its position relative to the regions of Europe beyond their own regional administrative boundaries. A region should be able to identify its competitive advantage through systemic comparisons with other regions, mapping the national and international context in search of examples to learn from, or make a difference with, and performing effective benchmarking. Moreover, a region should be able to identify relevant linkages and flows of goods, services and knowledge, revealing possible patterns of integration with partner regions. The position of regional businesses within international value chains in this respect is a crucial element to be considered (EC 2012a).

The concept of Smart Specialisation warns against ‘blind’ duplication of investments in other European regions. Such duplication of efforts potentially leads to excessive fragmentation, loss of synergy potential and ultimately could hamper the reach of the critical mass required for success. On the contrary, interregional collaboration should be pursued whenever similarities or complementarities with other regions are detected. The Guide, however, does acknowledge that this ‘regional infrastructure’ gap analysis process and external global industry niche positioning for Smart Specialisation would be difficult without a robust methodological approach. Therefore, the Guide also proposes that nations and regions use an
array of evidence to provide a suitable basis for the identification process. The European Commission recommends that nations or regions identify a niche and undertake an analysis of matching scientific and technological specialisations. Given the imperative under the Smart Specialisation policy to lift the innovation performance of regions through a place-based economic planning approach with an emphasis upon regional asset mapping and GVC analysis, the next section will detail the implications for this aspect of the policy in the context of the role of EU industrial policy developments and interaction with MNC GVC production decisions. This will contribute to a greater understanding as to how the Smart Specialisation policy can intersect with other policy instruments to lift the innovation performance of poor regions in Europe.

**Smart Specialisation, industrial policy and interaction with MNC GVC production decisions**

As was outlined in Chapter 1, at the beginning of the 1990s, both EU Industrial and Regional policy in the EC shifted from a ‘vertical’ approach to a ‘horizontal’ approach aimed at facilitating industrial clusters and innovation networks. Instead of direct financial transfers to enterprises, the emphasis switched to R&D, innovation and clusters of small firms. The new approach was defined in Article 130 of the Maastricht Treaty, the Lisbon Strategy, and then further developed in a number of EC Communications: *Industrial Policy in an Enlarged Europe* (2002); *Some Key Issues in Europe’s Competitiveness-Toward an Integrated Approach* (2003); and *Fostering Structural Change: an Industrial Policy for an Enlarged Europe* (2004) (European Commission 2002; 2003; 2004) A key focus of the new European industrial policy was to create an environment favourable to industrial development, and to overcome the negative effects of ‘deindustrialisation’ (Vladimirov, 2017).

The global financial crisis highlighted to policy makers the importance of the manufacturing sector to the real economy. It was seen that, despite the crisis, the EU manufacturing sector was still contributing disproportionately to exports (80%), productivity growth (60%) and innovation, accounting for 77 per cent of business investment in R&D. In this context, further EC Communications were developed, such as an *Integrated Industrial Policy for the Globalisation Era putting Competitiveness and Sustainability at Centre Stage* (2010); *A Stronger European Industry for Growth and Economic Recovery* (European Commission 2012); *Re-industrialising Europe to Promote Competitiveness and Sustainability* (2014) and *For an Industrial Renaissance* (2014). In response to the importance placed by the EU on vehicle production, the EC has also developed an industrial agenda for the industry. The CARS 2020 Action Plan for a Competitive and Sustainable Automotive Industry was adopted by the EC in November 2012 (EC 2014b).
The industrial policy reports emphasised the degree to which a strong industrial base would form the basis for growth and competitiveness, in order to support the goals of the Europe 2020 agenda, and confirmed a commitment to re-industrialisation as part of efforts to increase industry contribution to GDP to 20 per cent by 2020 (European Commission 2014a). An EU-wide weak industrial base with poor productivity performance in manufacturing was identified, one that continued to deteriorate in comparison to competitors. Further problems were highlighted, including weak internal demand which undermined European companies’ home markets and kept intra-EU trade subdued after the crisis. In addition to this, investment in R&D was too low, holding back the necessary modernisation of the industrial base and thus hampering future EU competitiveness. These industrial policy instruments asserted that “Europe needs to reverse the declining role of industry in Europe for the 21st century (as) this is the only way to deliver sustainable growth, create high-value jobs and solve the societal challenges we face” (European Commission 2012 in Vladimirov, 2017, p.191).

The overall EU industrial strategy proposes the development of ecologies of innovation within regions to help increase productivity and resource-efficiency, and to enable high value-added products to compete in global markets. The industrial strategy was guided by an understanding that, even following the crisis, Europe’s comparative advantage in the world economy continued to lie in high value-added goods and services, the effective management of value chains, and access to markets throughout the world; and that innovation and technological advancement remained the main source of competitiveness for EU industry (EC 2014i; EC 2014j). The main pillars of the new industrial policy included a commitment to an integrated and unified European market; industry modernisation; SMEs and entrepreneurship, and internationalisation (Vladimirov 2017, p.191).

The evolution of industrial policy towards a horizontal approach to economic planning was therefore aligned with EC Communications relating to Regional policy, with Strengthening Innovation in Europe’s Regions: Strategies for Resilient, Inclusive and Sustainable Growth (2017) reaffirming the commitment to Smart Specialisation innovation policies as a central focus of Cohesion policy (EC 2014):

The overall framework at European and national levels must be made more conducive to innovation. Smart Specialisation should be promoted at all levels, as this will facilitate contacts between firms and clusters and improve access to innovative technologies. The Commission has initiated policies to promote the participation of industry in Smart Specialisation strategies by facilitating collaboration between industry and regions (for instance by establishing a platform for information exchange).
Under Smart Specialisation, GVCs are seen as the key to technology upgrading; a key challenge in the implementation phase is how to link clusters internationally/inter-regionally both upstream and downstream. This calls for a new principle that place-based activities need to do more to embrace GVCs as levers of place-based growth. In this way, the diversity of EU regional ecosystems is able to drive an economic agenda for upgrading SMEs within a region such as in the case of the German-Central European manufacturing cluster. New initiatives, such as Vanguard, have been designed to establish inter-regional innovation value chains, with a view to aligning regional specialisations and capabilities to expedite technology deployment (Gereffi as cited in Foray et al 2018, p.2). Informants argued that a strength of the Smart Specialisation policy was in assisting regions to invest more in the new policy direction under the EU re-industrialisation strategy based on advanced manufacturing:

We are keen with that re-industrialisation strategy and with EU Regional policy and KETs, which is all about using advanced manufacturing to, if you like, re-shore some of the activities and if you can and bring down labour costs and become more competitive, but… it does come down to… do you want to support dying industries? If a region comes to us with a textile sector that is basically dead, but they say to us, “Well, we still see some companies there and we still see a future there” and then of course we have to ask them twice… “Well, is there really a future there?” We then ask, “What is the niche that allows them to see these opportunities?”… because we don’t want this money to go and prop up dying industries… that doesn’t make sense.

ECpolicy1 said that he believed the strength of the new economic agenda under Smart Specialisation was the linkage between big flagship initiatives that the Commission is investing in and the opportunities presented in cross-border cooperation. Alongside this, the EU is also trying with its Smart Specialisation policy to encourage regions to think about how they can encourage a move towards advanced manufacturing through greater use of KETs such as 3D printing:

We want regions when they look at manufacturing to think about the tons of opportunities that are probably not used… for instance we have a long-running initiative here at the EU… we have a pilot on energy applications in harsh environments… and this shows you very much how they look at value chains… and supply chains and sub systems within supply chains which… will open up a lot of opportunities for regions, which we could say are not connected to these value chains but… instead off-shore energy, but they have capacity in engineering and materials science to connect to these value chains… through cross-border cooperation… so this is about a long-run initiative… where we are also looking at 3D printing and we are saying to regions, that we want you to look beyond and go a step further than even the Smart Specialisation strategy and really look at the manufacturing challenges… and in advanced manufacturing and really have a look at the possibilities that these two things have together because only together will you have these opportunities.

However, as detailed in Chapter 2, Cooke has argued that a potential barrier for poor regions is that they face “industrial and political lock in”, given the potential for centralised
governance processes combining with global MNC production decisions that may have led to a low technology trajectory (Cooke, 2016). Morgan argues the combination of political and institutional weaknesses found within LDRs generates a “regional innovation paradox.” (Morgan 2015) This situation could well render these regions unable to join the EU ‘re-industrialisation’ agenda in relation to advanced manufacturing initiatives, such as the Vanguard initiative, a program directed at largely developed regions in Europe, thus jeopardising the wider impact of the Smart Specialisation policy in, for instance, poorer industrial regions located in CEE Member States.

ECpolicy2 said he believed a further potential barrier to the effective implementation of the policy may be a conflict with State Aid Regulations. Articles 107 to 109 of the Treaty on the Functioning of the European Union set out the application and control of state aid policy in the Member States. State Aid is defined as “an advantage in any form whatsoever conferred on a selective basis to undertakings by national public authorities” Although Article 107 (1) generally prohibits any kind of aid which distorts or threatens to distort competition. ECpolicy1 believed that State Aid Regulations are in conflict with the aims and objectives of the overarching Smart Specialisation policy agenda. He explained that the State Aid Regulations prohibit public investments to be directed to private beneficiaries. It is sometimes difficult to have EC oversight to ensure that the commercial outcomes envisaged by the new policy direction can be realised. Directorate-General for Competition oversees a research and innovation policy framework and a strict state aid regime that heavily proscribes investments made to companies to ensure that an unfair advantage is not given to one member state over another in competitive terms. ECpolicy1 indicated that it was the view of the Directorate-General for Regional and Urban Policy that competition laws should be made more flexible to enable the possibility for ‘downstream’ investment closer to the market. This would help firms with innovative new product development and commercialisation. He explained that the current state aid policy means that 70 per cent of investments are directed at public beneficiaries, such as clusters, rather than private firms:

… we want more money in this, but at the end of the day we end up with 70 per cent of the investments… under Tier Ones going to public beneficiaries… basically public infrastructure… and 30 only going to private… we would like it to be the other way around but that is the reality.

Further elaborating on this issue, ECpolicy2 highlighted the issue of global competitors in the nanotechnology field who are not confined by restrictions on state aid funding, and who are able to survive economic downturns in industry better than their European-owned competitors:
Silicon Saxony is a cluster that specialises in nanotechnology and it’s a cluster of research and business companies in the nanotechnology field so there are big companies and university departments who specialise in this field. But you’ve had problems, because of the competition from Asia… there is several nano-electronic micro-technology plants located in a cluster… but there were some problems in the past, because of the downturn of this industry… with this as well… a lot is this is linked to the State Aid questions… because they a lot of times sent people from Silicon Saxony and the big companies connected to this to the Commission to lobby. But to them, what was much more important was the State Aid competition question, then the ERDF… because they all said, “If were in Asia, we would not have this problem with the State Aid rules limiting support …”. But that is the most decisive thing in deciding about whether to relocate to another continent… and I think this factor limits the influence of our policy.

In relation to the role of the MNC in the Smart Specialisation policy, EC informants said that they saw their role as trying to encourage the emergence of SMEs. EUpolicy2 indicated that the Smart Specialisation policy was trying to change emphasis from large companies to the development of SMEs. In the new policy period, the ERDF Regulations are explicit about not being able to give business support to large enterprises, and will only do so now if the enterprise is in collaboration with SMEs:

…we always say, don’t focus on the big companies… focus on the SMEs… these are the ones that employ over 90 per cent of the people… and are the backbone of the Saxon economy… but then they always tell us, if we don’t support the big ones… you know, the small ones, are all connected to the big ones… if the big ones are there then the small ones settle around and they deliver certain elements of what the big ones need for their construction or whatever.

For instance, it was pointed out by ECpolicy3 how the entrepreneurial process of discovery had generated the involvement of SMEs over the previously influential MNCs in Saxony, including Volkswagen. One of the critiques of the ERDF and the German application of the structural funds is that in Germany the list of beneficiaries of the ERDF is very long. The EC had noted that the list of recipients was nearly 50,000. Volkswagen in Saxony received ERDF structural funds for research and development projects to a total amount of €654,000. In the latest policy round, Volkswagen received funds for research and development and a couple of “very small projects”:

The lead agency [for the development of the Smart Specialisation policy in Saxony] is the Saxony Ministry for Economy and Labour and they involved everyone at the industry level and the science world… it was in 2013 and there was a lot of stakeholders there, and they had a set of measures, about 100 or so… and we were all supposed to vote to give each measure a priority… and they had a list of consultants… that took part in the strategy building process. No Volkswagen though. The thing is that they mainly manufacture in Dresden… and the research they do in the headquarters in Wolfsburg… and because of the 2014–20 you are not allowed to give direct support to big companies for business development… it’s limited to
SMEs... so in relation to the competitiveness of the economy and that theme, they can only support SMEs...

Conclusion

This chapter has discussed the arrival of the Smart Specialisation policy in the context of the evolution of innovation strategies based on 15 years of the Commission refining programs mainly targeted at advanced regions across Europe. However, a key difference with Smart Specialisation is that the Commission has made strategies a pre-condition for ERDF funding, with EU Member States and regions being obliged to have Smart Specialisation strategies in place before their operational programs supporting investments are approved. Therefore, for the first time, EU innovation policy applies to all regions regardless of level of economic development. This development has significant implications for the successful implementation of the policy in LDRs.

A key question generated by the new policy agenda is that of the potential of the policy to be implemented effectively in LDRs given identified barriers found in many regions located in CEE, such as the ‘regional innovation paradox’ generated by the combination of centralised governance arrangements and weak regional innovation systems. It also a key question as to whether LDRs can overcome these barriers when industrial policy instruments promoting advanced manufacturing are mainly directed at advanced regions, thus having the potential to consolidate LDRs (given GVC MNC production decisions) into ‘industrial and political lock in’ on a low innovation trajectory.
Chapter 5

Western Transdanubia

Introduction

Western Transdanubia is a region located in Hungary. Its history of automotive industry-focused industrial development has greatly influenced its economic and social development. The dependency of the region on a single industrial giant – the foreign-owned Volkswagen subsidiary Audi – presents risks, as the performance of the region depends on the performance of the company. This risk became clear during the 2007–08 global financial crisis when world car sales faltered and unemployment within the region rose to 11.8 per cent (in 2008–09).

The EU Smart Specialisation policy (2014–20) has the potential to either consolidate the existing economic model or assist regions to embark on visionary strategy and ‘place-based’ economic diversification founded in the knowledge economy. This Western Transdanubia case study explores, the regional political context of the governance processes of policy design, the economic context in which key players are embedded, and the extent to which the region has significant ‘knowledge assets’ to support building a model of economic growth based upon a regional innovation system.

This chapter presents and interprets documentary and interview data. Documentary data relating to the Smart Specialisation policy was sourced from the European Commission, Hungarian Government and the Western Transdanubia region. Interview data was gathered relating to the Smart Specialisation policy, from informants identified as key policy actors within the Western Transdanubia regional innovation system ‘Quadruple Helix representative’ groups (government, business and university sectors) coded as follows: automotive industry specialist (Autind); innovation policy specialist (Innopol); regional development academic (Regdevac) and automotive business executive (Autex). All informants were asked for their perceptions of the ‘strengths and challenges’ of regional Smart Specialisation policy instruments.
Quality of Regional Governance

In Hungary, the political context in which the Smart Specialisation policy operates, is an important consideration in determining the capacity of the policy to be developed and implemented. The quality of regional governance arrangements is an important factor in determining the capacity for a truly devolved process to be operationalised. The policy places demands on public institutions, such as the regional state, with the expectation that they oversee a collaborative economic search process (‘the entrepreneurial discovery process’) and craft inclusive governance arrangements to enhance the diversity of ‘voice’ in policy processes (European Commission, 2012a; Foray cited in Morgan 2016).

According to official documentary sources, the consultation process for regional policy stakeholder input into the policy design process was managed centrally. This reflects the centralisation of political power in Hungary. In the elections held in April 2010, Hungary’s centre-right Fidesz political party secured a two-thirds majority in the parliament making it possible for the government to change so-called fundamental laws, including making crucial economic changes, without having to consult the opposition. Hungary became a unitary state and national regime change saw an increasingly centralised approach to government policy development processes with regard to major policy domains, including innovation policy. In this system, local governments are not financially powerful enough to finance innovation activities; they can only “influence these activities indirectly by operating local industrial parks (or cooperating with them) and by offering various advantages (like tax exemptions, favourable infrastructural conditions) to investments with a higher knowledge content” (Dory & Havas 2014).

Political carriage was increasingly managed by the national government, and regional governance within the national policy framework became weaker after the dissolution of the Regional Development Councils (RDCs) came into effect in January 2012. The role of regional institutions, such as previously established intermediaries like Regional Innovation Agencies, also became uncertain. After the dissolution of RDCs, their role was performed by county-level authorities (Dory & Havas 2014). A new set of national institutions was created to oversee economic development at the local level and the previously democratically elected county government system was dismantled (PNNDRIN 2013).

A newly constituted national authority – the National Development Cabinet – was set up and chaired by the Prime Minister; this in turn established a National, Research, Innovation and Science Policy Council or NKITT (Dory & Havas 2014). NKITT was charged with
coordinating the national innovation strategy and its power extended to the policy design governance connected with the development of the Western Transdanubia Smart Specialisation strategy (WT Strategy); the NKITT was given ultimate oversight of regional input. Subsequently, the Hungarian strategy was developed centrally with “input and design work” from the Western Hungarian Regional Development Agency. The regional plan was managed by a process initiated by the national Regional Innovation Strategy Council under their “guidance and supervision” (PNNDRIN 2013, p. 20). The National Office for Research and Technology Innovation developed the WT Strategy centrally, with a process reportedly involving extensive consultation with regional actors who were given “ample opportunity for feedback on the plan, based on principles of planning and public debate” (PNNDRIN 2013, p. 20).

**Figure 5.1: Policy governance sub-system of the Hungarian national innovation system**
(Dory & Havas 2014)

Despite this centralisation of power, documentary sources describe the extensive involvement of regional stakeholders in Smart Specialisation policy processes. For instance, the ERAWATCH Country Reports 2012: Hungary (hereafter the ‘ERAWATCH Report’) outlines how the regional Smart Specialisation strategies in Hungary started in early 2013. The regional strategies were coordinated centrally, with the Hungarian Ministry for National Economy overseeing the production of strategies and carrying out social consultation
processes. The regional plans were competed in April 2013 (Dory & Havas 2014, p. 19). According to the *Western Transdanubia Smart Specialisation Policy* (2013) (hereafter the ‘WT Strategy’) careful procedural adherence was given to the European Commission 2012 document *Guide to Research and Innovation Strategies for Smart Specialisations (RIS 3)* (hereafter the ‘EU Guide’) in designing the regional plan, with the input of stakeholders drawn from all of the Quadruple Helix representative groups (Pannon Novum Nyugat- dunantuli Regionalis Innovacios Nonprofit Kft, 2013; hereafter PNNDRIN 2013). The regionally place-based entrepreneurial process of discovery consisted of consultation processes, such as two county workshops, and reviews of proposals by representatives from regional businesses, RDI (research, development and innovation) actors, and economic development and public administration professionals (80 to 90 people). A further 100 people, such as specialists and innovation actors, indirectly worked on the strategy (PNNDRIN 2013). Table 5.1 details the strengths, weaknesses, opportunities and threats (SWOT) analysis undertaken within the WT Strategy and Table 5.2 the areas of priority and main actions also contained within the WT Strategy.

**TABLE 5.1. SWOT analysis of the situation in the Western Transdanubia region (PNNDRIN 2013).**

<table>
<thead>
<tr>
<th>STRENGTHS</th>
<th>WEAKNESSES</th>
<th>OPPORTUNITIES</th>
<th>DANGERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>The economic performance of the West Pannon Region commonly used to measure the value of long-term indicators and their dynamics higher than the national average, the first between countries in the region thanks foreign traditionally present capital an attractive corporate structure</td>
<td>The distribution of economic potential in the region regionally uneven. The region’s level of development It is predominantly industrial maturity, other far it appears sectors such markedly</td>
<td>The region borders with four countries, this geographical situation could be used to foster competitiveness and support economic regeneration</td>
<td>The larger companies attracted by the relatively positive and cheap wage and salary work therefore economic development model based on mass production which could see long term opportunities for the region gradually exhausted</td>
</tr>
<tr>
<td>The Region of</td>
<td>A poor region of</td>
<td>Corporate strategies</td>
<td>The wages for</td>
</tr>
<tr>
<td>Strong German industrial type of corporate culture, production and export. The region’s leading sectors are mechatronics for the automotive industry, the timber industry, environmental industry and thermal tourism</td>
<td>The region has small villages and there are areas within the regions development that contain peripheral conditions</td>
<td>The presence of multinational companies enable a continuation of the strengthening of the global integration of the local economy with advanced technologies and establishing modern management and leadership methods</td>
<td>As a result of the unfavorable situation on the world market innovative companies operating in the region have a situation that is deteriorating and the launch of new companies for this reason has been delayed</td>
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<td>---</td>
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<td>---</td>
<td>---</td>
</tr>
<tr>
<td>The foreign (mainly German, Austrian, American, Japanese) investors are dominant regional presence.</td>
<td>Large companies predominate as major employers</td>
<td>The high-growth innovative capacity SMEs targeted promotion of products and service improvement</td>
<td>Funding problems, the subsidy policy dependence on the unpredictability of budget</td>
</tr>
<tr>
<td>The region started several industries and dynamically clusters which is an evolving process</td>
<td>Industrial park services need improvement</td>
<td>The possibility of becoming a dominant region, with strong industrial parks into technological park, innovation centers and competence centers of development excellences and key related industries service focus.</td>
<td>The knowledge producing institutions cannot broker knowledge for companies operating in insufficient quality and quantity</td>
</tr>
<tr>
<td>In recent years, the pre-existing innovation</td>
<td>The region’s innovation and R &amp; D activities have</td>
<td></td>
<td>The economic crisis has caused a deteriorating</td>
</tr>
<tr>
<td>Paradox is reduced, increasing the region, the number of research centers, the R &amp; D area. The number of employees in research and number of topics</td>
<td>Low economic weight</td>
<td>Investment and employment situation in the region, so research staff is low and has been downsized, which has caused innovation spending resources to fall</td>
<td></td>
</tr>
<tr>
<td>Academic background covers a region geographically, extensive international connections</td>
<td>In the region, the scientific research sector and the relationship between economic gaps in the region the activities of operators found less innovation and R &amp; D-oriented</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The regional innovation management organization developed and co-operation system, easily accessible to businesses provide value-added services</td>
<td>Low funding for innovative supply-side research and social innovation low due to low demand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The innovative business development goals manifold needs of the mentoring major</td>
<td>Low levels of venture capital and business angels intensity of activity within the region</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 5.2. Smart Specialisation policy thematic priority areas and industries and actions (PNNDRIN 2013).

<table>
<thead>
<tr>
<th>Key sector/industry</th>
<th>Strategy</th>
<th>Actions to strengthen the Western Transdanubia RIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>The automotive industry will continue to develop and specialise in a wide range of domestic suppliers, system engineering, mechanical engineering and plastics industrial areas</td>
<td>Provide up-to-date electrical and mechatronics training in region</td>
<td>Renew related R&amp;D infrastructure, knowledge production and use, and strengthen their relationship, as well as networking with SMEs</td>
</tr>
<tr>
<td></td>
<td>Encourage growth of domestic suppliers</td>
<td>Strengthen the social aspects of innovation and knowledge to raise awareness of sustainable growth and ensure integration of cross-cutting tools to support growth in agriculture, forestry and animal husbandry</td>
</tr>
<tr>
<td>Forestry industry</td>
<td>Build renewable energy sources through wood industry-related activities</td>
<td>Pursue new innovations in biotechnology and biodiversity to ensure long-term economic security for the region’s rural population and increasing quality of life improvement, sustainable conditions for development</td>
</tr>
<tr>
<td>Health and thermal tourism</td>
<td>Build a health tourism industry based on existing internally important spas in region</td>
<td>Promote products derived from the region’s agricultural sector and on-site consumption and increase the competitiveness of services</td>
</tr>
<tr>
<td></td>
<td>Connect to an overall approach that also develops an organic food and health services</td>
<td>Improve the region’s R&amp;D efficiency, differentiated development of resources in terms of background, which includes the traditional, emerging and ancillary industries and improve the infrastructure of social activities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Improve technology and knowledge transfer, knowledge production and use of support services development environment, development tools and innovative service solutions for a wide-scale application including launching</td>
</tr>
</tbody>
</table>
innovative regulatory and funding initiatives
Establish a regional network of cooperation to further develop and expand cooperation development of intra-regional, inter-regional, cross-border and transnational context, innovative business products and services to facilitate market access
Restore and consolidate economic cooperation networks and clusters, to better broker take-up of national and international research

However, informants in the present study argued that the dismantling of regional political institutions led to the disenfranchisement of local voice in policy design processes, rendering involvement in these processes as symbolic and with local actors unable to leverage real power in determining economic priorities for regions. This has important implications when considering the extent to which the sector priorities determined by the WT Strategy actually reflect the regional preference for diversification, or instead reflect a centralised political preference for supporting specialisation focused on the existing dominant automotive sector.

Informants pointed out that national political developments and the election of the Fidesz government in 2010 had an impact upon regional governance processes and the way in which the WT Strategy was formulated between 2009 and 2012. The changed political context was seen by both Innopol and Autind as a major factor in how regional governance processes operated in comparison with the policy design of the regional strategy. According to Innopol, the centralisation of power in Hungary led to a perception at a local level that any form of regional policy development – including the formulation of the WT Strategy – had actually been developed centrally on behalf of key regional decision makers. Autind and Innopol emphasised the extent to which these political developments had affected regional planning and a growing feeling among regional policy stakeholders that they were not genuinely part of centrally managed regional economic planning processes. Innopol observed that stakeholders in the region supposed that “regional development just happens around you” and that centralised political processes had reduced the capacity for local “seeding points for new ideas to emerge”, and undermined the development of a “politically active citizenship” engaged with regional development.
Consequently, despite local and regional focus and consultation processes employed by the national government in developing the WT Strategy, Innopol saw it as a process that would not deliver “large-scale innovation projects” to the region. Innopol emphasised the extent to which the policy focus on regions adopting key enabling technologies (KETs) to encourage innovation advances across horizontal cross-sectoral lines, was perceived very positively by regional policy stakeholders. They saw this as a significant opportunity to reach the scale required for new businesses to emerge as a result of investment in new manufacturing software technologies, such as 3D printing.

According to Innopol, a tradition of low investment in KETs in the region had been a major contributing factor to its low innovation rate. The low-capacity 3D printing service in the Győr innovation facilities was aimed at small enterprises located within metallurgy, IT services, and conventional manufacturing, such as “laser cutting or whatever… is focused on solving repeat problems of local SMEs, especially those problems in which they are not very specialised”. The services offered were described as modest and mainly focused on assisting a lot of companies that required supply measurement equipment and components for large supply lines. Despite the ambition to build the small 3D printing service into a “large picture of a giant European Union innovation solution” based on the kinds of giant prototyping service providers that had been observed first-hand in Switzerland, the informant realised that Győr would need continuous high rates of investment to build that scale of service; this the region did not have access to. Innopol:

We realised here in Győr that in order to start a large prototype service then we would need about €30 million to make a facility… and that you could never just invest €100,000 and then maybe invest another €100,000 in the next year… because the machine moves forward so rapidly you would not be able to catch the train… so I realised that it was an unrealistic goal to have so I thought I would just start to frame a small position for myself… what I have here [at the industrial park] is probably small cooperation projects, so regional projects… small projects… small funding for simpler solutions.

Subsequently, it was the opinion of Innopol that, despite the policy indicating support for investment in technology, the required significant investment needed to make a large impact would not be forthcoming, given the history of “minimal grants” from the EU delivered through the national government to the region, to assist with a scaling and diversification strategy and the transfer of a more innovative model of production to the region:

… the importance of 3D printing and prototyping is not so much about the new technology, but it is actually about the implications for scaling… it is about having something that is attractive for local enterprises… not about killing the business of local enterprises… that enables them to have access to new ideas… but is… positioned to be… accessible for them.
Therefore, the importance of regional political leverage exercised in the actual funding of specific components of Smart Specialisation policies was emphasised. Innopol stressed that while regional consultation processes had occurred, these were symbolic in nature when considering the lack of regional leverage to gain significant financial investments. This mostly resulted in exclusion from most of the innovation-focused projects in Europe, because innovation was then focused on the top level. In this context, the issue for regions becomes not so much about the introduction of KETs to the region, but rather the capacity for funding of the new technologies on a large scale, so as to make an extensive regional impact.

Autex also noted that the governance process associated with the WT Strategy were developed and discussed with “all of the research institutes and all the companies and interest groups” within the region. However, given the political developments in Hungary and the removal of regional-level representation, the process was based on small county-led discussions. This undermined the regional focus of the policy. It was observed that large companies still play a major role in lobbying to establish the political agenda with state and EU-funded research outcomes. For instance, the establishment of a new joint cooperative research centre afforded a major role to Audi. This was thought to be a driver for the growth of innovative development and new SMEs emerging in the region in the automotive sector, potentially privileging that sector over other growth areas of the economy, such as the forestry industry.

This perspective raises questions about the regional governance processes adopted with the centrally coordinated policy design of the WT Strategy. The Smart Specialisation policy aspires to a consultative approach to the process of determination of expert competences developed by key stakeholders in the region during the “entrepreneurial process of discovery” phase, to achieve a specialised, scientifically excellent strategy in the region. Yet Innopol warns of the danger of a ‘business as usual’ approach to regional economic development based on a traditional regional economic model underpinned by infrastructure projects. Such an approach will not work, given the fiscal dependence of the region on the national government and the small amount of funds allocated to regions to enable significant innovation advances in a decentralised model of economic planning.

The insights provided by informants add value to existing research that has also suggested that the quality of regional and local government is increasingly considered a critical variable for the impact of the policy in European regions (Rodriguez-Pose & Garcilazo 2015; Morgan 2017; Rodrik 2003; European Commission 2014). The perspective of informants adds weight to studies that have highlighted a challenge that confronts Less Developed Regions (LDRs) in achieving greater innovation: a single political party and often weak and sometimes corrupt
public administrations (Morgan 2015). Furthermore, given that the Western Transdanubia case study is located in a Central Eastern European country, it also adds value to existing studies that have observed that CEE states often have weak administrative capacity, mistrust, politicised decision making and a culture of clientism (Bachtler & Mendez 2013, Bachtler & McMaster 2008; Dabrowski 2012). Dabrowski (2012) observed that central government control over the contents of a regional plan (particularly in Hungary and the Czech Republic) defies the purpose of strategic planning tailored to regional specificities. A situation can emerge where a strong plan is developed that signals the region’s economic strategy, but its implementation is ultimately determined by central government priorities (Healy 2016).

The role of the MNC in the region in GVC/GPN context

The Western Transdanubia region is poor. The region has a gross domestic product (GDP) of 50–75 per inhabitant, and lags well behind the highest performing region of Kopzag-Magyarorszag with a 100–125 GDP per head bracket (EC 2016). Manufacturing production plays an important role in the regional economy. The manufacturing sector is made up of automotive, mechatronics, plastics and textile industries (PNNDRIN 2013).

The Western Transdanubia regional economy has historically been highly dependent on external automotive investment, and the manufacturing industry/processing plays a dominant role within the Hungarian economy. Taking account of the national distribution of gross added value by sectors of the national economy (Figure 5.2), the manufacturing sector (at 22.7%) is as significant as agriculture is of declining importance (at 3.5%) (PNNDRIN 2013). In recent years, the manufacturing industry has increased its presence in the national economy, especially within the automotive, machine building and pharmaceuticals sectors, which have increased production significantly (Nemzeti Innovacios Hivtal 2014).
Historically, the automotive industry in the Western Transdanubia region has been the recipient of significant multinational investments initiated by United States car producer General Motors (GM) in attempting to reform Hungary before the collapse of socialism in 1989. The GM greenfield investment in the town of Szentgothard, located in Western Hungary, introduced car production to Hungary. At the time it was an assembly factory and most of the parts arrived from other European GM subsidiaries (Berend 2009). According to Rechnitzer’s profile of the Győr automotive district, other major automotive multinationals then began investing in modern export-oriented car production in Hungary (Rechnitzer 2014). Japan’s Suzuki built its new firm in the north-western town of Esztergom, and gradually increased production to 60,000 cars per annum. Finally, in 1993 Volkswagen established an engine factory in the city of Győr, which produced engines for its entire Audi production line (Berend 2009).
Volkswagen chose Győr because of the presence of a high-quality industrial culture based on a previous tradition of automotive production, the high-quality labour and training facilities (from secondary schools to higher educational institutions), and because the city’s location was favourable geographically. According to informants in the present study, Audi took advantage of regional assets such as the logistical position of the region – the city of Győr is situated about halfway between Vienna and Budapest – in combination with a strong history of automotive production “based on the region’s 100-year-old history of producing passenger cars and trucks and undercarriages and the sort of larger machinery that was built in Europe”, and facilities that “were committed to the first stage of the factory and the possible manpower to operate this first stage”. The location’s advantages were enhanced when a motorway between Hegyeshalom and Győr was constructed in 1993 and the railway line between Hegyeshalom and Budapest modernised; a transport infrastructure project that constituted an “equally important factor” in consolidating the city’s position as a regional transportation hub and logistics centre (Rechnitzer 2014, p. 22).

Informants spoke of the advantage of having GM’s pilot project production facility close to the Austrian border, which operated as a customs-free zone. They also said that Volkswagen was interested in Győr due to its Suzuki plant employing over 7000 workers and its steel and aluminium suppliers, established as a result of the region’s history as part of a military-industrial complex. According to Autind, this model of industrial development was underpinned by the EU Structural Funds. These factors were seen as historically important in “elevating the region from a rural area to an economically more impressive area” of Hungary:

… 20 years ago, when the Eastern Bloc collapsed and the new Structural Funds were opened up to us by the EU, we had a cross-border cooperation program that people from Austria and Hungary could apply together for funding for regional development projects and a lot of projects were started which shaped the face of this region and city for upcoming years [including]… the Innovation Hub, Chamber of Commerce, Győr Airport and the Harbor.

These projects had a synergetic effect on underpinning economic development within the region and supported heavy investments by the automotive industry at the time. The arrival of Audi and the subsequent investment by Volkswagen into enormous production operations helped to ensure that the automotive industry would be the dominant economic player in the region:

… in the past 20 years this plant of Audi’s has grown to be the largest engine manufacturing plant in the world, where over 2 million engines are produced each year, and cars are assembled here, but still the key part is engine manufacturing… and it’s really impressive… it’s a very large plant… so you can see in rolling back
The heavy investment by Volkswagen in the city of Győr and the ‘Audi-effect’ is said to have resulted in several positive economic spin offs. In 2013 (Rechnitzer 2014), Audi established its own educational base in the region, financially supported vocational education and training institutions in Győr, and forged strong cooperative links with the Szechenyi Istvan University, which saw a new mechatronics department created there. Audi investment invigorated the local real estate market. It saw higher education and training reorganised and new segments of R&D created. Audi’s presence has been credited with the strengthening and repositioning of the city’s image particularly in relation to sport and culture. There were also significant multiplier effects for employment in the region, especially with the relocation of major subcontractors. New firms and new jobs have been generated in architectural design with the emergence of building industry contractors and firms involved in the vehicle industry. Development saw aluminium companies and related innovative businesses established and financial service providers, labour agencies and enterprises specialising in education and training set up (Rechnitzer 2014).

Thus, Volkswagen constructed a total production system in Western Transdanubia with significant investment and knowledge bases that have helped to generate the firm’s dominance in the territorial economy. The large enterprise as a base sector has pulled industrial stakeholders to the region, including major subcontractors and producers. This effect in the city was assisted by the creation of an industrial park built with Austrian capital and the financial contribution of the local municipality at the end of the 1980s (Rechnitzer 2014).

However, documentary sources highlight the regional economic vulnerability of Western Transdanubia given the high dependence of the local economy on external investment, a problem exposed during the 2008 economic crisis. Because of the exposure of the regional economy to Western Europe, the Hungarian strategy warned that, in relation to future economic planning, stakeholders needed to be mindful that, where individual companies dominate areas of the region such as Audi in Győr, they can have an economic impact of a radius of a hefty 60 kilometres in Hungary (Nemzeti Innovacios Hivatal 2014). The European Commission report, *Ex Post Evaluation of Cohesion Policy Programmes 2007-13 Country Report Hungary* (2016) (hereafter the ‘EU Synthesis Report’) also placed emphasis upon the vulnerability of many regions in Hungary to external economic forces. This has led to the observation that the “economic impact of the GFC (2008–9) has led to significant economic disparities persisting across Hungarian regions” (EC 2016, p. 11).
The EU Synthesis Report noted that the only regional exception to this rule was Közép-Magyarország in Central Hungary (which includes the capital Budapest and accounts for around one-third of the total population) which had maintained a GDP per head twice that of the other regions during the crisis. The gap narrowed a little over the period, but only slightly (EC 2016). The WT Strategy has also established that regional economies situated in Western Hungary took over 10 years to recover economically and to again be above the national average on employment and GDP figures (PNNDRIN 2013).

Consequently, the Hungarian strategy central economic vision, that Hungary may become “a knowledge economy by the end of the decade”, is less dependent on external investment sources (Nemzeti Innovacios Hivatal 2014, p 46). This acknowledges the high economic dependence on foreign investment of regions located in the south west of the country and asserts that there needs to be better economic cooperation between regions to generate a new ‘horizontal axis’ to break down a persistent ‘north-south’ economic divide. This vision is underpinned by a desire to strengthen the strong base of SMEs and family-sized enterprises within the country and the “number and competences of them in regard to exports and suppliers” (Nemzeti Innovacios Hivatal 2014, p. 46).

According to the WT Strategy, the automotive industry is projected to grow significantly in the Western Transdanubia regional economy, with anticipated new investment by Audi leading to a prognosis that domestic production capacity could rise two-fold within a decade. In 2013, Audi invested €900 million in expanding the automotive industry in the Győr vehicle assembly site. As a result of this investment, the WT Strategy predicts that over 2000 new direct jobs will eventually be created. In addition, it is estimated that GM will also generate an additional 800 new direct jobs. It is predicted that the supply sector flow-on from these investments will result in a number of job opportunities for tens of thousands within related industries, such as electronics, mechatronics, vehicle technology, metal engineering techniques and tools, as well as in the fields of quality assurance and logistics. The WT Strategy found that in Western Hungary, by the end of 2010, in connection with the automotive industry’s expansion, 96 companies were registered. In addition, there was a new strategy for a project and training centre to be established at the Győr Industrial Park to supply training in the skills required by the growth in auxiliary industries associated with expansion of the automotive industry. The strategy argues that given this new expansion by foreign companies in the region, the state should negotiate with the companies for improved positions for domestic companies in supply arrangements (PNNDRIN 2013).
Thus, the WT Strategy identifies the automotive industry as having an ongoing dominant role and signals that other industries would be encouraged around this industry specialisation. For instance, the Hungarian strategy asserts that the automotive industry should continue to develop and specialise in a wider range of domestic suppliers. Future economic opportunities have been identified within related sectors such as mechanical engineering, plastics and in any industrial areas where concentration can be gained linked to the “needs of automotive multinationals” in the region. However, the WT Strategy also proposes that the automotive industry assist in the development of competencies in other local industries, to assist with diversifying the industrial base. The regional plan therefore outlines a vision for increasing the development of indigenous suppliers connected to the existing automotive industry, as well as building new competencies in, for instance, the forestry industry, which can service the automotive industry as well as other industrial opportunities (PNNDRIN 2013).

Informants also mostly agreed with the strategy outlined in documentary sources and were in favour of the automotive industry being a driver for building capacity in domestic companies. The region’s industrial history was viewed as representing a “great possibility” for the region, but “also a critical possible danger” given the region is so dependent on Audi in economic terms. Regdevac argued that the company was embedded in the institutional fabric of the region, especially through the strong partnerships with the education sector. Audi are strongly committed to Western Transdanubia and in this sense, differ from other foreign companies who may “rent a place while there is a life cycle for a product and stay for a while and then move if there are better conditions somewhere else”.

As you can see with Audi... the roots are built here with the relationship between the university and the education system and with the city and so you can see that if you embed them in the environment they cannot move as Phillips did 10 years ago… 10 years ago they came and then 10 years later they moved… they were all over Hungary and they had received subsidies from Hungary… and they didn’t do developmental work because there wasn’t a relationship with the scientists etc… so what we see here with Audi is that the roots are very strong here and that represents 20 years of evolution.

The WT Strategy was seen by informants as a distinct opportunity for the region to further build on the positive relationship with Audi and to further develop the multiplier impacts of the firm within the regional economy. It was also suggested by informants that this could occur through improving local supply arrangements with Hungarian-owned firms and by the company becoming more integrated into or ‘chained’ to the local economy through such strengthened connections. In this sense, the strategy could be seen by the region as ensuring that it developed a plan reflecting its own economic development perspective to enable it to capitalise on the strong base of manufacturing in the rest of the regional economy, as opposed to a situation of “overall decision making coming from Western Europe”.

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These insights add value to analysis on key characteristics of automotive GVC producer-driven networks undertaken by Pavlik and Zenka, who in their study of the Czech automotive industry discovered that the capacity for industrial upgrading within large industrial companies, which organise and co-ordinate investment-based vertical production networks of component suppliers, was highly selective and mainly associated with product and process upgrading as opposed to functional upgrading. The authors argue that for Czech subsidiaries the process of improving their position in global automotive production networks depends on the strategies and decisions of foreign MNCs in the absence of an effective state-led industrial or economic policy (Pavlik & Zenka 2011).

Informants were hopeful that Smart Specialisation represented such a state-led industrial and economic policy for the region. Autind said he believed that the industry alone would not enable the region to develop a unique European position of economic specialisation, but that the new policy direction articulated by the Smart Specialisation policy could limit the region to a low technology developmental trajectory because the automotive industry in the Western Transdanubia is about “forging, welding, and casting” and not high technology specialisation. He expressed concern that the Western Transdanubia region may end up with a typical ‘Western European’ version of regional economic development.

This economic model was said by Autind to be emulated by “at least 200 cities all over Europe where some sort of car is assembled or a part of a car is assembled”; this model does not enable regions dependent on it to develop specialised positioning in global markets that is unique enough. Additionally, Autind suggested that the ongoing focus on the automotive industry based on the export of engines would only set the region up to compete with other regions in Hungary, rather than create a new and unique field of scientific excellence. As he explained, this could lead to a region having to prove that it has the capacity to be unique no matter how narrow the field:

… at least unique on this continent… to innovate, to be able to provide services which would attract clients from Japan, and from the USA, to come here and buy your services.

Informants tended to believe that the economic vision contained within the WT Strategy presented an opportunity for the region to build automotive expansion with a vision for high value-added capacity. To achieve its economic vision for a diversified knowledge economy, informants placed emphasis on the need to link the quality of regional governance institutions to economic development outcomes. According to Autind, Western Transdanubia was missing a regionally driven formal policy to build the industry up from the bottom, with
advisory groups, and a policy making process to match the region’s capacity to reach the level of having a strategic systemic approach. Innopol too emphasised the importance of building regional economic institutions capable of advocating for higher value-added capacity within the automotive industry. As he explains in relation to Western Transdanubia:

… the possibility [for the region] to reach for a higher position and [the lack of regional strategy] is a critical weakness here I believe… I think it’s something that even the local municipality and decision makers are realising: that it’s important for companies to have design departments here, to have engineering work here, and to also have much more value added here… so I think by now it is common knowledge that these things are necessary to have a longer-term perspective of having these companies here.

In line with his emphasis on the greater role the region needs to play in shaping its diversification strategy, Innopol also stressed that the local municipality needed to play a greater coordination role in building a policy and shape future strategic policy approaches:

… we have an office for tourism but consider this… we are the city with the largest engine manufacturing plant in the world and a lot of automotive industry, but our city has not a single office with two people who should be responsible for actually promoting how the industry will be developed going forward…

The Smart Specialisation policy was seen by informants as having the potential to enable systems of innovation linking firms to strategic research and development institutions, and providing firms with technical support, well-educated researchers and technical staff to overcome the upgrading challenges identified by GVC scholars (Humphrey and Schmitz 2002). Oztagen (2009) for instance discovered in his study of the Turkish automotive industry that suppliers based in the Bursa component industry were able to mitigate the asymmetric distribution of power between themselves and the lead firms to change the mode of GVC governance, and to increase their competencies in design and product development. Thus it was discovered that firm-level efforts need to be complemented by regional and national systems of innovation to promote competence development, especially in peripheral places (Oztagen 2009).

Autind echoed the economic analysis contained within the WT Strategy in relation to low rates of SMEs emerging as presenting a barrier to the plan’s economic vision. He described this as a problem resulting from a “disincentive of smaller spin off companies emerging in the region, given the dominance of Audi offering good wages, job security and a career for employees” although he noted that despite this some SMEs were still emerging with slow cultural change towards development of local manufacturing industries:

Chaining already takes place on the lower management level… and we can see that at the moment it’s quite a large problem for the local economy, that these Western European companies, especially Audi, offer very good prospects for a career and they offer very good wages. Thus, the dominance of Audi has meant that local SMEs
cannot really compete with the company and that “all the good people go and start to work with Audi”.

Yet, slow cultural change is being observed in the region with the automotive industry informant adding:

…after 4, 5 years of existing in such a multinational environment that there are a lot of people who start to think “maybe I could be more innovative”, “maybe it is time to move forward and this very rigid structure is not for me”… “maybe I should start something” and it is said that then they start to make spin off companies or they simply leave the Original Equipment Manufacturer (OEM) and go to local SMEs and continue for maybe a little lower money, but for better perspectives or more interesting projects and so they are ready to leave these companies.

In this sense, Autind believed that the WT Strategy with its focus on “growth in auxiliary industries and more domestic companies in supply arrangements with foreign automotive companies” was a positive economic vision to enable local people to leave the large companies and to support the growth of Hungarian enterprises:

…one of the very important things for our region is that when people move away from the Western European companies, they are taking away the work culture… they already know how to manufacture to quality and high standards, and the processes and requirements of supplying products or services, and I have seen this culture slowly but steadily appearing in the local enterprises…

A further barrier to innovative SMEs appearing in the regional economy is presented by the specialised focus on the production of engines. The result of this specialisation has led Autind to observe that entrepreneurs who leave the company have no chance of taking away design knowledge or strategic thinking, which has created knowledge gaps about innovation and building up a company to produce commercial products:

I believe that these companies… the spin offs will be strong enough to be a key asset for our region maybe 10 years later… the problem is that because these OAMs like Audi operate in such a flat manner, [the start-up entrepreneur who leaves] has no chance of taking away design knowledge, they have no chance of taking away strategic thinking, because this just does not take place at the company… this situation has led to the observation that entrepreneurial efforts with new start-ups is that when [the entrepreneur] leaves the large company and starts their own small enterprise… they have a good idea of manufacturing and products, but they have almost no idea of innovation and they have absolutely no idea of how to strategically build up the product line and the company operations in a five-year perspective and while they try to learn it…they start from zero and not from a western European level and it’s a gap that we should be able to address, but at the moment I cannot think how we would address this gap.

This insight confirms the insights of Grabher’s extensive research into the implications for industrial regions as a result of strategies of MNCs, which found that where a production system is dominated by a system of work organisation without local upper-echelon technical
and management staff, the region may end up with a differentiated social structure and an undermined entrepreneurial ‘seedbed’ (Grabher cited in Amin and Thrift, 1994).

Since Audi do not assemble the entire vehicle in Győr, there was no need for Audi to build a large supplier base in Győr as they were involved in specialised component manufacturing, consolidated predominately on one production site. Autind noted:

It was an interesting situation because, when Audi first started bringing suppliers to Győr it was not a very good proposition because at the time there was no automotive production… it was only very marginal… when you are producing engines and you consider the 2 million engines that Audi produce each year… not a huge volume… so when you consider the position of engine part suppliers… especially in relation to small parts… It is a lot easier to make the supplier comply with logistics… you don’t need to comply with just-in-time demands and definitely not just-in-sequence… so it is where you have automotive production… You need a lot bigger and there is a sequential production method and there is more demanding logistics where it is almost impossible to make the supply without being actually there and producing on time or on sequence… whereas with engine parts… it is really quite easy.

Autind also observed that Audi’s specialised component manufacturing production focus in Győr was further consolidated by the GFC, which put an end to the company’s plans to increase production volume and establish a supplier park in the region:

When we talk about settling car production… ramping up from 150,000 to 300,000… that’s a real volume and usually for that… everywhere… in the globe you are setting up supplier parks… but I remember actually in 2008 and 2009, when there was a very big… push towards establishing a supplier park… starting car production and ramping it up quite quickly and that’s when the crisis came in… and I remember that many things stopped at that time… and so for Hungary I would say 2008–2009 was a significant pause… I would say… in a normal development path and then was a step back and then the whole thing started again.

Innopol also emphasised an additional impact of the focus of automotive companies within the region on specialised component manufacturing production – such companies have a flat management structure. Simple assembly manufacturing production is undertaken, but decision making, strategic operations and design mainly occur elsewhere in Western Europe, not in Győr. This global division of labour also has consequences for the emergence of innovative SMEs and suppliers within the region. The Hungarian regional context lacked strategic thinking at the level of place to challenge a regional dependence on “one giant actor” as opposed to “several smaller companies to act on”. There was a concern that within the framework of the policy, Western Transdanubia could miss out on opportunities for industrial re-invention due to being by-passed in relation to funding for innovation projects.

Innovation in the industrial manufacturing region of Western Transdanubia has developed in an incremental approach to advances within the manufacturing industry. Innopol described
how the industrial park in Győr had fostered the emergence of many small companies. Over 100 companies now occupy the park. *Innopol* explained that none of the companies are “disruptive companies” that have emerged as a result of a process of independent ideas and capital, but rather were built up “step by step” over 20 years and as spin offs emerging from activity within the manufacturing industry. In this context, the manufacturing environment is associated with incremental innovation:

Because of a situation, for instance, where manufacturing suppliers involved in a project are told “you should supply the same part but 5 per cent lighter” and “you should supply the same part but 5 per cent cheaper” and so there are incremental challenges to master and incremental solutions are developed and so the whole innovation model is step-by-step evolution going forward.

*Innopol* observed that in Europe in general, the culture of spin offs is absent from the industrial landscape and the barriers to their generation are related to a lack of policy incentives at a regional level. This situation has led to the development in the region of a model of incremental innovation and a lack of interest in venture capital. As he explained it, “most companies aren’t interested” in starting new businesses because of the high risks associated with new firms and the historically weak policy incentives due to the region not being considered a ‘disruptive’ environment by the national government:

We have not really had much destructive development here… mainly incremental innovation… so we have not enough history of free economic culture to have good business angels, but I can say it is happening… slowly… there are maybe two or three people already in this region, and I hope in 10 years there may be 20 people in this region who could be called business angels who would be ready to assist SMEs to start up.

This insight confirms the SWOT analysis contained within the WT Strategy, which lists the region’s low venture capital and business-angel activity as a key barrier to the achievement of the goals of the Smart Specialisation policy, especially in relation to the goal of industrial diversification (Pannon Novum Nyugat-dunantuli Regionalis Innovacios Nonprofit Kft 2013). Given the identified barriers by informants to the growth of Hungarian-owned SMEs, it was suggested that other strategies to encourage economic diversification within the region could concentrate on attracting foreign ‘smart’ companies specialising in high-level services to the region. *Innopol* suggested that the regional economy could trade off its strategic location and efficient public transport infrastructure to attract high-level services because the region is located strategically in a “scenic position between Budapest and Vienna”, which presents a good opportunity for services for offices and for larger parks of office workers.

Budapest is not really interested in this respect… But Vienna is clearly trying to expand its radius of interest and offices would be much cheaper to operate here than there, and so we are in a competitive position, in this sense… in relation to Budapest, Győr is not in a competitive position… but I believe we could be attractive for a
company who would like to set up in a large city and start off – we are not a bad location to live in.

*Innopol* further observed that the once-dominant position of the textile industry was seen as lost to the region due to the assertive stance taken by China in global value chain positioning:

… at the time of the transition [from communism] we had several industries in Europe, one of them was automotive and engineering, and one of them was food – agriculture, food products, and the textiles industry… the textile industry we lost to China, like all the other regions…Bangladesh, Vietnam – wherever people are able to make cheap clothing… the Eastern countries in Europe lost out to regions in Europe that were investing a lot in innovation into specific design in new materials and new solutions, which were unique, which were hard to copy, which were branded very strongly… and we had none of this activity… we had plants that manufactured low-quality textiles in larger volumes… This industry won’t ever come back. As a result of the loss of the textiles industry all of the [industry] knowledge has disappeared by now… so the companies were dismantled and residential areas have been created on the old sites, so I don’t think that we have an opportunity of returning to this business.

Therefore Smart Specialisation was perceived by informants to be an important policy instrument for the region to engage in ideas on how to get to a situation where there is less dependency on one or two giant corporate players in the automotive industry. In the words of *Autind*:

… in Western Europe… they have a lot of automotive activity, but we noticed no such giant companies, only five or six smaller companies based in a region and I think that’s a healthier situation, for collaboration, for projects, for whatever.

*Autind* described the situation, if Audi were to leave, as devastating for the region in economic and social terms:

… we have ideas and… we have a lot of small SMEs, which are competitive, but still losing Audi would mean 11,000 unemployed people, which is 10 per cent of the city’s population and this would mean a lot of other companies which operate here would simply close down because they were actually supplying services for Audi… if Audi collapsed, they would just go away.

Agriculture and forestry are identified by the WT Strategy as future industrial opportunities capable of being developed in line with the social and environmental objectives of the EU Smart Specialisation policy. Apart from the economic benefits to Western Transdanubia’s economy, a diversified economic base is not as vulnerable to external economic shocks and downturns, so the social imperative described by the WT Strategy emphasises a need to ensure that the region’s sizable rural population is retained locally. Policies need to focus on sustainable economic development through building a renewable energy industry in the region, one that better capitalises on the significant resources available. These include biomass, hot water, land and solar energy sources. Therefore, the regional plan presses for “due attention [to be given] to the development of internal resources, mobilizing economic
sectors such as wood and furniture production and the development of thermal tourism services industries” (PNNDRIN 2013).

Informants agreed with the WT Strategy economic plan for diversification and also identified the agricultural and food products industry as a sector in which the region was once strong and which could be revived and targeted for future development. Innopol noted the Hungarian agricultural industry was sound and regional assets for the industry included “good solid land” and “good opportunities for raising crops”. One key barrier was the entrenched mindset of people dealing with agriculture and a traditional Eastern Bloc-inherited economic focus on creating volume rather than complex small value-added products. This, he argued, was not relevant as “whether you make 10,000 tonnes of apples or 20,000 tonnes of apples when you could be making more money by making 2000 tonnes of very high-quality apples”. This would entail making complex products out of a simple agricultural product:

I believe we still have an opportunity… because the opportunity to manufacture the product actually exists, and we are able to do it here [Győr]… But the problem is that there are not a lot of people who have realised that it is possible even in small scale to produce very high added value into agricultural goods and that this would be necessary to have another stamp on the city.

**Regional Innovation System**

The WT Strategy compared regions in Hungary using R&D indicators (R&D research centres, research staff levels and expenditures). This indicated that, 10 years earlier, Western Transdanubia ranked near to last place on strength of R&D within the regional context, whereas today, the same R&D indicators have Győr, a sub-region of Western Transdanubia, in fifth place on R&D density. This is due to the distribution of research sites: the region is higher than the national average in the proportion of higher education and public research units. However, the number of patent applications in Western Hungary is the lowest in the country. The number of patents recorded in 2004–8 was seven, all in agricultural sciences (PNNDRIN 2013). To overcome this challenge, informants argue that formal knowledge assets in the region should be redirected towards basic research.
Documentary sources reveal that Western Transdanubia has reached a “surprisingly high rate of innovation” as measured by R&D expenditure, employment in medium/high-tech and knowledge-intensive sectors as well as with the sale of new products (Figure 5.3). It is the third-most innovative region in the Hungarian economy. The report credits this outcome of high technological innovation to the vehicle manufacturing industry, as compared to other regions in Hungary that experienced high innovation in the pharmaceuticals, computer, electronic, electricity and gas, IT, water, and financial services industrial sectors (PNNDRIN 2013).

The strong performance of Western Transdanubia is in contrast with the national picture, with Hungary considered among only the moderately innovative countries amongst the EU alongside CEE countries such as Slovakia and the Czech Republic (Nemzeti Innovacios Hivtal 2014). According to the ERAWATCH Report, the relative strengths of Hungary are in human resources, exports of medium and high-technology products and knowledge-intensive services. Weaknesses in the Hungarian national innovation system includes inadequate knowledge bases and knowledge production, poor knowledge and technology transfer rates and low rates of knowledge exploitation activities by companies (Dory & Havas 2014).

Despite the high rates of innovation found in the automotive industry, this has not extended to Hungarian-owned enterprises traditionally. According to the WT Strategy, small and medium enterprises are not engaging with innovation. For instance, slightly less than 15 per cent of businesses based in the region are engaged with innovative activities. The Western Transdanubia region was ranked last for SME-led innovation in Hungary. The report found that 70 per cent of small enterprises in the region were home-based businesses with low
turnover and minimal R&D expenditure. The companies consider themselves backward on innovation levels. This outcome suggests that high-innovation advances emanating from the automotive industry are not transferring to other sectors of the economy (PNNDRIN 2013).

According to the WT Strategy, the region is classified predominately as an industrial production zone or ‘traditional industrial region’ where production, manufacturing industry and intensive company R&D presence dominate and the national goal translates regionally to ‘smart production’ and product development. The focus is on product development and raising the capability of manufacturing local products or improving existing products through technological renewal in the innovation value chain, providing a competitive advantage, in particular using smart technologies and/or advanced materials (Nemzeti Innovacios Hivtal 2014). It was noted that the region could be jointly classified as it is highly urban in some parts, but it also contains parts where the classification of ‘only partially’ urban (rural, but close to an urban area) applies and some of the parts have declining population (PNNDRIN 2013).

Overall, however, the WT Strategy defines innovation as being about new knowledge brought about by improvements to product and processes, as opposed to the expansion of the knowledge base of the regional economy, as generated by R&D advances (PNNDRIN 2013). Of central importance to knowledge utilisation in Western Transdanubia is the idea that knowledge generation does not necessarily require R&D and technological breakthroughs. What should be sought and given priority is finding “specific manifestations of innovation naturally in the diverse regions of Western Hungary”. The innovation agenda in Western Transdanubia outlined by the report therefore describes modest goals in relation to economic innovation advances within the region that conform to the typology to which they have been assigned by the National Smart Specialisation strategy. Also, the goals relate to ‘product and process’ innovative advantages within selected industrial sectors that may be competitive in the future. The automotive sector is still the predominant industry in the economic vision for the region with wood, renewable energy and thermal tourism being other priorities.

Analysis of the economic vision in the documentary data, therefore, confirms an ongoing commitment to the heavy role for Audi in Western Transdanubia. The strategic vision seeks to retain that heavy influence, but to influence the companies to work with the university sector on their process and product design improvements for the industry, for instance in the area of electrical technology, in strengthening the indigenous supply industry. It is envisaged that a project and training centre will be established in the region to supply training. The centre would negotiate with the companies for improved positions for domestic companies in supply chains (PNNDRIN 2013).
Informants also identified that a key challenge to Smart Specialisation in the region was the absence of basic research capacity to support applied research outcomes. *Autind* indicated that most researchers in the region were engaged with applied research and that basic research was “non-existent” and missing in the region because the “State is not strong enough to support high end researchers”. This identified deficiency in public sector research was consolidated by a situation of foreign companies (since the 1990s after the fall of communism in Hungary) also not conducting high-end private research in the region. This has led to a situation that he describes as the companies “obviously making their own research in their own home countries” with the region becoming a base for “low-end” research activities.

This trend was seen after Hungarian companies were bought out by foreign companies (e.g. in the case of acquisition by General Electric of electrical company Tungsram and after the Ivaco-Renault consortium purchased the former Hungarian-owned bus company Icos). R&D activity almost completely stopped and was said by *Autind* be in line with a trend that was typically followed in Hungary and Central European regions, with foreign companies tending to determine that low-end research be located within these regions. *Autind* observed that a danger for regions is that low private and public expenditure into basic research results in less sophisticated outcomes in applied research. He observed that regions need “something more substantial in the background” as is found with high-end research as then “your capacity is so much wider”. This deficiency is seen as potentially undermining the capacity for universities to effectively support companies with applied research needs, as well as adding value to that research contribution by having a “wider tool set” of a strong publicly funded basic research capacity in the region. In addition to this, he felt that the low investment in public research has strengthened the influential role of foreign companies in the region, in determining R&D priorities and undermining the “power” of Hungarian universities. He indicated that he felt that this was a key barrier to innovation in the region.

While investment in public and private R&D is low in the region, Audi has recently invested heavily in Szechenyi Istvan University to meet both applied research and human resource needs associated with its plant:

> Audi are financing some of these faculties, the university is investing at least as much. But with respect to Győr culture and knowledge about how things are done and frame this strategy of what we should research – a lot of help is coming from Audi in research. And that’s very important for us.

For instance, *Innopol* stressed the importance of Szechenyi Istvan University to the automotive industry in the region and noted that the university had a close relationship with Audi within the region, but acknowledged that that there was concern amongst regional
stakeholders that the partnership had “largely focused on providing for the human capital needs of the company, rather than providing innovative research”. Audi had a joint faculty and joint departments with the university, but the “departments haven’t got a lot of experience with research cooperation”. Innopol observed that this trend was underpinned by the funding model of the university where Audi had financed some of the facilities and encouraged an applied research strategy for the region:

When you visit one of those departments you really feel like you are at any kind of Western European university as they are clearly structured, well organised and have very specific research projects with great output and operate on a very high standard for Audi… However, a key issue for Audi is turning a culture around [which] is about making people smart and not about making the university smart in relation to generating more of a focus on research and innovation.

According to Autex, Audi has invested heavily in the university in laboratory facilities, R&D capacity, industrial relations experts, educational quality and innovative technology, and even own a department, which is under the control of Audi’s Managing Director. The department has a liaison person based at the university to liaise between the automotive engineering department and all the faculties who want to set up a relationship with Audi. The company has been influential in attracting both national government funding and EU funds to support the establishment of research centres to assist with product and process innovation developments. This represents an incremental process of Audi investments in knowledge assets in the region over a 20-year period:

In 1993 we started a process of close institutional cooperation between the university and Audi… We have a joint cooperative research centre and a chemical research group established by the university and a chemical research group, and there is a research project with three universities.

According to Regdevac, the Hungarian Government assisted with the establishment of the first cooperative department at the university; a joint research cooperation centre (knowledge and excellence centre); a department group and, in 2015, a special Audi faculty was established. This evolved into four Audi departments with a director in a department specialising in logistics. The joint research centre was an initiative originally funded by the Hungarian Government, but was later funded by the EU in conjunction with the university, City of Győr, Audi and others in the private sector. The centre is an open institute, but is accessible to SMEs.

Autex emphasised that the centre is not just about producing research advances to be used by international branches of the company:

… but also, to generate advances in the engineering system that can be used by the local vehicle industry where GM are located at the industrial park… and… some suppliers that also utilise the system… can benefit from that knowledge that they
get here… from the university and the Audi departments… because that means that they can cooperate… you see they use the same language and they understand each other.

Therefore, there is significant product development done in Győr and Audi has a “lot to do” with the design of engines and the development of engine-making processes. Au tex:

This can involve production, or logistics… And other faculties and departments are often involved in coming up with design strategies for Audi… the economics, marketing departments, and they talk to the public… and there are other faculties and departments on the technical side also involved in these kinds of projects.

Nevertheless, Autind raised questions about the recent focus of Audi research in the region, arguing that despite the company having been in the region for 20 years, research activities have only very recently (in the past 7 to 8 years) relocated to the region and the nature of the research is more about development activities supporting the production line, with Hungarian engineers only able to make “tiny changes” to the end product. Thus, in relation to the joint cooperative centre established by the Hungarian Government and Audi 4 years earlier, he argued that it was important to understand that “engineers work together on contracted projects run by the centre [working on] sub-parts or steps or tasks in bigger projects but [they] do not have sole responsibility for product or technology development”.

Autind emphasised the degree to which he felt that this would generate a model where assembly of cars or more complex research and design work would not, in his view, settle in Győr, as the “mainly engineering skilled work based in the region was increasingly being added to with more complex operational dimensions of manufacturing production such as marketing, organisation and logistics”. Logistics employs approximately 1000 workers and it is estimated that “in 4 years it will be four times bigger”:

I think it was decided at Győr that Győr would be the competence centre for performance and efficiency… engine efficiency… but again… this was all related to engines and nothing to do with cars… so it’s a very nice learning path I would say starting from an assembly activity where everything came… as an online unit and where people… [were] just assembling it… to be able to support the production… production started… and then the production-related development started here… the next step was when some of the product engineering and the product development was located here… And that’s again in the line of the engines… So again, it’s the next step when anything to do with cars would come to here to Győr … so it’s always like a learning path or a learning process when the new Foreign Direct Investment (FDI) settles… and we keep seeing that… based on the environment… and the stage of that environment… the knowledge pool and the available skills.

Innopol also emphasised the importance of understanding the regional historical context of the role of the private sector and large companies such as Audi in bringing technical knowledge to the region. This history of private sector-led industrial development has led to a weakness in the public tertiary education system in contributing to knowledge. Training in
new manufacturing technologies was identified as a potential problem for the region in relation to keeping up with the latest trends in industrial development and supplying human resources to companies with new technologies, capable of operating such technologies:

… 20 years ago, when this economic boom reached our region and when all of the companies came here… one of the key assets we had was the workforce, a trained workforce. That means for the companies like Audi and all the suppliers, when they came here, people already knew how to operate the technology they had.

Thus, according to Innopol, while there were some aspects of the manufacturing lines of Audi that were technologically more sophisticated than the labour force they had previously dealt with before economic transition:

The processes, the qualities, the machinery were understandable and we already had the knowledge on how to operate a facility… So, in the recent past if someone decided to come to Hungary with a new company and said… OK… we would like to do plastic emulsion moulding and they open a new facility… they can be assured that there are a lot of experts in Hungary who would be specialised in plastic emulsion moulding and know how to operate the machinery and know how to do this project.

In this sense, in moving to new technologies such as new prototyping services that represent a new manufacturing technology used in additive manufacturing, it was observed by Innopol that the current labour force based in the region would face the difficulty not being knowledgeable about the technology and unable to apply it, and an education system not capable of delivering new knowledge of advanced manufacturing technologies. In this sense, it is argued that the gap in public technical education enables manufacturing companies to be seen as critical players in regional economic development in bringing new knowledge about manufacturing technologies into the region. Innopol explains:

Someone would like to establish a facility here which is not dealing with design, not dealing with strategy, just the same very flat manufacturing structure, but the plant would be specialised in additive manufacturing. They couldn’t get the knowledge from us locally… We would have to learn it… and I have no idea of where to learn it at the moment.

The focus of the region’s education system is therefore seen by informants as militating against the development of an innovation culture in Western Transdanubia. Innopol further observed that the only way for the region to get state-of-the-art knowledge was from the large companies, from automotive and non-automotive firms, and not from the education system:

Our education system is way behind… It does not have the financial resources, it does not have the knowledge resources, and it just has no way to keep up with the rapid pace of industrial development and that only knowledge about how to manufacture comes from the manufacturing companies right now… So, in this sense, it is very important for us to have companies which are really bringing in manufacturing knowledge into this region to have a chance to build up this manufacturing culture.
Autind expressed some scepticism about whether the universities in the region have the “capacity, skills, knowledge, R&D and power to absorb innovation funds” and convert the funding into business-related activity, such as transforming knowledge into commercial product development. It was his view that “local universities don’t know how to convert research into product… and if you say that companies are not allowed to take advantage of EU-sponsored research, then who is?” He further observed that, in the past, innovation projects in the Western Transdanubia region had tended to work best when funding was tied very specifically to encouraging university–corporate collaboration that resulted in measurable company results in relation to innovative products.

Informants pointed out that a further challenge is presented by a characteristic of the Szechenyi Istvan University in its traditional focus on technical studies. Regdevac emphasised this as a potential barrier to the Smart Specialisation policy focus on economic diversification and hence the importance of a change in approach if an innovation policy was to be successfully implemented in the region. It was explained by him that the university was seen as important for the region to move to an open innovation model of regional development:

In the 1990s a strategy was set up… and the view was that we needed to turn this technical college that specialises in transport and communication into a university… They realised that to get to an open innovation model… they needed more science, other than just technical science.

The vision for the university to move away from a sole focus on technical studies was again hampered by a lack of funds. Plans to establish an economics faculty faltered due to the failure of the region to attract academic staff and students to the region. It was in this context that Audi arrived in the region and began a partnership with the university. The partnership made the institution a lot “stronger” and encouraged the development of a dual-education system where students would study and work in automotive companies for a semester. As the academic notes, “technical studies [are today] still the main focus… And the technical system in Győr endures, cooperating with more than 80 companies and students having work placements with the companies and then often [they] go on and work for the companies”.

Regdevac noted that the technical orientation of universities in Hungary (and hence demand for engineers) is said to reflect national political priorities set by the current Hungarian Prime Minister Victor Orban, who supports technical sciences very much, and has said, “We need lots of engineers and we don’t need many sociologists”. The heavy focus of the City of Győr on technical studies is underpinned by a national funding system wherein “the company helps
to fund the system and therefore can help develop the education system they need for the workplace”.

Informants identified that a key challenge for the region was the predominant focus on technical studies and training engineers, given an increasing propensity for young people to leave the region to work in either Budapest or other European countries:

I am worried as my son works in Germany as does my daughter now, due to Hungary joining the EU, and they get more in salaries as a result than they would here, but who will then work for Audi in the future if all the young people leave?

This concern was echoed by Autind who observed that “the biggest obstacle… for continuous development for our economy for this region is the lack of human capital… and we need to do something with it”. Related to the problem of young people leaving, is the declining number of engineers being produced in the region. According to Autind, this was an issue that should be dealt with by policy interventions directed at primary school age children, rather than secondary students:

It is not enough to direct more students to the university because it is too late… we need to start the discussion with them a lot earlier, in order to convince them… and to put them on the path of engineering, as engineering leads to products, which in turn leads to economic growth… I don’t think [in this regional economy] that science leads to economic growth, and if you miss out on that then you probably don’t do too much good… and that’s why we have to work hard at retaining the interest of the region’s young people in working in the automotive sector.

The long-term human resources challenge for the automotive sector is very much a focus of the region, which has invested in a large educational facility focused on exposure of young people to exhibits of engineering technology to help:

… bring the joy and the passion of the automotive industry and physics and natural sciences close to kids… and their parents… in the young and early stage of their lives where they can make decisions and it will make an impact on career paths… and give access to schools so that they can also help the young along or give them access to some enthusiasm about this career path.

For instance, Regdevac observed that Audi had over the “past 20 years”, except for a “brief pause in production of engines” during the crisis in 2008, consistently employed an increasing number of engineers who had graduated from the Szechenyi Istvan University. In 2015, Audi employed over 11,000 engineers, who, according to Autind had mostly been recruited from the Western Transdanubia region:

There are about 5000 engineers employed at the company… and almost half of them graduated from Győr… So, this is a significant statistic… and the four universities based in Hungary have a strategic management contract with Audi. The university is important to Audi… for development objectives in Győr as it is not the general thing that students from here can assimilate into other Audi plants or subsidiaries of Volkswagen… So, the work that the university does, provides the direct link and connection to Audi here… and the engineering systems developed here [at the
Szechenyi Istvan University] is the system used by Audi… So, getting the engineering students from here, familiar with Audi, and then a lot of them they start to work there… is very important to us.

Informants also observed that they thought that the region also required more of a human resources base “able to work in the region’s future areas of comparative advantage” in the knowledge-based industries identified for regional economic growth. The WT Strategy identified the need for a strong role for business and government in overcoming the shortage in existing university training courses in growth areas. This imperative for the region to diversify its human resource supply pool of labour in order to generate innovative new areas of the economy was seen to be a key barrier to the aims of the WT Strategy by the innovation policy informant:

We have a problem… of human capital knowledge in the region that is heavily tied to automotive industry production, rather than “customised unique product” development. In the case of manufacturing, I do believe that a lot of knowledge, which I mentioned, is accumulated in the working class or mid-management within the automotive industry, [knowledge] that could be convertible for different industries as well. But still, this would need to be industries which have come here to manufacture mass-produced goods and not tailor-made projects and not customised unique products. So, it’s much more difficult to tell what could be made in this manner.

He also felt more could be done to generate a human capital culture of entrepreneurs to reach this vision. Autind believed that in order for Budapest to generate a ‘start-up’ culture, the Hungarian education system would require an overhaul in relation to a new curriculum being developed to teach young people skills to be entrepreneurs. This process, he contended, would need to encompass high school as well as university students “as they will be ones that we are expecting results from in 2020, yet reform of the education system was not part of the strategy”. Autind:

… if you had entrepreneurs on every corner… and you have these role models teaching at universities and providing these kinds of role models… and teaching the youngsters… Then you have success stories… that you can show these… and it is not a success story that you have been telling for 20 years continuously…

According to Autind, there is a general attitude of negativity about the integrity of entrepreneurs deeply ingrained in the Western Transdanubia regional culture and, without positive role models, this cultural problem will be difficult to overcome. He identified the education system as not assisting with building an innovation culture in the region, as entrepreneurship, and commercial knowledge are not taught in Győr or part of a university curriculum. This gap in knowledge was identified as a “big problem requiring a big fight” to rectify. Rectifying it meant better links between universities and industry to generate more innovative products emerging in the region.
It was noted that, due to this knowledge gap, it would be difficult to gain conversion from an ‘incremental’ model of innovation associated with the region's industrial manufacturing environment into a ‘disruptive’ model of innovation associated with small companies building up global markets:

Whenever we participate in meetings dealing with innovation and innovation-fostering activities, we are always confronted with the idea of start-up companies because start-up companies are very fancy right now… In Budapest we do have a start-up culture, to be honest, there are a lot of people who came back to Hungary from the United States and Western Europe and decided to copy the model of the West to try [to] make something of start-ups. So, in Hungary, there is definitely a ‘start-up’ culture… But Budapest is a large capital city and you see a village culture that initiate start-ups… but in Győr for all of those guys who come and talk to us about start-ups… we have to tell them that honestly… we have never seen a start-up grown here… Well, maybe two or three start-ups in this city over the past decade who received some development profit… But they are ‘destructive’ companies… starting small and then going into the world market with many users, but that’s it.

A way out of this innovation paradox is suggested by Tödtling and Trippl who observed that in the case of old industrial regions, that although they have many firms, dominant clusters and relevant organisations, they are often strongly orientated on old industries and technological trajectories leading to ‘lock in’ occurring. Thus, they argue, in peripheral regions a key challenge is to strengthen and upgrade the regional economy by fostering ‘catch up learning’. Recommended policy measures include upgrading the knowledge base though industrial and technological diversification and reorganising existing firms, networks and institutions (Tödtling and Trippl, 2005).

The Smart Specialisation policy is seen as a promising tool for CEE regions to support higher R&D spending and better cooperation between business and research and education institutions to encourage innovation advances (Dyba et al. 2018). Certainly, the WT Strategy signals an intention to tackle some of these challenges. Most promisingly, in the area of revitalising new cluster initiatives, to encourage strategic alliances between private and public actors in new growth industries. Thus, rather than a strategy of greater state investment in the university system, a more realistic aspiration could be to develop the better functioning of the RIS in the region, by generating more cooperative arrangements between universities and firms.

The WT Strategy notes that in order to achieve the economic vision of a more diversified economy, more work is needed to improve the performance of business networking in the region and, therefore, the regional industry clusters. The policy notes that “regional cluster initiatives tend to be concentrated in traditional industries that carry a lower potential for
innovation” and that clusters have traditionally been organised horizontally along sector lines, while vertical lines had not yet been explored (R&D, production, market research along with sales or even organisation in chains). Another identified opportunity is to improve performance of the agricultural industry by establishing a new cluster to better link the work of the Georgikon University sciences faculty with the needs of that industry. This reflects the currently low value adding in primary goods in the agricultural industry. The report noted that improving the performance of such industry clusters in the region would assist with lifting overall regional economic performance (PNNDRIN 2013).

Thus, while the Western Transdanubia region is rich in formal knowledge assets such as major universities and research centres, in order to achieve a more diversified regional economy, the WT Strategy recommends more emphasis and investment in building university–industry collaborative partnerships in economic growth areas. One such plan is to better link the work of the Forestry and Wood Utilisation Knowledge Centre with the region’s timber industry so as to further raise industry standards and enhance the technological and economic development of the entire region. It is envisaged by the WT Strategy that these research centres will be able to provide industrial and scientific research and link some key industries together in the automotive, electronics, wood and renewable-energy industries, as well as increase cooperation between service innovation and commercialisation services (PNNDRIN 2013).

The WT Strategy emphasises the need for ongoing support for regional networks established to facilitate business innovation in the region. Western Transdanubia has several established institutions to assist with the establishment of new businesses and to help generate a culture of entrepreneurialism (PNNDRIN 2013); for instance, the Business Development Foundation (initially funded by the EU) and an active Chamber of Commerce. A regional innovation agency was formed in 2008. The main agenda for the agency is to increase the competitiveness of SMEs and to enhance their innovative activities. Entrepreneurial incubators and industrial parks are dominant centres of the region's infrastructure support for start-ups, and operating micro and small enterprises. Each of the 30 industrial parks located in Western Hungary operates at least one incubator that provides basic services to local companies. An innovation and technology centre called the Automotive Technology Competence Centre has been established to strengthen the relationship between science and the business sector, and to promote the automotive industry. It plays an important role in Győr in advocating for industrial advancements. However, the report found a problem around SME access to “shrinking” innovation resources, saying that EU funds can only “partially
compensate” for a shortfall in resources going to the development of innovative SMEs (PNNDRIN 2013).

Autind reported that some universities in the region were seen as performing well in the area of life sciences and others worked well with pharmaceutical companies. These developments have some potential in relation to outcomes that could be influential within the global market. However, despite the intention for ongoing support for business–university collaboration and opportunities for future collaborative arrangements identified in official documentary sources, informants identified some key challenges in the implementation process of the effective functioning of policy tools designed to encourage networking between public and private actors. First, Academic2 argued that there was a lack of a culture of social interaction between public and private actors in regions located in Central and Eastern Europe, due to the State tradition:

In Eastern Europe you don’t have the institutional architecture in place to build an innovation ecosystem… In Eastern Europe, [the EU] have made a lot of investments in places, Slovakia and places like that, in science…and things like that… but in my opinion they don’t have a real innovation ecosystem… Because there is a State tradition and you need for an innovation eco system, you need a lot of different actors in society interacting… which is what you have in Brussels for instance… And this is very difficult to reproduce this in Poland, Czech, Hungary and even in Russia… I think this is one of the main problems that [the EU] have with the new policy direction… because then for instance in Germany, you have… an academy in Sciences… and you have Bonhoeffner and you have the Rhineland and all of the universities and there are all kinds of institutions and they very open to collaborating with the companies and building an open innovation system.

Autind described the Eastern European political State tradition as being important to understand in trying to develop a more diversified model of ‘quadruple helix’ collaboration between economic, social and educational actors within the regional economy. He ultimately concluded that what was needed was a conversion from the old State model of corporatist collaboration between the university and Audi in shaping the triple helix model of university–industry cooperation in the region (indicating the centrality of Audi to the development of the relationship) to a new network governance of devolved relationships between multiple economic and societal actors. Autind argued that it needed to be understood that:

everything that happened since 1993… was somewhat related to a city that could support the early phase of a company… and obviously support their hopes for their production base could be fulfilled and there was a continuous discussion… with the city, the university and the company… so the triple helix did actually work… the intention of solving problems to foresee issues… to encourage regional development… In order to see that we all needed, to come together in order to satisfy FDI and a huge company… who did actually change the way that the city and the region actually work.
A

Autind described a scene in the contemporary context where economic stakeholders within the region had been attempting to overcome cultural barriers to the establishment of an innovation ecosystem:

We have been fighting for [a new model of] triple helix cooperation for nearly 15 years now and... we are actually at the very early stage of this development... we need to push for it and we need to do everything we can to attract smart citizens and highly skilled people who value services and consumers and obviously if your ‘net’ is better then you are going to have a better opportunity to attract companies... more towards the high end... Smart people would then find it easier to relocate to that place... so this is the classical model... with Silicon Valley as the successful model....

The informant concluded this discussion by saying the region is in the very early phase of a converted ‘triple helix model’ of networked cooperative relationships.

As outlined within the documentary analysis section of this chapter, the WT Strategy emphasises the importance of greater use in the Western Transdanubia region of policy tools, such as regional industry clusters, to achieve innovation outcomes. The EU Smart Specialisation policy document states that “regional cluster initiatives [have] tended to be concentrated in traditional industries that carry a lower potential for innovation” and clusters have been “traditionally organised in a horizontal direction along sector lines and vertical lines are not explored” such as with R&D, production, market research and sales. Thus, the policy emphasises the need for new industry clusters to be established to “better link the work of [for instance] the Georgikon University with the needs of the agricultural industry [identified as an economic growth industry by the policy document]”.

Autind identified key barriers in the region that may militate against the success of such a policy, with reference to his experience as manager of the first ever industrial cluster established in Hungary (between 2001 and 2004) in the automotive industry, and emphasised that the original intention was that it be a regional development tool where:

...you bring many different actors together... on a platform... and you make them talk... and support them to find their business actions... through discussions that’s a great thing and not be built on a business model where we [were] supporting companies to come together and to produce something very specific together.

Autind explained that the industrial cluster experiment (based on his vision of regional economic development) had “eventually failed” in 2004 due to a number of barriers emerging. The first factor related to the poor public funding of the cluster. The “small investment” was not enough to generate the network activities to enable the cluster to become self-sufficient in the longer term:
The cluster was not really funded. Most of the clusters are like that… there is a nice vision from some people and an initial investment made… by local government or national government… a tiny investment… definitely not sufficient… it was sufficient to bring companies together… but it was definitely not sufficient to make the thing work… and it got abandoned in Győr a lot longer before what was needed to probably get the system to work… because it is not the inherent hope or wish of companies to work together… you actually need to make them work together… and once the result is there you might feed it back.

According to Autind, a second factor for the failure of the industrial cluster was due to the competing interests of the firms involved in the cluster. The cluster was made up of a combination of a “very prestigious group of large Hungarian and FDI automotive firms who had very different interests that could never be harmonised because they were so different”. The cluster was supposed to be about larger companies helping the smaller companies to become better suppliers “but due to the large companies not being able to agree on the sort of suppliers they wanted, the debate was lost and contributed to the collapse of the cluster initiative. There was some progress in relation to the development of indigenous suppliers but the vision of converting the suppliers into development suppliers was not able to be achieved”:

It was 2004–2005 when I left the cluster… and 10 years have passed since then… and we still have not seen too many development suppliers… So even with a cluster and even without a cluster… the thing was just not coming together it seems.

Further, according to Autind, it was said that the Hungarian companies in the industrial cluster were not interested in developing skills in market knowledge:

On many occasions we tried to talk to companies and tried to convince them that… OK… whatever you have learnt in automotive, well… you’re allowed to use that in different fields as well… I mean… with that technology… with that knowledge of cost cautiousness… with that knowledge of quality systems… you might as well as be producing something that you can actually sell on the market. However, these skills were seen as difficult to teach Hungarian companies… as they have never been exposed to a culture of learning market knowledge… and they are not able to handle customer marketing… and selling… advertising… building a brand… on the customer market.

This is a significant barrier in knowledge that needs to be overcome, according to Autind, to realise the Smart Specialisation policy focus on building innovation ecosystems. According to Autind, another reason for the industrial cluster having said to have failed is due to cultural reasons with a history of being a part of the Eastern Bloc. A culture of suspicion between people worked against a culture being developed in the region based on collaboration and trust built up between firms and an ‘individualistic’ spirit:

In Hungary, we have had over 100 years of experience… Or many hundred years of experience in looking for shortcuts in the system and backdoors to find ways around things… and this history is not very good for the state of collaboration and this history means when in this region, when people first started to consider the idea of building clusters and organisations with any sort of network between companies, we
all were facing the problem that critical trust issues exist between local managers, SME owners, and these trust issues are very difficult to solve.

Autind also emphasised the importance of a support scheme that had developed – the cooperation research centre in the region referred to earlier, where universities worked closely with companies on joint research projects on research required by companies:

Autind:

I believe this kind of approach is the kind of approach that we want to be leading companies toward to teach cooperation between companies and universities… and you should very clearly say that the goal setting should come from the companies… because they are the ones that can sell the product… so I think this is a really good model of building universities up and building cooperation up… allowing the university to value their services… and this is a big question because universities and academics tend to overvalue their added value to research… and until they are measured by the market then… it will always be very difficult to talk to universities because… they will sell their services at a lot higher price than it is actually worth… so with these cooperation activities you can actually value your services… to the market… and I think this is also a very important model.

Many of the insights of informants support the vast amount of empirical research that has addressed the challenges confronting LDRs and found that many of these regions exhibit unfavourable RIS, with typical characteristics such as organisational thinness, lock-in associated with declining sectors and outdated technologies, fragmented systems that inhibit networking and knowledge exchange, and a weak capacity to drive transformative change (Stambach & Klement 2012; Tödtling & Trippl 2005; Weber & Rohracher 2012 cited in Healy 2016). In this sense, it adds to the claim that a more dynamic perspective is needed on how a region may lack capacity for regional renewal over time. Trippl et al (2016) argue that the traditional measures, for instance, of defining a RIS as analytical (R&D)-based knowledge and STI modes of innovation rather than consideration of different types of knowledge and innovation modes to support new path development (Trippl et al 2016).

Conclusion

The Western Transdanubia case adds significant weight to other empirical studies addressing early implementation challenges confronting LDRS located in CEE states confronted by centralised governance processes in policy design, (Morgan 2015; Bachtler & Mendez 2013, Bachtler & McMaster 2008; Dabrowski 2012). This case particularly corroborates the findings of Cooke (2016), where he showed how power levels within the Portuguese state had conspired through MLG processes against de-specialisation aspirations of the region of Algarve. In that case, Cooke demonstrated how regional policy-makers and firms felt that diversification of economic activity was superior to specialisation due to a widespread
distrust of the way the region has become over-specialised in sun and beach tourism. He argued that regional stakeholders wanted to see results from their best research centres being “transferred into innovations by seeking applications in related fields as well as within the dominant sector in the regional economy reflecting the importance placed by the region in seeing the value of variety in regional development” (Cooke, 2016).

This chapter has highlighted the extent to which regional stakeholders felt that ‘diversification’ in Western Transdanubia may be undermined by centralised political processes determining funding priorities of joint research centres and the scale of technological investments. Centralised political power was thought to ensure an ongoing consolidation for the dominant role of Audi in the region, and may act to suppress, for instance, other identified priority growth areas of the economy, such as the forestry industry. The Smart Specialisation policy was seen by the region – in its determination that the automotive industry be the main priority area for future growth and innovation – a potentially important missed opportunity to build related variety with other growth sectors. The GFC exposed the vulnerability of a regional economy dependent on a powerful embedded MNC, as is the case of Western Transdanubia with its reliance on industrial giant Audi, and regional stakeholders expressed nervousness at the industry’s selection as the main priority sector within the regional policy.

The stakeholders also expressed concern about the WT Strategy, outlining a key objective related to supporting greater innovation in the automotive sector as being based on the development of domestic suppliers as opposed to ‘functional upgrading’ into design and R&D work in the region. As argued previously in Chapter 2, these insights add value to analysis on key characteristics of automotive GVC producer-driven networks undertaken by Pavlik and Zenka, who in their study of the Czech automotive industry discovered that the capacity for industrial upgrading within large industrial companies, which organise and coordinate investment-based vertical production networks of component suppliers, was highly selective and mainly associated with product and process upgrading as opposed to functional upgrading. The authors argued that for Czech subsidiaries the process of improving their position in global automotive production networks is dependent on the strategies and decisions of foreign TNCs, in the absence of an effective state-led industrial or economic policy (Pavlik and Zenka 2011).

Cooke has also argued that policy makers should understand the important role of MNCs in shaping regional knowledge-based economic development, given the increasing outsourcing of R&D from large corporations. In this sense, regions should try and influence location and decision making of R&D by large corporations to help shape and exploit knowledge-
production processes and innovation systems in the context of globalization (Cooke & Picculuga 2009). For countries located in CEE, attracting the settlement of research facilities owned by MNCs to regions will enable functional upgrading of knowledge capacity processes and hence the capacity to break out of their peripheral status in the global economy (Smaho 2012). In addition, Capello and Kroll argue that repositioning of peripheral regions in international value chains, however desirable, can often not be controlled by policy-makers from within these regions alone. Typically, these regions’ only link to the international economy is based on local MNE subsidiaries acting under headquarter directives and embedded in global corporate strategies. Consequently, they are not usually particularly interested to become engaged with a region’s local government or its strategies. Even if they were to become involved, moreover, any internationalisation strategy built upon their activities will remain vulnerable to more general corporate plans, as they can at any time by closed down or relocated following considerations entirely out of the control of the regional government (Capello and Kroll 2016).

As was also noted earlier in this study, within the automotive sector, the global value chain (GVC) organisation of the company Volkswagen demonstrates how a core-periphery dynamic may be established in relation to the placement of R&D facilities across Europe. The research carried out by the Volkswagen Group has always been largely centralised, with the corporate research division at the company’s Wolfsburg headquarters providing support for all of the Volkswagen brands. A baseline mapping exercise of advanced manufacturing capacity in European regions undertaken on behalf of the European Commission, found that ‘top layer’ advanced manufacturing capacity in the automotive industry is largely concentrated in regions located in Western Europe and Spain (Technopolis 2014). Given the problem of the vertical nature of MNC GVC strategy, it is therefore maintained by many GVC scholars that it is not feasible for regions that are characterised by unfavourable structural features of economies (outside global economic cores) that are dominated by lower tier suppliers, have guaranteed demand (often in large volume) for standard goods produced with well-known technology, and do not tend to conduct activities such as market research to aspire to an industrial upgrading strategy (Blazek 2016; Tödtling and Trippl 2005). In this sense, it may be that public policies aimed at stimulating socioeconomic development by supporting innovation, for example via the promotion of cooperation between firms and academic R&D institutions, are to a large extent misleading. Instead, given the narrow profit margins of lower tier suppliers, as well as their limited growth potential stemming from their modest capabilities and consequent low-road strategies of competitiveness, the concept of upgrading is not relevant for these firms (Blazek 2016; Tödtling & Trippl 2005).
However, despite the arguments of Blazek (2016) and Tödtling & Trippl (2005), informants emphasised that the economic vision contained within the WT Strategy presented an opportunity for the region to build a strategy for automotive expansion into the future, with a vision for high value-added capacity. In achieving the economic vision in the strategy, for a diversified knowledge economy, emphasis was again placed on the need to link the quality of regional governance institutions to economic development outcomes. The stakeholders felt that with the new policy direction, Western Transdanubia may be missing a regionally driven formal policy to build the industry up from the bottom, with advisory groups, and a policy-making process to match the capacity for the region to reach the level of cities with a strategic systemic approach to the process. Informants emphasised the importance of building regional economic institutions capable of advocating for higher value-added capacity within the automotive industry.

Thus informants were of the view that rather than rely upon MNC GVC strategy, the roles of the state and the region were critical in playing a greater coordination role, in building a policy for automotive development to shape future strategic policy, and emphasised the degree to which this would generate a model where assembly of cars or more complex research and design work, would not settle in the region.

Finally, the case of Western Transdanubia also corroborates the findings of many empirical studies that have sought to investigate the innovation paradox confronting LDRS posed by the characteristics of their RIS. Chapter 2 reviewed many empirical studies that have demonstrated how the policy would likely face challenges in the implementation phase due to such regions often exhibiting unfavourable research and innovation systems (Stambach & Klement 2012; Tödtling & Trippl 2005; Weber and Rohracher 2012 in Healy 2016). It is argued that regions with less-favoured research and innovation systems have a low potential to diversify into new industrial areas due to unfavourable economic structures and a weak endowment of knowledge organisations (Boschma in Trippl et al 2016) and have a low capacity to use funds due to a weak capacity to absorb change; for instance, by not having an innovation ecosystem based on the triple helix model (Marques & Morgan 2018).

McCann and Ortega-Argilés have also argued that one of the greatest challenges facing the application of modern regional innovation policies across EU regions is in regions with very limited innovation-related assets. Some regions, for example, contain no research institutes; other regions, particularly in Eastern Europe, as yet exhibit only a very limited capacity for developing an innovation system, because they are constrained by institutional and governance, and technological issues. They maintain that the “tendency towards policy
homogeneity will produce wrong policy priorities in some places; for example, in weaker economies aiming to catch up with more advanced parts of Europe, the main priorities should relate to the absorption and adaptation of existing frontier technologies, rather than initiatives aimed at fostering features such as creativity” (McCann & Ortega-Argiles 2016, p.1410).

In Western Transdanubia, informants also expressed concerns about the characteristics of knowledge assets within the RIS, identifying challenges in the region of low levels of both public and private funded research, and the technical focus of the main university in the region. In addition to this, there was concern that the WT Strategy focused on “bringing back the lost engineers” to the region to assist with the expansion of the automotive industry, as opposed to aspiring to a more diversified human resources base that would support a broader mix of industries and assist in the retention of younger people. Finally, in relation to the operation of the ‘quadruple helix’ model, concern was raised by the region that the policy focus on business and university networking would be undermined by a culture of mistrust and a history of underfunded cluster initiatives.
Chapter 6
Bratislava

Introduction

The industrialisation of Western Slovakia, with the automotive industry an important feature, has seen Bratislava called the “Detroit of Europe”. In the 1990s, the region became home an automotive production cluster, including factories owned by Volkswagen and the French car maker Peugeot. In 2015, this trend continued, with the Slovak Government attracting the British firm Jaguar to the region. The EU Smart Specialisation policy provides an opportunity for the region to expand on this industrial history, particularly to build domestic capacity within the supply base of the industry. In the longer term, the plan proposes an eventual transformation of the region’s base from production-oriented to knowledge-oriented, to generate manufacturing exports of greater value.

This case study of Bratislava explores the governance aspects of the design and institutional arrangements proposed to implement the new policy direction, the economic context and the extent to which the organisation of knowledge assets will assist the long-term strategic direction of the new policy. This chapter presents and interprets documentary and interview data. The first section analyses documentary data to gain insights from key documents relating to the EU Smart Specialisation policy from the European Commission and Slovak Government. The second section provides an analysis of interview data as a parallel research source. Informants were identified as ‘key policy actors’ within the Bratislava regional innovation system ‘quadruple helix representative’ groups. Four informants were drawn from the government, business and university sectors, coded as follows: automotive executives (Autex1 and Autex2), government policy officer (Govpol) and automotive industry academic (Autacad). Informants were asked for their perceptions of the strengths and challenges of the Smart Specialisation policy instrument.

Quality of regional governance
Documentary sources detail how the Slovak Government oversaw the development of a
single national Smart Specialisation policy Through Knowledge towards Prosperity: Research and Innovation Strategy for Smart Specialisation of the Slovak Republic (2013) (hereafter ‘the Slovak Strategy’). The policy was coordinated centrally by the national government and took the development needs of the country as a whole into consideration, while taking into account regional specifications. The centralised governance processes reflect geographical considerations due to the “small size of the Slovak economy”, a size comparable “to … a region in a larger EU country” (Slovak Republic 2013, p. 53).

In relation to regional participation in the policy design, the Slovak Strategy describes broad participation of key relevant stakeholders. The policy consultation process involved scientists, entrepreneurs, businesses, academics, government and citizens. The regional governance processes of the policy involved consultation with European Commission experts, who heavily influenced the design and implementation processes of the strategy. Overall, 120 experts were involved in the entrepreneurial process of discovery established to guide the policy design (Slovak Republic, 2013). Analysis was undertaken by the EC in a peer-review process undertaken to provide commentary on the design of the policy. That RIS3 Peer Review Report Slovak Republic (2014) (hereafter the ‘EU Peer Review’) found that Slovakia “had performed well in the governance processes associated with coordination of stakeholders across the spectrum of the triple helix representative groups” (European Commission 2014f). The Slovak Strategy emphasised the extent of the involvement of stakeholders in the policy design process. Extensive local consultation created the conditions for the establishment of informal networks of scientific teams involving innovation teams in industry, including key MNCs, and small and medium enterprises. In addition “the wide-ranging discussions, dialogue and work of multi-departmental working groups resulted in formulation of governance processes of policy implementation [as] barriers of narrow thinking about the management of science and innovation of the Slovak Republic were dismantled”. The strategy also emphasised the important role for industrial clusters as a key policy instrument to promote diversification. The strong base of MNCs was seen as important in building a RIS where large companies could play a role in furthering innovation advances with domestic businesses. Further, the Slovak Strategy proposed that national institutions, rather than regional authorities, should be charged with implementing the policy (Slovak Republic 2013).

Informants mostly agreed that the formulation of the policy was consultative at a regional level, that the concept of the policy was positive and that an organised vision for the next 15 years was needed for Bratislava because “otherwise we will have to go back later and correct mistakes and this costs money… mistakes cost money… we need a strategy for our generation… with Eastern Europe we need to a to develop a strategy for the future”.

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Thus, Autex2 saw the automotive industry playing a predominant role in the economic plan for the region:

We selected six sectors, all related to the automotive industry, as Slovakia has a good network in the automotive industry… it is important to note that the biggest investment in Slovakian industry is Volkswagen with €11.5 billion and second is Samsung who invest about €8.5 billion and Slovaks themselves chip in over €5 billion over 5 years.

However, Autex1 disagreed that the companies themselves were intrinsically involved in the policy design processes, arguing that large companies such as Volkswagen Slovakia were only peripherally involved in policy design processes and was sceptical about what the policy was trying to achieve. He instead emphasised a preference for traditional regional economic development goals based around employment outcomes for the region, to be supported through industrial policy instruments such as tax breaks and land-use planning regulations. EU regional policy was seen as remote to automotive industry needs, and largely focused on infrastructure focused on education needs projects, rather than projects involving industry. There was also a sense from Autex1 that the increased GDP wealth of the region would prohibit Bratislava from receiving Cohesion Fund support:

Bratislava is the fourth-strongest region [for] GDP per capita in the whole of the European Union… after Central London, Hamburg etc. For us this is a bit of a problem, as you can’t ask for the subsidies… I guess at the start of W project that arrived, back in 1999–2000, we got tax breaks… and this helped a lot because at that time it was a huge investment … and we had to build a lot… and invest in people… suppliers, so that was very helpful.

In relation to governance structures and policy implementation, according to documentary sources, weaknesses in institutions overseeing innovation policy in Slovakia have led to failed regional innovation projects. One such was during the 2007–13 EU regional funding period; the Slovak Government initiated a project using funds allocated to innovation outcomes to create territorially based institutional structures, for a “more efficient connection between industry and selected services with research and development objectives”, overseen jointly by three national ministries covering diverse portfolios including Economy, Education, Science. Research, Sport, Labour and Social Affairs. These ministries cooperated in a project that focused on the creation of regional innovation centres. However, in 2011, the national government stopped building centres, citing a lack of “verifiability and sustainability of the projects” arising from a possible risk of unauthorised state aid for the commercial sector, leading to a lack of consensus between the ministries on implementation (Slovak Republic 2013 p. 56). This policy experience led to a sense that a significant cultural shift was needed in the national innovation environment, and governance arrangements managing research and innovation policy needed to be overhauled (Slovak Republic 2013).
A key institutional reform established by the Slovak Strategy was a new national authority to oversee policy design and implementation: the Government Council for Science, Technology and Innovation. The Council has new powers to undergo nationally organised, direct engagement in policy making with all of the stakeholders in innovation, including regionally based research communities and industry associations. It has significant political weight in the national government, as evidenced by it being chaired by the Prime Minister. The Slovak Strategy proposes that the Council will act in concert with the Scientific and Technology agencies which are the two central coordinating organisations overseeing policy design and implementation, alongside the Ministry of Education, Science, Research and Sport, and the Ministry of the Economy. In addition, the strategy proposes the transformation of an existing network of seven implementation institutions, which will involve a merger of two new central public agencies, the Research and Technological Agency, and a Scientific Agency, with both agencies overseen by a newly constituted Board (Figure 6.1; Slovak Republic 2013).

Figure 6.1: Organisational Scheme of institutional management of strategy of Smart Specialisation implementation until 2020 (Slovak Republic 2013)

Hence, the Slovak Strategy establishes reformed governance arrangements as critical institutional reform needed for the success of establishing a RIS policy. This reform aims to provide a national “central guiding authority” to coordinate policy in the region. In the past
responsibilities were fragmented across various government authorities, including across national government departments such as the education and economic ministries, and various agencies under their jurisdiction. This led to a situation where “vertical coordination between national and regional innovation systems” was not working effectively (Slovak Republic 2013 p. 54).

The EU Peer Review endorsed the new proposed governance arrangements and noted, in relation to the newly constituted Board, that it would be composed of an equal division of public and private-sector representatives to ensure a “continuous and permanent process of entrepreneurial discovery” occurring in Slovakia. The review also noted that the Slovak representatives involved in the process welcomed the new national approach to policy making. They acknowledged the fragmented nature of previous institutional arrangements, and how it represented a significant barrier to the cooperation of actors within the innovation system. However the report noted several institutional challenges that required further attention. Concern was raised about the design of the new proposed national system: “while the merging of the high number of existing implementation agencies into two agencies is rational and will make the system more consolidated, effective and transparent, the role of the Board(s) of Research Agency and Technological Agency as implementation structures needs to be better defined and their status, responsibilities, composition and negotiation processes legally codified” (EC 2004, p. 26).

Questions were also raised about the election and nomination processes relating to board members, with the report stating that they needed to be clearer and more transparent, and the extent to which board members were independent in relation to their responsibilities and roles in the evaluation processes. It was noted that the Strategy did not clearly state how board members would evaluate the relevance of proposals to selected priorities and liaise with external experts (EC 2014f). Further governance reform to assist Slovakia with implementation and further integration into EU wide programs was proposed, to encourage research and innovation outcomes. The EU Peer Review acknowledged the involvement of Slovakia in several EU and international research and innovation initiatives, including the ERA-NET program, European Technology Platform, and the Joint Technology Initiative, but recommended greater involvement by Slovakia in the Horizon 2020 program, which was of “critical importance to achieving better innovation outcomes” (EC 2014f, p. 25).

The EU Peer Review noted that the Slovak Strategy omitted details on how there could be better coordination of existing financial resources for research and innovation, including from the business sector, public budgets, EU structural and investment funds, the
Horizon 2020 program, banks, institutional investors and venture capital. According to the report, the Slovak Strategy is based on inter-departmental, inter-ministerial, inter-agency coordination, and does take into account the existing level of policy coordination within the country. However, the report noted that, while the Strategy aligns EU, national and regional policies to support upgrading in identified areas, missing was the proposal on how to exploit synergies between different European sources, including ERDF and Horizon 2020, and national and regional funding sources (EC 2014f).

The role of the MNC in GVC/GPN context

The Slovak Republic is one of the fastest growing national economies within the EU. Bratislava is considered the most prosperous region in Slovakia. It is classified as an EU ‘transition’ region for the purposes of calculating Structural Fund allocations, meaning it has a GDP between 75 and 90 per cent of the EU-28 average (Figure 6.2; Slovak Republic 2013).

![Figure 6.2: Slovakia, Structural Funds (ERDF and ESF) eligibility 2014–20](European Commission 2018)

Bratislava is the capital of the republic and is strategically located at the junction of the
borders of the Czech Republic, Austria and Hungary in the extreme west of the country. Bratislava is considered predominately an industrial region, although the finance sectors are gaining dominance over industrial production. The strong economic performance of the region stands in contrast to the ‘periphery’, the areas of southern and eastern Slovakia that have a rural character, with below average rates of economic productivity, low investment, high unemployment, marginalised groups, and poor transport and infrastructure. Location is a key factor contributing to Bratislava’s economic success. It enjoys rates of almost full employment, due to considerable Foreign Direct Investment (FDI) the region has attracted – since 1993, almost 63 per cent of the country’s inflow – as well as the existence of an educated and skilled labour market (Nicholson & Balogoa 2007).

The high industrial production of Bratislava has seen it designated an industrial micro-region. Due to the availability to Bratislava of per capita fixed asset rates well above other regions in Slovakia, the region has a distinct economic advantage in that it receives considerable revenue from this strong presence of industrial production (Slovak Republic 2003). In 2007, the main industrial sectors of the region include the chemical, automotive, engineering, electro-tech and food industries. Bratislava is also the administrative and financial centre of Slovakia. Major banks and insurance companies have headquarters in the city. Finance and insurance accounted for “almost a quarter of the region’s economic activity”. Several international IT firms, including Dell, IBM, Lenovo, AT&T, Accenture and SAP have established outsourcing centres there. Moreover, Bratislava is Slovakia’s technological and scientific educational centre. It has the highest percentage of university-educated citizens in the country. Over 40 per cent of Slovak students study at one of three universities in the region: Comenius University, University of Economics, and the Slovak University of Technology (Nicholson & Balogoa 2007).

According to a key documentary source The Automotive Industry in the Slovak Republic: Recent Developments and Impact on Growth (2008) (hereafter the ‘Slovak Automotive report’), Bratislava’s automotive industry is the single most important industrial sector in the national economy. Nationally, the sector employs more than 10 per cent of the Slovak labour force engaged in manufacturing. By 2010, the industry was predicted to produce approximately 500,000 cars per year. The Slovak Republic is the world’s leading car producer as measured on a per capita basis (Jakubiak et al. 2008). In the broader European geo-political regional context, the automobile industry is seen as a driving force of economic development in many CEE countries, the Czech and Slovak Republics, and Poland and Hungary (Tirpak 2006). It is estimated that the four CEE countries accounted for 12 per cent of the total EU-27 production of passenger cars, or 2 million cars in 2006.
The emergence of central Europe as a major car manufacturing hub is compatible with global trends in the automotive industry. Automotive production in Slovakia takes place within a circle of production with a diameter of about 400 kilometres, concentrated in three regional clusters (Figure 6.3). The first and the strongest cluster is in the western part of the country, where Volkswagen and Peugeot have factories. The second regional cluster is located in the northern and central part of the country, centred on the Kia Motors plant. The third is in the east, with the Kecne industrial park in Kosice housing several key suppliers, including Gertrag Ford transmissions and Molex. The establishment of manufacturing plants in CEE serving the EU market is said to be evidence of the emerging new ‘network-led’ model of industry, of firms producing within every large market. The need for just-in-time delivery processes that are characteristic of vertically integrated production has made the CEE regional context attractive for automotive investment (Jakubiak et al. 2008). The assembly plants’ clustering was underpinned by a well-developed road and rail infrastructure. Automotive production assembly’s dependence on just-in-time auto parts deliveries from suppliers demands an efficient logistics network. This was important for the sale of final products and the proximity to both western and eastern markets being advantageous (Tirpak 2006).
As the Slovak automotive report indicates, the presence of foreign investors and their successful operations has proved to be a positive signal for others to invest in locations where foreign operations are already established in the same or similar industries. This generated a pattern of car production over many years after with investors preferring to invest in places that have already attracted suppliers and benefit from the externalities of the agglomeration. Increased competition in the global automotive industry and low wage levels in the CEE countries have often been combined with a relatively well-trained and educated workforce. Foreign investors, especially in medium-high technology sectors such as the car industry, have preferred the combination of wage competitiveness and a qualified workforce (Jakubiak et al. 2008). The strong base of basic research and talented specialists in important sectors have also been combined in CEE countries (Berend 2009).

The Slovak Government played an active role in expanding the automotive industry. It actively courted Volkswagen to get them to locate their production base within their network of suppliers in Bratislava in the 1990s. In 1997, Prime Minister Meciar’s cabinet developed a “Program for the Development of the Automotive Industry in Slovakia”, which set a general strategy and stipulated the goals and measures to be implemented. Volkswagen was granted significant tax incentives, and the company received €31.2 million in tax allowances in 1999. The rapid expansion of Volkswagen’s operations attracted a number of large foreign suppliers, many of them (such as Johnson Controls and the Lear Corporation) located as part of an industrial cluster in an industrial park in Bratislava.

Informant Autacad felt that a minimum of two to three companies were needed in the region to encourage supplier optimism. He explained how important it was to then build up the supplier base:

> We now have 250 foreign companies… the biggest suppliers, from the top 20, all are here… for example Johnson Controls, has eight companies here… Continental, and we have here Bosch and Manuetti Morelli and Dana… from the top 20 suppliers, OEMs in the Tier 1 category… we have the top 20 here.

The positive experience of Volkswagen in Slovakia is said to have had a demonstration effect on other car producers and impacted on their decisions to locate to Slovakia in subsequent years (Jakubiak et al. 2008). As Autacad explained, Volkswagen were in turn attracted to
Slovakia and the initial investment by Volkswagen in the region reflected the company’s interest in the strong mechanical engineering tradition (resulting from the former dominance of the military industry). The volume of production in Volkswagen’s “initial period” was “only eight SUV buses daily”. In 2015, the company produced 400,000 SUVs a year, around 1500 vehicles a day, a huge leap in production. Autacad further observed that the government strategy of attracting and retaining automotive production and developing auxiliary firms to support it consolidated an “intra-regional” cluster that could service the needs of the “12 brands” associated with Volkswagen globally.

According to Autex2, all of the engines for Slovak car assembly are sourced from Gyor in Hungary and the whole Volkswagen Group works together with the production of 12 brands in an intra-regional context to source components and to produce vehicles. Autex2 explained that, in the course of negotiations between the Slovak Government and Volkswagen, strong advocacy was entered into to attract the company to the region, as the government knew other companies would follow. He emphasised that, at that time, automotive production was considered essential for regional economic development:

The Slovak Government… at this time in 1991… decided to call up 40 car producers around the world and only three came back with proposals… General Motors, Renault and Volkswagen … They asked Renault and Volkswagen. Renault decided that they were not that interested… Volkswagen and General Motors were interested in the Slovak car company Skoda, so they gave exclusivity with General Motors in negotiations. Then the Slovak Government discovered that General Motors just wanted to build gear boxes. But the Slovak Government had a plan that they did not just want to build and finalise cars here and that they wanted the three components therefore built here, including gear boxes and components, and to finalise cars here so you almost [do] the whole production, just not engines… as well as this… General Motors, they wanted a lot of money… and at this time the Slovak part of the state, they did not have this kind of money… so they did not come to a conclusion, so then Volkswagen came with a proposal that all of the three products would be built… and in 1993 they started production.

Following on from Volkswagen production location investment in Slovakia came announcements of greenfield investments by Peugeot Citroen and Kia Motors. These investments were of significant economic importance for Slovakia, and critical to the consolidation of the ‘Detroit of Europe’ in its strength in automotive production. Autex2:

I sold Slovakia to potential automobile producers thinking about where to situate their plants on the basis of our suppliers, for the logistical advantage being in the sea for shipping purposes and I personally convinced in the year 2000 Peugeot Citroen to come here and told them about the amount [sic] of suppliers we had in a 500-kilometre circle and so on this basis they came to Slovakia and they started the production of the Peugeot Citroen Picasso here…

The Slovak Government presented the country as a reforming and rapidly developing CEE nation which was increasingly attractive for foreign investors. Slovak media at the
time of this immense economic activity predicted that the investment would “draw the
attention of the whole Europe” and that it was therefore “probable that various investors
deciding to invest in Eastern Europe will focus on the Slovak Republic more” (Jakubiak
et al. 2008, p. 38). Informants explained how the Slovak Government wanted specialised
production rather than just a simple assembly line with a regional economic development
despite in focus. The government negotiated for “significant production facilities” to be
built in the region for the “entire car” to be built at the new facilities, rather than just
corner parts to be built there. Instead, a cluster of component suppliers were built in CEE
countries close to Slovakia. *Autex2*:

In 1990, we had Volkswagen here and at that time I was General Manager of Skoda
and we had discussions with Volkswagen about having a joint venture in Slovakia…
it was such a lucky step Volkswagen coming here… because of the fact that we had
Skoda and they produce small cars, and Bratislava could become a new production
base for the Volkswagen company and so at this time… in 1992… slowly, we
started assembling cars for Volkswagen in Bratislava.

*Autex1* indicated that 80,000 people work in the Slovak automotive industry and quoted
a Slovak Automotive Industry Association survey that estimated between 200,000 and
240,000 people in Slovakia are somehow connected to the automotive industry,
including the service industries:

There is definitely a lot of SME flow from Volkswagen … when
Volkswagen came, it means a lot of components to cars, but it also means a lot of
flow-on activity to the service sector… means a lot of services that are supplied…
from smaller companies for example, the cooking and the catering is all done by a
Slovak company that is located here in Bratislava… so all the catering services for
our workers, the cleaning services… for not just the workplaces but also the paint
shop, which has to be cleaned with special chemicals… we take it to a Slovak
cleaning company and they also do this cleaning in a special factory and then we
get it back… there are a lot of these positive effects… and also one of the other
positive effects is that the workers… their salaries are quite high… and the stability
of salaries, they can also take credit, but… they can also spend the money in the
shops and buy a lot of things and in restaurants and so on, and so they are supporting
the manufacturing sector as well.

A robust supply base was considered important as the automotive OEMs used just-in-
time production methods and required maximum flexibility in changing the line of
production quickly. Just-in-time methods meant the supplier network had to be situated
near the plant, within 100 kilometres. In the outer circles of production suppliers that do
not need to conform to just-in-time can be within the “second circle” from the factory
and can supply modules, systems and engine gear boxes with a 2-week turnaround. Ten
per cent of European-built vehicles emerge from Bratislava’s three plants. Informant
*Autex2* said the Slovak Government recognised the economic imperative of attracting
automotive investment in order to attract lots of other industries that “would then give
us a big regional advantage to then develop other manufacturing industries, for instance
with the development of the glass, steel and plastics industries” and emphasised the extent to which the regional model was underpinned by a strategy of understanding the importance of building up an entire manufacturing industry:

You need all of these industries that provide components to cars and so we built capacity in the electronics industry that is now quite strong, for instance we have Samsung here... and some other companies that are now somewhat in decline because of the competition in European markets... for instance with Sony.

The original production model involved importing parts from Germany and conducting assembly work. Once the car was assembled, it would be exported back to Germany. This model was in operation for the first 10 years of Volkswagen operations, from 1992. According to Autex2, the quality of the product was thought to be excellent, so Volkswagen head office decided to think about creating companies in Slovakia and the Czech Republic. Due to the high logistical costs associated with the export model, there was a new strategy employed to relocate suppliers to the CEE countries and to create a big cluster. The Slovak Government then strategically developed “three regional circles of production” where the largest 500-kilometre circle of production within Central Europe takes in 12 countries. Autex2 explained that in “each of these countries there are 20 plants and their capacity is 5 1/2 million cars and that that represents 30 per cent of Europe in that circle”.

A 500-kilometre circle becomes important for investors and suppliers who formed the basis of an economy built around automotive production. There are today over 220 suppliers in Slovakia, most of them component suppliers. Autacad:

... now on a map you can draw a line between the big three companies and then you see Győr is also not very far on the map... and then on the northern part of the border on Hungary there is a Suzuki plant... so there is a connection there and they have also Mazda that has a factory, I think, somewhere in Hungary... so somehow you can work with the supplier network and it is always easier when you have the supplier network closer... than far away.

The Slovak Strategy reinforces the strong role of the automotive industry in the country’s future economy by making the industry a key sector targeted for ongoing specialisation. Table 6.1 demonstrates how the automotive and mechanical engineering industries play a central role in existing areas of specialisation in the economy. Importantly, the automotive industry retains a central role in the nominated prospective areas of specialisation under the Slovak Strategy. Other industries nominated for specialisation are the cultural and creative sectors, and there is emphasis on increasing the value of the domestic raw material base to increase the potential for renewable energy in areas such as water resources, magnesite and wood (Slovak Republic, 2013).
Table 6.1 Areas of economic specialisation (Slovak Strategy, 2013)

<table>
<thead>
<tr>
<th>Existing areas of economic specialisation</th>
<th>Actions</th>
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<tbody>
<tr>
<td>Automotive and mechanical engineering industries</td>
<td>Increase domestic value-added products, particularly through the effective transfer of technology and science and research results into the production process. Develop production processes in industry focusing on better use of available resources, greater use of recycling materials and environment-friendly materials through the R&amp;D led development. Encourage the use, placement and replacement of previously used materials for advanced materials with a new and more complex performance, including technological processing (machining, forming, joining). Develop technological investment units, particularly in the field of metallurgy, engineering, energy and integrated industrial equipment, with respect to the application and use of light metals and advanced materials in the production of transport and construction facilities to reduce overall weight and contribute to the green economy, development and application usage of composite materials. Develop technological investment units, particularly in the energy and industrial facilities, with respect to internationalisation activities and the development of so-called “emerging countries”. Make more efficient the production and logistics processes and use ICT and robotics in the production processes. Involve in supply chains and internationalization - &quot;the purchase of cooperation is also a purchase&quot;, - know-how transfer from large to small subjects and vice versa in the framework of the</td>
</tr>
<tr>
<td>Prospective areas of economic specialisation</td>
<td>Actions (technology)</td>
</tr>
<tr>
<td>---------------------------------------------</td>
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</tr>
<tr>
<td>Automation, robotics and digital technologies</td>
<td>N technologies allowing the transmission, processing and storage of data</td>
</tr>
<tr>
<td>Processing and increasing the value of light metals and their alloys</td>
<td>Smart production system</td>
</tr>
<tr>
<td>Production and processing of polymers and progressive chemical substances (including smart fertilisations)</td>
<td>Smart and industrial transport</td>
</tr>
<tr>
<td>Creative industry</td>
<td>Smart technologies for the intelligent management of smart products consumption</td>
</tr>
<tr>
<td>Increasing the value of domestic raw material base</td>
<td>Progressive chemical technologies for the production of modern fertilizers</td>
</tr>
<tr>
<td>Support of smart technologies in the area of processing raw materials and waste in the regions of their occurrence</td>
<td>Technologies and services for the active life and aging, i.e. health care, diagnostics and wellness</td>
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<tr>
<td></td>
<td>Support of smart technologies in the area of processing raw materials and waste in the regions of their occurrence.</td>
</tr>
<tr>
<td>Areas of prospective specialisation considering scientific and research capacities</td>
<td>Actions</td>
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</tr>
<tr>
<td>Research of materials and nanotechnologies</td>
<td>R&amp;I in the field of new materials, their components, polymer composites and their application in the business practice</td>
</tr>
<tr>
<td>Information and communication technologies</td>
<td>R&amp;I in the field of linking dynamic parts of machines and mechanisms in order to increase the life and performance of devices</td>
</tr>
<tr>
<td>Biomedicine and biotechnology</td>
<td>In the field of plastics it will be realized a research focused on for e.g. the use of recycling and biodegradable plastics in specific applications with reduced burden on the environment after their lifetime</td>
</tr>
<tr>
<td>Environment and agriculture including modern enviro-friendly chemical technologies</td>
<td>R&amp;I in the field of welding, surfacing and untraditional coupling of components</td>
</tr>
<tr>
<td>Sustainable energy and energetics</td>
<td>In the field of R&amp;I technologies for the exploration and mining of raw materials</td>
</tr>
<tr>
<td>Sustainable energy and energetics</td>
<td>R&amp;I technologies for acquiring of the electricity and heat from renewable sources (water, sun, wind, biomass and geothermal energy)</td>
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<td></td>
<td>Research in nuclear energy with a focus on safety, storage of spent fuel; research of Generation IV reactors and problems of the nuclear fusion, Slovakia’s participation in global projects</td>
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<tr>
<td></td>
<td>Development in the area of improving the efficiency of energy transfer systems</td>
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<td></td>
<td>Development of innovative solutions enabling the rational management in the agriculture and forestry and reducing environmental burdens such as advanced fertilizer systems and chemical substances used in these sectors</td>
</tr>
<tr>
<td></td>
<td>Technologies with a focus on the special chemical and pharmaceutical substances</td>
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<tr>
<td></td>
<td>Development of solutions in the context of the climate change adaption and strengthening of the internal security</td>
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</tbody>
</table>
The major economic priorities described in the Slovak Strategy are outlined in Table 6.1. For instance, the automotive industry and consumer electronics sectors are dominated by a high level of marginal consumption and low level of value adding. Therefore, a strategic objective to improve innovation in these industries is to create the conditions for stimulating research and innovation activities of enterprises in collaboration with the academic and research and development sectors, and for implementing the results of research, development and innovation into practice. Table 6.2 outlines specific actions include increasing the number of large companies that become Tier 2 suppliers this said to be due to low number of companies in higher tiers, caused by their inadequate innovation activity. The result is their low competitiveness. To improve this, the strategy outlines that conditions will be created for implementing the innovative technologies. In addition to this, the strategy argues that the stimulation of enterprises to develop their own technologies, products and services will be especially supported. Improve the linkages of local SMEs with large MNC suppliers. A further action proposed is to improve the linkages of local SMEs with large MNC suppliers. In this way, it is argued that by increasing the value added of supplied products and services of domestic companies as well as improving the position within the framework of supply chains, this will cause an increase in the embeddedness of key industries through building of corporate research and innovation centres.

Table 6.2 Strategic objectives, aims and measures for the automotive industry (Slovak Republic, 2013)

<table>
<thead>
<tr>
<th>Strategic objective</th>
<th>Aim</th>
<th>Measures</th>
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<tbody>
<tr>
<td>Strategic objective 1: Deepening integration and embeddedness of key major industries increasing local value added through the cooperation of the local supply chains and turning local supply chains into embedded clusters</td>
<td>Create conditions for growth of added value generated at home in total exports by 5% until 2020 in comparison to the current status. Value added in total export will be supported through the restructuralisation of industrial sectors identified within the scope of the specialization of the economy, especially in automotive industry and consumer electronics, since these sectors are dominated by high</td>
<td>Development of innovative capacities through cooperation between enterprises and research institutions in key sectors of the Slovak economy. The measure aims to support the creation of consortia for solving multidisciplinary problems and embedding sectors through clusters and</td>
</tr>
<tr>
<td>Development activities in domestic enterprises operating in the supply chains or enterprises that have the potential to become sub-suppliers for supply chains.</td>
<td>Level of marginal consumption and low level of value added. This will be done by creating the conditions for stimulating research and innovation activities of enterprises in collaboration with academic and research and development sector and the conditions for implementing the results of research, development and innovation into practice. Increasing the number of large companies that become Tier 2 suppliers Low number of companies in higher Tiers is caused by their inadequate innovation activity. The result is their low competitiveness. Conditions will be created for implementing the innovative technologies. The stimulation of enterprises to develop their own technologies, products and services will be especially supported. Improve the linkages of local SMEs with large MNC suppliers. Increasing the value added of supplied products and services of domestic companies as well as improving the position within the framework of supply chains will cause an increase of embeddedness of key industries through building of corporate research and innovation centres.</td>
<td>Other forms of networking in order to develop innovation capacities. Technological upgrade for structural changes in industry The measure aims to support the increase of the technological level of companies in order to increase their competitiveness. Support for building research and innovation capacities in Slovak enterprises The measure is aimed at creation of industrial R&amp;I centers and support of existing industrial R&amp;I centers in Slovakia. The measure will allow the establishment of industrial centers with the participation (ownership and partnership) of academic and university sector. 1.3 Establishing indirect motivational tools Indirect motivational tools for the support of R&amp;I development will be looked upon, especially in relation to private sector.</td>
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</table>
As Table 6.2 shows, the centrepiece of the Slovak Strategy hinges on the cooperation of large firms and SMEs, and the cooperation of these entities with R&D. Slovakia belongs among the group of OECD countries in which the share of enterprises in funding research and innovation is relatively low. Thus, the strategy is heavily focused on an ongoing state strategy to continue to stimulate MNCs operating within Slovakia, to transfer R&D capacities and to support the creation of R&D centres in large companies and SMEs. This, the strategy maintains, will contribute to an increased “embeddedness of major export sectors to domestic economy” (Slovak Republic 2013).

The EU Peer Review validated the ongoing dominant role afforded to MNCs in the Slovak economy. In relation to the objective to “deepen integration and the embedding of key major industries increasing local value adding through the cooperation of local supply chains and turning local supply chains into embedded clusters” it noted that the Slovak economy is driven by large ‘key’ multinational companies. The report therefore confirmed the importance of building on the concentration of domestic suppliers operating in supply chains or enterprises that have the potential to become sub-suppliers for supply chains. It argued that the key to achieving this objective will be in the building of research and innovation activities within the domestic supplier base and collaboration with the academic R&D sector, and by the creation of conditions for implementing the results of R&D and innovation into practice (EC 2014f).

Sub-supplier companies operating predominately in the automotive and the complementary electro-technical industry and ICT sectors are encouraged by the Slovak Strategy to continue to work closely with MNCs to identify new strategic export and cross-sectoral opportunities within GVCs, to build domestic production capacity and to add value. The Strategy sees a particular and priority potential added value in metal and non-metal materials research. ICT products may often be sold as both a separate article and as an input to automobiles and consumer electronics; for example, navigation software, management systems, communication systems. A key challenge identified in the Strategy relates to collaboration among countries with similar positioning within GVCs; therefore complementarities in niche activities need to be explored and considered. To reach this objective, emphasis is placed on the importance of working with local companies to encourage more effective production and logistical processes. Alongside this aim, the Strategy also emphasises that companies should also be encouraged to focus on materials research, especially in the area of metals (steel, light metals and alloys), plastics and compression moulding, and joining of materials, with the aim of improving a product’s quality and durability – such product and process innovation will improve the country’s global competitiveness (Slovak Republic 2013, EC 2014).

The strength weaknesses, opportunities and threats (SWOT) analysis (Table 6.3) within
the Slovak Strategy also reveals that a key ‘opportunity’ under Smart Specialisation is presented by “broadening the connection of domestic sub-suppliers to global supplier MNC chains”. This strategic approach was supported by informants, who emphasised the importance to the Slovak economy of retaining the significant supplier base in the country. *Autex* emphasised the importance of more than 1000 suppliers to the region and indicated that this was also a factor for the Volkswagen head office in ensuring ongoing investment in Bratislava with *Govpol* arguing that the degree of effort to “move our entire supplier structure as the cars are not built anywhere else… in the world”. He believed the same would eventually apply to Kia, where “it does not make sense [to move], when they set up a factory in Europe they also set up an engine shop there, they have the suppliers’ network set up there… and a lot of qualified people”. According to *Govpol*, the Slovak Strategy in its objective of broadening the connection of domestic sub-suppliers to global supplier MNC chains was based on a sound economic strategy, particularly from a human resources perspective.

**Table 6.3 SWOT analysis (Slovak Republic, 2013)**

<table>
<thead>
<tr>
<th>Strength</th>
<th>Weakness</th>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key industrial sectors represented by MNC</td>
<td>Insufficient share of own (Slovak) R&amp;I activities in export sectors in Slovakia</td>
<td>Broadening the connection of domestic sub-suppliers to global supplier MNC chains</td>
<td>The shift of investors into EU territories with different comparative advantages in comparison to the Slovak Republic</td>
</tr>
<tr>
<td>Competitive technological level and production level in export sectors</td>
<td>Absence of corporate industrial research in Slovakia</td>
<td>Creation of linkages between MNCs’ R&amp;I and domestic business R&amp;I frameworks</td>
<td>Insufficient investments in products and technologies based on knowledge also due to insufficient links between MNCs and local R&amp;I infrastructure</td>
</tr>
<tr>
<td>Increasing interest of businesses and industrial clusters in rebuilding of industrial R&amp;I structures (entities)</td>
<td>Insufficient integration of domestic businesses into sub-supplier chains for MNCs</td>
<td>Concentration of R&amp;I centres on the limited number of RIS3 priority areas</td>
<td>Reluctance of businesses to invest in R&amp;I in Slovakia</td>
</tr>
<tr>
<td>Increasing share of information services in export services</td>
<td>Undercapitalisation of businesses associated with low innovation performance, especially SMEs</td>
<td>Deepening the trialogy between academic, business and public sectors</td>
<td></td>
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<tr>
<td>Good results in selected scientific</td>
<td>Marginal application of revolving schemes</td>
<td>Potential for using land and strategic domestic natural resources (water, timber,</td>
<td></td>
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<tr>
<td>and technological disciplines, with concentrated research teams and workplaces (materials and nanotechnologies, information and communication technologies, biomedicine and biotechnologies, industrial technologies, energetics and energy, environment and agriculture, social sciences and humanities)</td>
<td>including venture capital for R&amp;I support</td>
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<td></td>
<td></td>
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<tr>
<td>Dynamic growth of ICT usage in all business processes</td>
<td>Absence of a system for the application of venture capital</td>
<td></td>
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<td>The quality of human resources in the competitive production sector</td>
<td>Low added value of production of domestic businesses</td>
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<td>Absence of a complex R&amp;I strategy and its implementation</td>
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<td>Excessive number of broadly defined priorities of state policy in the area of science</td>
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<td>Fragmentation of resources for building R&amp;I infrastructure on a national level (state budget, structural funds)</td>
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<td>Extensively built R&amp;I infrastructure</td>
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<td>Barriers for companies to access the infrastructure of public R&amp;I workplaces</td>
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<td>Administrative barriers to implementation of projects financed from structural EU funds into practice</td>
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<td>Low level of cooperation between academic sector and industry</td>
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<td>magnesite) in an innovative economy</td>
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<td>Support for the conversion to green technologies, materials and products due to legislation and undesirable ecological changes</td>
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<td>New “EU Industrial Strategy (Industry 2020)” heading towards the revitalisation of European industry</td>
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<td>Dismantling the barriers to cooperation (increasing coherence) through quadripartity (quadruple helix) as a basic governance principle of R&amp;I</td>
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<td>The support of R&amp;I projects within Visegrad Four countries and the EU Strategy for the Danube Region and interlinking within ERA also by utilising the Centrepo region potential (Bratislava-Brno-Vienna)</td>
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<td>Better use of community programs, especially Horizon 2020 and the system of ESFRI programs and projects</td>
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<td>Use of European technological platforms by integrating national</td>
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<td>Limitation of desirable financial support for the R&amp;I system in the Bratislava region</td>
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<td>Autonomous functioning of sectors of education, R&amp;I and business practice, resulting in different understanding of R&amp;I</td>
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<td>Changing population structure with increasing share of population with insufficient quality of education and low professional skills</td>
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<td>Persisting educational orientation towards the areas that do not correspond with economic practice and knowledge society needs</td>
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<td>Deteriorating composition and quality of graduates in the educational process</td>
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<td>Lack of graduates especially in technical and natural sciences</td>
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<td>Persisting brain-drain abroad</td>
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<td>Low share of national resources allocated to financing R&amp;I</td>
<td>technological platforms into their activities</td>
<td>Imbalance of employees’ age structure</td>
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<td>Low involvement of Slovak bodies in the Seventh Framework Program (FP7)</td>
<td>Broader use of Slovak Republic’s knowledge in carbon-free energetics including the level of security that is accepted by society</td>
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<td>Insufficient competitiveness of Slovak R&amp;I organisations within EU</td>
<td>Insufficiently used agriculture and water resources management potential</td>
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<td>Dysfunctional national innovation system</td>
<td>Development of social innovations and the creative industry</td>
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<td>Barriers to utilising the protection of intellectual property rights</td>
<td>Entry of national innovative firms into global markets</td>
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<td>Ineffective use of resources for the transfer of knowledge and technologies into practice</td>
<td>Support for the creation and development of innovative spin-off and start-up businesses</td>
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<td>Absence of indirect tools and motivational environment for the R&amp;I support</td>
<td>Utilising the potential of networking (enterprises, R&amp;I structures)</td>
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<td>Low levels of law enforcement</td>
<td>Motivating businesses to support the innovations and technological transfers by financial tools (innovation vouchers, venture capital funds)</td>
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<td>Absence of legislation stimulating the acquisition of innovative products</td>
<td>Utilising the potential of services and products in the area of ICT in the context of Digital agenda 2020</td>
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<td>Educational system not linked to practical needs, especially in the area of technical and natural sciences</td>
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The health of the automotive industry was emphasised by *Govpol* as evidenced by British company Jaguar building new facilities in Bratislava in 2015. However, he also raised concern about the implications of industry expansion on increasing dependence of the region on this industry and, as the region is located in Eastern Europe, further consolidating its presence in the region. *Govpol* argued that this could lead to problems in the future in relation to the division of labour and the corporate supply chain because Bratislava is subject to material shortages and not exposed to the innovation advances that occur in the West:

The European Federation of Steel has argued that some countries have become very dependent on industry but that some regions house the premium product and some are the producers. Here in the EU, we are very dependent on car production and traditional industrial production... this is a big problem between North and South and East and West. We have a problem with materials shortages and funding innovation in the East.

*Govpol* also noted that while the Volkswagen production model was about assembly, it was not focused on development work in relation to the cars and components being made in the region and this production was typical of that found in most CEE countries, where “very few countries [are] involved with R&D in the automotive industry” as they are mostly product-oriented. He noted the component supplier Johnson Control was the only automotive company involved with R&D situated in Bratislava. *Autex2* also stressed the importance of

| Absence of a system and support of business education and development of creativity in the educational process | Renewal of the tradition of vocational and technical education |
| Low number of efficient R&I employees focused on practical utilisation of the results | Creation of a suitable environment for the return of Slovak citizens employed in foreign R&I organisations |
|                          | Support for inflow of foreign R&I workers and foreign students to Slovakia |
|                          | Involvement of young R&I workers in solving practical business problems |
moving from what may be termed a problem of a “labour-seeking model” of routine assembly work in the region, to a “complementary specialisation” model where technological-structural advances are possible. Thus, in order for there to be innovation across sectors, for instance between Samsung and Volkswagen, and to get cooperation from Volkswagen for cross-sectoral work, Bratislava needed to show its German partners that it could produce a future model of car:

We have 12,000 people working here for Volkswagen in Bratislava… but we need to show that we are capable of building a luxury model of car like Porsche, not just that we can produce the cheap cars for the market because of our low costs compared to Germany… this is the challenge for us.

As has been discussed in this chapter, the perspectives of informants raises questions as to whether the Slovak Strategy objective to increase the number of large companies that become ‘Tier 2’ suppliers (recognising that Slovakia had low numbers of companies in high tiers, and that this is caused by their inadequate innovation activity) really represents a comprehensive enough program for innovation to emerge in new domains and niche markets around activity in the automotive industry, according to the vision of the Smart Specialisation policy architects. The Slovak Strategy outlines how “conditions will be created for implementing innovative technologies”; and further, the “stimulation of enterprises to develop their own technologies, products and services will be especially supported”. Given these informant perspectives, it is apparent that there is a strong sense from local stakeholders within Bratislava that more could be done by both the state and the MNC to more concretely embed subsidiary activity within the RIS. This would enable industrial upgrading in a more substantial manner, beyond sub-supplier development, thus reducing the capacity, as Morris has argued, for the potential of car producers to downgrade them in the producer chain, rather than undergo a process of functional upgrading as represented by occupying design-intensive activities in the value chain (Morris, 2001). This leads to an analysis that give the Slovak Strategy has a heavy focus upon strengthening the existing car industry through supply chain development, that this may represent a traditional cluster approach to developing a RIS, rather than regions aiming to identify a radical foundation of a new domain, as envisaged by the EC in the Guide, where it was explained that this would entail concentrating R&D on a certain field in previously low-growth activities to become attractive with the co-emergence of R&D innovation areas and the emergence of a niche market (EC 2012).

Autex2 also expressed concern about the ongoing dominant role afforded MNCs in the region under the Slovak Strategy and the potential for regional economic advancement depending on ongoing large company investment, employment and technological advancement. MNC activity has led to the observation that there has been an
overshadowing of the capacity for small Slovak-owned companies to emerge and compete in that economic environment. *Autex2:*

Therefore we started with 900 employees in 1991 when we set up and now we have 10,000 employees and the investments are... altogether are about €3 billion... until the end of last year... so all of this investment came from Volkswagen headquarters... and basically we are producing models that you do not see anywhere else in the world... at that time, Volkswagen had 106 factories in the whole world... and we were the first that produced the only electric car that didn’t need diesel or petrol in 2014... if you did this with a small company, there would be not enough money and... not enough connections to qualified people or connections to do that... we have the best qualified experts from Germany who are helping in our factories and our training centres and they are highly qualified and specialised... how can small companies compete in this environment, when the big companies have so much money and can bring the newest technology and bring the technology faster and easier than any local source...

A further issue associated with the ongoing role afforded to automotive MNCs in Slovakia is that this development would potentially further consolidate in the long term the structural vulnerability of an export-orientated economy with an over-reliance on external foreign investment due to industrial development in Bratislava. Most of the passenger cars produced in the three Slovak car factories are exported, with the Wold Bank observing that “car exports are growing faster than overall exports since 1998, with the share of car exports rising from 20 per cent in 1998 to more than one-third in 2006, with Volkswagen being the lead exporter”. Over that same time period, the largest market for Slovak exports of motor vehicles and parts was Germany, with 47 per cent followed by the US at 10. The large US share is said to be explained by high sales volume of SUVs – the Volkswagen Toureg and Audi Q7, both manufactured exclusively in Bratislava – on the American market. It is estimated that almost half of the production volume of the Audi Q7 targets this market (Jakubiak et al. 2008). A high diffusion of knowledge in the country occurred because of the role of FDI driven by foreign companies based in the country (Slovak Republic 2010, 2013). For instance, in 2011, the share of FDI in the total GDP of the Slovak economy reached 57.4 per cent (Slovak Republic 2013).

The previous economic strategy for the country entitled the *National Reform Program of the Slovak Republic* in 2010 (hereafter the ‘National Reform Strategy’) warned that, while Slovakia’s economic performance was strong it was built on a model of competitiveness that was not sustainable in the long-term and that the strong economic outcome was primarily fuelled by strong performance outcomes in labour productivity. According to the Slovak Strategy, in 2005 labour productivity in Slovakia was only 47 per cent of the EU27 average, whereas it was 73 per cent in 2011. Breaking this down further, the strong performance in labour productivity growth can be explained by a strong rate of total factor productivity (TFP) growth based on diffusion of knowledge from abroad. This economic model has had
implications in the long term for the national economy in relation to value adding to exports. The prosperous countries of Western Europe are technologically more developed and have a higher share of advanced technologies in economic activities. According to the National Reform Strategy, “sectors with higher technological complexity of production are able to achieve good results on foreign markets due to high quality (and not only due to low prices) and create higher added value and lead to technological development of a given country”. Moreover, the Slovak economy is highly specialised in the area of industry, especially in the area of industrial production associated with medium-high technology, and that 65 per cent of this production is created by the production of motor vehicles and their spare parts. Such a high share in production demanding medium-high technologies is not seen in any other EU state (Slovak Republic 2013).

The status of Slovakia as a medium-high technology country has also impacted on its production capacity within industries demanding high technologies. It explains low export performances in sectors such as pharmaceutical products and preparations, and knowledge-intensive services. This has implications for the capacity of Slovakia to pursue an economic specialisation strategy in these growth industries, despite the focus upon them as identified growth areas under the Slovak Strategy, as depicted in Figure 6.4.

![Figure 6.4: Triangle of areas of RIS3 Smart Specialisation](European Commission 2014)

Slovakia’s share of knowledge-intensive service exports is low, with 23.13 per cent of this
sector being exported, compared to an average rate of 48.13 per cent in most EU Member States. This has meant that service exports in Slovakia are mainly of low added value as they are dominated by the transport and tourism industries. The Slovak Strategy noted, however, that Slovakia holds a relatively good position in the area of computer and information services, particularly with its export performance to the US. In line with this observation, the Slovak Strategy has recommended that to overcome this problem of knowledge diffusion “Slovakia should create conditions for further technological convergence through the development of its own technological solutions and not only through the purchase of foreign technologies, especially from developed countries” (Slovak Republic 2013).

Thus, overall it can be seen that the implications of the Volkswagen production model found in the Slovak economy are significant in relation to innovation policy objectives. The Slovak Strategy perceives MNCs as the predominant actors in transfer of research and innovation capacity in Slovakia. The strategy outlines a “realistic self-assessment” that its economy is heavily open market and, due to its small size, it has a limited internal market. Therefore “the Slovak economy will always be open” and this means that, in order to sustain competitiveness based on export ability, the involvement of all economic actors needs to be concentrated towards this objective. It also notes the imperative of the MNCs in connecting and linking export industries to domestic production and the impact that capacity building will have on strengthening the position of growth export sectors in the Slovak economy. The predicted outcome is positive effects on employment and economic growth, and a reduced risk of economic collapse in the case of departure of important foreign investors from Slovakia. However, as discussed earlier, a key question is to what extent the MNCs can play this more ambitious role in the Slovak economy, given the barriers presented by dependence on imported technology, and the international GVC challenges associated with MNC location of production decisions (in the case of VW) being made from foreign countries, for instance Germany.

Furthermore, according to the EU Peer Review there are governance challenges for the implementation of these objectives, and it will be important for Slovakia to overcome cultural and legal differences across countries and introduce common standards and educational programs. The administrative procedures associated with EU initiatives for trans-regional collaboration are complicated and need the removal of administrative barriers. Slovak representatives in the EU Peer Review highlighted additional problems to do with GVC analysis within the region and argued that data is difficult to access and complex analysis requires time, money and human resources (EC 2014f). The next section will discuss the implications of these identified implementation challenges of the Slovak Strategy posed by
the role of the MNCs in the context of the challenges posed by the characteristics of the RIS found in Bratislava.

**Regional Innovation System**

Chapter 2 discussed the extent to which the state can shape the production decisions and organisation of MNC GVC activity in a regional context is dependent on the degree of embeddedness of that MNC within the context of a RIS (Heidenreich 2017). It was argued that a major advantage of the regional and national embeddedness of MNCs is that they may facilitate learning processes within other companies in their proximity (competitors, suppliers and service providers) and have a strong role in the transfer of learning between research and higher education institutes, technology transfer agencies, vocational training organisations, and business associations that hold important competence to support regional innovation (Heidenreich, 2017).

However, a challenge for embedding an MNC within a RIS located in a CEE are the particular constraints that can impede an effective innovation system from functioning at the level of place. Such regions can exhibit unfavourable research and innovation systems, which are often characterised by organisational thinness, fragmented systems that inhibit networking and knowledge exchange and a weak capacity to drive transformative change (Coenen et al. 2015; Healy 2015). In addition to this, a high level of specialisation in CEE countries has led to overspecialisation and investment in obsolete technologies, thus undermining the competitiveness of CEE countries in the context of globalisation (Berend cited in Dyba et al. 2018).

For instance, Slovakia as an entire country greatly lags behind the EU average in innovation performance. It belongs to a group of ‘moderate innovators’, the second-lowest innovation performance rank among 27 EU Member States, and occupying the twentieth position in 2011. Slovak R&D investments are one of the weakest links in the Slovak innovation system, reflecting a 20-year history of neglect in this policy area. Slovakia has historically invested little in R&D. Total expenditure was on average 0.5 per cent of GDP growing to 0.6 per cent in recent years, and in 2011, just 0.68 per cent. In comparative terms, the total expenditures for R&D in other European economies indicates that Slovakia is still one of the countries with the lowest public expenditure into R&D. R&D funds have historically been given to basic, rather than applied, research (Slovak Strategy 2013).

Slovakia directs a high proportion – 77 per cent – of public spending on R&D to basic research. This figure represents the highest proportion in the EU. The Slovak Strategy identifies insufficient support for applied research and the lack of institutions for the transfer
of scientific knowledge into commercial practice as representing a major barrier to innovation. An exception is the development of departmental research institutes and centres embedded in the universities, where some applied R&D does occur. This history of underinvestment has led to a low graduation rate of PhD students in technical and scientific fields, few excellent research teams, insufficient innovation activity of SMEs, insufficient cooperation among innovation stakeholders (especially companies and R&D departments), low representation of knowledge-intensive activities in the economy, and poor patent activity. Slovakia also rates poorly in international comparative terms (in the second half of 144 assessed countries) on innovation indicators, such as the quality of scientific and research institutions, availability of scientists and expenditure on R&D (Slovak Republic 2013).

Slovakia’s low investment in R&D has also been historically concentrated in the public sector and two-thirds of overall expenditure on R&D still occurs mainly in universities or other public-sector research organisations. A relatively low proportion of Slovak universities were involved in public research and development (48%) compared to other EU countries. As the Slovak Strategy indicates, this trend is said to be a typical characteristic of CEE economies where national scientific institutions and, to a limited extent departmental research institutes, played an important role in the communist era. The Slovak universities rank low in quality in international terms because legal regulation has enabling a relatively large number of universities both public and private to be established, leading to fragmentation of funding across a large sector and undermining high-quality state institutions’ prosperity (Slovak Republic, 2013).

The Bratislava region stands in contrast to the national performance on scientific research indicators. This is due to the agglomeration of technical and research capacities in the region; 50 per cent of the country’s capacity. However, according to the Slovak Strategy, the good-quality publications from Bratislava’s universities do not outweigh the poor overall performance in basic research and world-class R&D compared to, for instance, outputs associated with Denmark and Germany. Public R&D has been heavily concentrated on the Slovak Academy of Sciences based in Bratislava. The main mission of the university is to implement basic and applied research in engineering, natural sciences, humanities and social sciences with the support of specialised service organisations (Slovak Republic 2013).

According to the Slovak Strategy, private expenditure on R&D in Slovakia, represents about 0.25 per cent of GDP, which is very low in European terms. In Finland in 2011 expenditure on private R&D was 2.67 per cent of GDP, in Sweden 2.34 per cent, the Czech Republic 1.11 per cent, and Hungary 0.75 per cent. Slovakia has been lagging behind in innovation in private enterprise, including low levels of technology transfer; patent activities; cooperation
between research institutions and industry; venture capital; and the effective use of human resources (Republic of Slovakia 2013). The low level of patent registrations in Slovakia is due to enterprises investing insufficiently in their own R&D and the purchase instead of ‘ready-to-use’ technologies and knowledge. The low level of private activity in R&D. Slovak-based MNCs carry out most of their R&D in Germany, France, the UK and Korea; hence R&D is conducted in isolation from activities in Slovakia. Low levels of private R&D has led to overall poor outcomes in knowledge-intensive services, except in key economic sectors such as motor vehicle, consumer electronics, and machinery and metal trades industries. The Slovak Strategy concludes that the strengthened position of these sectors needs to be better supported by more intensive investment into R&D (Slovak Republic 2013). To address this low investment in R&D, the Slovak Strategy recommends increasing state investment to “at least” 1.2 per cent of GDP by 2020, with financing targeted to R&D projects in priority areas. It is noted that this development is likely to motivate the private sector to increase R&D investment. This increased investment in public R&D will then stimulate investment in private sector R&D spending. Greater publicising of venture capital investment and public procurement policy tools, and further tax incentives, have been proposed by the EU Peer Review as additional policy mechanisms to achieve this outcome (EC 2014f). To address system-wide problems with the Slovak education system, the higher education system has been subject to a government review to identify and rectify “systemic distortions” impeding the quality of higher education and undermining the “scientific excellence” that the university system in Slovakia aims to achieve. The Slovak Strategy notes that, although the review is still under way, the national government has recognised the need to reform the current funding system so that high-quality universities are the main beneficiaries. Thus, the Strategy outlines an intention to direct funding increasingly to elite universities seeking to engage in applied research, with the aim of commercialising the results of their R&D (Slovak Republic 2013). Govpol thus confirmed the empirical research findings of Coenen et al (2015) and Healy (2015) that note the challenge of implementation of Smart Specialisation faced by CEE regions with weak innovation systems. A key problem facing Bratislava is a culture of public-private industry collaboration that is still seen as underdeveloped, given the political background under communism. Govpol noted that, even though in 1993 the Slovak Republic was formed based on a democratic political institutional platform, there was still very much “a mentality… that is very communist”, which undermines business innovation. Govpol observed that even though Slovakia had adopted the new EU industrial emphasis on developing an innovation system focused on institutional collaboration, this was still
not making a large impact. He believed that policy makers felt they were still in a capacity-building phase and therefore only took small steps to generate closer cooperation between the business and academic world. According to Govpol, the private sector is still driving commercial innovation outcomes in the Slovak context, with the government still trying to drive the start of a new economic culture embracing “business innovation” in public administration:

There are some developments… many universities have partners with business for example… on their own, for instance under the last policy period, a centre was established by a university… where they closely cooperate with Siemens which is a German company… same with the company and Otis and the ICT academics, so faculties are often wanting to cooperate and collaborate according to their fields of studies.

The same informant also identified an additional potential barrier to the Slovak Strategy objective of increased links between research institutions and industry – the dominance of technical universities in the region:

For example, we have eight universities… we have new technical development centres but Slovakia is very small… we have university sectors… but we have a problem in that they are very technical and focused on the technical nature of science… we have seven universities that are working in the science area… we have Slovak Academy for Science and many others… and we have many scientists, about 18,000 of them.

Despite these constraints in the organisation of R&D infrastructure in Slovakia, Bratislava is still seen as critical to the building of an R&D innovation ecosystem across other less-developed regions of Slovakia. Since 2007, EU funds in Bratislava have been heavily directed towards R&D programming priorities, with heavy emphasis on the creation of centres of excellence within the research community. Arising out of this, eight new research centres have been established in Bratislava, including centres of excellence (support of top fundamental research), R&D centres (industry–academia collaborations) and competence centres (relatively large clusters of academic institutions and industry). These provide support for applied research projects and technology transfer. In addition, EU Structural Funds have been directed towards university infrastructure, equipment and the building of university science parks and research centres. The centres and projects have been focused on materials research, nanotechnology, environmental protection, biotechnology and biomedicine (Slovak Republic 2013).

Autex1 asserted that Smart Specialisation had encouraged a new policy of “tying grants” to researchers who cooperate with industry, to overcome the focus on heavy involvement
in basic research. Over 30,000 people in the region are engaged in basic research, but working “in isolation from industry”, leading to a situation where there is research without innovation, which is described as a big problem. **Autex1:**

We made a big mistake in Europe by sending our high technologies to China and we lost a lot by doing this… we have a big problem now and it’s not easy, but it is important for the future, the companies need from us… companies are working in development and innovation processes and we need to create the innovation conditions and the potential… and we would like to cooperate with our partner in one segment. In this context, it is understood that with the Smart Specialisation policy we have to change this and we have to define what is important in our future, so now under the new policy direction we have developed our six priority areas… and what we would now like is to still give more money to our scientists and research and development centres… but what we will be saying is that we want to give money, but that that you need to cooperate with industry.

**Autex1** also indicated the need in the shorter term to build more R&D capacity in the region to deal with operational requirements of VW. He gave the example of a significant multi-million-Euro investment in a new body shop attached to the production facilities in the region. The facility is entirely automated by approximately 1000 robots and has introduced new technologies into the production process, which had not previously been used in the welding or car-producing industries. He conveyed that there was a sense that Slovakia had fallen behind in its capacity to resolve technical issues relating to more sophisticated production:

I would have to say that I think that this is the part that is not working well in Slovakia… in the sense that the technological centre of the Volkswagen Group is still located in Western Europe, as in Germany and Austria… there is a technical university that is located in Vienna and we are cooperating with them as well…. and we find that, when we have a problem or issues on the line, we have to ring Austria and ask the guys to come up and take a look and find a solution… they come up and they do some tests… see it in production, they take into the laboratory at the university and they find a solution after some time… and they come up with something after some time… they are expensive, but they come up with something after some time… our goal is to have this capacity in Slovakia.

However, **Autex1** did not express the same concern for the long-term implications of much of the research and design work of the GVC organisation being located in key regional centres globally, and Slovakia mainly doing “routine production” work on the global assembly production line; **Autex1:**

I don’t think this is a problem because [the way the GVC is organised for Volkswagen] you have R&D centres for each brand… for SEAT in Spain, Germany every brand, Audi has one, Volkswagen has one, Skoda has one in the Czech republic… in general, you would need a history of this… it can come from some components in Slovakia for instance… but to build the R&D for the whole product, the whole car… you need tens of thousands of experts from all of the fields, the
suppliers… it makes no sense to do it here when we have it already set up in Germany… or in Skoda… there are Slovaks… [who] are training in design… here is a famous design school in Slovakia… where quite a lot of design people are working, BMW or Volkswagen… both interior design or exterior design… but there is no sense that they stay here… they tend to go and work elsewhere… like Germany and so forth.

Autexidentified a further key challenge for the region in moving the system of innovation away from expecting universities to come up with “small process improvements” within the automotive industry, such as with a recent university-firm collaborative project where a special transport system was developed to bring components to the lines without any need for human support. He argued that the region needed to see innovation advances as more about assisting with bigger R&D projects that encouraged “cross sectoral” innovation through more comprehensive collaboration between universities and firms.

Autacad argued that centres for excellence could assist with more comprehensive innovation advances. EU Structural Funds contributed to a public-private funded R&D facility, bringing together academia and industry to develop innovative advances in the areas of aluminium, steel and plastics. These important institutions enable flow-on effects, up-skilling automotive industry employees to set up their own companies and filling the gap left by a lack of investment in R&D by Volkswagen in Slovakia:

So, even though Volkswagen has 6000 employees, but only 70–100 of those are in R&D… which is not giving them a chance to set up their own companies through supplier networks… so compare this to Stuttgart that has 12,000 workers alone in R&D. So, Volkswagen has a global R&D network where problems are solved within 24 hours which is good but still a problem for us… so what we have done with the EU and RIS3 strategy is to develop a strategy to co-finance an R&D facility. Johnsons are an external engineering centre and we have argued that we should build an R&D facility together… so with the Slovak Government we can build together a centre for excellence in aluminium, steel and plastics. And we can bring in private companies through tied grants of EU R&D grants, we can get the R&D investments in aluminium and IT to create some interesting technology… for instance, in making toasters with hydrogen we are able to add value here and have good cooperation with the suppliers.

Yet, Autacad cautioned that although the new centre for excellence was seen as a key plank of Smart Specialisation in action, to cooperate on shared projects, policy stakeholders were concerned that government funds could actually be indirectly benefitting Volkswagen’s headquarters in Germany rather than assisting with advances in innovation in Bratislava, given the extent of private funding by Volkswagen in the new cluster. Autacad:
Volkswagen agreed to be involved in the Centre of Excellence project. We approached them for the prototype and they said that they would pay for it for 1 year and then they will bring the product into their production... they will collaborate with the Central European Technology Institute. In the production plants, you have a very bureaucratic process with the logistics all in the one place and materials for the car being produced around one vehicle.... but with the Centre of Excellence, you have academia, private capital and with the support of the State... you have specific product... plastics... and specific technology... so what we are trying to do here in Slovakia is emulate the model of clusters that have been so well developed for the automotive industry, for instance in Sweden and Canada. So, the strategy that is needed for building the cluster is getting one big OAM, some suppliers, some plastics industry expertise. Then you have the problem of the suppliers not having R&D money, so that is where the EU money can be very helpful, but the EU cannot give money to private capital and this is a problem... and we don’t want our indirect state funds to help Germany rather than Slovakia.

Autex1 maintained that collaboration between competing firms in the automotive sector may be undermined by heavy competition between car companies and a lack of research departments within the firms:

With car producers in Europe... for example, in Russia, Slovakia and the Czech Republic, there is huge competition... everyone wants to produce engines... and everyone wants to be better and better... there is competition between Volkswagen and Kia and this creates a strong innovation wave and this innovation wave has a big influence on car attractiveness to the customer, and European cars from this region are sought all over the world... this competition is about creating new brands.

Collaboration was therefore limited between Kia and Volkswagen. As Autex1 explained, when Kia arrived in Bratislava, they communicated directly with the Slovak Automotive Association in establishing operations:

For us it’s no problem [that we don’t collaborate with Kia] as they are about 250 kilometres away so it basically has no impact on us... and we have a small factory in Martin, a small city about 50 kilometres away... for us we are just a production site, we don’t sell cars, 99 per cent of our cars are exported all around the world... to 28 countries and for us, they are building other classes of car.

In addition to this, Autex1 also said he believed that the capacity for collaboration between Volkswagen and KIA in the regional context would be undermined by Kia’s use of Korean rather than Slovakian suppliers. The Korean suppliers, in turn, supply a factory site owned by Hyundai in the Czech Republic producing other models of cars.

Autex1 also believed that Kia, which in Slovakia employs about 4000 people, was also undercutting Volkswagen in human resources supply, through lower labour costs:

They also have a Peugeot factory in Trnava that is about 40 kilometres from here... that was more competition for us, more in terms of labour market, they were sucking
our people… especially at the beginning, but they have much lower salaries than we do, and now especially that the Bansk group is not doing well… we are still the most attractive employer in the country… but at the beginning when we came in 2005… it was different.

According to Autex2, however, the region hoped to be able to design cars, but this would require more public R&D investment in the future:

… for example, with Skoda… the designer is from our university and it is a very interesting design and we would like to support it. Thus, in relation to the support for links between the university and the production sector and there was hope that this cooperation results in the future in European policy as it is understood in the region that without research and development… without good people… we have no future and that every year we have to pay the EC a lot of money to support research and development… and within the CEE we have big countries that have a lot of potential… the people are very clever… we just need to create the base – we need to construct the base – for research and innovation.

The Slovak Strategy notes the importance of a superior workforce and human capital strategy to its economic plan. An important strategic objective is the need to “change the structure and the orientation of schools” as a basic precondition for long-term competitive positioning in the global economy. In order to do this, the Strategy states that there is a need for a better plan to match market demand with supply. It notes a decline in primary school student numbers over a 13-year period and, since 2002, a decline in enrolments in secondary vocational schools with an industrial specialisation. At a tertiary level, students are found to be increasingly more focused on social sciences and humanities than engineering qualifications, despite insufficient job opportunities in the labour market for these qualifications. Slovak employers are seeking IT and building industry graduates and, to a lesser extent, mechanical engineers and scientists. Despite this preference, the system is mostly producing social scientists and engineers (Slovak Strategy 2013).

As Table 6.4 demonstrates, the Slovak Strategy proposes generating an increased interest in technical training and improving the attractiveness of vocational schools to support the teaching of mathematics, natural sciences and engineering subjects. It proposes a new ‘dual education’ system designed to be consistent with the needs of the labour market. Besides an increased focus on vocational education, new information campaigns and programs are intended to increase motivation amongst young people towards careers in entrepreneurship. In addition, there will be on-the-job training, and collaboration between schools, universities and enterprises. There is also a plan to encourage science and research workers to return to Slovakia (Slovak Republic 2013, EC 2014).
Table 6.4 Strategic objectives and measures for human capital

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<th>Strategic objective 4</th>
<th>Improving the quality of human resources for an innovative Slovakia</th>
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<td><strong>Strategic objective 4</strong></td>
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<td><strong>In a long-term perspective it is impossible to sustain economic growth or employment without superior workforce. Change in the structure and orientation of schools is a basic precondition for long-term competitiveness. A demand for graduates is necessary to link with the market demand in relation to demographic development.</strong></td>
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<tr>
<td>a) Increase the employability of secondary school and university graduates The reform of educational system starting from the primary schools in order to harmonize education with the market demand and ensure the flexibility of employees. The improvement in PISA.</td>
<td>4.1. Improving the quality of secondary education The measure will ensure the corrections and changes in state educational policy in secondary education, especially vocational schools in order to increase the quality and harmonize the interests of individuals with the needs of society.</td>
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<td>b) Improve linkages between educational system and practice The educational system does not currently reflect the needs of practice to a sufficient extent. It is therefore necessary for schools in collaboration with businesses to take part in preparations of education programmes and enabling mutual linkages and usage of capacities on secondary or university level. It is necessary to motivate enterprises to take part in the education of their future workers.</td>
<td>4.2. Improving the quality of higher education The measure will ensure the realization of EUA Audit, legislative changes leading to the amendment of institutional financing of public universities (especially in the area of technical and natural sciences) and amendments leading to changes in categorization of universities, reflecting the mission of concrete universities in order to increase the employability of graduates.</td>
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<td>c) Lifelong learning The changing society and labour market dynamics necessitates educated people in all age categories. It is therefore necessary to improve the population access to all forms of education (formal, informal, non-formal) during the whole life. This will enable them to include, broaden, and deepen the acquired education, to requalify themselves or fulfil their interests while preserving their information and knowledge. The aim is to</td>
<td>4.3. Improving business involvement in education The measure will support the training centres in businesses, common technical departments of schools and businesses, motivational tools for</td>
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<td>elaborate a system of acknowledging the results of non-formal education and informal learning. This includes a legislative solution.</td>
<td>businesses in order to involve them in vocational training. There will be a support for the improvement of facilities in specialized (vocational) secondary schools and universities in selected programmes and there will also be the involvement of experts from practice in the educational system in order to improve the linkages between educational system and practice. 4.4. Improving the quality of life-long education The measure focused on the adults in productive age will ensure strengthening of the vocational competencies verification system and the establishment of quality of consultant services verification system.</td>
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<td>d) Increasing the intersectoral mobility of workers The important factor for improvement in communication and an increase in cooperation between public and private sector in the area of science, research and innovation is a mutual reciprocal possibility of worker exchanges in order to unify the “mentality”.</td>
<td>4.5. Increasing emphasis on education in fields relevant to the RIS3 priority areas The measure will put forward legislative changes for improving the financing of priority fields; there will be motivational tools to study priority fields (conferences, exhibitions, workshops, etc.) and lastly there will be improved conditions for involvement of young scientists in grant</td>
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<td>e) Supporting the creation of international R&amp;I teams The return of our science and research workers back to Slovakia is one of the possible keys how to create a generation of highly skilled workers in the future. The possibility to cooperate with world-renowned scientists and building of strong teams of global importance should bring new possibilities for increased competitiveness of the Slovak Republic and the whole EU as well.</td>
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programmes of science and research. 4.6. Supporting the mobility of highly skilled workers The measure will support the compatibility of qualifications and academic degrees between research and academic sectors and it will also create the conditions for return, immigration or drawing of highly qualified personnel to the SR.

According to Autex2, the EU vision for greater links between the university and industrial sectors is being supported by heavy EU investments in the university sector in Bratislava. For instance, “in the last 4 years, it was decided that eight centres will be built… more than €320 million from the EU… and this is important, and this money supports the cooperation activities, for instance with Volkswagen and other producers in the region.” This investment was to increase the potential in the region for process improvements in technology and to generate strong results for product development. Govpol indicated the importance of EU Structural Funds to increasing investment in research and development in the region of Bratislava:

Many universities would not have been able to finance projects without the Structural Funds… and from the Slovak Government’s state budget, not so much is going into research and development… we are very grateful for the European Union’s support as we could not finance all the activities we want to without this.

In relation to publicly funded research, Govpol observed that organisations involved in science and technology were leading the way in Bratislava, and that extensive science research infrastructure was a key strength in the region. The “active science community” in Bratislava was coupled with an extensive scientific research institutional infrastructure that included “about five science parks heavily focused on bio-medical research and micro-electronic engineering and technology”. The five main priorities identified for
research and greater cooperation between the sectors are medicine and bio-medicine, agriculture, micro-electric technology, environmental and information technology. Thus, the Slovak Academy of Sciences is focused on engineering and information and communication technology. Govpol also observed that the 2007–13 policy phase had focused on building ‘hard’ research infrastructure: buildings and science parks. He also observed that most of the R&D connected with the automobile industry tended to be generated in other countries, such as Germany, and this represented a problem, from the subsidiary perspective, to the long-term regional economic development goals of Bratislava:

… we need to develop research and innovation in our countries [in Eastern Europe] because long term… not only in Slovakia, there are 200,000 working people working in the automotive sector and… about 12 or14 per cent work in the automotive industry [nationally] so the automotive industry is very important.

According to Autex1, a key public policy challenge for Bratislava is to encourage the ‘young generation’ to study relevant courses qualifying them to be employed in the automotive and electrical MNC-based industries, given that young people increasingly want to work in diverse industries and occupations. This is a concern for public policy, as a key competitive advantage for Slovakia in attracting large automotive firms to invest in the country has been the quality of human capital available. Autex1:

… 70 per cent of young people want to work in management, sociology or to be a scientist and this is important, but we can’t produce 15,000 sociologists and we have to be prepared for future positions in the market… the world is open…it is a global market and workers can work anywhere… capital can go anywhere… China, Russia… America.

Finally, Autex1 said that he perceived a key challenge for Bratislava was to encourage young people into traditional industrial qualifications and career paths:

It is not correct anymore to talk about countries… we need to talk about regions… we in Slovakia need to be producing students who can work in the electrical industry… for Samsung who are producing metal parts for videos and televisions and for the automotive industry. We have to say to the young people that, without state money you can study what you want… but we have priority areas and we need the best people. We also need to join up the students from the universities with the companies… not just the theory but also the practice.

**Conclusion**

The Bratislava case study has demonstrated the extent to which policy design processes have been driven centrally. Despite this, informants indicated their confidence in the plan and the
new set of nationally driven institutional arrangements established by the Slovak Strategy to implement Smart Specialisation in Bratislava. The informants interviewed were positive about the automotive industry continuing to retain a dominant position of specialisation in the regional economy. There was, however, some concern about the strategy representing a ‘traditional cluster model’, which may reinforce the ‘core-periphery’ dynamic in GVC production decisions of MNCs by its focus on supplier development, as opposed to a more ambitious plan for upgrading production capacity. In relation to human capital, informants largely agreed with the official narrative of the policy in its emphasis on a future intensive focus on technical training at secondary and tertiary levels of education. This was seen as a key imperative to enable the future competitiveness of the automotive industry in the region.
Introduction

The Catalan economy is highly dynamic, diversified and open, with a large industrial base. No one sector dominates the regional economy. Catalonia’s strategic location favours links with other Mediterranean countries, continental Europe and Asia. The Research and Innovation Strategy for the Smart Specialisation of Catalonia (hereafter, ‘RIS3CaT’) seeks to decrease the reliance of Catalonia on the international economy by further broadening the economic base of the region through developing leading sectors, such as the agricultural, energy, transport, health and cultural sectors. The plan seeks to boost the entrepreneurial sector in the region, especially through increased support to technological start-ups. Catalonia’s strong industrial sector is also important in driving innovation advances. The strategy aligns with the EU industrial policy direction aimed at re-shoring industry to regions and the developing advanced manufacturing capacity. The Volkswagen subsidiary SEAT is a major player in the Catalan economy and an important economic driver in establishing a regional innovation system. In this case study, the governance aspects of the policy design and institutional arrangements proposed to implement the new policy are explored. The economic context is considered, as well as the extent to which the organisation of formal knowledge assets will assist in the long-term strategic direction of the new policy agenda.

This chapter presents and interprets documentary and interview data collected in Europe, and particularly Catalonia. The first section analyses documentary data. Here, insights were sought from key documents relating to the Smart Specialisation policy from the European Commission, Spanish and Catalan governments and the Barcelona City Council. The second section provides analysis of interview data as a parallel research source to the documents. Informants were key policy actors within the Catalan regional innovation system’s ‘Quadruple Helix representative’ groups. Seven informants were drawn from the government, business and university sectors and coded as follows: automotive industry specialists (Autex1 and Autex2), academics (Academic1 and Academic2) and government representatives (Catalangov1 and Catlangov2, and BCcouncil). Informants were asked for
their perceptions of the strengths and challenges of the regional Smart Specialisation policy.

Quality of Regional Governance

As was argued in Chapter 2, given the devolved character of policy development processes, for effective policy implementation, inclusive political institutions that can distribute political power in a pluralist manner are ideal (Marques & Morgan 2016). The degree to which formal competences and power (autonomy) to design regional innovation strategies (and the financial resources to independently implement them) are decentralised is said to be a key determinant of strong policy and governance capabilities of research and innovation strategies (RIS) (Tripp, Zukauskaite & Healy, 2018). In this sense, even in regions where a Smart Specialisation approach could in theory be perfectly viable and productive, barriers and complexity at the level of the local policy and governance system may keep the agenda from being transferred into an effective policy program (Capello & Kroll 2016).

The Catalan case highlights the extent to which strong political institutions found in the region have ensured a robust policy design process. According to documentary sources, the Catalan Government played a central role in the policy design of the region’s Smart Specialisation policy, RIS3CAT. In 2013, the government established a Steering Committee and designated it to promote and coordinate the policy process. The group was collegiate, made up of representatives of Catalan Government economic departments and representatives from the influential Barcelona City Council (BCC). The committee coordinated the drafting of the RIS3CaT document. The policy was developed using a “two-way iterative process that combined both top-down and bottom-up approaches”. In July 2013, a draft of the RIS3CAT document was submitted to stakeholders and civil society through an online public consultation process and 176 contributions were received, mainly from the universities, research bodies and businesses. In relation to policy implementation, the plan specified the need for a strong, multi-level governance structure involving both representatives of the Catalan Government as well as active participation by stakeholders drawn from the quadruple helix representative groups as specified by EU policy methodology (Generalitat de Catalunya 2014).

BCcouncil pointed out that Catalonia’s sophistication in its approach to the RIS3CAT policy was due to the strong political governance found across two levels of government at the level of the region, and pointed to the leading and coordinated role of both local and regional governments in driving the policy development process:

The council is not neutral. We have decided to create ecologies of innovation from the demand side. For instance, in the area of photonics… this is a
technology that can be applied. It can be cross sectoral... and in building ecology of innovation, we believe you need hard factors and you need soft factors. A key element of the strategy is the concept of place and the concept of urban. You need, on the demand side, ecology of innovation and the concept of the city as a lab.

According to BCcouncil, local government was a political partner in the development of the RIS3CAT policy and it was determined that the BCC would strategically develop its city-based urban strategic priorities to fit Smart Specialisation. He described the shift from a traditional approach about developing an urban strategy based on issues such as “waste management and parking… all the things that matter when developing a strategy for the city”, to a new approach based on seeing development of a strategy for the city as urban planning in the context of regional, state and supranational policy priorities:

We now as policy makers need to ask ourselves when designing our strategies... what kind of Europe are we building? How is Europe going at a regional level? How is it looking at a regional level? Regions now need to fit in with the new Smart Specialisation policy and the research and innovation objectives. And for us the big concept is mobility... and technology is a key driver in the strategy… we need to have four things to build our innovation ecology and sectors in each territory, for instance with priorities such as key technology... key talent… key finance and [fourth] internationalisation. So, mobility is important. In the City of Barcelona, cars are one element of mobility. Perhaps the people can share cars? Technology in real time that shows people where they are at any given time, it is a US approach.

According to BCcouncil, BCC priorities in the 2014–20 period were part of the Smart Specialisation policy framework. A new strategic approach was adopted where urban innovation projects were to be trialled and the city conceptualised as a laboratory experiment. In line with the Europe 2020 strategy, the policy was developed to incorporate three pillars: smart growth, inclusive growth and green growth. According to the council, another key concept in developing the Smart City framework was putting the “person in the centre” at the start of planning and being conscious that this also made a contribution to the Kyoto Protocol:

We need to take a look at what is happening between public and private sectors. It must also be green as an initiative. Public and private must be using green energy. In this sense, we need to also be looking at how we can connect in with the electric car, but this is also about money.

Alongside Barcelona City Council, the Catalan Government is also a strong political institution and has significant responsibilities including the provision of key services of the welfare state (Generalitat de Catalunya 2014).

Academic2 also asserted that there was strong political support for Smart Specialisation, with its economic focus seen by the community as avoiding the political nature of determination of previous EU projects by centralised decision making processes. Support for the new policy direction was partly driven by the sense that, prior to 2015, “billions of Euros”
dedicated by EU Structural funds to infrastructure projects in southern Europe had not been spent on projects resulting in positive economic-development outcomes. In this sense, the policy direction was seen as a positive development in relation to the future accountability of expenditure of Structural Funds in the 2014–20 policy phase. Academic2:

What happened in 2008 was that Europe faced the biggest crisis since the 1930s… so, something went wrong… so the EU started to think, “What went wrong?” And the Parliament and the Commission started to develop a new approach… and they call it Europe 2020… and so it was one of the benefits of the crisis… because the old policy… was a traditional regional policy based on the idea of building a lot of infrastructure and by some miracle you get a lot of economic growth… and that’s not true. That’s very old fashioned.

Therefore, it was the view of Academic2 that RIS3CAT represented a radical change in policy direction. He hoped that the new policy direction would enable the EU to implement the objectives of the Lisbon Strategy particularly in relation to the knowledge economy. There was strong support for the strategic nature of the methodology, based as it is on regions undertaking a combination of external and internal economic examinations of positioning in relation to developing a regional economic plan. He felt that many regions were not “on the right track”, for instance, with technology. Academic2:

… this has resulted in a Europe of more than 100 biotechnology regions… but most of them didn’t succeed after spending a lot of public money. So now regions must demonstrate that they are spending a lot of public money on something… [and demonstrate that when] they dedicate the money to something, that they have a critical mass of public and private agents [for it] to have a reasonable probability of success of this object or this priority… because in the old times… last year… the regions just say, “OK, I’m going to dedicate this money to this building?” …and nobody asks whether this was a successful idea or not, or smart or stupid… now this is not possible.

Documentary sources highlighted how, in relation to the deliberative governance processes established by the policy and its focus on inclusion of stakeholder groups in policy development, the Catalan Government indicated that it believed the policy to be bringing about “a fundamental transformation” in the orientation of public policy design and implementation processes in the delivery of research and innovation policy in the regional context. To implement the policy, the Catalan Government established RIS3CAT communities called Territorial Specialisation and Competitiveness (PECTS) projects as the main tool to promote cooperation among the Quadruple Helix stakeholders. RIS3CAT communities consist of voluntary associations of companies and stakeholders in the Catalan research and innovation system, which cooperate to incorporate innovation into production activities in leading sectors (Generalitat de
Catalunya 2014).

Catalangov1 argued that the Smart Specialisation policy’s governance model was impacting on devolution of policy development processes at a regional government level. He indicated how the new approach had encouraged the government to move away from a traditional policy development approach, led by government and ‘top down’ in orientation (in the determination of infrastructure projects) to a more decentralised approach where sectors are approached to design innovation policies:

… how we will work, not just inside the government but also with companies from these sectors, and we have mobilised and tried to get their opinion and their active participation, and they have had an active role, in this sign-in and tell-us [approach, which asks] “Which are the main projects?” that they are interested in.

Academic2 noted that a further strength associated with the decentralised policy design processes would be in the elevation of SMEs into a more influential standing in industrial policy terms. This development was seen as challenging the previously privileged position of large corporations, which are able to influence the economic program for the region through their own negotiations in Brussels, to produce industrial policy outcomes favourable to individual firms:

Traditionally, all of the R&D resources were developed from a policy frame developed by seven framework programs, and there has been a big change recently with Horizon 2020. There are two elements of the big change… one element is putting more the accent on innovation, not so much on research… and they say that the innovation that pays for the research and the second change is trying to encourage the development of SMEs… before this, SMEs were not implicated in the programs… so complex and before this that only the big multinationals went to Brussels… in practice… and they are trying to change this. And this is not easy.

According to Autex1, there was optimism in the corporate sector about the Smart Specialisation policy that would build on the role of the EU Framework programs in encouraging the most highly competitive bodies within Europe to join and work together towards regional economic goals. He argued that the cooperation between corporate players forces partnerships at the regional level and generates a synergic effect:

You form partners that are closest to you… and this has an impact at the level of the region where it is forcing partners, especially in industries where logistics costs are important… to work together… this is especially so for industrial sectors that rely on logistical processes, so the geographical effect is important… so… a company like this, [asks] “Where we are getting parts from suppliers close by because we don’t want to spend a lot of money… and also we have our research partners, we have the university here… the University of Catalonia in Barcelona so at the end of the day, for our business we have a lot of partners right here in this sector… and we have that?” And in some regions, they are concentrating partners in certain sectors and some regions they are growing and becoming more competitive in that sector and...
people working on an idea together and ... developing partners in a chosen sector... those regions are becoming more competitive in that sector.

_Autex2_ also noted that the new governance communities involved with policy had consolidated and acted to focus the work of an informal stakeholder policy, a network already in place. He argued that RIS3CAT had made it easier at a regional level for people to work together on projects. This has in turn had the positive impact of building a base of professionals in a region who are working together, and from there a psychological effect emerges “that you are getting more competitive at a regional level”:

We had already been working together in a community, and we already knew all of the actors in the community, and what we are seeing now is a community that has been built in the past... so this is a good thing, when you are trying to put together an action plan and you are trying to explain the future of a project and you can explain that in context of a past, where these actors have actually already worked as a community ... so we are currently working on and running on new projects but we have also had a history in the past...we [SEAT] are participating in the cluster and we are also represented in the community established by the new RIS3 policy as well. So, we are actively involved in the network.

Informant _Academic2_ also indicated his hope that RIS3CAT policy would assist in enabling a more long-term development process in relation to industrial policy in Catalonia in the future. Informant _Academic2_ argued that “short-term political cycles and calibre of political leadership” had meant that “industrial policy has not been something very strong... [not] well established or settled in time” in the Catalan public policy context. He also emphasised the strong engagement with Catalonia in designing place-based governance processes for the design and implementation of the policy. Catalonia, he said, conducted a very consultative entrepreneurial process of discovery in formulating policy. Sector priorities were determined by industry communities established to administer the policy’s development and implementation process:

For instance, with the fruit industry... we used an administrative instrument called a ‘community’... and so the agents of this community... they agree about the projects to develop in favour of the food industry... and then they present both this to the companies and the research institutes and they present these projects to the Catalan Government... and now we are in that process exactly... 13 communities have been approached or [approved] in Catalonia... and now they are preparing the initiatives to receive financing and to develop during the next years.

The complexity of the processes was, however, seen as a potential barrier to the success of the new policy direction. Both _Autex1_ and _Autex2_ raised concerns about the degree of administrative complexity involved with the governance processes established by the policy’s design. They thought a vast number of stakeholders were needed to form the basis of the sector-based communities that have been formed under the policy, and coordination and establishing focus within such a large group would be difficult. _Autex2_: 

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The community itself has to present an action plan... so then the community, it puts forward a project and then the best project is then presented… and I would say from the point of view of the difficulties… is the getting together of all the partners and to try and organise this, not in a project… not just the community, but in an action plan… and make sure that we do not forget any important issues. In addition to this, the partners need to be certain that they are covering all the important aspects for the community.

Autex2 believed the policy relied on partners within a community being able to reach consensus around important aspects of policy and reach a sophisticated position:

Where you have a highly complex topic like mobility we have to have the OEMs, Tiers one and two, we need to have the public-transport operators, we have to have the whole value chain… what else is there… if you lose one significant player, then your community is not represented.

He identified a further barrier as being presented by the small funds attached to the policy, given the ambitious nature of its objectives:

… if you make some comparisons between the programs that have been running in the last decades, namely the Framework programs and now Horizon 2020... then you see these kinds of programs have high complexity. So, while it is important for there to be cooperation at the international level and with universities on research projects here... you have to understand the high complexity and with that I am meaning the administrative complexity. And in the end, the money that we receive is not that significant... and so that is what I am afraid of when we talk about this so-called RIS3 and the communities being generated as part of the policy, because the degree of complexity is enormous and... in fact... it is not yet well known how this will all work... the funds will be not so... not so... significant... and if you take into consideration that the ‘community’ has a lot of projects with a lot of participants in the end... but with the funds allocated... it is not so significant... So, Horizon 2020 is at the international level, the EU level, and now RIS3 is at the regional level... in Catalonia... in Spain, in different communities... this is very administratively complicated.

The role of the MNC in the region in GVC/GPN context

According to documentary source Catalonia: the Strength of an Outward-Looking Country (2017) (hereafter ‘the Economic Outlook’), the Catalan economy is similar in population size to other middle-size economies in Europe. Catalonia has 7.5 million people and a GDP of €223.6 billion, of a similar size to Switzerland, Austria, Finland or Denmark (Generalitat de Catalunya 2017a). It notes Catalonia’s strategic location in relation to other Mediterranean countries, continental Europe and Asia (Generalitat de Catalunya 2015). Catalonia is considered ‘more developed’ in the EC’s categorisation of regions, with a GDP that is 90 per cent of the EU-27 average (EC 2016). According to the Annual Report of the Catalan Economy (2015) (hereafter ‘the Annual Report’) the Catalan economy is strong in
macroeconomic terms, with strong export growth rates recorded in 2015 despite generally weak growth in the European economy (Generalitat de Catalunya 2017a).

![Map of Spain showing different economic regions](image)

**Figure 7.1: Categories of regions of Spain for the ERDF, ESF and EAFRD 2014-20**

(European Commission 2016)

The Catalan economy is highly dynamic, diversified and open, with a large industrial base and no one predominant sector. Catalonia has had a long industrial tradition and has a powerful established manufacturing base. This tradition is seen as key to long-term economic success, having the capacity to contribute to boosting technological innovation, export capacity and to improving production processes, considered essential in laying the foundations of a stronger growth model. Commerce is also a major industry operating within the regional economy. Public administration, however, represents a smaller component of the economy compared to the weight it has in the rest of Spain and of the EU (Generalitat de Catalunya 2017).
In this context, the strong history of industrial development underscores the importance of the automotive industry to Catalonia’s long-term regional economic growth strategy. Volkswagen subsidiary SEAT (Sociedad Espanola de Automoviles de Turismo) is the top company in the region as measured by turnover and exports and is a major player in the Catalan economy (Generalitat de Catalunya 2017b). SEAT was originally founded in 1950 as a state-owned industrial holding company and forged a partnership with Italy’s Fiat until the 1980s. In 1990, the German Volkswagen Group acquired SEAT as a subsidiary. SEAT’s importance to the Spanish economy is integral; contributing about 1 per cent of Spanish GDP, as well as being a major employer. The company employs over 14,000 people worldwide and, since 2016, it has indirectly employed over 70,000 people (CNBC 2016).

As was pointed out in Chapter 2, the GVC organisation of the company Volkswagen demonstrates how research carried out by the Volkswagen Group has always been largely centralised, with the corporate research division at the company’s Wolfsburg headquarters providing support for all of the Volkswagen brands. The individual brands also maintain smaller research departments which together form a research network, with the Wolfsburg headquarters as its hub. The R&D activities of the various brands concentrate mainly on development efforts. Each brand has its own development department including SEAT in Martorell, near Barcelona, Spain (Schmid & Grosche 2008). In 2015, SEAT accounted for 39,356 jobs in the regional economy, 12,810 direct jobs and 25,546 indirect jobs, as well as representing 5.1 per cent of the total industrial employment in the region. While jobs in the manufacturing industry are the predominant economic beneficiaries (90.6%), the services sector has also greatly benefitted from the company’s investment in Catalonia (9.1%). SEAT has two plants in Catalonia, in Barcelona and Martorell. These factories have generated sales organisations and dealerships in over 70 countries beyond Spain. Accordingly, SEAT has had a significant economic impact on the whole Catalan economy.
The *SEAT Annual Report* (2016) indicates that the company is the largest industrial investor in R&D in Spain, which in 2015 invested almost €400 million in activities relating to R&D and innovation in Spain, representing 2.9 per cent of the total amount spent on R&D in the country (SEAT 2016, p. 22). A major component of this investment has been directed to the SEAT Technical Centre. This centre of excellence was established in 1975 within the complex that includes the Martorell factory. The centre operates as a hub of knowledge and innovation and is focused on brand development and the incorporation of the most advanced technologies into its vehicles. More than 1000 engineers, designers and technicians are employed at the centre (Generalitat de Catalunya 2015) (Table 7.1).

<table>
<thead>
<tr>
<th>Value of production</th>
<th>Added value</th>
<th>Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct effect</td>
<td>5,443.73</td>
<td>756.72</td>
</tr>
<tr>
<td>Indirect effect (a)</td>
<td>2,241.14</td>
<td>781.01</td>
</tr>
<tr>
<td>Indirect effect</td>
<td>837.18</td>
<td>380.06</td>
</tr>
<tr>
<td>Indirect effect total=(a)+(b)</td>
<td>3,078.32</td>
<td>1,161.07</td>
</tr>
<tr>
<td>Total effect</td>
<td>8,522.05</td>
<td>1,917.79</td>
</tr>
<tr>
<td>Multiplier</td>
<td>1.57</td>
<td>2.53</td>
</tr>
</tbody>
</table>

Values in millions of Euro

**Table 7.1: Impact of SEAT’s activities on the Catalan economy**

(Generalitat de Catalunya 2015)

Despite major R&D investment by SEAT in the Catalan economy, RIS3CAT identifies several other significant sectors within the Catalan economy, including food processing, chemicals, pharmaceutics, transport equipment and metallurgy industries (Generalitat de Catalunya 2017) (Table 7.2). Increasingly, a growing ICT sector is also driving industrial outcomes, with many companies basing themselves in Barcelona to develop technology such as 3D printing (Generalitat de Catalunya 2018).

**Figure 7.3: Description of leading sectors**

(RIS3CAT)

Food

Agri-food industry and other links in the value chain: primary industry, distribution, packaging, machinery
for the food and drink industry, additives and raw materials, cuisine and restaurants

Energy and resources
Management of energy and natural resources, the water cycle and waste treatment and recycling (energy saving and efficiency, new, more efficient materials, combined heat and power automation, energy control and management, renewable energy, organic chemistry, nuclear fusion).

Industrial systems
Activities focused on the management and development of efficient industrial systems (plant and machinery; robotics; data-processing, electronic and optical products, and electrical material and equipment), particularly related to process engineering and advanced manufacturing, in which ecodesign plays a key role.

Design-based industries
Industries closely linked to design as a key cross-cutting factor: textiles, garment making, leather, footwear, jewellery, furniture, and perfume and cosmetics, amongst others.

Industries based on sustainable mobility
Management systems for mobility, public transport and infrastructure; automobile industry and related activities; electrochemistry, nanomaterials, Internet, mobile telephony.

Health industries
Fine chemicals, pharmaceutical preparations, medical technology industry, insurance industry and hospital systems.

Cultural and experience-based industries
Creative and cultural industries and key services for Catalonia, such as tourism and sport.

RIS3CAT reinforces the need to sustain a diverse economy that includes its “industrial base” alongside an “open, competitive and sustainable economy” that combines talent, creativity, a diversified business fabric and an excellent research system located within the framework of a dynamic, enterprising and inclusive society. The policy notes that the region is home to both MNCs and local companies in industries that have become international leaders, and emerging technological sectors that should drive a diversification agenda. In all of these sectors, strategic plans are put into place and knowledge hubs attached to each, which it is hoped will foster innovation. In relation to these identified KETs, the strategy lists for special attention ICT, nanotechnology,
advanced materials, photonics, biotechnology and advanced technology (Generalitat de Catalunya 2014).

Three key economic vectors are identified. The first vector is said to reflect the “great Catalan industrial tradition”, which it argues was driven in the 19th century by the textile, chemicals and iron and steel industries, and the railways, and in the 20th century by the electrical industries (energy generation and machinery production) and the automobile, pharmaceutical and agri-food sectors – which, as they have developed, have placed emphasis on competitive factors such as innovation, design and training. The second vector focuses on people’s wellbeing and concerns food, health, leisure and lifestyle. Here, R&I generates, not only economic opportunities, but also direct benefits for individuals and society as a whole. The third vector is the firm commitment to transforming the Catalan economy towards a green economy. In response to the global challenges caused by climate change, the impact of human activity and scarcity of natural resources, the green economy offers promising niches for specialisation and generates opportunities to improve and enhance efficiency in all economic sectors.

![Venn diagram of leading sectors in Catalan economy](Generalitat de Catalunya 2014)

RIS3CAT establishes four priority pillars of action for research, innovation and competitiveness (Table 7.3). Pillar 1 focuses on seven leading sectors whose importance and potential enable them to act as cornerstones for economic recovery and to reorient the Catalan economy towards a growth model that is smarter, more sustainable and more inclusive. Pillar 2 identifies new economic opportunities in emerging sectors, based on technological
capabilities (new activities generated through technological change and cutting-edge innovation) and the synergies between related sectors. Pillar 3 focuses on cross-cutting enabling technologies, the main tools for transforming the production system and generating new scientific, technological and economic opportunities. Finally, Pillar 4 focuses on improving the innovation environment.

Table 7.2 RIS3CAT Structure: Pillars and Tools

<table>
<thead>
<tr>
<th>Pillar 1</th>
<th>Pillar 2</th>
<th>Pillar 3</th>
<th>Pillar 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leading sectors</strong></td>
<td><strong>Emerging activities</strong></td>
<td><strong>Cross-cutting enabling technologies</strong></td>
<td><strong>Innovation environment (public policies)</strong></td>
</tr>
<tr>
<td>Food</td>
<td>To be identified in the entrepreneurial discovery</td>
<td>ICTs</td>
<td>Digital agenda</td>
</tr>
<tr>
<td>Energy and resources</td>
<td></td>
<td>Nanotechnology</td>
<td>Entrepreneurship</td>
</tr>
<tr>
<td>Industrial systems</td>
<td></td>
<td>Advanced materials</td>
<td>Eco-innovation (green economy)</td>
</tr>
<tr>
<td>Design-based industries</td>
<td></td>
<td>Photonics</td>
<td>Non-technological innovation</td>
</tr>
<tr>
<td>Industries linked to sustainable mobility</td>
<td></td>
<td>Biotechnology</td>
<td>Training and talent</td>
</tr>
<tr>
<td>Health industries</td>
<td></td>
<td>Advanced manufacturing</td>
<td></td>
</tr>
<tr>
<td>Cultural and experience-based industries</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**RIS3CAT communities**

Emerging activities

Development of key technological capacities

Research and technology transfer infrastructure

Collaborative R&D projects

Technology valorisation and transfer

International cooperation

Innovative public procurement

Specialisation and territorial competitiveness projects
Academic2 noted that RIS3CAT emphasises the importance of GVC development across sectors rather than an industrial strategy based on just one sector in isolation from another. As has been outlined, the plan identifies seven economic priorities: food and drink, agriculture, mobility, design, health sciences, energy resources and industrial systems.

Academic2:

It is not easy to say what ‘sectors’ we are building, as one of the characteristics of the new EU policy direction is that it is supposed to be very diversified. Actually, in the RIS3 Catalonia, they have defined seven different priorities… seven different sectors, and it’s not the traditional concept of industrial sector… it is more about global value chains. For instance, we try not to talk about the ‘automotive industry’ or ‘sector’ but instead we use the mobility concept… so going to that point… the two most powerful sectors… are the mobility one and the food industry one…. these are the two that have the most capacity to innovate… and develop new activities and new services around these two concepts.

In relation to the automotive industry, informants agreed that, given the cross sectoral nature of the plan, a tripartite approach to coordination and planning was occurring across all levels of government, and with the corporate sector. For instance, in relation to Barcelona City Council, BCcouncil explained how the new strategic direction of council is now being built around ‘concepts’ and ‘communities’. The concept of ‘mobility’ has replaced a traditional ‘vertical’ concept, the policy directed at the automotive industry. The concept of ‘mobility’ allows a capacity to deliver on vertical sector plans, but also across horizontal value chains. At the Catalan Government level, Catalangov1 explained how the concept of mobility has been adopted and now transcends traditional sectoral planning based on just one industry (e.g. automotive) and instead enables the recognition of the wide scope of the automotive industry and “not seeing the sector as comprising SEAT and Nissan which are the main players here, but also seeing mobility sector as being about electric vehicles and other stakeholders, such as public transport mobility and transport logistics, so therefore perceiving of a wider scope of the sector”. The SWOT analysis contained in RIS3CAT also places emphasis upon the future of the industry being about sustainable mobility (Table 7.4).

Table 7.3: Select elements of the strengths and opportunities of Catalonia’s RIS3 leading sector ‘sustainable mobility’ (Generalitat de Catalunya 2014)

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>The automotive sector forms a highly complete cluster: two car assembly plants;</td>
<td>Over the last few decades, growth in the sector has been based on manufacturing and the</td>
</tr>
</tbody>
</table>
five design centres; specialised technology centres; the Circuit de Catalunya racetrack; a leading international car show; more than two hundred spare parts suppliers; and powerful related industries

Catalonia has all the other elements necessary to become a leader in the new model of sustainable mobility: a dynamic ICT sector; a firmly-established energy industry; and cities highly suited to the application of these new solutions.

In Catalonia there is a huge diversity of new “born global” companies in the field of sustainable mobility, and these enterprises have enormous growth potential.

**Autex1** strongly endorsed the strategy outlined in RIS3CAT relating to sustainable mobility. At a corporate level, **Autex1** indicated how SEAT’s operational decisions on production organisation are also now being guided by the new policy framework. He emphasised that SEAT is working closely with the Barcelona City Council and the Catalan Government to “move from a situation of producing and selling cars… to providing mobility” as part of new sustainable strategy for the implementation of electrical vehicles in the city:

We are now moving from a situation of producing and selling cars… to providing mobility and of course this implies a huge transformation… and the main place that this transformation will happen is in urban places… it is for this reason, that we are working very closely with Barcelona [City Council] and the Catalan Government and we are founding members of the so-called LEAF platform… the logistical implementation of the electrical vehicle… this was an initiative of the Catalan Government and the Barcelona City Council… to develop further implementation of electrical vehicles in the city.

The commitment by the automotive industry to the sustainable concept of mobility in Catalonia was underpinned by a sense that industrial production needed to change to reflect the challenge of consumer preferences for electric vehicles, social trends like car-sharing schemes, an ageing society, and aspirations for young people today to buy a mobile phone rather than a car. **Autex1** pointed out that, after more than a century of production, for instance the Czech car company Skoda had disappeared because it could not adapt to changed technology in the digital world, “so the lesson is that you have to move fast”. He added, “that is why we are working hard with public institutions such as
the City of Barcelona and the region of Catalonia to reinforce our commitment to this society so as to ensure that the automotive industry will continue to be the main driver of economic growth in the region, alongside tourism” and indicated that SEAT had determined, based on the 2014 results, that it would be adding about 100 additional engineers for the technical centre to meet the demands of the sustainability and social commitments that involvement in EU-funded regional innovation projects had bought about. This was spurred by recognition of the need for the company to be “drivers of technological change” rather than being “driven by change”, to be a trend setter and remain competitive.

The involvement of SEAT in the LEAF project has served to widen the field of action of LEAF to other technologies. *Autex*1:

… sometime later, we wanted to widen the field of action of LEAF… to other technologies… especially to natural gas… which had become available… and which we are now producing… and as has just been pointed out, the E in LEAF is now not just about Electrical but really now stands for Ecological… and we are working closely with the city council in developing this platform. Also, two years ago, we proposed to the Catalan Government and to the City of Barcelona to work jointly on the so-called Future of Urban Mobility project with almost the same actors as on LEAF, but working specially to develop specific projects on human mobility… and we are also now looking for European funds… for those projects, which have also been included in the list of the RIS3 Community… for sustainable mobility… everything in the end has been included in the same plans.

The economic vision under RIS3CAT was seen as having to incorporate the industrial base of the region. While the Smart Specialisation focus on diversification of economic sectors was welcomed, the importance of rebuilding the manufacturing industry was equally emphasised. *Academic*1 emphasised the importance of the relationship between manufacturing production and the innovative design and creativity involved in manufacturing processes. *Academic*1 highlighted the degree to which Catalonians were thinking about the Smart Specialisation strategy as very much to be implemented alongside other important EU framework programs, such as the EU’s Reindustrialisation of Europe strategy. He explained that, in this sense, Catalonia was following a movement in the US to de-industrialise when they lost their industry 20 years earlier. He argued that the ‘re-industrialisation’ movement was now being embraced in the region and that the “wind is blowing in favour of industry in general”. This project has been embraced by regions such as Catalonia, which also want to revive their manufacturing sector:

Catalonia is an industrial country. Twenty years ago, I said this… and now I say the same… because it is very important… we cannot lose industry… it is not possible for a country to be strong on innovation without production… innovation is research and design and creativity and this is related to the production process, so some of
the European countries that went to China, they are now taking back some of the elements of industrial production.

BCcouncil also emphasised the value placed by Barcelona City Council on re-industrialisation for the future of the Catalan economy. He indicated that the council wanted to align with the Catalan Government in seeing technology such as 3D printing as a priority KET to develop in the regional economy. He argued that “there are lots of technologies here such as printing and robotics and the manufacturing industry and the concept of re-shoring industry is important to us”. He indicated that the council strategy is underpinned by the concept of creating ecologies of innovation in Barcelona.

BCcouncil:

There is a whole push at the moment towards the ‘re-industrialisation of Europe’ and the EU manufacturing document [Towards an Industrial Renaissance] is an important one, as it also looks at public and private partnerships and clean industries. We have been somewhat interested here in the American experience and strategy for re-industrialisation and we are influenced by key reports such as the Brookings Report entitled America’s Advancing Industries which talks about the importance of 3D printing as a KET.

Academic1 highlighted the importance of industry to the Catalan GDP, which “theoretically represents about 20 per cent in Catalonia, but in practice is about near 50 per cent if you consider the secondary sector and considering the value chain related with industry”. He argued that, with the RIS3CAT plan, Catalonia needed to capitalise on the importance of manufacturing to the economy and to value add to industry through creative innovation.

Academic1:

That means, and I said this yesterday during the debate at the Steering Committee… that the future of the country will depend on the future of industry… the future of the economy… because Catalonia represents about 16 per cent of the Spanish population… we represent about 20 per cent of the GDP… and we represent more than 25 per cent of the exports… and so most of the exports come from here and this is because of the university… so…I think that with the RIS3 and this new approach of Europe 2020… and so on, will be a good opportunity to take advantage of this, and as a result… to have a more competitive industry and not only to boost manufacturing, but also to add value to manufacturing. Innovation comes from the relationship between creativity and manufacturing.

The automotive industry informant Autex1 also emphasised the degree to which MNCs such as SEAT are strongly embedded in the Catalan economy and an important economic driver in the region, especially during the 2008 global financial crisis, with its strong export figures. Autex1:

Spain has been doing its homework, because in spite of the crisis, the news now, that we have from the worldwide ranking, shows that we have jumped from the 12th... to 9th place... to the 9th position worldwide and this is thanks to the results of the work done by Spanish industry... and the confidence that we have given to the OEMs because you know that there is... one single Spanish automotive company
which is SEAT... But as you know, this company is not independent, it belongs to the Volkswagen group... but in any case, I think we have done a good job, giving confidence to the OEMs.

He pointed out that the combination of high expertise in the workforce, extensive auxiliary industries developed around SEAT from the second half of the century, and high productivity, had all contributed to the recent assignment and production of new models (including premium products) to the SEAT factories in Catalonia. He added that the confidence of the Volkswagen Group in SEAT has led to an economic flow-on of activity in the automotive industry, including investments from Ford, General Motors and Renault improving manufacturing figures for Spanish industry by €2.4 million in 2014:

Both the Catalan Government and the Barcelona City Council see the RIS3CAT innovation strategy as being aligned with building technological capacity, especially through Key Enabling Technologies, within the manufacturing industry... with the automotive industry, it is about 7 per cent of the GDP... and that is a lot... and that means that it is important... and if we also look in detail at how many technologies can be developed and impact on other sectors, then you really see the impact... so a lot of technologies from stamping, painting, welding, plastics, electronics... these technologies... across... you can use them in a lot of sectors... And given that the automotive sector is so competitive, and you can go into other sectors that are competitive, then you have a lot of advantages.

Catlangov1 emphasised the important role of the Catalan Government in securing production decisions from Volkswagen, Nissan and Renault consortiums to remain in Catalonia, by negotiating for industrial conditions to be favourable in attracting projects to Catalonia:

The best example was in 2010 when in the middle of the financial crisis, we had a high risk of off-shoring the plant of Nissan and also reducing production in sales... in the case of SEAT, we had the opportunity and the ability to attract a new model [the Audi 3] which the production could have been done in Barcelona or in Bratislava or maybe also in other countries, maybe the Czech Republic or some parts in Germany, and thanks to the joint work of other companies and unions, we were able to present an offer of this project to Volkswagen and we have won. SEAT has managed to increase the labour force and is now thinking about projects for the next four to five years... and we are sure that, had we failed to attract this project, the situation would have been a little more dramatic.

According to Catlangov2:

... it was not until the 1960s... that Catalonia began to wake up in terms of industry... in about 1967 and so since then, the automotive industry developed in Catalonia and today now we can say that Catalonia is one of the most important regions in Spain and the fact that we can say that more than 30 per cent of the components that are produced in Spain are produced in Catalonia... that means Catalonia is really a very important regional actor in the Spanish economy.
He also emphasised the importance of advanced technologies in generating innovation in the manufacturing industry. The need to ‘catch up’ on technological advances in the industry was said to reflect a ‘black hole’ occurring in industrial development after the Spanish Civil War, which held back the evolution of the automotive sector in Catalonia relative to industrial development trends in the rest of Europe:

In Catalonia, we have a large tradition in the automotive industry. If we look at what happened in Catalonia, we started in the beginning of the last century being, I would say… a… not an important but I would say… a relevant actor in the automotive industry in the beginning of the 1890s, 1910 and 1920… there was a lot of industry… then we had the Civil War… and we have a black hole for 25 years… we lost the pace… in terms of evolution… in terms of technological evolution… I mean… 25 years behind the rest of Europe… you had the Second World War and at that time, Europe was very competitive in terms of technology… because of the Second World War and then after that… but Catalonia was a black hole.

The Volkswagen Group’s competitive position in the global automotive market, relative to that of Toyota and Renault for instance, has reflected the strategy of market planning, where they have different plans for different segments of the market. The Skoda brand was developed for the low-value, Audi for the high-value and Volkswagen for the medium-value segment of the market. In this sense, the devolution of marketing strategy to Catalonia helped to revive the profitability of a “nearly bankrupt” SEAT, with the Catalan Government and SEAT developing a research centre for designing cars in Barcelona. The research centre employed over 1000 people designing different models for different segments of the export market. The success of new innovative models resulted in their becoming global brands (e.g. the Leon model hatchback developed for the younger segment of the market) and ensured the competitive position of the SEAT production facility in Catalonia. Academic2:

Volkswagen do very well… they are very efficient… I think the most efficient industry in the world is the automotive industry because they have a big share of the market, and when you see a car and you see it is for sale for say €10,000… this is a miracle. This is because… when you consider the price of the pieces… this is because of the production methodologies starting with Taylor in the middle of the 20th century… and then with the Fordist approach and then with all of the production methodologies that have developed since… if you look at it, the automotive industry has been the leader… of efficiency, because they need to be… they are very innovative in the production process… in terms of robotics and not only just robotics and logistics… also in the automotive parts… for instance the SEAT plant here in Barcelona… they have a park… where all the suppliers are integrated … and most of the added value is made by the suppliers! So, they transfer the innovation to the whole system!

With the RIS3 plan it is so important… to be in a place with a lot of externalities… activities, people, research companies and things like that… and build them at the place where the company is based and this has been one of the advantages of Silicon Valley or Baden Württemberg… and places like that and so, at that moment, now, in the creation of these kinds of positive externalities, in terms of innovation… are
so critical… because the companies need to open to make a network, an innovation network around the company… to build the externalities.

Informants further observed that in order to aid the process of large companies transferring technological innovation advances to the regional economy, an open innovation system needed to be built in Catalonia to generate “positive externalities” in the regional economy, such as research and innovation groups, which can then collaborate with larger companies to take ideas into new commercial products. According to Academic1, large companies should be part of the new policy direction, rather than operating outside the new institutions established by Smart Specialisation policy. The companies would be “dragged in” and be participants because of the externalities that the regional government would build around them to encourage economic flow-on from their activities. Large corporations in the region, such as SEAT, are seen not as a barrier to the implementation of policy, but as a potential collaborative partner in the delivery of the policy:

Yes, SEAT can be part of an open innovation system in Catalonia. They must be. Any industry in the world must follow an open innovation system that follows after the Henry Chesbrough formulation… and not because of his formulation because it was something based in the real world… based on networks… all big and small and medium companies… must follow an open innovation scheme for their innovation strategy.

Autex2 pointed out that SEAT is already operating to assist the development of SMEs and process innovation improvements through R&D centres such as the Centre Verde. However, the low level of funds attached to the centre militate against its success:

In Catalonia we actually have mostly very small companies… we have 20,000 companies and of those the majority are small or actually... some medium but mostly small companies and they are trying to get the big companies like SEAT… [to] become part of a collective pool, or a driver… so as to make a consortium and include these small companies… so that they can become integrated in really big projects… and this is one of the points of Centre Verde right and what we have been doing in the last years... and for instance in relation to Centre Verde... was a clear example of cooperative research in which we have participated in the last few years, but also the [2008] crisis has affected this kind of cooperation because the amount of funds and the quality of subsidies has decreased due to the crisis... but at the end the critical point is the average R&D with respect to GDP has decreased... because now we received the maximum rate in 2011 and 2012... because the policy in the former years was very research-devoted but in the last couple of years, in 2013, 14 it has unfortunately again decreased... and because of this... we are again now facing a situation... we are trying to look for more funds, but the problem is that on both sides... the state on the one side and the region on the other... but the funds are not so high at the end... but we all have our elements... on the one hand the cluster... which is also integrating those OEM Tier One companies and SMEs related to the automotive sector.

Although boosting capacity in the manufacturing industry is an important objective
under RIS3CAT, in order for innovative SMEs to emerge, a change in thinking would be required about the innovation model in Catalonia from a ‘micro-innovation’ model based on incremental process innovations associated with industrial production, to a ‘radical’ innovation model based on ideas, start-ups and information technology sectors.

Academic1:

I think you know, that I think that in Catalonia, that the SMEs have a big challenge… to change the innovation model… because you know in Catalonia, you know, it took part in the first and the second Industrial Revolutions and… and very soon in Catalonia… during the first part of the 19th century… there were a lot of… all of these places up there are made up of old companies that developed in the 19th and 20th centuries… and it is important to understand that we have an industrial tradition… but the innovation model of all the SMEs is based on what some actors have defined as ‘micro-innovation’, which is an incremental innovation processes not a radical innovation model but an incremental innovation model based on machinery… and is about adapted innovation… you buy the machinery and then you follow a learning process… where you adapt and make small innovations little by little, and we did this very well, this kind of innovation.

Academic2 has argued that the move to a global open economy has led to the need for knowledge-based competition and R&D-led innovation. Globalisation has led to a model of competition where “time matters very much” and where the innovation and knowledge base is about building a talented human resource base capable of attracting high-technology industries associated with ICTs to the region, similar to Berlin and London. Academic2: “the challenge for traditional SMEs here is to be more innovative, but in a new way… but then there are many, as more SMEs start to start up, coming from the uber-talented people who are coming to Barcelona… because they wish to live here and so on”:

… so now you have to adapt your traditional innovation model… and that is the big challenge for the SMEs in Catalonia… and for doing so they need a rich environment of creativity… innovation culture… the capacity to attract talent… For instance, Barcelona is in a good position to attract talent, we have attracted many international and European talents because they want to live here… and we have a research incubator with co-working spaces… and most of the people working in the co-working spaces… there are more than 100 co-working spaces in Barcelona… are foreigners. They have come here because they love working here. This is an example of [urban theorist] Richard Florida’s ideas here being put into motion.

Regional Innovation System

As was argued in Chapter 2, a significant barrier to the successful implementation of regional innovation policies across EU regions is faced by regions with very limited innovation-related assets. McCann and Ortega-Argiles argue that “some regions, for example, contain no research institutes; whole other regions, particularly in Eastern Europe, exhibit only a very
limited capacity for developing an innovation system, being constrained by institutional and governance issues, and technological issues.” McCann and Ortega-Argiles 2016, p.1410). Veugelers maintains that the tendency towards policy homogeneity will produce wrong policy priorities in particular places; for example, in weaker economies aiming to catch up with more advanced parts of Europe, the main priorities should relate to the absorption and adaptation of existing frontier technologies rather than initiatives aimed at fostering features such as creativity (Veugelers 2015 in McCann and Ortega-Argiles 2016, p.1410).

Catalonia, in contrast, has a dense and specialised RIS (Isaksen and Trippl 2016) with many regional assets identified by the RIS3CAT SWOT analysis providing a distinct opportunity for the region to implement Smart Specialisation (Figure7.5). According to documentary sources, such as the ERDF Operational Programme Catalonia 2014-2020 under the Investment for Jobs and Growth Goal (hereafter the ERDF Report), R&D expenditure in Catalonia in 2011 accounted for 1.55 per cent of regional GDP, representing a 146 per cent increase since 2000, a spending higher than the Spanish average (1.33 per cent), but far below the 3 per cent target set by Europe2020 and below the EU-27 average of 2.03 per cent. Nevertheless, the Catalan government has attempted to raise the productivity of the economic base by fostering new R&D activities in recent years, including efforts to strengthen existing facilities such as research and technology centres. Corporate R&D spending has fallen in recent years. However, Catalonia has performed well on other innovation indicators in the same period. For instance, scientific publication numbers have increased, Catalonia accounting for 1 per cent of global and 3.7 per cent of EU-28 scientific production by this measure. Catalonia is also known for its innovative outcomes in the health sector and clinical research in human health: the region has over 18 university hospitals, nine hospital research institutes and 11 hospitals considered among the 20 best hospitals in Spain (European Commission 2015a).

**Figure 7.5 Select elements of the strengths and opportunities of Catalonia’s Research and Innovation System (SOURCE?)**

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Opportunities</th>
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<tbody>
<tr>
<td>With 1.5% of the EU-27 population, Catalonia generates 2.9% of scientific publications, receives 2.2% of funds allocated under the Seventh Framework Programme for Research and attracts 3.29% of European Research Council projects (Catalonia is the third-most important EU</td>
<td>R&amp;D&amp;I processes are becoming increasingly global and open. The Catalan R&amp;D system occupies a good position: it is a centre of attraction for researchers of international prestige and is fully interconnected with European networks and platforms (strong presence in framework research programmes and</td>
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Catalonia has an important network of centres for the generation and application of knowledge (12 universities and three of the top 25 business schools in Europe). This network generates a significant critical mass of qualified and highly valued professionals in the world of employment and science. There are also hospitals and research centres with great international prestige in the fields of science and knowledge transfer.

Over the last 20 years, stable public policies have been agreed in Catalonia, reflecting political commitment to R&D.

The Institucio Catalana de Recerca i Estudis Avançats (ICREA) programme is a successful model, recognised internationally, for attracting and retaining talent.

Catalonia has scientific and technological infrastructure that enjoys great international prestige (the National Centre for Genome Analysis, the Alba Synchrotron and the Barcelona Supercomputing Centre).

Catalonia’s R&D&I is sufficiently competitive to meet new challenges and play a role major scientific and technological projects in the future.

Incentives are provided for the concentration and consolidation of research stakeholders in order to increase critical mass and competitiveness.

European Research Council funding, participation in both regional organisations such as the Four Motors for Europe and the Working Community of the Pyrenees) and international networks (stable research and innovation cooperation with Israel, Massachusetts, USA, Quebec, Canada, and Santa Catarina, Brazil).
Catalonia’s highly developed network of technology centres is gradually gaining position in European and international platforms and projects.

There are many collaborative initiatives amongst research and innovation system stakeholders.

Catalonia and, especially, Barcelona, are internationally renowned for design and creativity, important assets for the Catalan innovation system.

Barcelona is the world mobile capital and, in 2014, European capital of innovation.

In relation to human capital, documentary sources have highlighted how Catalonia has a strong pool of human resources talent, with more than 236,000 university students, one of the highest numbers in Europe. There is a strong presence of scientific research centres attached to Catalan universities, with research groups coordinated by internationally recognised postdoctoral researchers. Most of the financial aid given by the ERC to Spain is concentrated in Catalonia, the fourth region in Europe in terms of the numbers of ERC grants per million inhabitants (Generalitat de Catalunya 2018). The proportion of the population with higher education remains above the EU average: 37.5 per cent of the population aged 25–64 years, compared with 30.1 per cent in the EU28 (Generalitat de Catalunya 2017b). Yet informants pointed out that despite the positive picture of the state of graduate research in Catalonia, a mismatch in supply and demand was occurring in the labour market; for instance, the identified human resources shortfall in the region in relation to engineers. According to Catlangov1, to retain the current competitive position of the automotive industry and to improve on it meant a need for better trained people and better student outcomes. This human resource issue was identified by Autex1:

Increasingly we are needing engineers… we have started a new program called the ‘Start Up Europe’ program… and through that we have hired some engineers [of whom] we expect two qualifications… one that they be a ‘hydro’ engineer, but that they also should be a German speaker… and then we offer them two opportunities: to either work at SEAT or for a Volkswagen plant in Pamplona where we produce the Polo. And then we say, after… a learning period in the company in Spain, then they have the possibility to move to Germany.
RIS3CAT proposes a policy strategy to address the identified shortfall of engineers within the region. First, the government is working to develop the region’s skilled professional people. They have created a dedicated training centre for the education of people working in welding, machining or painting, with the capacity for more than 2000 students based at the facility per year. Second, the government is working with a local university to deliver the most important automotive engineering program in Southern Europe to train young engineers in the automotive industry. Finally, the government is preparing a third level of training, targeted at professional managers of the automotive industry. Academic1 believed these policy interventions will address the shortage of engineers in the longer term.

A further identified key barrier in the RIS relates to a history of insufficient public and private R&D investment, and insufficient cooperation and strategic alliances between companies and knowledge production systems. In relation to private R&D, Autex1 observed that the economic crisis had a heavy impact on government subsidies to large companies, which in turn influenced the capacity of companies to invest in R&D. He also noted the constraint of the European State Aid regulation for private subsidies to assist firms. Autex1 argued that the combination of these two factors had dramatically influenced the level of public support to R&D projects occurring in Spain in recent years:

Until 2011, there were specific programs for investment and direct subsidies into R&D for big companies and this was important. But due to the crisis, and for example in Catalonia... the money... it seems to have disappeared... and in relation to Spain and Spanish Government, the conditions of the support, mainly in the past operated in the form of interest-free loans... now these have disappeared.

He further emphasised the commitment of SEAT to the concept of RIS3CAT and provided some examples of some recent initiatives of the Volkswagen research group in Catalonia, which have sought to reinforce research capabilities in the automotive sector. For instance, an initiative initiated by Volkswagen, described as still in its preliminary phase but that “shows that Volkswagen have the clear intention to reinforce the research capabilities particularly in SEAT... and also with their direct suppliers”. Autex1:

This initiative is very important because Spain now recognises that the region of Catalonia is an elevating region and because Barcelona is such a big city and is recognised as one of the most dynamic and innovative biggest cities in Europe... the theme of urban mobility presents a challenge for our sector in the future. Because of this new policy direction, Volkswagen has decided to establish here with SEAT and the local university UPC a new open research network focused on urban mobility topics in the same way that they have done in Palo Alto... which is a facility near to the Silicon Valley for new transformative electronics and IT sectors.
and the idea is that we can become more specialised in concrete topics relevant to the future associated with the automotive sector… in this case research on urban mobility… so we are working on this initiative together with the City of Barcelona and university departments and together we will fund it.

Accordingly, he argued that SEAT was pleased to be involved with the open research network as it generated a “good connection with the public administration” and is ultimately a good thing for the competitive position of the company to assist rival companies such as Nissan and SMEs in the region to improve their competitive positioning. He argued that “these initiatives around research and mobility are making the regions stronger. We have found out in Catalonia that we have the ingredients to make this possible”: *Autex 1*:

The research network is open because we want to have a good connection with the public administration and as part of that we want to provide small and medium enterprises with research and development capabilities… some of these companies do not have any R&D departments so they have to outsource these activities… and we are trying to establish here in Catalonia, with a focus on urban mobility… but also in general applying the capabilities of other research centres… is one central research R&D capability in the region through this R&D network… so this is not about establishing the network in a concrete building, but it is about a network that shares facilities and capabilities and where there are a lot of strategic partners and Nissan can be part of that – why not? And the idea is that we get everyone together who is creating value in Catalonia… who will also profit from these facilities… and then we have the R&D network and we have strategic partners and Nissan is one of those strategic partners… and IDIADA… one of the biggest test centres for the automotive industry located here in Catalonia… so we have to join our capabilities and all together we have to work together to become competitive at a worldwide level.

Within the Catalan region, automotive MNCs, including SEAT, are strongly embedded in the RIS, enabling a strong role in the future vision of the economy to upgrade production with the use of new technologies in advanced manufacturing. In this way, the MNC can, as Heidenreich maintained (Chapter 2), facilitate learning processes with companies in the proximity (customers, competitors, suppliers and service providers) to provide regional collective goods to other actors within the regional economy. Examples of these regional collective goods include access to specialised technological knowledge, information about new markets, the vocational training of qualified and motivated human resources base adapted to the needs of the regional industry, and the stabilisation of regional networks and patterns of cooperation between regional companies, schools, universities, technology transfer, R&D facilities and political and administrative arrangements, that is by forms of local governance (Heidenreich 2017).

For instance, *Autex 1* also describes the support of SEAT for the development of an open
innovation system in the Catalan region as elevating the whole automotive industry; ultimately a key goal of the regional economic plan. Catalonia is seen as having the automotive industry infrastructure that could enable it to expand and become a more important economic player, along the lines of the large French and German cities where the headquarters of OAMs are based:

Spain is now the second biggest car producer in Europe… and has jumped from 12th to 9th place in the world wide ranking of manufacturing… and it has been put to me that there has been this leap because of the trend towards… the use of smaller cars… and because of Spain and our production costs, we are typically A Class and B Class car producers… small compact cars… the most expensive cars, the premium cars are mostly produced in Germany… because they make more profit… but if you are talking about compact cars… then you are looking at them being produced here and in France… and this is our advantage… of course the evidence in Catalonia for the development of the automotive industry in Catalonia is exceptional… because we have everything… we have two big OAMs present… .SEAT and Nissan… and on the one hand we have powerful technological centres that need to act more rationally but… the know-how is there… And on the other hand, we have technical centres like IDIADA… we also have a racing park here in Barcelona… so we have really a situation which is not comparable to other regions in Spain… well, when you look at Europe and Germany and France… well, they of course house a lot of the headquarters of the OAMs, but in Catalonia it has no comparison with Spain… regarding the infrastructure that we have, to be a base for the automotive industry expansion.

Catlangov1 impressed upon the importance to their regional economy of having the SEAT technical centre based there. Innovation advances were seen as linked to advanced manufacturing capacity in the region. The informant argued that since the GFC in 2008, the growth of SEAT and the manufacturing industry has been critical to the regional economy, and there has been a philosophical return to seeing industrial jobs and the link to vocational education as particularly important. The region has seen the building bubble burst, and the Spanish economy has been over reliant on the construction industry. Catlangov1:

SEAT is relevant to all of manufacturing. SEAT is a big manufacturer in Spain and it makes the whole car, so it is important… SEAT can make the whole car here in Spain because SEAT has the technical centre based here in Catalonia, and this is the only R&D centre… and if you make a line from Paris to North Italy… to the South… [it is the] only R&D centre which is able to design new cars so as to work not just for SEAT… but also for the whole of the Volkswagen Group… they design new cars, they make R&D projects… not just for SEAT in Catalonia but for other Volkswagen plants around the world, and then… manufacturing of course… the steel, the metals, pieces… until you have the whole car made.

Catlangov1 maintained that if SEAT had not established the R&D centre in Spain, then the situation for the regional economy would have been very different. The Catalan Government argued that the decision by SEAT to build the centre represents about €500
million to the Catalan economy in R&D investment. In turn, SEAT’s profit made each year is €600 million. In that sense, a Catalan Government industry policy expert argued, his government had strongly supported SEAT building technical capacity in the region, believing it would also lessen the risk of off-shoring:

This is the only R&D centre... yes, this is the key... because we talk about manufacturing but if SEAT didn’t have this centre... then the situation would be very different... because it would be similar to Nissan... Nissan have a small technical centre, but it is not really an R&D centre so it depends... on the high level development it made in Japan... the developments are therefore made in other sites around the world and then bought here to some manufacturing plant... so we believe that it is important to have the R&D function here, and that the government can get some agreements with the company and the union, and the risk of off-shoring becomes less... so you can see here in the case of SEAT and Volkswagen, which have here a very important technical and R&D centre this is so important to our economy as it represents about €500 million in R&D investment in SEAT... in comparison, SEAT turnover each year is around €600 million... so if we have this park... then it is key... to maintain and retain all the manufacturing activity.

Academic2 also highlighted the importance of the technical centre for the competitive position of SEAT, citing technological process development, marketing and branding strategy. He highlighted too, the extent to which the company has applied creativity and development to robotics in its production strategy, improved logistics around just-in-time processes and the successful structuring of the supplier park, and, in relation to design branding, that the Volkswagen Group had decentralised a regional design department to Catalonia, which enabled them to retain creative design professionals in Barcelona. They can design cars such as the Lear for the group and the cars “get exported all over the world, but the design is done here”. Catalangov2 too emphasised the critical role of SEAT to regional economic development:

If you look at the Catalan Government’s input and output figures for the Catalan economy from 2007, figures where they are talking about the impact of SEAT and Volkswagen on GDP... It represents 1 to 2 per cent of total industrial workforce, but then you have to see that regarding every euro that is invested in Volkswagen and how this impacts on other sectors... so here you can see... vehicle manufacturing, you can see is the main sector... and then look at the impact of this sector and investment on other sectors in the Catalan economy... metal products, plastics... rubber, commercial sector in terms of the dealers... research and development machinery... furniture, chemical products, ICT, telecommunications, financial services, electrical machinery, all of the electrical products industry, transport by rail, because they transport a lot of exports by rail and other services... so the impact starts from the manufacturing of Beagles, and it arrives to right through to services so this €600 million profit per year... implies that a lot of sectors have benefitted from this activity, so it is for us not just about securing the OAM SEAT and the Volkswagen workforce, but it is about all of the other auxiliary industries... If something fails with SEAT, then we have a very big problem for the whole region.
In relation to public R&D, RIS3CAT proposes to enhance existing R&D policy interventions to give them sectoral and technological orientation, and to promote new policy tools, such as encouraging public-private partnerships to continue to advance Smart Specialisation. A key component of this vision is to build an innovation ecosystem around key universities in Barcelona, such as the Autonomous University of Barcelona, the UAB. The strategy outlines a plan to capitalise on the centres located on the UAB campus with technology parks, companies and local councils to create a hub of knowledge and innovation, with a special emphasis on specific areas of specialisation in order to act as an engine for socio-economic development (EC 2016a). These interrelationships with the university are seen as integrating it as a fundamental part of the regional strategy. Hence a centrepiece of the RIS3CAT is to build closer ties between public and private actors. The EC (EC 2016a):

Though Catalonia has first-rate R&D centres and universities as well as a solid industrial tradition, it registered a lack of technology transfer. Consequently, connecting its research and innovation system to the existing business and industrial fabric is identified as the strategic priority in their RIS3CAT.

According to Autex2, “before this new approach we had a problem in Spain in that in the past, we had more technical and research centres than Germany and France put together! So, you have all of these university professors and you had all these research centres and then they would have a spin off and nobody would know”. He argued that in addition to this, Spain was missing in the past a focus on specialisation, especially in Catalonia “where you had a lot of centres, but they were all doing the same kind of work... and following on from the pattern of the last century... but there are not enough research funds, then they cannot survive... and they should therefore follow the famous example of Germany who have the strongest research centres with different sides... to it... to the whole county... And this makes more sense and this makes cooperation with the big OAMs easier.”

In addition to these initiatives, a further policy being promoted under RIS3CAT is that of improving research and technology transfer infrastructure in the region. Research and technology transfer infrastructure and R&D cooperation projects are proposed to assist with the application of basic research to the business sector. The technology market is being targeted as a driver to differentiate Catalan companies through Technology Valorisation and Transfer strategy, as well as fostering collaboration with global companies though international cooperation projects and finally improving innovative public procurement. Further, RIS3CAT promotes the use of public policies including promoting ICT tools through a variety of plans: a digital agenda, promotion of an entrepreneurship agenda, promotion of eco-innovations, encouraging non-technological
innovation through new organisational models based on professionalism and improving business management, improving social innovation cooperation processes at a societal level, and strengthening the education system, particularly in relation to science and technology-based training (Generalitat de Catalunya 2014).

Informants noted, for instance, that industrial clusters in the region have been successful in encouraging cross-sector growth with the use of KETs. The technologies that have been utilised across the health and automotive sectors are IT and nanotechnology. Catlangov1 maintained that there was a strong relationship between the activities of the automotive cluster and Centre Verde, the SEAT technical centre, and that there is a “very good relationship and we are cooperating a lot with them, with new technologies, with electric vehicles… we are cooperating a lot with them, we have about eight or nine projects with them”. Therefore, the impact of the automotive cluster has been very important to regional economic development. Catlangov2:

For years and years, the Catalan Government has tried to promote the automotive cluster in Catalonia… SEAT and Nissan never agreed. One would agree to set up the cluster and the other would not agree… so for years and years… Finally, two years ago, surprisingly, Volkswagen decided on their own to set up an automotive cluster in Catalonia in the context of promoting a new training centre for the automotive sector which was set or located in Matamay, close to the Volkswagen premises. The training centre generated collaboration and it was thought that this had to be not just with SEAT and Nissan, but also with complementary industries. The Catalan Government assisted in the establishment of the cluster with subsidies and promotion and office space and now the cluster is a success story and it works on its own and doesn’t have much help from the government anymore… there a lot of different clusters here, almost 25 clusters here in Catalonia and they have some support and some of them are linked to activities and they have their own independent lives and they work well, and they work well together… the automotive cluster is a big success as it has the two big OAMs and over 100 other companies attached… we have two OAMs… that is SEAT from the Volkswagen Group and that is Nissan Group and Tier One, Tier Two and Tier Three and engineering services and a lot of companies that make up the complete picture of the automotive business in Catalonia and we are really trying to force… and I say ‘force’ because we are really trying to force the companies… to cooperate in a small island… because Catalonia is a very small island… we are a sea view with a very big garden… and we are trying to cooperate in Catalonia… in order to become more competitive… on a worldwide basis… and that is very important… here… we are able to cooperate between competitors… in order to be more competitive outside of Catalonia… that is one of the key issues, we are trying to explain, and try to join companies… and try to force them to work together and cooperate… and this is quite difficult.

According to Catlangov1 the cluster has worked well in relation to encouraging collaboration between the many multinational firms located in the cluster including
SEAT, Nissan and Johnson Controls:

Now, you see, Volkswagen and Nissan, they take their own decisions… but even Volkswagen and Nissan, they are able to cooperate… and for instance we make, for example, some common trains… to reduce costs for logistics… such a type of project… they are not competing and there are some advantages for both Nissan and Volkswagen… that is a win-win solution… and for instance, if Volkswagen or Nissan have some advantages in costs in transporting their work… that is an advantage in cost… this is good… and they will be more competitive…

Catlangov1 pointed out that the cluster has developed many different fields of cooperation and collaboration among companies to generate competitiveness among the firms in the cluster, and in turn regional economic development:

Yes, we are also looking at infrastructure, and for instance are talking to the government about whether they should invest to make the fuel more competitive… we are looking also at training programs together… so we have a lot of activities in terms of competitiveness… training programs, activities, product technology, production technology… we have different fields of cooperation… and the companies are really working with us… and today, I can say that we have more than 240 companies working in cross-collaboration projects with other companies… that is a lot of people… and in some of these cases the government will contribute some money to get the project off the ground and running.

Catlangov1 argued that corporate activity had enormous indirect benefits and the strategy by Catalonia is to retain the corporate activity as well as to value add to it:

I see more activity with the Tier One than I do with the Volkswagen and those sort of companies… because Volkswagen they are a big direct employer but they are also an indirect employer and the biggest impact that they have is indirect with the suppliers etcetera… the Volkswagen Group in Catalonia have maybe about 20,000 people indirectly employed… they have directly about 3000 people working for them, but it is more important what they are doing in terms of pulling from the market from Tier One and Tier Two suppliers who are the major employers within the regional economy

Autex2 sees RIS3CAT as an important framework for ensuring specialisation in research directions in Catalonia, as well as rationalising the technical and research centre relationships with industrial commercial outcomes:

So… in a way… the cluster… this is a great opportunity for SEAT to make connections, not only with other OAMs but also with Tier Ones… and you can see really quickly which of these companies are really active with innovation… and I can give you some really concrete examples of some really small companies… that had very quickly, some really quick, sound ideas where they could collaborate with big companies like SEAT… and also from the help from funding from the automotive cluster… they got some small funds that helped them put together some applications for the bigger funding programs, but… also applied for short-term projects… it is much easier to find financing, also from the companies… so if someone comes here to SEAT with an idea and it could be applied in one year and make savings in two years… they will get financing also from us, because then we can also be able to get the profitability in the short
term... which is, nowadays, the most important decision criterion for these projects and... so therefore the focus in very much on the short term nowadays rather than on long-term research topics... and in Catalonia, I have to say, most of the SMEs today are focused on industrial topics rather than pure research topics... and then the Catalan Government now, is focusing very much on the problem of these small companies and... putting all the technical centres and the research centres all together.

According to Autex1, the greater encouragement of cooperation between companies through their participation in R&D and technological centres was a positive policy direction for the region. He said that overall this was considered a positive change in that it encouraged a focus on regional economic outcomes, but he expressed concern about the low funds attached to the new RIS3CAT policy direction to deliver on this policy objective. Autex1:

Now the RIS3 strategy of the EU... to devote funds from the Regional funds and to focus them on strategic fields... and there is one area... sustainability.

...We are integrated into one of those so-called RIS3 communities... which theoretically should receive money from the Catalan Government to develop research and development into sustainability projects... but unfortunately... nowadays... the funds will be much lower than in the past. We have been told that the allocation in the annual Catalan Government allocation of EU Regional across all of the communities that are being established by the policy... so it is not so much... this is the unofficial information that we have received.

As discussed earlier, Barcelona City Council at a local level is complementing the work of the Catalan Government in implementing the RIS3CAT strategy by developing an open innovation system in Barcelona using the policy tools (such as public procurement) available to it, and by ensuring that citizens are combined into the strategy from a demand perspective (Barcelona City Council 2015). The council has developed a policy tool, the ‘Urban Lab’, which is designed to provide a space in Barcelona to carry out tests and pilots on products and services that have an urban impact. The central idea behind the initiative is the use of the city as an urban laboratory. The aims of the policy are threefold, and include the objective of fostering innovation so as to be a benchmark of innovation for the rest of the city and for other cities’ administrations and companies, to enable companies to trial innovative products in a real place, and, if they prove their value, commercialise these on a large scale in Barcelona or in other cities in the world; and, third, to learn and create new products and services that are capable of offering improvements to the citizens of Barcelona. Some of the BCC pilot projects that have been successfully trialled include the implementation of bicycle lanes, charging points for electric cars, and the use of new sustainable outdoor public street lighting that uses Eco Digital with LED technology (Ajuntament de Barcelona 2016).
Apart from Catalonia having strong ‘hard infrastructure’ such as its network of industrial clusters, and the smaller infrastructure initiatives at a local level to encourage demand, informants also argued that Catalonia was well placed to implement the RIS3CAT policy because of the long history of investment in so-called ‘soft institutional factors’ in building innovation capacity there. This is due to the long involvement of the region with the EU’s Horizon 2020 and it being allocated Structural Funds to innovate on the basis of being a developed region. **BCcouncil:**

Catalonia gets about €800 million from the EU. The money goes to Spain. The EU money is delivered to ‘hard’ and ‘soft’ factors. In relation to the €800 million that Catalonia gets, the breakdown is as follows: 300 million, R&D; 60 million-IT, 152 million, SME development; 128 million, to generate a low-carbon community… Horizon 2020 is a big policy and worth about €79.40 million to Catalonia.

Informants all agreed that in the past 10 years, EU Regional funds have in the main been specifically directed to innovation objectives. They argued that this development had contributed to the consolidation in the region of an ‘informal’ social institutional milieu reinforcing an economic environment conducive to implementation of a policy such as RIS3CAT. **Catalangov1** argued that “with Horizon 2020 we have already had companies that present projects together and that means we try and align projects with the Horizon 2020 strategy locally with the partners we have”. **Academic2** also emphasised that the EU policy framework that encouraged informal institutional networking between universities and corporations was having a significant impact and had laid the foundation for the success of the policy in Catalonia, particularly in relation to the development of an open-innovation system. **Academic2:**

In the past you had a system of closed innovation where you had ideas and views coming from the market and you had screening of the idea and then the end result was the product. All the time, you had 15 ideas and then you got the product. There were several stages of development and they were all in-house. Then times changed and the realisation [grew] that it was more and more important to build external expertise and skills. And also, to explore the notion of letting the ideas go, and outsource the ideas we are not using on the market. This was called the open innovation model. At the same time, we were looking for external capabilities… buying research from universities.

According to **Academic2**, with the EU grant system moving more generally to open innovation systems, there was initially no incentive for corporations to join in. But gradually they came to understand that in order to meet their own needs, they needed to build teams with members who were outsiders:
This has been a learning process for corporations because what I observed with previous funding rounds for Horizon 2020 was that corporations wanted the funding, but that they didn’t want to share information, so they built false projects so that they were not sharing too much with the outside world and not revealing secrets... but now, more and more, they are realising that it makes no sense that there be artificial projects and this itself is a competitive positioning because if you build a good relationship for instance with a university, then you can share the risk. This is an open innovation system in practice and it is happening right here now in Catalonia.

*Academic1* highlighted the impact of EU framework agreements like Horizon 2020 that “with over 15 years of operation of the programs in Catalonia” had resulted in a sophisticated applied research system at the level of the region in several important industry fields, such as biomedical research, health, design and information technology:

The EU Horizon 2020 scheme has made a big impact on building an applied research system at the level of the region in that, as an instrument, it has forced collaboration projects between research and industry in relation to pilots... it has forced scientists who think they are not being funded to do applied research to engage with industry and it has at the same time encouraged industry to share risk.

*Academic2* further observed that the Horizon 2020 scheme had laid the foundations for large corporations to engage with smaller companies through making it a requirement of funds that they invest in SMEs with new business ideas and experiments. In this sense, the RIS3 strategy represented an extension of Horizon 2020 to the broader regional context and that this would potentially have a broader social impact with the development of an even greater open innovation system which, in order to be achieved, would need to bridge a research and industry continuum. This required a “lot of work” to integrate more closely key research institutions like UBC with technological centres and corporate stakeholders. *Catlangov1* emphasised the importance of seeing the RIS3CAT strategy as aligning with the EU’s re-industrialisation strategy in policies around encouragement of linkages between R&D and education and training systems to encourage industrial outcomes:

… since the GFC there has been a general movement towards re-industrialisation in Catalonia with companies and business organisations and our stakeholders and economic institutions coming together and saying, “We are in a terrible crisis… and we have seen that the countries that have overcome the crisis and that have had better performances during the crisis have been industrial countries such as Germany.” And there has been a realisation that we have to return to our industrial roots and try and restore industrial jobs that are more stable, have better wages than other sectors, and a clear link between R&D technology and a clear link with technology centres which have an applied link to market and finally a clear link between the education system and a strategy to link the training and vocational skills to the industrial reality and there is now some consensus around this agenda in Catalonia.
**Conclusion**

The Catalan case demonstrates that Catalonia is committed to a diversified and open economy and broadening the economic base of the region through developing leading sectors, such as the agricultural, energy, transport, health and cultural sectors. Catalonia’s strong industrial sector is seen as important in driving innovation advances. The strategy aligns with the EU industrial policy direction aimed at re-shoring industry to regions and the development of advanced manufacturing capacity. The Volkswagen subsidiary SEAT is a major player in the Catalan economy and is seen as an important economic driver under RIS3CAT.

In Catalonia, the presence of strong political institutions has contributed to a robust policy design process. A sophisticated policy development methodology has been employed and policy communities established that are well represented by stakeholders across quadruple helix groups in the region. SMEs were well represented alongside large MNCs. SEAT is a strong MNC player within the regional economy and has indicated that RIS3CAT policy is encouraging it to become increasingly embedded within the regional economy, towards contributing to an economic agenda in developing a sustainability strategy in conjunction with public institutions, around the implementation of the development of electric vehicles. Yet, this case showed that while Catalonia is rich in knowledge assets within its RIS, the most significant challenge in the implementation of the policy may be the facilitation of linkages between research institutes and corporate stakeholders. It is the functioning of the RIS in this regard that has been historically a problem in the development of public-private collaborations.
Chapter 8
Discussion

Introduction

The implementation of the Smart Specialisation policy has faced many challenges at the level of the region posed by various factors including quality of regional governance arrangements; the characteristics of a given regional innovation system and the role that the MNC plays in a region in the context of where the subsidiary sits within the governance of its global value chain and global production network. Transforming Smart Specialisation strategies into action has emerged as a complex task, particularly in LDRs, as was emphasised in the review of recent empirical research. This is corroborated by the research from this study which has showed that strategies faced significant impediments both in formulation and implementation, in their potential to bring about significant economic reform. Therefore, the research raises questions as to the extent to which these impediments constitute a failure of the policy in the case study LDRs located in CEE countries. This chapter provides a discussion of the main findings from the research and, where applicable, links the literature to the research outcomes.

Quality of Governance

The first research objective investigated the extent to which the quality of governance found in a Member State or region would impact on successful implementation of the policy. A number of conclusions can be drawn from the case study analysis presented in Chapters 4-7. Data analysis revealed that there were many barriers impeding effective implantation of the policy, including entrenched power dynamics in MLG processes favouring Member States; centralised political power in many CEE countries and ERDF Regulations that lacked specificity of detail on policy parameters.

Firstly, Commission informants revealed that they were finding it difficult to negotiate around key elements of the new policy direction due to entrenched power dynamics within MLG processes, favouring Member States. New regulatory measures were established by the
Commission to oblige Member States and regions to develop Smart Specialisation policies to stipulate specific requirements that must be adhered to in gaining approval of submitted strategies. The new powers afforded to the Commission seemed to have the potential to challenge the long-held principle of subsidiarity where Member States and regions had the power to determine the scope and nature of projects funded under Structural funds investments within the context of broad criteria. The EC argued that the success of the new policy in large part hinged upon the capacity of EC desk officers to be “strong negotiators” to ensure that the plans are detailed and specific on objectives. However, it was identified in Chapter 4 that a significant barrier to the successful implementation of the policy was in the lack of power afforded to EC desk officers responsible for negotiations with Member States and regions. While negotiations take place in the context of a “shared management framework” it was noted by Commission informants that the concept has not been fully realised due to power dynamics entrenched in the system that enabled Member States to often “move around” the EC, by exercising power through the European Council if they want to influence politically-driven economic priorities against the advice of the EC on the new policy direction.

Secondly, it was noted that consultations with regional stakeholders under the policy had not necessarily occurred due to the poor state of governance arrangements (efficiency of regional and local authorities) within Member States prohibiting regional partnerships. This was seen as a major impediment to the successful implementation of the new policy, as the EC in its Guide for implementation of the policy had emphasised the extent to which it was their intention that Member States and regions design their Smart Specialisation policy policies utilising a decentralized process with an “entrepreneurial process of discovery” involving regional stakeholders drawn from a broad range of representative fields in society inclusive of the educational, scientific, government and civil society realms. The EC describes the role of regional actors as paramount to the policy’s success “as it is believed that no one has a greater commitment to knowledge of a region than the individuals and organisations that are based there” (EC 2012a, p.35). Interview informants however stated that they could not ensure that regions were involved, in the receipt of funds attached to Smart Specialisation strategies, as funds were distributed to Member States, not to regions. It was noted that the quality of government was found to be lowest in LDRs such as Romania, Bulgaria and Hungary, with governance problems tending to undermine the impact of Regional Policy interventions. It was further observed by EC informants that this was the case in regions located within CEE countries, where strong central governments tended to predominate. At a regional level, this in turn had led to weak governments and weak administrative capacity to deliver the policy objectives. Bulgaria was singled out as an example of a Member State
where “a lot of work” still needed to be done in capacity building within that state to properly design and implement the new policy direction. Marques and Morgan have also pointed out that the collaborative economic search agenda involved with the entrepreneurial process of discovery in the policy requires inclusive governance processes to ensure the diversity of ‘voice’ and that this needs to in turn be supported by inclusive political institutions capable of distributing political power in an inclusive way (Marques & Morgan 2016). In addition, Rodriguez-Pose and Garcilazo have also postulated that that the success of Cohesion Policy investments is directly linked to the quality of regional and local governments. They argued that if the Smart Specialisation policy is to be successful, then it needs to build in an institutional component, including promoting transparency and accountability and dealing with corruption to improve the quality of government as an essential component of the strategic planning processes of the policy alongside economic planning (Rodriguez-Pose & Garcilazo 2015).

The impediment of centralised governance arrangements to successful policy implementation was also supported by conclusions drawn in the Western Transdanubia case, where a nationally-driven policy design process was seen by interview informants as reflecting the political context in Hungary, where regional governments were dismantled resulting in increased centralisation of power. These political developments had led to regional stakeholders feeling disenfranchised in economic development planning in both the design and the implementation phases of the policy. An impact of the centralised process in the WT case study was that “large companies” had played a major role in setting the agenda for the policy. A further impact was said to be in the loss of regional leverage in securing extensive funding allocations, for instance, attached to new KETS such as 3D printing facilities, potentially impacting on what could be achieved with the new policy direction. The fiscal dependence of the region on the national government, and “small amounts of money” being allocated to innovation in the region, have led to a concern that the new policy direction would just result in a ‘business as usual’ approach to regional development based on the existing industrial development model underpinned by infrastructure projects rather than the more transformative model that the policy hoped to engender. The Western Transdanubia case confirms the empirical research that has addressed the policy implementation challenges faced by CEE regions, with Healy observing that in East Romania, the centralisation of fiscal power had undermined regional agency in the policy design process rendering the regional plan as a strategy that signalled intentions for an independent regional vision but was ultimately hamstrung by central determination of national priorities on innovation given a centrally driven budgetary process (Healy 2016). This case also corroborates the findings of Cooke where he showed how power levels within the Portuguese state had conspired through
Similarly, in the case of Bratislava, it was shown that the Slovak Strategy was designed centrally. Policy design processes involved consultations with representative stakeholders that were coordinated by the national government. A new national authority, the Government Council for Science, Technology and Innovation, was formed. It was given considerable political weight within the government and charged with implementing the Slovak national plan. Despite the centralised policy design processes in Slovakia, the case of Bratislava emphasised the extensive nature of consultation with regional stakeholders, although it was noted that more could have been done to include the large MNCs in the process. The omission of large companies was seen as a barrier to implementation. There was concern that MNC players may lose sight of the regional development focus of the policy while pursuing their own commercial interests in isolation from broader economic and social objectives of the plan.

In contrast to this situation, EC informants noted that in countries with strong regional governments such as those in Spain, France and Germany, policies were sophisticated and regionally driven. The Catalan case clearly demonstrated the extent to which strong regional and local governments that were empowered to oversee the policy’s development assisted with a rigorous policy design process. Therefore, in Catalonia, the policy governance process consisted of a “two-way iterative process that combined both top-down and bottom-up approaches”. The RIS3CAT strategy was submitted to stakeholders and civil society through an online public consultation process with contributions from universities, research and business. The policy established consensus-based communities made up networks of companies and stakeholders in the Catalan R&D system around sector and thematic priorities of the strategy. Sector priorities were determined by the 13 committees formed. They presented projects to the Catalan government and then received financing. The Smart Specialisation policy overturned a ‘top down’ model of public policy development resulting in a sophisticated decentralised model of cross sector committees being formulated to develop and implement the new policy direction. It was observed by interview informants that the broad governance process did not favour large corporations in the region, with the new policy focus being about encouraging SME involvement in governance processes. It was said that this had led to an overturning of the traditionally privileged position of the large corporation in influencing economic planning at the level of the region and was seen as a positive policy development as it had led to the old system of state negotiation with corporatist elites at a peak level, such as the automotive industry, being replaced by a devolved model of consultation with a
broad range of economic actors. It was shown that the Catalan government played a central role in the policy design of the RIS3CAT, and it was emphasised how the policy had encouraged for instance, Barcelona City Council to change its priorities away from a traditional focus on waste management and parking to fit with the Smart Specialisation agenda around the concept of mobility. A powerful Steering Group was established made up of representatives from across the Catalan government and the city council. This enabled the development of the policy alongside a broad group of local stakeholders and companies.

The case of Catalonia demonstrates a devolved consultative approach to policy design. However, informants raised concerns about barriers emerging in the policy implementation phase. The policy was said to have “administrative complexity” associated with the governance processes involving many stakeholders to consult with in design and implementation phases, as well as low funds attached to the new decentralised policy direction with “such ambitious objectives.” These concerns reinforce the observation of Marques and Morgan, whose analysis of the potential governance pitfalls of the policy design process also highlighted the potential problem of the deliberative governance model and administrative complexity in implementing the new policy direction (Marques & Morgan 2018). The EC chapter also emphasised the extent to which the low funds attached to such a sophisticated policy direction may present a barrier for Member States and regions and render it an “exotic exception” rather than having the power to transform regional economic reform.

A third impediment to Smart Specialisation implementation relating to the governance of the policy was argued by EC informants to be presented by the legal framework attached to the policy. Specifically, Commission informants stated that they felt that the ERDF Regulations needed to be strengthened, to become more specific on detail to enable the EC officer to have greater leverage in negotiations with nations and regions. It was observed by the EC that the only capacity for leverage in negotiations experienced thus far, was to use the ‘stick’ of the EC auditing process to ensure funds were expended according to the policy objectives only after plans had been implemented. For instance, they argued that the new regulations lacked specific detail relating to governance requirements associated with the entrepreneurial process of discovery that should be undertaken; to what projects can be approved, and in specifying indicators for required evaluation and monitoring systems that need to take place. They argued that Member States and regions had submitted draft programs that express “general and vague aims” and “listing a large number of possible actions” so as to maintain maximum flexibility in the selection of projects at a later stage. EC informants observed that the ERDF Regulations were vague in many areas. However, a recent key report
addressing the future governance arrangements under Cohesion Policy post 2020 has indicated the political difficulty of moving away from the functioning of subsidiarity in the operation of the shared management framework in the MLG system. The report emphasised the degree to which Member States are strongly in favour of negotiation and flexibility in determining policy priorities and suggests that a better results-orientated framework should be the priority for reform, rather than the imposition of financial penalties or greater ex ante conditionalities (Bachtler et al. 2016).

The role of the MNC in the region in GVC/GPN context

The second research objective investigated the extent to which the role that the MNC plays in a region would impact on successful implementation of the policy. A number of conclusions can be drawn from the case study analysis presented in Chapters 4-7. Data analysis revealed that there were many barriers impeding effective implantation of the policy including a supplier led strategy of development in the automotive industry and low levels of private and public R&D in CEE regions. In contrast, SEAT in the Catalan economy was observed to be strongly embedded in the regional economy and focused on development of greater product innovation, for instance on the development of electric vehicles.

The case study regions face varied challenges in planning for structural transformation of their economies. Both ‘less developed’ Western Transdanubia (WT) and ‘transitional’ Bratislava identified themselves as being situated as ‘industrial production’ regions within the OECD typology of region matrix, and the ‘developed’ Catalonia identified as a ‘knowledge region’. The broad view of innovation adopted by the policy – that innovation may occur anywhere and in different forms – was seen as a potential limitation by informants located within Western Transdanubia and Bratislava. Both regional strategies concentrated on an approach that would consolidate their region’s automotive industry as the centrepiece of a specialisation agenda. Both saw their automotive industry as the most important economic player in innovation advances over the long term. This was seen by informants in Western Transdanubia as potentially reinforcing an existing industrial economic base rather than taking a more ambitious strategy of more rapidly transforming to a diversified knowledge economy in the long term, which Catalonia has aspired to do under RIS3CAT. In both the industrial regions of Western Transdanubia and Bratislava, innovation advances were seen as being achieved by aiming for ‘smart production’ focused on product development within manufacturing industries found in the region, rather than new knowledge generation through R&D directed at technological breakthroughs or a more radical model of innovation associated with the endogenous growth of disruptive firms. Due to the regions identifying as ‘industrial production
zones’, they instead seek to connect to the innovation chain through R&D activities through the development of high value-added products, especially by strengthening the SME sector. The regions see this occurring by MNCs assisting with the development of innovative SMEs that “want to become suppliers” linked to the needs of the MNC automotive firms located there. An increasingly diversified economy would be made possible by the development of place-based economic networks facilitated by new institutions established by the policy such as Centres of Excellence.

However, this economic vision was met with concern by informants in the Western Transdanubia case who expressed concern that the Smart Specialisation strategy supported greater innovation in the automotive sector based on the development of domestic suppliers as opposed to “functional upgrading” into design and R&D work in the region, feeling that this would not be a radical enough approach to bring about innovation advances within the region. In this context, the Smart Specialisation policy represented an opportunity to diversify the economic base. While the automotive sector was seen as having an important role in the region, it was emphasised in the WT case that focusing too heavily on it in the new policy environment may have various negative consequences, such as limiting the region’s economic future to a low-technology development trajectory given that the Audi production in the region is built on a model of complementary specialisation and export of components. This was seen as potentially impeding the capacity to develop internationally competitive niche products based on scientific excellence; providing a disincentive for innovative strategic SMEs to emerge as the company has a flat structure not enabling spin off activity to occur. These insights add value to the empirical analysis on key characteristics of automotive GVC producer-driven networks undertaken by Pavlik and Zenka who in their study of the Czech automotive industry discovered that the capacity for industrial upgrading within large industrial companies, which organise and coordinate investment-based vertical production networks of component suppliers, was highly selective and mainly associated with product and process upgrading as opposed to functional upgrading (Pavlik & Zenka 2011).

Cooke has also argued that policy makers should understand the important role of MNCs in shaping regional knowledge based economic development, given the increasing outsourcing of R&D from large corporations. In this sense, regions should try and influence location and decision making of R&D by large corporations to help shape and exploit knowledge-production processes and innovation systems in the context of globalization (Cooke in Cooke & Picculuga 2009). For countries located in CEE, attracting the settlement of research facilities owned by MNCs to regions will enable functional upgrading of knowledge capacity processes and hence the capacity to break out of their peripheral status in the global economy.
(Smaho 2012). In addition, Capello and Kroll argue that repositioning of peripheral regions in international value chains, however desirable, can often not be controlled by policy-makers from within these regions alone. Typically, these regions’ only link to the international economy is based on local MNE subsidiaries acting under headquarter directives and embedded in global corporate strategies. Consequently, they are not usually particularly interested in becoming engaged with a region’s local government or its strategies. Even if they were to become involved, moreover, any internationalisation strategy built upon their activities will remain vulnerable to more general corporate plans, as they can at any time by closed down or relocated following considerations entirely out of the control of the regional government (Capello & Kroll 2016).

As was also noted earlier in this study, within the automotive sector, the global value chain (GVC) organisation of the company Volkswagen demonstrates how a core-periphery dynamic may be established in relation to the placement of R&D facilities across Europe. The research carried out by the Volkswagen Group has always been largely centralised, with the corporate research division at the company’s Wolfsburg headquarters providing support for all of the Volkswagen brands. A baseline mapping exercise of advanced manufacturing capacity in European regions undertaken on behalf of the European Commission found that ‘top layer’ advanced manufacturing capacity in the automotive industry is largely concentrated in regions located in Western Europe and Spain (Technopolis 2014). Given the problem of the vertical nature of MNC GVC strategy, it is therefore maintained by many GVC scholars that it is not feasible for regions that are characterised by unfavourable structural features of economies (outside global economic cores) that are dominated by lower tier suppliers, have guaranteed demand (often in large volume) for standard goods produced with well-known technology, and do not tend to conduct activities such as market research, to aspire to an industrial upgrading strategy (Blazek 2016; Tödtling & Trippl 2005). In this sense, it may be that public policies aimed at stimulating socioeconomic development by supporting innovation, for example via the promotion of cooperation between firms and academic R&D institutions, are to a large extent misleading. Instead, given the narrow profit margins of lower tier suppliers, as well as their limited growth potential stemming from their modest capabilities and consequent low-road strategies of competitiveness, the concept of upgrading is not relevant for these firms (Blazek 2016; Tödtling & Trippl 2005).

These insights from the literature are relevant to the case of Western Transdanubia, where informants were of the view that rather than rely upon MNC GVC strategy, the roles of the state and the region were critical in playing a greater coordination role in building a policy for automotive development to shape future strategic policy where they emphasised the degree to which this would generate a model where assembly of cars or more complex
research and design work, would not settle in the region. Thus informants from Western Transdanubia expressed concern that regional Smart Specialisation strategy focused heavily on supplier development, and that this could potentially consolidate the existing production model of export of engine components, rather than a more expansive strategy based on functional upgrades to the production site. In this way, Western Transdanubia faces the challenge described in the literature of potential industrial lock in an MNC GVC organisation that often determines an international division of labour and a spatial division of innovation (Massey; Aydalot in Simmie 1997).

Bratislava shares many structural similarities to WT, especially a large presence of heavy manufacturing industry and having a VW-owned plant as a large player in the regional economy. As discussed earlier, in the 1990s this reflected a GVC strategy by the VW Group to invest heavily within CEE and develop auxiliary firms to support a central production model and to consolidate an “intra-regional cluster” that would service the needs of 12 brands associated with the VW Group. As a result, a cluster of production facilities emerged across CEE regions based on big OAMs such as VW, Peugeot and Kia that then bought about a close economic cooperation between regions such as Western Transdanubia and Bratislava. The Slovak Smart Specialisation strategy also consolidates the strong role for the automotive industry in the region with priority sectors for economic specialisation, all of which relate to the automotive industry. It was observed of the policy design process how six sectors were selected “… all related to the automotive industry, as Slovakia has a good network in the automotive industry” with VW a key player in the regional economy. The Bratislava case emphasised the importance of the automotive industry to its regional economy and that the factories have attracted foreign suppliers into the region. However, the WT case highlighted considerable concern about the vulnerability of the region, based on this strategy, to a long-term reliance on external foreign investment. The strong performance of Bratislava’s economy is driven by growth rates in TPF which reflects a diffusion of knowledge and medium-high technology from foreign sources. The fiscal problem of low state funding for R&D was said to probably consolidate the economic dependency of the region on the import of foreign technology. The Bratislava case also demonstrates how MNCs generally have their technological centres in Western Europe, a situation compounded in Slovakia due to both low private and public funding into R&D. A further structural flaw preventing advances in innovation in the economy was that SMEs tended to be concentrated in the ‘low technology’ service sector.

Hence, both the Western Transdanubia and Bratislava cases highlight the potential for their respective Smart Specialisation strategies to generate path-dependent economic ‘lock in’
associated with the form of industrial production located in their regions. As has been outlined, in Western Transdanubia, informants noted the economic vulnerability associated with the ‘routine assembly’ production model found regionally. It was felt that by not producing ‘premium product’ that a North-South-East-West GVC divide was consolidated. Similarly, the Slovak case demonstrated attitudes that the model of automotive production found in Bratislava would be unsustainable in the long term, given predicted material shortages and the increasing introduction of more sophisticated technology such as that of robots, which would eventually, it was feared, undermine employment capacity. Informants were concerned that the GFC in 2008 had resulted in an economic downturn in the region and the experience was seen as contributing to a view that the region needed to reduce its dependency on one giant industrial actor or major MNC for economic success.

The Catalan case has also highlighted how its large industrial base in the region is considered integral to the regional economic vision. However, in contrast to the CEE regions; the case study of this developed region demonstrated that the region wanted a highly diversified strategy. RIS3CAT outlines seven major leading sectors in the regional economy including food, energy and resources, industrial systems, design-based sectors, sectors relating to sustainable mobility and health. Catalonia has a highly diversified and open economy, with a large industrial base but still not one ‘predominant sector’ within the regional economy. While the automotive industry is central in the RIS3CAT strategy, an industrial plan is seen as working equally alongside other sectors, including ‘quality of life’ and the ‘green economy’ as priorities in shaping Catalanian economic development. RIS3CAT points out that Catalonia is already a highly diversified and open economy, with a large industrial base but no single ‘predominant sector.’ VW subsidiary SEAT is a strong MNC player within the regional economy and has indicated that RIS3CAT policy is encouraging it to become increasingly embedded within the regional economy, contributing to an economic agenda in developing a sustainability strategy in conjunction with public institutions, around the implementation of the development of electric vehicles.

With these priorities, RIS3CAT states that it aims to develop its innovation strategy around ‘horizontal’ plans across global value chains and industrial sectors around key concepts such as ‘mobility’. The concept of mobility was thought to then enable a transcending of traditional sectoral planning based on just one industry, for instance the automotive industry, and focuses an economic plan on recognising the wide scope of the automotive industry. This would then create a situation where regional economic development goals could be forged on horizontal cross sector planning, thus no longer having a narrowed focus on large automotive players such as SEAT and Nissan, but also seeing the mobility sector as being
about electric vehicles and other stakeholders such as public transport mobility and transport logistics.

In relation to boosting entrepreneurialism the Catalan case highlights the intention of the region to move away from an economy built on ‘micro-innovation’ to a ‘radical’ innovation model based on ideas, start-ups and information technology sectors. The ‘developed’ region of Catalonia is concerned that the ‘model of innovation’ found in the region could be described as a ‘micro-innovation model’ based on incremental process innovations associated with industrial production and machinery. The move to a more destructive innovation model is associated with Catalonia’s position, according to the OECD typology of regions classification, as a ‘knowledge region’. It was emphasised in the Catalan case that SMEs faced a big challenge to change the innovation model under the new Smart Specialisation policy direction as they had an industrial tradition where the innovation model of SMEs was based on a micro innovation model, based on machinery and adapted innovation. In this sense, the wide view of innovation adopted by Catalonia stands in contrast with the less ambitious interpretation of possible advances adopted in the Western Transdanubia and Bratislava cases, restricted as they are to aspiring for innovation advances in product and processes associated with the industrial context that they are situated in.

In relation to the RIS3CAT, the public policy perspective from both the regional government and the Barcelona City Council emphasised a direction of seeing the need for continued support for the automotive industry in the region, but also trying to assist with an advanced manufacturing strategy that supports the industry with investment in new KETS such as 3D printing, robotics and sport to clean industries. According to the Catalan case, the economic importance of manufacturing production and innovation linked to research, design and creativity is seen as integral to the success of RIS3CAT. Hence, RIS3CAT policy has highlighted the importance of regions having a sound economic strategy based on trying to move to ‘advanced manufacturing’ through encouragement of the take up of KETS rather than “propping up dying industries. “

In Catalonia there has been a strong “philosophical return” to seeing the need to re-shore industrial jobs and build a strong vocational education system to support re-industrialisation. This view emerged after the GFC in 2009, the “building bubble” and a sense that the regional economy of Catalonia was too dependent on the construction industry. A strong view emerged from the Catalan case that the Smart Specialisation strategy should be implemented alongside other important EU Framework programs such as the EU’s Reindustrialisation of Europe strategy. It was seen in this case that the strategy to re-industrialise Catalonia was part
economic and part social, with the realisation in the region that there needed to be a return to its industrial roots and try to restore industrial jobs that are more stable, have better wages than other sectors and a clear link between R&D technology, and a clear link between technology centres which have an applied link to market as well as a clear link to the education system and to training and vocational skills linked to industrial reality.

**Regional Innovation System**

The third research objective investigated the extent to which the particular characteristics of a RIS would impact on successful implementation of the policy. A number of conclusions can be drawn from the case study analysis presented in Chapters 4-7. Data analysis revealed that there were many barriers impeding effective implantation of the Smart Specialisation policy especially for LDRs located in CEE. Barriers included low levels of private and public R&D; cultural factors impeding networking based on a quadruple helix model of co-operation and a human resource supply problem, with young people relocating to Western Europe, and an education system heavily focused on technical studies.

Chapter 4 emphasised the extent to which the EC Guide to development of regional strategies highlighted expenditure on R&D as being an important but not the only characteristic to the development of a successful RIS. The EC data highlighted how regions with high expenditure on R&D are the most highly developed ones and of the 20 regions in the EU with the highest expenditure on R&D, 16 have a level of GDP per head above the EU-27 average. Conversely, it was observed that most of the regions recording low levels of expenditure on R&D are either located in southern, central and eastern Member States, or are in regions with relatively low levels of GDP per head in western ones. According to the EU, “not all regions can or should try and reach national targets” since regional differences are described as being an inherent feature of regional systems. The Smart Specialisation policy encourages a broad view of innovation to be derived from many sources of knowledge, yet, as the Bratislava and WT cases demonstrate, many regions located in CEE still perceive R&D as an integral feature of building a regional innovation system to enable a more transformative economic program.

For instance, Bratislava and Western Transdanubia focused heavily on building R&D capacity in their respective Smart Specialisation strategies. The Western Transdanubia based informants observed that its region was rich in formal knowledge assets such as major universities and research centres. However, the region had recorded low levels of basic R&D conducted there, given that most research in the country has tended to be developed in the
regions of South Plains and Northern Plains of Hungary. Most researchers in the region were engaged with applied research due to a history of long-term decline in state investment in R&D. This was seen as a problem by informants as they considered basic research to be essential to fuelling developments in applied research outcomes. The Western Transdanubia strategy addressed this problem by outlining a plan to place “more emphasis and investment into building university-industry collaborative partnerships in growth areas of the economy”.

The case identifies Szechenyi Istvan University as the most important regional asset, due to the university’s strong focus on automotive research and educating engineers for automotive companies situated in Western Transdanubia.

The Western Transdanubia strategy also argued that applied research needed to be extended to many more universities and research centres to enable industrial and scientific research and to link some key industries together in the automotive industry, such as electronics, wood and renewable energy sources. It was stated in the plan that there needed to be increased use of policy tools such as clusters to facilitate cooperation between universities and industry (for instance in the agricultural sector). However, both the Western Transdanubia and Bratislava cases found that in CEE countries, a history of socialism leading to particular cultural factors presented a barrier to building regional innovation systems. Informants argued that this history would make collaboration between public and private actors difficult to encourage due to a long state corporatist tradition; it was observed by a Slovak informant that “you don’t [yet] have the institutional architecture to build an innovation ecosystem” based on collaboration between companies and universities.

Informants in Western Transdanubia also highlighted their concern that long term state underfunding of R&D compounded an additional problem, that of foreign automotive companies conducting ‘high end research’ in their home countries and only ‘low end research’ in CEE regions. The Slovak strategy also highlighted the extent to which there is low private R&D spending in Slovakia. Private R&D spending represents only 0.25 per cent of GDP. Multinational companies based in Slovakia also have tended to carry out their R&D activities mostly in their home countries and separated from practice in the Slovak context.

The weakness of private R&D in Slovakia was seen as an important issue to address with the Smart Specialisation plan as, according to an informant “there are 200 000 people working in the automotive sector directly and indirectly [in Slovakia] and given that there is 600 000 to 700 000 people in total in the country”, a figure of 28-33% of employment in that industry makes it very important. It was further argued by the informant that the lack of R&D capacity within the region impacts on the capacity for the subsidiary to resolve technical problems, with new technology having to be bought in from Western Europe.
A key component of the Slovak Strategy is therefore to encourage MNCs to cooperate with SMEs and share R&D through newly established EU-funded R&D centres. R&D centres are said to be key institutions in enabling integration of major export sectors in local economies and to embed local supply chains in clusters. Like in Western Transdanubia, it is hoped that in Bratislava the new Centre for Excellence model would fill the gap in private R&D in the region. A major component of the Slovak Strategy is that large firms cooperate with SMEs and share R&D towards this objective. An identified challenge in this regard is for both WT and Slovakia to move from such a narrow interpretation to a more ambitious strategy around large scale R&D projects between universities and firms, and to encourage cross-sectoral innovation advances across the whole regional economy. Also seen as key to a more ambitious strategy is the importance of building public investment in technology to reduce dependency on using foreign imported technology to enable higher value adding to export investments in aluminium and IT. However, while the Centre for Excellence model was seen as a positive development for the encouragement of MNC support to supplier development and cross-sectoral innovations, concern was raised by an informant as to whether this would result in EU funds indirectly supporting advances in predominately VW-owned rather than Slovak-owned innovation advances, benefitting Germany rather than Slovakia. Again, this point highlights the problem for CEE regions in economic dependence on foreign owned companies, with the associated implications for the development of “a spatial division of innovation” (Massey; Aydlot cited in Simmie 1997).

The Bratislava case also finds that the region has considerable formal knowledge assets, despite Slovakia lagging well behind the average EU innovation performance. However, like the case of Western Transdanubia, the proportion of Slovak universities involved in public R&D is low, and universities are considered to be of low quality. In Bratislava, most researchers are engaged in basic research but generally have not linked to applied research outcomes. Hence the Slovak Strategy identifies the need to reform the funding system of universities to ensure elite universities engage in more applied research in engineering, and lower emphasis on funding to scientific institutes. The Slovak strategy is said to be a vehicle for Slovakia to start to challenge this culture by increasingly tying EU grants to applied research outcomes, particularly in the science and technology field and focusing on more sophisticated industrial technological priorities such as automation, robotics, as well as technology for forming, cutting and joining of new metallic and non-metallic materials and composites, logistic technologies and processing technologies. Considerable state funds will be directed to the region to boost capacity within research infrastructure projects and clusters already established, and to further encourage the
role of research institutions in their activities.

The Bratislava case emphasised the degree to which the region was still ‘capacity building’. That is, building a model of cooperation between economic actors and focusing on consolidating a successful model of cooperation research centres in the region, rather than pursuing a more ambitious plan, given the fiscal problems with state funding to universities. This confirms the insight of Marques and Morgan who earlier in this study observed that a key barrier for lagging regions was a weak capacity to implement the new policy direction due to not having an innovation ecosystem based on the Triple Helix model (Marques & Morgan, 2018). LDRs and even ‘transition’ regions such as Bratislava therefore face the dual challenge of systems that may work against “new path development” in the manner envisaged by Isaksen and Trippl who, as was noted, argued that these elements are required for successfully building a dynamic RIS (Isaksen & Trippl 2016, p. 51). Similarly, in the case of Western Transdanubia, policy tools such as clusters were important to the implementation of the strategy but a whole range of barriers to their success were identified. These included the aforementioned cultural reasons to do a suspicion of collaboration due to a history of Hungary being part of the socialist regimes within the Eastern bloc. The failure of the automotive cluster in the region was also seen as reflecting a situation of poor public funding, competing interests of firms involved, and a lack of interest by firms in developing skills in market knowledge. The Catalan case stands as a contrast to this experience. This region has successfully built a strong base of highly functioning industrial clusters which was seen by informants as a key strength in the implementation of RIS3CAT. The clusters were perceived as encouraging cross-sectoral growth and specialisation between, for instance, large OAMs in the automotive sector and developments in public transport infrastructure.

In contrast to the Catalan experience, there was a sense from a Slovak informant that the ‘cluster model’, in trying to generate collaboration across competing car companies to develop innovation advances in Bratislava, would probably not be able to overcome an entrenched culture of heavy competition between the car companies. Competition between car companies such as VW and KIA was said to be a better mechanism for generating an ‘innovation wave’ than collaboration as the “competition is about creating new brands… and everyone wants to produce engines and be better and better” in the broader CEE regional context. In addition to this, the Slovak case showed that collaboration between competing car producers was not necessarily of regional value in relation to innovation advances, given that the Slovak operations for both car companies are routine production sites – competing on labour costs and using different supplier companies: the KIA production site for instance uses Korean suppliers rather than Slovak
suppliers connected to the VW facility in Bratislava. In addition to this, in Bratislava it was noted that clusters that have been generated or that have emerged within automotive and electrotechnic and creative and cultural sectors face a key barrier. They are insufficiently linked to final producers and, while this situation is “slowly improving,” but it was felt this had not yet occurred in a comprehensive enough way. The Slovak case will be interesting to observe in the ‘post 2014-20’ policy phase as to whether the ‘Centre of Excellence’ model supported by the Smart Specialisation policy has managed to create the cultural and institutional foundations for forms of strategic coupling and co-evolution of lead firms in GPNs and regional assets, in the manner described earlier by Mackinnon (2012).

Mackinnon noted that a barrier for regional innovation was generated by “FDI in developing regions … [which] continue to be characterised by a lack of local linkage and power asymmetries between TNCs and regional institutions, which in some cases results in corporate capture and points to a strong degree of path dependence in the relations between these regions and GPNs” (Mackinnon 2012, pp. 241-2).

The role of culture in the CEE regions was also identified as a factor impeding the success of business innovation initiatives in the regions. An informant pointed to the role of culture in generating a suspicious attitude directed towards entrepreneurs, one “deeply ingrained within the Western Transdanubia regional culture” and, “without positive role models in society”, a cultural problem that “will be difficult to overcome”. Culture aside, insufficient funding for SME development, low venture-capital investment, little business angel activity, a lack of skill development, and a lack of focus towards entrepreneurialism in the education system, were further barriers. The Western Transdanubia strategy proposes measures to address this challenge, such as changes to tax incentives and a shift from a supply- to a demand-led funding model, which it is hoped will assist with driving private investment. Private sector R&D outcomes are to be encouraged through a reformed system of venture-capital financing. Internal R&D to develop advanced technologies will take precedence over the purchase of external ‘finished’ technology, and the use of public procurement as a new policy tool will be promoted.

The cases of Bratislava and Western Transdanubia corroborate the findings of many empirical studies that have sought to investigate the innovation paradox confronting LDRs posed by the characteristics of their RIS. It was argued in the literature that that regions with less-favoured research and innovation systems have a low potential to diversify into new industrial areas due to unfavourable economic structures and a weak endowment of knowledge organisations (Buchman in Tripp et al 2016) and have a low capacity to use funds due to a weak capacity to absorb change; for instance, by not having an innovation ecosystem
based on the triple helix model (Marques & Morgan 2018). In addition, McCann and Ortega-Argyles have also argued that one of the greatest challenges facing the application of modern regional innovation policies across EU regions is in regions with very limited innovation-related assets. As was established in Chapter 2, they argued that “some regions, for example, contain no research institutes; other regions, particularly in Eastern Europe, as yet exhibit only a very limited capacity for developing an innovation system, because they are constrained by institutional and governance, and technological issues” (McCann and Ortega-Argiles 2016, p.1410).

The Catalan case differs substantially from those of CEE regions due to Catalonia having a sophisticated innovation ecosystem in place in the region. Catalonia has benefitted from long term investments from the EU Horizon 2020 program leading to a sense from informants that the region had already made progress in establishing an innovation ecosystem based on ‘soft institutional factors’ such as collaboration between universities and corporations in product development. Informants noted that a sophisticated applied research system existed in several fields including biomedical research, health, design and IT. In this sense, the RIS3CAT policy describes the need to build an even greater open innovation system. However, like the CEE regions, despite Catalonia spending more in public R&D than any other region in Spain, spending remains low by European benchmarks.

To address this, RIS3CAT proposes to boost institutional R&D facilities through investment in the existing research and technology centres. The plan further proposes to build a strong eco-innovation system around key universities such as the UAB in Barcelona. The BCC complements this policy agenda through its Urban Lab policy which seeks to further the innovation ecosystem through demand-led local government initiatives. And in sharp contrast to the CEE case study regions, private R&D investment is high in Catalonia. SEAT has invested heavily in R&D in the regional economy. The company has established a technical centre in the region which has acted as a hub of knowledge and innovation. This again reinforces the extent to which while Catalonia is rich in knowledge assets within its RIS, the most significant challenge in the implementation of the policy may be the facilitation of linkages between research institutes and corporate stakeholders. It is the functioning of the RIS in this regard that has been historically a problem in the development of public-private collaborations.

The role of advanced manufacturing in industry is seen as important for innovation advances under RIS3CAT. The role of the automotive industry is acknowledged for innovation advances through product innovation, advances in both robotics and logistics,
and transferring innovation to the whole system through the supplier base. Initiatives in Catalonia like the public-private Centre Verde project have already demonstrated that large automotive producers such as SEAT can be involved in an open innovation system where the government has played a large role in building positive externalities to encourage regional economic development. The Catalan case demonstrated the prevalence in the region of small companies, estimated to be 20,000 mostly small and some medium companies. SEAT was identified as a driver to make consortiums with the small companies in the regions so that they could then get involved in big projects, of which Centre Verde was given as an example. RIS3CAT has encouraged MNCs like SEAT to become increasingly embedded within the regional economy, contributing to an economic agenda in developing a sustainability strategy in conjunction with public institutions, around the development of electric vehicles.

Human resource supply problems were also found to be a barrier to policy implementation in the CEE regions. The case of Western Transdanubia emphasised the extent to which business and government needed to play a greater role in generating a supply-led transition to a diversified economy by overcoming the shortage in existing university training courses in growth industry areas, including advanced manufacturing. A key weakness identified was the region’s traditional focus on technical studies as attempts to diversify tertiary courses were said to be “hampered by lack of State funds”. The region also faces a challenge with its young people, however, who are turning away from the study of engineering, and leaving to work in Budapest or other European countries. Thus, a major focus of the WT Strategy is dedicated to ensuring ongoing investment into institutions formed to encourage educating the region’s young people in engineering.

According to the Slovak case, employers are predominately seeking IT and building-industry graduates, and to a lesser extent mechanical engineers and scientists. However, “despite this preference by employers, the tertiary education system is mostly producing social scientists and engineers”, so a key public policy problem for the region of Bratislava was about encouraging the ‘young generation’ to study courses qualifying them to be employed in the automotive and electrical multinational companies based in the region. That young people are increasingly wanting to work in diverse industries and occupations and live in other places is the evolving human resources challenge, and one Slovak informant noted that it was the “key public policy challenge” to generate a diversified economy facing Slovakia, arguing that the region “can’t produce 15,000 sociologists… we have to be prepared for future positions in the market”. To address this challenge the Slovak Strategy has outlined an ambitious education system plan for the better encouragement of secondary students into
vocational education schools that teach mathematics, natural sciences and engineering subjects, to better match economic demand with skilled labour supply. In addition to this, students will be encouraged into vocational education, entrepreneurship, and more on-the-job training and collaboration between schools, universities and businesses with a further policy to attract departed science and research workers back to work in Slovakia again.

The Catalan case also highlighted a problem of mismatch between supply and demand in the regional labour market. Catalan informants noted with concern the shortage of engineers in the region. However, the RIS3CAT policy proposes to address these shortfalls through support for a new dedicated vocational training centre, and new university courses in engineering and management training within the automotive industry. The Catalan case also demonstrated the advantage of the region in relation to building its knowledge economy sectors, as Barcelona is seen as an attractive international city which will enable the development of a ‘creative class’ able to work in high technology jobs in IT and other knowledge economy sectors. Catalonia was seen to be in a good position to adapt and transition to becoming a knowledge economy given its significant regional assets.

It was seen in Catalonia that globalisation had led to a model of competition where “time matters very much” and “where the innovation and knowledge base [required] becomes more critical for a regional economic development strategy”: hence the move to a more radical model of innovation. To become a ‘tech city’ requires a “rich environment of creativity” and an “innovation culture”. It was seen that Barcelona was in a good position to attract talent as companies associated with ICT needing special talent, wanted to live in the city. The Catalan commitment to generating an attractive, tolerant region capable of building a creative class of human capital to the region underscores the proposition by Florida, that regions must generate a supply led economic path to regional economic development through progressive investments and policies (Florida 2014). However, the WT and Bratislava cases stand in stark contrast to this approach, given the significant barriers to building such a strategy, due to their situation in semi-rural regions, low state investment capacity and inheritance of a culture unsympathetic to urban elites.

**Conclusion**

For the first time in 2014, EU Innovation policy (Smart Specialisation) applies to all regions regardless of level of economic development. This development has significant implications for the successful implementation of the policy in LDRs. There is a vast amount of existing
empirical literature that has demonstrated the degree of difficulty of implementation in LDRs
given identified barriers found in for instance many regions located in CEE, presented by the
‘regional innovation paradox’ generated by the combination of centralised governance
arrangements and weak regional innovation systems. It also a key question as to whether
LDRs can overcome these barriers, especially when industrial policy instruments promoting
advanced manufacturing, are mainly directed at advanced regions, thus having the potential
to consolidate LDRs (given GVC MNC production decisions) into ‘industrial and political
lock in’ on the path of a low innovation trajectory.
Conclusion

The Smart Specialisation policy represents a major reinvention of EU Regional policy – an amalgamation of industrial and regional policy instruments, with an emphasis upon establishing regional innovation systems at the level of place. The policy envisages structural transformation of regional economies based on regions identifying development opportunities and inducing structural change. The policy is seen as having the capacity to provide a strong approach for regions to transcend economic ‘path dependence’ and generate opportunities for ‘new path development’ in, for instance, many old industrial regions facing economic stagnancy. In the 1990s, for regions located in CEE, the traditional model of economic growth based on FDI was already seen as being exhausted, and many CEE countries were aspirational around trying to shift towards an innovation-based development model – based on building a functional local innovation base of R&D, improved education and training, well-functioning institutions and improved social capital based on trust, cooperation and political stability – to enable rapid economic growth (Berend 2009).

This study has noted that Smart Specialisation is not a new policy concept and extends existing innovation strategies based on 15 years of refining of programs mainly targeted at advanced regions across Europe. The key differences that have been observed related to the universality of the policy, with all regions now obliged to have Smart Specialisation strategies in place before Structural funds are approved. EU Innovation policy applies to all regions regardless of the level of economic development. This has significant implications for the successful implementation of the policy in LDRs. In addition to this, a further difference is that the Smart Specialisation policy explores in more detail the devolved governance policy processes associated with identifying areas of economic growth. The key input to the Smart Specialisation concept is the process of entrepreneurial discovery that details exactly how the policy process must select and priorities fields or areas where a cluster of activities should be developed, and to let entrepreneurial discovery determine the right domains of future specialisation. Dominique Foray has argued that it is these governance processes that would have the effect of “improving the capacity for the avoidance of vested local stakeholder interests, and enable new economic players to emerge to avoid regional lock-in” (Foray et al. as cited in Boschma, 2013, p.4).

This study employed a qualitative approach to address the opportunities and challenges associated with the implementation of Smart Specialisation policy plans over a cross section
of regions across Europe at different stages of economic development. Unlike earlier largely
quantitative work in the field of economic geography, the focus in this study has been about
providing a qualitative analysis of the strengths and challenges associated with the
overarching design of the policy. The study utilized a case study methodology, examining
documentary data to explore the implications of policy design at the level of the EU and the
region, and secondly using original interview data to provide parallel evidence gained from
official documents about the strengths and challenges associated with the policy design. It
included interviews with regional stakeholders from a large MNC in the automotive industry
with subsidiaries in regions across Europe. This study has contributed a perspective on Smart
Specialisation policy design processes and the likely regional impact of the policy from the
perspective of a key corporate player from a traditional industrial development model. This
has allowed the study to explore also the tension between global forces and local policy in
shaping development at the level of place.

The research objectives were to assess what impact would be made on policy implementation
in diverse regional contexts given – the quality of governance, characteristics of an
innovation system and the role of a key MNC in in the context of the global value chain/global
production network governance arrangements. The study found that there were many
challenges facing policy implementation, particularly for industrial regions located in CEE.
For instance, in relation to quality of governance arrangements, it was found that the policy
faced policy design and implementation challenges in Western Transdanubia given the
centrally driven policy design processes. In addition, both in Bratislava and Western
Transdanubia, there were a range of barriers impacting on institutional capacity building
within RISs located in these region. These included factors such as the presence of corporatist
state actors, historical factors impeding social capital between actors within networks and
low capacity in relation to R&D and knowledge assets. In addition it was found in Bratislava,
that the MNC in this region was not embedded in the RIS, thus potentially consolidating an
incremental approach to product and process innovation in the region. In contrast, the
developed case of Catalonia demonstrates the capacity of the Smart Specialisation concept
to be implemented more successfully given the presence of strong regional political
institutions, a diversified economic base, the presence of an international city and a
professional knowledge economy class. The study also found that the European Commission
policy officers implementing the policy are finding the legal framework a significant
impediment to policy implementation.

This study has highlighted implications for implementation of the policy in the future and
future research. In relation to governance, there is a need to address how regions can become
more empowered in negotiations with the EC over policy design and implementation processes. This has particular implications for the capacity of LDRs to implement the policy as clearly, where there is centralised governance processes, regions are unable to negotiate their own strategies reflecting stakeholder perspectives, in the manner that the policy envisages. In the words of Rodríguez-Pose and Garcilazo (Rodríguez-Pose & Garcilazo 2015, p. 1044):

Otherwise the implementation of one-size-fits-all policies may not yield the expected results. Taking into account place-based institutional conditions and learning and how institutional quality can be consistently improved, needs to become basic elements of any development strategy. Thus, for regional development policies to be successful, there needs to be an empowerment of local decision makers and openness to the reality that many different and contrasting institutional arrangements may be needed in order to achieve sustainable development.

Also related to governance, more research could be directed to how the role of the MNC can be improved upon in the process of policy design, enabling them to become more ‘embedded’ into a RIS and able to contribute more fully to innovation strategies throughout the entire regional economy. A greater role for MNCs in the Smart Specialisation policy may also bring about more private R&D development in industrial regions, thus compensating for low state capacity in knowledge assets and helping to overcome the problem faced by some regions of having large automotive subsidiaries engaged in routine production or export of component parts, not enabling economic spin-offs to occur. It is also clear from the findings of this study that LDRs require significant capacity building in the task of building functioning regional innovation systems, that go beyond the scope and resources attached to the Smart Specialisation policy remit. The study found significant political will at the level of the region for Smart Specialisation and has highlighted many of the challenges that need to be overcome in future phases.

Because the Smart Specialisation policy phase commenced in 2014, this study has captured original data, collected in the early phase of policy implementation, thus providing a contribution to existing research on Smart Specialisation policy implementation challenges. As such, the study will add to a growing literature addressing the particular challenges confronting LDRs located in CEE. As there is already a substantial body of work addressing policy design and implementation challenges associated with the policy, the focus of this study reflects a preference for it to have practical value to suggest reform of policy design processes directed at regions associated with industrial production located in Central and Eastern Europe. As such, it is hoped that it provides a valuable addition to the existing literature to provide further insights for policy reform in future phases of the Smart Specialisation policy experiment.
References

Ajuntament de Barcelona (Barcelona City Council) (2016) The Barcelona Urban Lab: An Experience of Innovation Public Pre-Procurement, Barcelona City Council, Barcelona

Amin, A and Thrift, N (1994), Globalisation, Institutions and Regional Development in Europe, Oxford University Press, NY


Bacchi, C. (2009), Analysing policy: What’s the problem represented to be? Pearson, Frenchs Forest, UK

Bache, I. (2010), ‘Europeanization and Multi-Level Governance: EU Cohesion Policy and Pre-Accession aid in Southeast Europe’, Southeast European and Black Sea Studies, 10 (1), 1-12

Barca, F. (2009), An Agenda for a Reformed Cohesion Policy: A Place-based Approach to meeting European Union Challenges and Expectations, European Commission, Brussels


the 2006 Reform Being Achieved?" European Structural and Investment Funds, 1(1) 15-20


Barcelona City Council (2015), Linking the Best, PowerPoint presented at the International Association of Science Parks and Areas of Innovation, Barcelona


Berend, I (2009), From the Soviet Bloc to the European Union: The Economic and Social Transformation of Central and Eastern Europe since 1973, Cambridge University Press, USA


Charles, D (2003), ‘Universities and Territorial Development: Reshaping the Regional Role of UK Universities’, *Local Economy* 18 (1) 7-20


Cooke, P. (2002), *Industrial Innovation and Learning Systems; Sector Strategies for Value-Chain Linkage in Less Favoured Regional Economies*, Report (37), Regional Industrial Research Centre for Advanced Studies, Cardiff, UK

Cooke, P, ‘To Construct Regional Advantage from Innovation Systems First Build

Cooke, P and Picculuga (2009), *Regional Development in the Knowledge Economy*, Routledge, New York


Cooke, P (2016), ‘Four minutes to four years: the advantage of recombinant over specialized innovation- RIS3 versus 'smartspec', *European Planning Studies*, 24:8, 1494-1510

Corbin, J and Strauss, A (2008), *Basics of Qualitative Research* (3rd ed), Sage publications, USA


Creswell, J (2013), *Qualitative Inquiry and Research Design: Choosing Among Five Approaches* (3rd ed), Sage Publications Inc, USA


Dabrowski, M (2012), ‘Towards Strategic Regional Development Planning in Central and Eastern Europe’, *Regional Insights* (2) 6-8

Denzin, N and Lincoln Y (eds) (2003), *Collecting and Interpreting Qualitative Materials* (2nd ed), Sage Publications, USA


European Commission (2011b), *Connecting Universities to Regional Growth: A
Practical Guide, European Commission, Brussels

European Commission. (2012a), Guide to Research and Innovation Strategies for Smart Specialization, European Commission, Brussels


European Commission (2013c) Panorama, (45), magazine European Commission, Brussels

European Commission (2013d) Panorama, (16), magazine, European Commission, Brussels


European Commission. (2013g) Urban Development in the EU: 50 Projects supported by the European Regional Development Fund during the 2007-2013 Period, report,
European Commission, Brussels


European Commission (2014c), Competitiveness in Low-Income and Low- Growth Regions; the Lagging Regions Report, European Commission, Brussels


European Commission (2014e), Regional Policy, factsheet, European Commission, Brussels

European Commission (2014f), RIS3 Peer Review Report: Slovak Republic, Peer Review workshop, European Commission Smart Specialisation Platform, Dublin, Ireland, 2-4 July

European Commission (2014g), Slovakia, Structural Funds (ERDF and ESF) Eligibility 2014- 20202, fact sheet, DGREGIO


European Commission (2014j) For a European Industrial Renaissance, Communication from the European Commission, European Commission, Brussels

European Commission (2015a), ERDF Operational Programme Catalonia 2014-2020
under the Investment for Jobs and Growth Goal, report, European Commission, Brussels

European Commission, (2015b), *European Structural and Investment Funds in Spain*, Brussels

European Commission (2016a), *European Structural and Investment Funds: Spain*, factsheet, April 2016, European Commission, Brussels


European Commission (2016e), *European Structural and Investment Funds: Country: Hungary*, factsheet


European Commission (2018b), *Structural Funds 2014-2020 (ERDF and ESF)*


Foray, D (2015), Smart Specialisation: Opportunities and Challenges for Regional Innovation Policy, Routledge, New York

Foray, D, Morgan, K and Radosevic, S (2018), The Role of Smart Specialisation in the EU Research and Innovation Policy Landscape, European Commission, Brussels

Foray, D, David, P and Hall, B (2011), Smart Specialisation: From Academic Idea to Political Instrument, the surprising career of a concept and the difficulties involved in its implementation, Management of Technology & Entrepreneurship Institute, MTEI Working Paper, 2011


Generalitat de Catalunya (2014), *RIS3CAT: Research and Innovation Strategy for the Smart Specialisation of Catalonia*, Generalitat de Catalunya, Barcelona


Gorzelak, G (1996), *The Regional Dimension of Transformation in Central Europe, Regional Policy and Development*, Routledge, UK


Grabher, G (1994) in *Globalisation, Institutions and Regional Development in Europe*, Oxford University Press, NY


Heidenreich, M (2012) *Innovation and Institutional Embeddedness of Multinational Companies*, Edward Elgar, UK


Office, Hungary


Kogler, D, 2015, ‘Evolutionary Economic Geography - Theoretical and Empirical Progress’, Regional Studies, 49 (5) 705-711


Kroll, H, Muller, E, Schnabl, E and Zenker, A (2014), ‘From Smart Concept to Challenging Practice-How European Regions Deal with Commission’s Request for Novel Innovation Strategies’, Working Papers Firms and Region (R2), Fraunhofer Institute, Germany


Marques, P and Morgan, K (2018), ‘The Heroic Assumptions of Smart Specialisation:

Mattes, J (2010), Innovation in Multinational Companies: Organisational, International and Regional Dilemmas, Peter Lang, Oldenburg


Mazzucato, M (2014), The Entrepreneurial State; Debunking Public vs. Private Sector Myths, Anthem Press, New York


McCann, P and Ortega-Argiles, R (2013a), ‘Smart Specialization, Regional Growth and Applications to European Union Cohesion Policy’, Regional Studies, 49 (8), 1291-1302

McCann, P and Ortega-Argiles, R (2013b), Smart Specialisation, Regional Innovation Systems and EU Cohesion policy’, in Thissen, M, Van Oort, F, Diodato, D & Ruijs, A (ed) Regional Competitiveness and Smart Specialization in Europe: Place-based Development in International Economic Networks, Edward Elgar Publishing Ltd, UK


McCann, P & Ortega-Argiles, R (2016), The early experience of smart specialisation implementation in EU Cohesion policy, European Planning Studies, 24:8, 1407-1427


Mackinnon, D, Cumbers, A and Chapman, K, ‘Learning, innovation and regional
development: a critical appraisal of recent debates’, *Progress in Human Geography* 26 (3) pp 293-311


Morgan, K (2015), ‘Smart Specialisation: Opportunities and Challenges for Regional Innovation Policy’, *Regional Studies*, 49:3, 480-482

Morgan, K (2017), ‘Nurturing Novelty: Regional Innovation Policy in the Age of Smart Specialisation’, *Environment and Planning C: Politics and Space* 35 (4) 569-583


Nemzeti Innovacios Hivatal (2014), *National Smart Specialisation Strategy*, Nemzeti Innovacios Hivatal, Hungary


Pannon Novum Nyugat-Dunantuli Regionalis Innovacios Nonprofit Kft (2013) Nyugat-
Dunantul Intelligens Szakosodasi Strategiaja, Pannon Novum Nyugat-Dunantuli Regionalis Innovacios Nonprofit Kft, Hungary

Parrili, M Fitjar, R and Rodríguez-Pose, A (Eds.) (2016), Innovation Drivers and Regional Innovation Strategies, London, Routledge

Patton, M (1980), Qualitative Evaluation Methods, Sage Publications Inc, California


Potluka, O et al (2010), The Impact of Cohesion Policy in Central Europe, Leipziger University, Germany


Rodríguez-Pose, A (2013), ‘Do Institutions Matter for Regional Development?’, Regional Studies, 47 (7), 1034-1047

Rugraff, E (2010), ‘Foreign Direct Investment (FDI) and Supplier-Orientated Upgrading in the Czech Motor Vehicle Industry’, Regional Studies, 44 (5) 627- 638


Sharp, M (2003), ‘Industrial policy and European integration: lessons from experience in Western Europe over the last 25 years, UCL School of Slavonic and East European Studies (SSEES) <https://ideas.repec.org/p/see/wpaper/30.html>


Slovak Republic (2013), Through Knowledge Towards Prosperity: Research and


Storper, M (1993) ‘Regional “worlds” of production: learning and innovation in the technology districts of France, Italy and the USA’, Regional Studies, 27:5, 433-455

Tödtling, F and Trippl, M (2005), ‘One size fits all? Towards a differentiated regional innovation approach’, Research Policy (34), 1203-1219


Thissen, M, Van Oort, F, Diodato, D & Ruijs, A (2013), Regional Competitiveness and Smart Specialization in Europe: Place-based Development in International Economic Networks, Edward Elgar Publishing Ltd, UK


Volkswagen (2014), *Volkswagen: The Fascination of Automobile Assembly*, Dresden


Wishlade, F Yuill, D and Mendez,c (2003), ‘Regional Policy in the EU: A Passing Phase of Europeanisation or a Complex Case of Policy Transfer?’ European Policy Research Paper, European Policies Research Centre University of Strathclyde, Glasgow, United Kingdom

Wilson, B (2014), ‘City-Regions (“Regional Capitals”) as a Focus of Smart Specialisation’, draft conference paper, EU Centre, RMIT University, Melbourne

Wilson, B, Hogan, A, Cuthill, M, Baker, D, Buys, L, Burton, L (2014), ‘Someone Else’s Boom but always our Bust’, draft conference paper, EU Centre, RMIT University, Melbourne

Yin, R, (2009), *Case Study Research: Design and Methods* (4th ed), Sage, Los Angeles
Appendix: College Human Ethics Advisory Network Notice of Approval

Design and Social Context College Human Ethics Advisory Network (CHEAN)
Sub-committee of the RMIT Human Research Ethics Committee (HREC)

Notice of Approval

Date: 02 May 2014
Project number: CHEAN B 0000018523-03/14
Project title: The role of EU regional policy in planning for competitiveness in the manufacturing sector; a case study of Volkswagen in three plant locations (Dresden, Catalonia and Bratislava)
Risk classification: Low Risk
Investigator: Professor Bruce Wilson and Miss Sarah Howe
Approved: From: 02 May 2014 To: 31 August 2016

I am pleased to advise that your application has been granted ethics approval by the Design and Social Context College Human Ethics Advisory Network as a sub-committee of the RMIT Human Research Ethics Committee (HREC).

Terms of approval:

1. Responsibilities of investigator
   It is the responsibility of the above investigator/s to ensure that all other investigators and staff on a project are aware of the terms of approval and to ensure that the project is conducted as approved by the CHEAN. Approval is only valid whilst the investigator/s holds a position at RMIT University.

2. Amendments
   Approval must be sought from the CHEAN to amend any aspect of a project including approved documents. To apply for an amendment please use the ‘Request for Amendment Form’ that is available on the RMIT website.
   Amendments must not be implemented without first gaining approval from CHEAN.

3. Adverse events
   You should notify HREC immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.

4. Participant Information and Consent Form (PICF)
   The PICF and any other material used to recruit and inform participants of the project must include the RMIT university logo. The PICF must contain a complaints clause including the project number.

5. Annual reports
   Continued approval of this project is dependent on the submission of an annual report. This form can be located online on the RMIT human research ethics web page.

6. Final report
   A final report must be provided at the conclusion of the project. CHEAN must be notified if the project is discontinued before the expected date of completion.

7. Monitoring
   Projects may be subject to an audit or any other form of monitoring by HREC at any time.

8. Retention and storage of data
   The investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.

In any future correspondence please quote the project number and project title.

On behalf of the DSC College Human Ethics Advisory Network I wish you well in your research.

Suzana Kovacevic
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