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ii. Abstract

In 2010, the European Commission introduced the Europe 2020 framework as the overarching strategy for coordinating European and national economic policy and ensuring growth in the coming decade. One of the main pillars of this framework is the Innovation Union, which aims to improve framework conditions for entrepreneurship, research, and innovation in order to stimulate economic growth and employment. The thesis is motivated by scepticism toward this European model, due to the disappointing economic results achieved under the previous framework, the Lisbon Strategy.

The thesis sets out to examine the European model of economic policy coordination that underlies both the Lisbon Strategy and the Innovation Union. Given that the strategies focus on improving the institutional environment for entrepreneurship, the thesis intends to explore *how* these environments are constructed at the European and member state level through the Innovation Union and member state reform programmes. In addition, the thesis examines the role of institutional entrepreneurs in this process, and the potential consequences for long-term economic growth.

Building on the fundamental insights of the individual-opportunity nexus, this thesis proposes an expanded model, the EIO nexus, that to a much larger extent includes the institutional environment as an active factor in the process of creating and supporting entrepreneurship and growth. This framework incorporates the individual-institutional interaction as a key driver of entrepreneurship.

Following the EIO framework, the analysis shows how European and Danish reforms address many important determinants of entrepreneurship. However, a substantial share of these reforms is based on the creation of institutional platforms that function as enabling conditions for institutional entrepreneurship. These conditions enable organisations and institutional actors to collaborate with the aim of improving the institutional environment for entrepreneurship. The collaborations are shown to have several positive relationships with economic growth. However, regions and member states that lack the economic and institutional conditions to support and attract institutional actors may not benefit equally. This inability to act upon the improved framework conditions may lead to a skewed distribution of entrepreneurship and economic impact. This throws the long-standing objective of economic and institutional convergence in Europe into question.

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iv. Abbreviations

CER	Centre for European Reform
EC	European Commission
ECL	European Council
EIO	Entrepreneur-Individual-Opportunity
EU	European Union
FDI	Foreign Direct Investment
FIVU	Danish Ministry of Science, Innovation and Higher Education
GDP	Gross Domestic Product
MNC	Multi-National Corporation
NIS	National Innovation System
NSE	National System of Entrepreneurship
OECD	Organisation for Economic Cooperation and Development
SME	Small and Medium-sized Enterprise

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1. Introduction

The strategic and institutional framework for economic growth in the European Union is changing. In 2010, the European Commission introduced the Europe 2020 framework as the overarching strategy for coordinating European and national economic policy and ensuring growth in the coming decade. It represents the continuation of the recently concluded Lisbon Strategy[1]. The evaluations of the economic objectives of Lisbon, as well as considerations for a post-Lisbon policy framework, were influenced by the consequences of the global financial crisis and European sovereign debt crisis (Blundell-Wignall, 2012: 2-3; Lane, 2012: 62-65). These crises have revealed and exacerbated significant structural and economic problems in member state economies and in the existing economic strategy of Europe (EC, 2010a: 5; Samardžija & Butković, 2010: 15-19). Thus, the Lisbon Strategy is widely considered a failure with regard to the main objectives of European competitiveness and economic growth (CER, 2010: 91-93; Borrás & Radaelli, 2011: 465; Cohen-Tanugi, 2010: 80). Despite these disappointing results, the notion of a common, European framework for coordination of national economic policy has not been abandoned; this *horizontal Europeanization*[2] of economic policy has carried over to the Europe 2020 framework in the hopes of stimulating social and economic progress in member state countries. This thesis contributes to the discussion on European economic strategy by demonstrating how Europe 2020 is unlikely to generate the desired economic development and growth across member states, despite clear improvements in several of the areas in which the Lisbon Strategy failed.

In the formulation of the Europe 2020 framework, policymakers have had to consider the combined objective of resolving the pressing challenges of the economic and financial crises, while promoting the reforms of European and national economies needed to foster economic growth and sustainable long-term development (EC, 2013a: 3; Stefanescu & On, 2012: 889; Mrak, 2010: 74). The framework represents a joint response to the multitude of economic and societal challenges in Europe. It relies on three mutually reinforcing priorities; the development of a European economy based on knowledge and innovation; the promotion of more resource-efficient and competitive economies; and the improvement of territorial cohesion and employment (EC, 2010a: 5). These objectives call for '*institutional and structural reforms in various areas of economic, social and environmental development'* (Mrak, 2010: 66; cf. EC, 2010a: 10-11).

[1] The strategic framework for economic growth and development in the European Union, 2000-10 (ECL, 2000).
[2] The non-coercive process of constructing, diffusing, and institutionalising EU policy paradigms across member states (cf. Ernst, 2012: 1; Richardson, 2012: 4; Bruno, Jacquot & Mandin, 2006: 519-521; Radaelli, 2001: 124).

The Europe 2020 has been structured into seven flagship initiatives, which coordinate the definition and implementation of reforms and strategic initiatives according to seven primary areas of change. Each flagship initiative consists of a large number of priorities and reforms. Some of these are to be implemented by the EU, and others are to be implemented individually by member states. One of these flagship initiatives is the Innovation Union, which aims to improve framework conditions for entrepreneurship, research, and innovation in order to stimulate economic growth and jobs through the commercialisation of innovative ideas and the start-up of new businesses;

'At a time of public budget constraints, major demographic changes and increasing global competition, Europe's competitiveness, our capacity to create millions of new jobs to replace those lost in the crisis and, overall, our future standard of living depends on our ability to drive innovation in products, services, business and social processes and models. This is why innovation has been placed at the heart of the Europe 2020 strategy (EC, 2010b: 2).

The Innovation Union emphasises the importance of innovation and entrepreneurship in addressing current challenges and bolstering future competitiveness and welfare. The implementation of the Innovation Union is funded with a dedicated budget of €70 billion through the new Framework Programme, Horizon 2020. This programme also aims at assisting SMEs in obtaining funding from the existing Structural and Cohesion Funds[3] (ECL, 2013: 19). Thus, while the Innovation Union is only a relatively small part of the overall, European effort to foster employment and growth, there is a clear indication that entrepreneurship and innovation are considered important in reaching these goals. The importance of entrepreneurship for the overarching objectives of Europe 2020 is made explicit in the statement that *'to bring Europe back to growth and higher levels of employment, Europe needs more entrepreneurs'* (EC, 2013b: 3).

1.1. The rationale of the thesis

This rationale of this thesis is built on a set of relatively simple observations. First, the objective of the Innovation Union to foster competitiveness, growth, and employment through entrepreneurship and innovation is not new. The Lisbon Strategy had similar economic objectives, and it also relied on innovation and entrepreneurship as the main drivers of these goals (EC, 2000). It is necessary, therefore, to be sceptical of the Innovation Union, considering the fact that the Lisbon Strategy failed to generate the expected increase in entrepreneurship and growth, even before the economic crisis set in (Cohen-Tanugi, 2010: 80). This would indicate problems in either the content or the

[3] Comprising €325 billion (roughly a third of total EU budget) in 2014-2020 for investment in employment and growth.

implementation of the Lisbon Strategy; problems that the Innovation Union needs to address. Thus, it is necessary to look beyond the economic crises for explanations of why the Lisbon Strategy failed to foster entrepreneurship and knowledge-based competitiveness across member states.

The second observation is that there are important similarities between the Innovation Union and the Lisbon Strategy. As the literature review below explains, this reflects commonalities in the economic, political, and technological conditions underlying the strategies. Indeed, both strategies are focused primarily on the improvement of the institutional environment for entrepreneurship (EC, 2000: 1; 2010a: 10); e.g. better patent protection, capital availability, and entrepreneurship education. These improved institutional conditions are expected to enable potential entrepreneurs to better perceive and exploit economic opportunities (EC, 2010a: 13-14; 2013b: 8; 2000: 2-3; ECL, 2000: 12-19)[4]. The exploitation of these opportunities is done, for instance, through the start-up of new firms, which in turn fosters economic growth and employment.

The third observation is that it is not possible for the EU to force European member states to comply with the economic policy objectives. This is generally prevented by community law for both the Lisbon Strategy and the Innovation Union (Cohen-Tanugi, 2008: 47). Instead, the coordination of economic policy across the EU is based on a mutual effort between the EU and the member states. The EU sets out the overall strategy objectives, e.g. the need to promote excellent entrepreneurship education, improve availability of funding for potential entrepreneurs, and enable greater mobility of knowledge, researchers, and collaboration across member states (EC, 2010b). The realisation of these overall objectives is then dependent on the combined efforts of the EU and individual member states. The EU is primarily focused on creating broad, institutional conditions for entrepreneurship and innovation. Thus, *'no single country, for example, can offer the advantages of scale that the single EU market offers. Similarly, the existence of innovation-friendly, EU-wide standards and regulatory frameworks offer far greater benefits than similar constructions at Member State level'* (EC, 2010c: 32). However, many of the necessary policies and initiatives must be carried out at the national level by individual member states. Therefore, member state governments are expected to formulate national reform programmes that complement the EU policies and help realise the European objectives at the national level (EC, 2005a: 5; EC, 2010a: 29). It follows that the ability of the EU to foster commitment among member states is highly important for the success of this type of economic policy coordination.

[4] There are of course differences in the institutional areas that the strategies seek to influence, but they nevertheless share the focus on the institutional environment as the primary policy lever for economic progress.

In the Innovation Union, this focus on European and national levels is no longer seen as sufficient; the regional level has also become important. It is argued that *'the Innovation Union must involve all regions [to avoid] undermining recent convergence. Europe must avoid an 'innovation divide' between the strongest innovating regions and the others'* (EC, 2010b: 20). The focus on involving both national and regional levels in the realisation of the strategy is based on the view that *'there is no simple one size fits all policy prescription'* (EC, 2010c: 74). European policymakers have realised that *'no individual Member State is identical to another and the problems they face and the policies they need to tackle them are highly context-dependent and best formulated and implemented by national and regional authorities'* (EC, 2010c: 31). What this involvement of national and regional levels shows is that the successful implementation of the Innovation Union cannot be a top-down process. It depends instead on the commitment and activity of actors at the national and regional level, who must ensure that the European objectives are translated to fit local conditions. In other words, the Innovation Union is an 'open ended' strategy, in the sense that its implementation is determined by the ability of national and regional actors to define and implement policies and initiatives at the local level. These policies should support the European goals of employment and economic growth by stimulating local entrepreneurship and innovation.

Building on these observations, the rationale of the thesis can be outlined. The thesis is motivated by a degree of scepticism. Indeed, if the Lisbon Strategy failed to generate the expected innovation and entrepreneurship across member states, and therefore failed in its objective to make European nations competitive and prosperous, why should the Innovation Union be any different? To answer this question, the thesis provides an analysis that is divided into two main parts.

First, the thesis explores the main differences in the implementation of the strategies. As the previous paragraph indicated, there has been a change in the way that the EU seeks to coordinate economic policy across member states and regions. Taking the Lisbon Strategy as a starting point, the thesis aims to show that the strategy failed because it expected member states to conform to a common set of objectives that did not take sufficient account of the different strengths and capabilities of nations and regions in Europe. Thus, it failed to generate the necessary commitment and, in turn, the necessary change. The thesis then intends to show how the Innovation Union builds on the lessons learned from the Lisbon Strategy, in the sense that the governance and implementation of the Innovation Union is based on a much more structured cooperation between member states and the EU. In this cooperation, individual member states are expected to work closely with the EU to set out a strategic direction for the country, based on recommendations from the EU. This is meant

to ensure that the European objectives can be better translated to a set of policies and initiatives that fit the national and regional conditions.

Second, the thesis argues that in spite of this improved governance in the Innovation Union, there is no guarantee that the objectives of economic growth and employment will be realised in the entire EU. In fact, there is good reason to believe that the expected improvements in innovation and entrepreneurial activity will differ across member states and regions. The thesis seeks to demonstrate this point by analysing the policies of the Innovation Union and the Danish national reform programme. Specifically, the thesis intends to show how the implementation of many proposed policy initiatives depends on the capability of national or regional actors. In other words, the European and national strategies set out policies to improve the institutional framework for entrepreneurship. But many of the institutional policies do not produce their intended results automatically, whether they aim to improve the regional environment for entrepreneurship, the capabilities of potential entrepreneurs, or the set of new entrepreneurial opportunities. Instead, the policies must be interpreted and implemented at the national or regional level by institutional actors, e.g. universities, companies, public organisations, and individual entrepreneurs. The quality of these institutional actors, as well as their ability to collaborate, is argued to determine the actual improvements in the environment for entrepreneurial activity. In addition, the thesis argues that these actors often act as *institutional entrepreneurs* as they shape their institutional environments (cf. Leca, Battilana & Boxenbaum, 2008).

1.2. Research objectives

The research objectives follow from the previous section. The thesis examines the European model of economic policy coordination that underlies both the Lisbon Strategy and the Europe 2020. Thus, the main objective is to explore how political actors, both European and national, seek to construct institutional environments for entrepreneurial activity and economic growth. To do this, the Innovation Union and the Danish reform programme are studied, based on the Lisbon Strategy failure, keeping in mind how difficult it is to *'appreciate the full impact of policies designed to transform a system as complex as a nation's economy'* (Colwell & Narayanan, 2010: 295).

> *RQ: How do political actors construct institutional frameworks for innovative and entrepreneurial activity?*[5]

[5] Entrepreneurship and innovation are not synonymous. For now, Drucker's (1993: 19) view of innovation as the *'specific tool of entrepreneurs, the means by which they exploit change as an opportunity*' is sufficient. It is consistent with the entrepreneurial function described by Casson (2010: 141).

Furthermore, the thesis seeks to answer two related research questions. First, it is interesting to examine how national and regional actors take on the role of institutional entrepreneurs in order to facilitate the institutional changes necessary for entrepreneurship to flourish. Second, the thesis raises several concerns with regard to the objective of long-term economic growth across member states.

Sub-RQ: What is the role of institutional entrepreneurs in the creation of environments for entrepreneurial activity?

Sub-RQ: How do the European and Danish strategies relate to the proposed objectives of long term economic growth?

1.3. The academic relevance of the thesis

The thesis builds on the understanding of entrepreneurial activity as an important determinant of economic growth, which is well-supported by recent research (Audretsch & Pena-Legazkue, 2012; van Praag & Versloot, 2007; Carree & Thurik, 2006; 2005). This relationship is also demonstrated in several econometric studies (Sousa, 2013; Audretsch, Bönte & Keilbach, 2008; Thurik, Carree, van Stel & Audretsch, 2008)[6]. Policymakers have become increasingly aware of this relationship, and there has been an increase in research trying to determine how entrepreneurship and innovation can be stimulated in an economy. This thesis is a response to the policymakers and scholars, who have voiced the need for an improved understanding of how entrepreneurship and innovation can be fostered in and across the economies of Europe to ensure long-run economic growth and competitiveness (CER; 2010: 91-92; EC, 2013b: 3-5; Veugelers, 2013: 5; Martens & Zuleeg, 2010: 8).

This thesis explores the understanding of the institutional environment as an important determinant of entrepreneurial activity and new business creation (Boettke & Coyne, 2009: 159; Bowen & De Clercq, 2008: 748; Baumol, 1990). This view is closely related with the perspectives of New Institutional Economics (Ménard & Shirley, 2011: 14; Minniti & Lévesque, 2008: 606; North, 1990). The institutional perspective is central to the analysis of this thesis, since the European and Danish strategies both aim to improve the institutional environment for entrepreneurship and innovation. However, it is important to note that despite the central role of the institutional environment in the strategies, there is still significant uncertainty as to how institutions account for differences in entrepreneurship across countries and regions (Stenholm, Acs & Wuebker, 2013: 176). The thesis

[6] The notion of entrepreneurship and innovation as closely related to economic prosperity and development is by no means new, as indicated by the evolution of the concept of the entrepreneur within economic theory (Say, 1803; Marshall, 1890; Knight, 1921; Schumpeter, 1934; Hayek, 1945; Von Mises, 1949; Kirzner, 1973).

contributes to this debate by proposing the *entrepreneur-institution-opportunity nexus* as a model for understanding the policy impact on entrepreneurship. This model is inspired by an emerging line of research, which argues that entrepreneurship is determined by the institutional environment, but that the individual entrepreneurs also play an important role in shaping the institutional environment (Hung & Whittington, 2011; Fortunato & Alter, 2011). This model expands the established view of entrepreneurship as an individual-opportunity nexus (Shane, 2003; Shane & Venkataraman, 2000)[7]. In doing so, the thesis aims to show how institutional actors are an important driver of entrepreneurship and growth, as they interact with the institutional environment to create the conditions for entrepreneurship (Tolbert, David & Sine, 2011: 1339; Leca et al., 2008).

The thesis discusses how the conditions for entrepreneurship are created at the national and regional level. This is consistent with a growing body of research that seeks to understand how entrepreneurship and growth are related at the local economic level (Audretsch & Peña-Legazkue, 2012: 531: Huggins & Williams, 2011). The primary interest in this literature is why some regions lag behind, even when they have the traditional preconditions for growth and development. The main explanations centre on the institutional environment and entrepreneurship (Sousa, 2013: 1). With regard to the Europe 2020 and, in particular, the Innovation Union, this string of research is of the opinion that the strategies must have *'a more explicit territorial dimension, a way in which to engage all potential and dispersed actors to contribute to the Agenda with their decision processes in a bottom-up manner'* (Capello, 2013: 187; Camagni, 2011). This thesis comes close to this view, as it argues that local institutional actors are important drivers of the institutional changes for entrepreneurship at the national and regional level.

1.4. Delimitations

An important delimitation of the thesis is the choice to focus attention on the Innovation Union. It is a reasonable prioritisation, considering the importance of entrepreneurship and innovation for the objectives of both the Lisbon and Europe 2020 strategies. This delimitation extends to the broad set of EU regulations, institutions, and programmes. Thus, the thesis draws selectively on relevant parts of the existing policy environment. However, it is necessarily constrained in scope and therefore risks the exclusion of potentially relevant policies.

Entrepreneurship has been increasingly applied in several strands of economic research (Minniti &

[7] Shane and Venkataraman (2000) define entrepreneurship as the perception and exploitation of opportunities by economic agents.

Lévesque, 2008: 604-605; Sorenson & Stuart, 2008: 522-523). Despite a well-established correlation with economic growth, entrepreneurship remains a multi-dimensional concept in policy and research (Verheul, Wennekers, Audretsch & Thurik, 2002: 13-17; Harbi & Anderson, 2010: 436). Given the European focus on institutional conditions for entrepreneurial activity, the thesis focuses on the intersection of institutional and entrepreneurship research (cf. Tolbert et al., 2011). This involves the impact of national and supranational institutions on entrepreneurship and growth, and the ability of entrepreneurs to influence institutions and opportunities via *institutional entrepreneurship* (Pacheco, York, Dean & Sarasvathy, 2010; Estrin, Korosteleva & Mickiewicz, 2013).

Second, the proliferation of entrepreneurship research across several academic disciplines has led to discussions on how to appropriately define the entrepreneurial function (van Praag, 1999; Shane & Venkataraman, 2000). In the literature review, the view of entrepreneurship as the perception and exploitation of economic opportunities is developed, as it corresponds closely to the view of entrepreneurship in the European and Danish strategies (EC, 2010a: 1; FIVU, 2012: 15).

1.5. Thesis outline

The research objectives are addressed in the frame of three main chapters. The first chapter reviews the economic and political developments underlying the European policy focus on entrepreneurship. Entrepreneurship research related to the individual-opportunity nexus is presented and integrated with relevant perspectives from New Institutional Economics.

The second chapter outlines the research strategy. The selection of research approach and empirical material is discussed and critically assessed. The analytical framework of the thesis is constructed, and the epistemological and ontological assumptions of the framework are discussed.

The third chapter contains the thesis analysis. The Lisbon Strategy is analysed in order to identify the main explanations for the failure. The structure and objectives of the Innovation Union are then analysed to find out if the problems have been addressed, and to identify other potential concerns in regard to the objectives and implementation of the strategy. Building on this initial analysis, the Innovation Union and Danish reform programme are examined in depth to understand how the European and national strategies seek to improve the institutional conditions for entrepreneurship and economic growth. This examination follows the analytical framework.

The conclusion revisits the objectives and summarises the thesis findings. Several economic implications for the European Union are outlined, and trajectories for future work are proposed.

2. Literature review

The literature review establishes the background and significance of the thesis (Randolph, 2009: 2). This chapter reviews research on the individual-opportunity nexus of entrepreneurship, in addition to relevant perspectives based in New Institutional Economics. First, the economic and political developments underlying the European focus on entrepreneurship are briefly outlined.

2.1. The entrepreneurial economy in Europe[8]

European entrepreneurship policy and the related frameworks for coordination of national economic strategy emerged as the result of three interrelated developments. These developments are explored in order to explore the change in the European paradigm of public policy from traditional business regulation and competition policy to policies aimed at enabling entrepreneurship and knowledge commercialisation (Audretsch & Thurik, 2001a: 26).

The first of these developments had to do with the acceleration of globalisation (Audretsch, Grilo & Thurik, 2012; Acs, Morck & Yeung, 2001). This acceleration has led to particular structural changes in the economic landscape (Leitão, Lasch & Thurik, 2011: 132; Audretsch & Sanders, 2007: 1). The structural changes are mainly related to improved mobility of people, capital, goods and knowledge, which has served as an important catalyst for the growing significance of entrepreneurship (Audretsch & Thurik, 2010: 7; Thurik, 2009: 220; Casson, 2005: 343-344). This has given rise to important economic effects, including dynamic growth in international trade and financial flows[9], as well as technological knowledge exchange (Acs et al., 2001: 236; Greenhalgh & Rogers, 2010: 243-245). In addition, there has been a growing policy focus on SMEs and regional economics (Gatewood & Boko, 2009: 124; Audretsch & Thurik, 2009: 14).

The second development has to do with the political and technological shifts that led to a broader economic scope and a shift in competitive advantage for European and North American firms (Audretsch & Thurik, 2010: 7; Wennekers, Uhlaner & Thurik, 2002: 38). In particular, the importance of SMEs started to increase in economies that had previously functioned as Schumpeter Mark II regimes on the basis of scale, scope, and creative accumulation (Carree, van Stel, Thurik & Wennekers, 2002: 271-272; Carree & Thurik, 2005: 443; Chandler, 1990). The main technological shift was the ICT revolution, which motivated an increased use of outsourcing arrangements. As a

[8] This section has been significantly shortened. An elaborate discussion is found in Appendix A and A-2.
[9] The relevant discussion of financial globalization and European financial market integration is excluded.

consequence, the comparative advantage of developed countries moved toward knowledge-based economic activity (Audretsch & Thurik, 2010: 2). Significantly lower transaction costs for small firms (Persson, 2011: 225), combined with the possibility of outsourcing late life cycle tasks, led to an increase in the relative competitiveness of SMEs, due to their capacity for exploring variation and knowledge co-operation (Audretsch & Thurik, 2010: 6-8; Loveman & Sengenberger, 1991: 4). This is corroborated by studies documenting the recurrence of small business and entrepreneurship in North America and Europe from the 1970s onward (Acs & Audretsch, 1993; Wennekers & Thurik, 1999).

The important consequence of the described developments was a shift in the comparative advantage of developed economies. As emphasised by Casson (2005: 343), the changes in international competition led to new and amplified patterns of economic volatility, which favoured adaptable and innovative organisational forms (Aldrich & Martinez, 2001: 44; Wennekers & Thurik, 1999: 32). Thus, SMEs have been hailed as *'contributing not just to employment and social and political stability but also to innovative and competitive power'* (Thurik, 2009: 8). Moreover, given that knowledge investments do not spill over automatically for commercialisation, it is required that *'an entrepreneur provides a conduit for knowledge spillovers by creating a new firm'* (Audretsch & Thurik, 2010: 18; Minniti & Lévesque, 2008: 605; Grilo & Thurik, 2006: 75). Thus, SMEs function as entrepreneurial agents, who generate economic growth by acting upon new knowledge and opportunities in order to commercialise it (Zwan, Verheul, Thurik & Grilo, 2013: 804; Audretsch, 2007a: 65). This is an important point, because it illustrates how entrepreneurship is an essential link between investments in new knowledge and the spillover of this knowledge to create economic progress (Acs, 2006: 105; Audretsch, Keilbach & Lehmann, 2006: 35). In terms of policy, such views of entrepreneurship have led policymakers to prioritise increased investments in knowledge and R&D to foster opportunities for entrepreneurship (Audretsch & Keilbach, 2004: 951; Carree & Thurik, 2005: 22). Yet, it has also been recognised that policies should improve the institutional environment that enables the perception and exploitation of opportunities (Hwang & Powell, 2005: 179; Acs, 2006: 105; Stenholm et al., 2013: 177). This importance of institutional framework conditions for entrepreneurship and growth was corroborated by several studies (OECD, 1998: 14; GEM, 2000: 22; 2002: 33).

The previous sections have described economic, academic, and political developments that have all contributed to an increased economic importance of entrepreneurship and entrepreneurial firms. The

perceived importance of entrepreneurship has been reflected in economic policy (Audretsch & Keilbach, 2004: 957; Audretsch et al., 2009: 467). Thus, the Lisbon and Europe 2020 frameworks build on these developments.

2.2. The individual-opportunity nexus of entrepreneurship

With the described political and economic developments, entrepreneurship entered the public policy agenda. The academic status of entrepreneurship changed as well, as seen in trend analyses of the publication rate of entrepreneurial research in major academic journals (Sorenson & Stuart, 2008: 518; Busenitz et al., 2003: 290-291). The growth of entrepreneurship in economic and management research led previously isolated groups of scholars to call for the establishment of entrepreneurship as an independent academic field (Aldrich, 2012; Chiles et al., 2007: 468). The development of the field has generally followed an evolutionary and heterodox trajectory with important links between entrepreneurship and several other academic disciplines; e.g. sociology, strategy, and organisational economics (Sorenson & Stuart, 2008: 523; Minniti & Lévesque, 2008: 603-604). In addition, established disciplines recognised the potential for new theoretical and empirical perspectives on existing research by incorporating entrepreneurial phenomena into mainstream fields (Alvarez, Barney & Young, 2010: 23). This is important for the thesis, because the study of the impact of European and national strategies on entrepreneurship and growth cannot be pursued by means of entrepreneurship research alone. The effect of public policy on entrepreneurship requires an understanding of how the politically created institutional environment impacts the available opportunities and their exploitation (Short, Ketchen, Shook & Ireland, 2010: 61; Landström & Persson, 2010: 63). Thus, the analytical framework of the thesis builds on cross-disciplinary research perspectives between New Institutional Economics, entrepreneurship, and economic growth. The next section provides the foundation for this framework by defining entrepreneurship as an opportunity-based activity.

2.2.1. Entrepreneurship as the exploitation of economic opportunities

The multidisciplinarity of entrepreneurship research has led to somewhat heterogeneous definitions of entrepreneurship (Landström & Persson, 2010: 63). Scholars have voiced concern over the narrow and constricting definitions that have often been used (Gartner, 1988; Venkataraman, 1997). In turn, significant debate has taken place regarding the actual domain of entrepreneurship research (Shane & Venkataraman, 2000; Bruyat & Julien, 2000; Gartner, 2001). As the number of entrepreneurship scholars rose, the field slowly coalesced around a focus on the formation and exploitation of entrepreneurial opportunities (Eckhardt & Shane, 2010; Shane & Venkataraman,

2000). The dominant framework for contemporary research is increasingly based on this perspective (Jong & Marsili, 2010: 5; Landström et al., 2012: 2).

The opportunity concept emerged in Austrian economics (Buenstorf, 2007: 324; Holcombe, 2003). Following the marginalist revolution, the attention of neoclassical economics was directed toward static equilibrium analysis, leaving little room for the dynamic evolution and growth of economic systems (Screpanti & Zamagni, 2005: 165-167). The entrepreneurial function was not considered an active agent in the economic development process, with a few exceptions[10]. It was not until Schumpeter (1934) and Knight (1921) that the entrepreneur became truly endogenous (van Praag, 1999: 319; Rocha, 2012: 5). In their writings, the notion of entrepreneurial opportunity arose as an important determinant of economic activity (Shane, 2003: 19-22; Jong & Marsili, 2010: 5)[11]. Schumpeter considered economic development to be inherently dynamic (Hagedoorn, 1996: 885); opportunities were assumed to arise when the entrepreneurial function acts upon technological, macroeconomic, and political changes (Berglund, 2007: 247; Buenstorf, 2007: 326). Schumpeter operated with an economic model of circular flow, but he did not accept simple adaptation to exogenous change as economic development. Instead, Schumpeterian development consists of discontinuous changes to the circular flow that arise when entrepreneurs introduce new combinations endogenously. These displace existing products or modes of operation (Schumpeter, 1934: 62; 1942; Dodgson, 2011: 1119). This continuous displacement of economic equilibria is termed *creative destruction*.

Knight (1921) introduced the concept of *true uncertainty* as the condition of entrepreneurial action, where outcome probabilities cannot be predicted (Brouwer, 2002: 92). Economic activity therefore requires judgment, and as van Praag (1999: 322) states, '*this kind of uncertainty, which had been ignored in economic theory before, is borne by a particular subset of individuals in society: the entrepreneur'*. Related to this, Hayek (1945) focused on the notion of distributed knowledge, which implies that entrepreneurial opportunities are only available to a subset of the population at any given time (Shane & Venkataraman, 2000: 221). Von Mises (1949: 290) expanded on this by arguing that *'the only source from which an entrepreneur's profits stem is his ability to anticipate better than other people the future demand of consumers'*. Building on these contributions, Kirzner (1973) introduced *entrepreneurial discovery* and *alertness*, referring to the ability of individuals to perceive profit opportunities ahead of others (Rocha, 2012: 8; Chiles et al., 2007: 471). Thus, in a system characterised by Knightian uncertainty and imperfect knowledge, certain actors demonstrate

[10] For instance, the coordinating, risk-bearing and innovating entrepreneur of Marshall (van Praag, 1999: 318).
[11] Implicitly in the case of Schumpeter.

greater alertness to previously unexploited profit opportunities (Rocha, 2012: 8), either because of a natural ability or higher appreciation of the economic incentive (van Praag, 1999: 326). The existence of entrepreneurial opportunities is predicated on disequilibrium, and their exploitation moves the economy closer to equilibrium (Chiles et al., 2007: 468).

This outline shows how Schumpeterian and Kirznerian opportunity perspectives have emerged as overarching explanatory frameworks for entrepreneurial activity (Short et al.: 53-55; Alvarez & Barney, 2007: 129). In contrast to Schumpeter, Kirzner (1973: 49) maintains a distinction between entrepreneur and capitalist, but uncertainty is no longer exogenous to the entrepreneurial function; '*the entrepreneurial activity undoubtedly involves uncertainty and the bearing of risk* (Kirzner, 1973: 78). It would also seem that the Kirznerian entrepreneur does not presuppose the *opportunity creation* advocated by Schumpeter, where macroeconomic or technological changes serve as catalysts of innovations and new combinations. Rather, opportunities are determined by arbitrage and differences in perception, made possible by the information asymmetries in a given system (Shane, 2003: 20-22; Jong & Marsili, 2010: 6).

The strong separation of these two perspectives is misguided, at least in terms of entrepreneurial opportunities. It may seem that opportunities exist ex ante for the Kirznerian entrepreneur, simply waiting to be discovered and thus reducing entrepreneurship to arbitrage (Koppl & Minniti, 2010: 218). This is contrasted to the active opportunity creation by Schumpeterian entrepreneurs on the basis of macroeconomic change. Yet, Kirzner (2009: 149) has rejected this interpretation, arguing that *'the merely alert entrepreneur... was never intended as an alternative to the creative, innovative Schumpeterian entrepreneur'*. Instead, the main difference is in the equilibrating effects. Whereas Schumpeter emphasises the destruction of existing equilibria, Kirzner focused on the tendency towards an equilibrium state that is never fully achieved. The views of Kirzner arose from an attempt to understand how the market process is driven by alert entrepreneurship; it did not imply a rejection of the creative element of real-life entrepreneurship (Kirzner, 2009: 148-149; cf. Buenstorf, 2007: 325). It is therefore possible, indeed necessary, to reconcile the perspectives to the extent that they agree that entrepreneurs perceive opportunities for assembling or activating certain unexploited resource combinations; a Schumpeterian entrepreneur is therefore *'at a yet higher level of abstraction also engaged in arbitrage*' (Kirzner, 2009: 150). It follows that both Schumpeterian and Kirznerian opportunities and entrepreneurs are present in an economy at a given time (Berglund, 2007: 247; Shane, 2003: 20-21; Shane & Venkataraman, 2000: 221). They either exploit

changing conditions to introduce novelty into the economic system[12] or discover potential profits in the existing set of economic conditions. Thus, in more recent contributions to the field, entrepreneurial activity is understood as the perception and exploitation of different types of opportunities (Berglund, 2007: 247; Buenstorf, 2007: 325). This has encouraged scholars to turn their attention toward *'the study of sources of opportunities; the processes of discovery, evaluation, and exploitation of opportunities; and the set of individuals who discover, evaluate, and exploit them'* (Shane & Venkataraman, 2000: 218).

This understanding of entrepreneurship as the perception and exploitation of opportunities forms the basis of the analytical framework for the thesis. Economic policy shapes the institutional environment, which in turn influences the emergence of entrepreneurial opportunities and their perception and exploitation (Short et al., 2010: 61; Bruton et al., 2010: 426). To understand the ability of the European strategy to foster entrepreneurship and growth, it is therefore necessary to examine how the institutional frameworks created through the European and national strategies impact the sources of opportunities, as well as the perception and exploitation by individual and organisational entrepreneurs. However, while the available literature provides several perspectives on opportunity sources and exploitation, there is no fully developed and readily available analytical framework suited to the thesis analysis. The individual-opportunity nexus provides a reasonable starting point for developing a useful framework.

2.2.2. The individual-opportunity nexus as an analytical framework

The individual-opportunity nexus was proposed by Shane (2003) as a conceptual framework for understanding entrepreneurial activity as it unfolds in an economic context. The fundamental observation underlying the nexus is that the study of characteristics and decisions of entrepreneurs is a necessary but insufficient research focus (Shane, 2003: 2-3; Gartner, 1988). Research must consider both the entrepreneur and the opportunities that are perceived and exploited. Thus, the nexus is consistent with the developments described in the previous section, which indicated how sources of entrepreneurial opportunity have become central to the entrepreneurship research domain, along with the processes by which they are perceived and exploited (Eckhardt & Shane, 2010: 333; Shane & Venkataraman, 2000: 218, Venkataraman, 1997).

The individual-opportunity nexus is modelled on the assumption of a linear entrepreneurship pro-

[12] Novelties are not restricted to new products and services. For instance, Schumpeter (1934: 66) also discussed new markets and inputs, as well as changes to modes of production or organizing. See also Drucker (1993: 35).

cess (cf. Figure 1). The individual entrepreneur is embedded in a disequilibrium economy, in which continuing changes in technological, political, and socio-demographic factors serve as the primary sources of entrepreneurial opportunities. They therefore exist independently of the process through which they are perceived and exploited (Shane, 2003: 23; Sarasvathy, Dew, Velamuri & Venkataraman, 2003: 87; Alvarez & Barney, 2007: 128). Shane (2003: 18) characterises an entrepreneurial opportunity as a particular set of conditions *'in which a person can create a new means-ends framework for recombining resources that the entrepreneur believes will yield a profit'*. Thus, both Schumpeterian and Kirznerian entrepreneurship exist in this system, as the state of disequilibrium produces opportunities for both innovation and arbitrage (Buenstorf, 2007: 325).

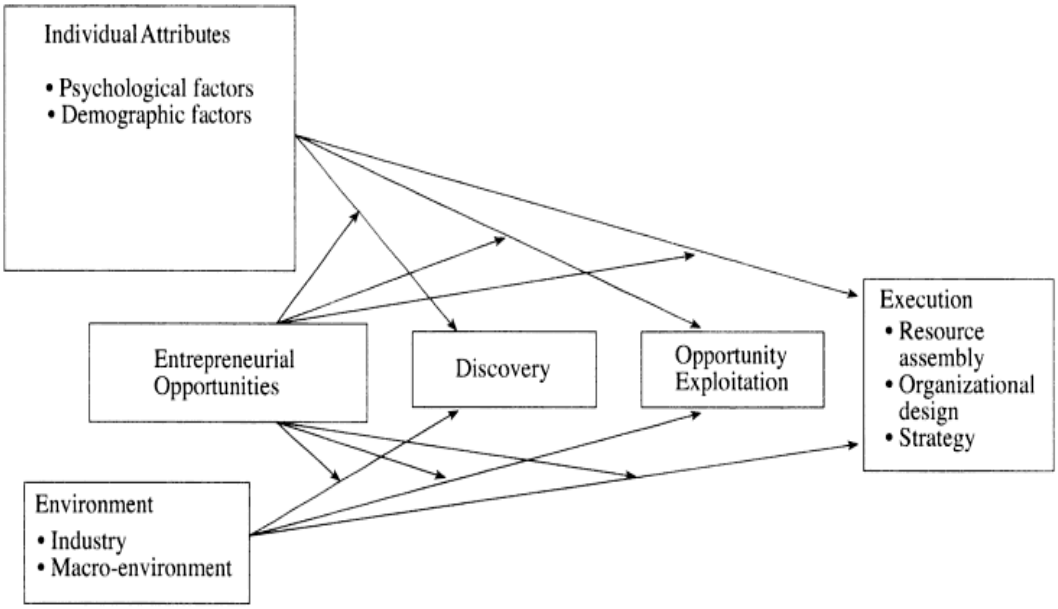


Figure 1 A model of the entrepreneurial process *Source: Shane. 2003: 11*

The sources of opportunity are essentially Schumpeterian (1934: 66). Opportunities for recombining resources into new means-ends combinations arise on the basis of new information in several forms; e.g. the invention of new technology, changes to the regulatory framework, or demographic shifts (Shane, 2003: 23). This information is assumed to be exogenous and independent of the entrepreneurship process (Wennekers & Thurik, 1999: 31). The information, once created, represents new opportunities that the entrepreneur can then discover and exploit. The understanding of opportunities as determined by exogenous shocks to the economic system is based in a realist philosophy of science (Alvarez & Barney, 2007: 128); opportunities are independent and objective realities, and the role of the entrepreneur is in the *'decision by a person to act upon an opportunity'*

(Shane, 2003: 7; Shane & Venkataraman, 2000: 220). In research on the economic effects of entrepreneurship, the sources of opportunity have been explored and expanded to include many elements, such as new customer preferences (Verheul et al., 2002: 25; Eckhardt & Shane, 2010: 57), corporate and public research (Holcombe, 2003: 37), and unemployment and the structure of the job market (Faria et al., 2009; Cowling & Bygrave, 2003). Thus, opportunities are not isolated from influence, but the understanding of opportunities as removed from the entrepreneurial process significantly limits the scope of economic policy (McMullen, Plummer & Acs, 2007: 273; Buenstorf, 2007: 328); this is explored further at the end of the section.

The discovery and exploitation of opportunity is assumed to be dependent on the characteristics and knowledge of potential entrepreneurs, as well as the economic, political, and socio-cultural aspects of the institutional environment (Shane, 2003.: 62, 147; Berglund, 248). The potential entrepreneur is considered to possess particular collections of knowledge, experience, and psychological traits that impact the ability and propensity to discover and act upon an opportunity, whether it is potential new products, more appropriate organisational structures, or underemployed resource arrangements (Ardichvili, Cardozo & Ray, 2003: 110; Short et al., 2010: 56). In terms of policy, this indicates the need to ensure adequate levels of knowledge and (potential) entrepreneurs through education and collaboration networks (Levie & Autio, 2008: 231; Grilo & Thurik, 2005: 12).

The processes of discovery and exploitation are also expected to depend on the institutional environment. Entrepreneurs with particular capabilities and cognitive attributes are embedded in a set of environmental factors, including for instance the economic incentives produced by the tax system and property rights (Sobel, 2008: 642; Troilo, 2011: 159), the availability of capital (Wennekers et al., 2002: 42; Bruton et al., 2010: 426), and the cultural beliefs and norms regarding entrepreneurial activity (Zwan et al., 2013: 809). The interaction of individual attributes and institutional factors is assumed to impact discovery and exploitation by influencing the expected value of the opportunity (Shane, 2003: 62; Eckhardt & Shane, 2010: 339). Specifically, the environment determines the extent to which the pursuit of an opportunity is considered worthwhile (Stenholm et al., 2013: 180; Veciana & Urbano, 2008: 373). This is because exploitation depends on the access to information and capital (Acs, Desai & Hessels, 2008: 219; Henrekson & Stenkula, 2010: 608), as well as the ability to appropriate the returns from exploitation through adequate property rights and economic stability (Estrin et al., 2013: 567; Acemoglu & Johnson, 2005). Moreover, it depends on the ability to organise the entrepreneurial process to overcome uncertainty (Shane, 2003: 196).

While a full review of the theoretical arguments and implications of the individual-opportunity nexus are beyond the current scope, it is clear that the fundamental understanding of the entrepreneurship process is consistent with much contemporary research. This conclusion is supported by Casson (2005: 423), who argues that *'most of its predictions are borne out by the evidence'*. Thus, the nexus provides the basic framework for the thesis analysis. It does so by indicating a particular set of functions for economic policy in the process of entrepreneurship. Policy should foster knowledge investments to ensure the provision of opportunities for exploitation[13], as well as create an institutional environment that allows entrepreneurs to commercialise this knowledge. These policy roles are echoed by a large amount of research on the impact of policy on growth (Hartog, van Stel & Storey, 2010: 4; Colwell & Narayanan, 2010: 296-297; Audretsch et al., 2008: 696).

Casson (2005: 429) points out that the evidence underlying the nexus comes largely from research on the economic activity of individual SMEs. Thus, the model has little to say with regard to the macroeconomic implications, and he calls for an improved understanding of '*the causal factors generating opportunities*'. This reflects the broad concern among scholars that *'without a clear understanding of the nature of opportunity, formulating logically consistent prescriptions for both policy and practice is problematic'* (McMullen et al., 2007: 273; Holcombe, 2003: 39). In other words, the model needs to be more explicit about how entrepreneurial opportunities emerge. This will enable economic policy to better identify the sources of opportunity and, in turn, improve the supply of opportunities for exploitation and economic growth. In the current model, opportunities emerge from broad technological and political changes outside the entrepreneurial process. Little attention is devoted to how opportunities can be actively created within the entrepreneurial process as a product of the interaction between entrepreneurs and the institutional environment (Wood & McKinley, 2010: 66; Alvarez & Barney, 2007: 131). It is argued here that this is an important source of entrepreneurship. Thus, the mutual interaction of entrepreneurs and their institutional environment must be incorporated in the nexus as an endogenous source of opportunity creation (cf. Acs, Autio & Szerb, in press; Szerb, Acs & Autio, 2013).

2.2.3. Adding an institutional dimension to the individual-opportunity nexus

By proposing that opportunities are *created* in the entrepreneurial process, as opposed to emerging ex ante for *discovery*, the thesis risks being drawn into the current ontological debate in the research

[13] The model implicitly acknowledges the importance of knowledge investments for the stock of opportunities. For instance, technological advances are recognized to occur in universities and research laboratories (Shane, 2003: 24). The amount of knowledge investments in universities and laboratories is amenable to policy influence.

field (e.g. Alvarez & Barney, 2013; Sarason, Dillard & Dean, 2010; Mole & Mole, 2008). While the importance of the opportunity construct is widely acknowledged (Alvarez et al., 2010: 23), there is little consensus on whether opportunities exist objectively for discovery or are created by individual agents who interact with and interpret the institutional environment (Alvarez & Barney, 2007: 125; Wood & McKinley, 2010: 66). These philosophical debates have little practical relevance, and the thesis follows Buenstorf (2007: 328) in arguing that opportunities are simply the consequences of action within the existing conditions of an economic market. In this view, entrepreneurs perceive an economic potential and proceed, if necessary, to change or reinterpret the market conditions in order to realise the perceived opportunity. At any time, the perception of opportunities and possibilities for institutional change is constrained by the existing environment.

This understanding of economic choice and action as embedded in evolving institutional environments originates from *New Institutional Economics*, which recognises the existence of formal and informal institutional frameworks that act to incentivise and influence the activities of individual and organisational agents (North 1990: 6; Ménard & Shirley, 2011: 2). North (1991: 97) defined institutions as *humanly devised constraints that structure political, economic and social interaction [through] informal constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, property rights)*. North (1990: 95) maintains a distinction between institutions and organisations; entrepreneurs create organisational arrangements to exploit the set of opportunities emerging from the institutional framework. Thus, while institutional environments are amenable to change (Williamson, 2000: 597; Sine & David, 2010: 2), the economic agent pursues opportunities and growth within institutional structures (Aidis, Estrin & Mickiewicz, 2008: 658). Baumol (1990) contributes to this perspective by defining productive, unproductive and destructive types of entrepreneurship; the major distinction here has to do with whether agents work to create wealth through productive activities (e.g. introducing new products) or try to reallocate and capture existing wealth via rent-seeking activities. The type of entrepreneurship that emerges is determined by the quality of regulatory, economic and political institutions, e.g. property rights (Estrin et al., 2013: 567), tax policy (Sobel, 2008: 644), corruption (Aidis et al., 2012: 119), and judicial aspects such as contract enforcement (Harbi & Anderson, 2010: 437). Thus, an entrepreneur with relevant resources, knowledge, and motivation is directed in her production of economic outcomes by the particular institutional setting (Sobel, 2008: 644).

The relevance of the institutional perspective has been recognised in much current research on the determinants of economic growth (e.g. Koppl & Minniti, 2010: 238; Boettke & Coyne, 2009: 160;

Acs et al., 2008: 220). Minniti (2008: 781) argues that *'the renewed need for effective entrepreneurship policies rekindled the debate about how government can foster entrepreneurial activity ... [and the] analysis of institutions and their role in society, remain, to date, the most satisfactory framework to discuss entrepreneurship policy'*. Specifically, scholars have turned their attention to public policy and how *'entrepreneurs will tend to discover hitherto overlooked socially-beneficial opportunities for profit only under certain institutional and policy conditions'* (Kirzner & Sautet, 2006: 14; Henrekson & Stenkula, 2010: 601). These perspectives are present also in the engine room of economic policy. Thus, the European Commission (2009: 18) points out that *'at the roots of competitiveness we find the institutional and microeconomic policy arrangements that create conditions under which businesses can merge and thrive and individual creativity and effort are rewarded*".

The incorporation of the institutional perspective has similarities with the vast literature on National Innovation Systems (NIS, cf. Lundvall, 2007; Nelson, 1993). This line of research seeks to integrate the linear understanding of innovation with insights on how processes of innovation and technology are determined by the interaction of national institutional conditions (Rosenberg & Nelson, 1994: 4-5). Yet, agency has been mostly omitted from these models (Acs et al., in press: 2; Lundvall, 2007: 110). Thus, innovation and the resulting economic outcomes are mainly seen as structurally (institutionally) determined, and the entrepreneurial function is therefore absent or reduced to an automatic property of the system (Radosevic, 2007: 3). In contrast, models of entrepreneurship ascribe importance to the individual-level characteristics of potential entrepreneurs; cf. the individual-opportunity nexus described above. These cannot be easily reconciled with the deterministic role of institutions in NIS. Furthermore, the view of this thesis that entrepreneurs influence and are influenced by the institutional environment becomes near-impossible to embed in the general NIS model. One attempt to incorporate agency within NIS is found with Hung & Whittington (2011: 527), who propose the incorporation of institutional entrepreneurship; this *'adds to national innovation systems theory a source of internal agency that, while still respecting national institutions as non-trivial constraints, has the potential of generating change on its own behalf*'. They go on to argue that policymakers need to re-evaluate the role of agency-driven institutional change as an important mechanism for overcoming the system inertia that may be detrimental to national and regional competitiveness[14].

The idea of institutional entrepreneurship represents a particular development in institutional theory. Pacheco et al. (2010: 975) discuss this shift in institutional theory from processes of organisational

[14] The central argument of Hung & Whittington (2011) corresponds closely to the views of this thesis.

isomorphism and homogenisation (DiMaggio & Powell, 1983: 150; Meyer & Rowan, 1977: 345), toward an acknowledgement of endogenous changes in institutional arrangements (e.g. DiMaggio, 1988: 3). This marked the reintroduction of agency in institutional theory (Leca et al., 2008: 3). The institutional entrepreneur is the agent *'who mobilizes resources to transform or create institutions that favour his or her interests'* (Pacheco et al., 2010: 975). Thus, it is possible to move from exogenous explanations of institutional change to an understanding of the regulative, normative and cognitive rules of the game as structures that are created and recreated by agency (Garud, Hardy & Maguire, 2007: 961; Bruton et al., 2010: 428). The view that actors are somehow able to alter their institutional environment has met with some confusion; how is it possible for agents to deliberately change the conditions that determine their actions and cognition (Seo & Creed, 2002: 223)? Scholars have addressed this *paradox of embedded agency* by proposing various sets of *enabling conditions* that motivate and enable actors to reinterpret and change their context. In their review, Leca et al. (2008: 7) combine these conditions in three primary categories; field-level conditions, and the entrepreneur's social position and characteristics. The latter two relate to the ability of an entrepreneur to mobilise change, either because he occupies a special position in the institutional field that influences his perception and/or access to resources, or because of an ability to enlist cooperation on a particular agenda. The most important category for this thesis is the field-level conditions. This has to do with the degree of heterogeneity and institutionalisation of the economic field. If a field contains competing institutional logics, or if the stability of the current logic is disturbed by exogenous shocks such as technological or regulatory change, agents may exploit the uncertainty in order to introduce new arrangements. A particularly relevant sort of field-level conditions is the *'presence of ... multi-faceted problems such as environmental issues'*, which enables individuals to organise and collaborate in an attempt to change certain institutions so that the problem might be addressed (Leca et al., 2008: 7). The analysis demonstrates how the European and Danish strategies make use of enabling conditions in the form of institutional platforms, which address perceived problems or potentials in a region or nation. The problems are defined by a broad set of actors, who then collaborate via the platforms to create solutions (opportunities) and necessary institutional change.

In an emerging and related string of literature, the NIS model is completely replaced by the concept of National Systems of Entrepreneurship (NSE), which emphasises *'the interactions between individuals and their institutional contexts in producing entrepreneurial action and regulating the quality and outcomes of this action'* (Acs et al, in press: 4). These systems differ from the models of NIS by defining individual-level action as the engine of entrepreneurship and total factor productivity. The

individual agents take on an entrepreneurial function by mobilising resources through new venture creation; this is done in order to realise and exploit perceived opportunities. This is consistent with entrepreneurship models such as the individual-opportunity nexus. However, the NSE concept goes beyond these models by defining individual action as the product of interactions between the individual entrepreneur and the national institutional context. While the nexus model acknowledges the impact of the institutional environment on individual discovery and exploitation, the NSE concept includes *'the feedback loop from action to system-level outcomes'* (Acs et al., in press: 4; Szerb et al., 2013: 13). It therefore comes close to the notion of institutional entrepreneurship used by Hung and Whittington (2011).

Considering the development in national systems literature toward entrepreneurship as institutional-individual interaction, in addition to the perspectives from New Institutional Economics, it becomes possible to better outline the foundation for this thesis. Building on the fundamental insights of the individual-opportunity nexus, this thesis proposes an expanded model that to a much larger extent includes the institutional environment as an active factor in the process of creating, perceiving, and exploiting economic opportunities. Thus, the role of the institutional environment is expanded from being only an exogenous influence in the nexus model (cf. Figure 1). While the environment remains an important source of opportunities, as well as a primary determinant of the capabilities and resources of potential entrepreneurs, there is also an important role for the institutional environment in interacting with and being adapted by the endogenous actions of entrepreneurs. These entrepreneurs act as institutional entrepreneurs in an attempt to change conditions to their benefit or create new economic opportunities.

3. Research strategy

This chapter presents the research strategy of the thesis, which is constituted by two main elements. First, the research design is outlined. It involves a description of the research purpose, as well as the selection of an applicable research method and relevant empirical material. Second, the individual-opportunity nexus is integrated with the insights from New Institutional Economics and institutional entrepreneurship in order to construct an analytical framework. The framework defines an expanded role for the institutional environment and institutional actors, and it structures the analysis.

3.1. Research design

The research design represents the fundamental decisions about data selection and analysis (Bryman & Bell, 2007: 40). These decisions are determined by the objectives of the thesis and the knowledge it intends to produce, i.e. the research purpose.

3.1.1. Research purpose

The primary objective of this thesis is to examine how institutional environments for entrepreneurship are constructed through the Innovation Union and the Danish reform programme. Based on an analysis of the Lisbon Strategy, it is explored how the Innovation Union has addressed the problems relating to the failure of the Lisbon Strategy. Following this, it is examined how the European and Danish strategies go about defining and implementing policies for institutional change that aim to improve the environment for entrepreneurship. The role of national and regional actors as important drivers of this policy implementation is emphasised. By doing so, the thesis aims to show that the interaction between institutional actors and the institutional conditions set up by the Innovation Union and Danish strategies is a key determinant of entrepreneurial activity in a nation or region.

The thesis constructs an analytical framework to structure the analysis of the European and Danish institutional reforms. This model complements and expands on existing models that seek to explain the relationship between economic policy and growth. The analysis is supported empirically by the identification and discussion of relevant policy initiatives, as well as illustrative economic statistics.

The research purpose is exploratory, in the sense that the Innovation Union and the Danish reform programme remain relatively unexplored. This paucity of studies is to be expected, given the early stage of implementation and the resulting lack of longitudinal evidence. By drawing on insights from entrepreneurial and institutional research, as well as a critical analysis of the Lisbon Strategy,

the institutional and economic impact of the Innovation Union and national strategies is examined.

The thesis also has an explanatory purpose. Thus, the examination of the strategies gives rise to possible explanations of why the objective of long-term economic growth across member states is unlikely to be met. In addition, the thesis offers insights on whether the goal of European economic and institutional convergence is an appropriate vision (Bongardt et al., 2013).

3.1.2. Research method

Given the purpose, this section defines an appropriate research method and the criteria for selecting relevant data (Bryman & Bell, 2007: 40). In order to make these analytical and empirical decisions, it is necessary to first consider certain difficulties in the study of economic policy and institutional change. When studying reforms that have the purpose of changing the institutional environment, it is hard to avoid the problems of causality[15] and conceptualisation[16] (Kuhlmann & Wollmann, 2011: 484).

With regard to the *causality* issue, the thesis must recognise that the strategies are path dependent. Thus, the different elements of the European and national strategies have not been formulated in a vacuum. They represent the policymakers' interpretation of current economic conditions. These interpretations are influenced by a variety of factors, not least by the existing national and European institutions and policies[17], as well as the reviewed economic, political, and academic developments that placed entrepreneurship on the European policy agenda. For instance, the emphasis in the strategies on the environment for entrepreneurship is consistent with the evolution of European political and economic conditions toward knowledge-based competition. It is also consistent with the increasing academic emphasis on productive institutions for entrepreneurship (Minniti & Lévesque, 2008: 608; Boettke & Coyne, 2009: 159). The strategy formulation has also been forced to take account of the sovereign debt crisis, in order to find out how existing institutions may be changed to better prevent and deal with such crises. These examples show that the analysis must consider the context and path dependency of the Innovation Union, including lessons learned from the Lisbon Strategy.

In order to address this, the thesis first provides an analysis of the Lisbon Strategy. As the primary focus of the thesis is the Innovation Union and Danish strategies, the Lisbon analysis is limited to a

[15] Given the complex and relatively unique nature of the European and national strategies, it is difficult to find similar, comparative cases that could shed light on and corroborate the analysis.
[16] Institutional reform is based on many interacting initiatives and objectives. It is difficult to isolate and understand the full impact of individual initiatives.
[17] Cf. section 1.4.

brief discussion of the overall policy priorities, as well as the governance mechanism used to ensure implementation and commitment. In this way, the fundamental mechanisms of European economic policy coordination are presented. This is important, because these mechanisms are shown to be the primary drivers of the Lisbon failure, and because many elements of these mechanisms have carried over to the Innovation Union. It is important to find out if the Innovation Union has resolved these governance issues. In addition, the policy focus of the Lisbon Strategy forms the basis for analysing the initiatives of the Innovation Union and Danish reform programme.

Regarding the issue of *conceptualisation*, the European and Danish strategies are clear examples of how individual policies are implemented alongside many other policy initiatives. In addition, this implementation occurs in complex, institutional environments that often prevent a clear prediction of economic outcomes (Colwell & Narayanan, 2010: 295; Koppl & Minniti, 2010: 240). This complexity of European and national strategies makes it *'virtually impossible to fully identify the factors affecting entrepreneurial activity; to quantify their respective effects is of course even more difficult'* (Henrekson & Stenkula, 2010: 9; Velupillai, 2007)[18]. This is different from the increasing amount of empirical research that seeks to determine the economic impact of individual institutional levers employed in public policy (cf. Aidis et al., 2012; Autio & Acs, 2010). This thesis intends to complement this research on individual policies by examining the implementation of several types of policies in the Innovation Union and the Danish reform programme. Individual policies are seen as part of a multilevel policy environment, and their potential effects are discussed in light of the interaction between European and national policy implementation. This is consistent with the view that it is possible to construct an environment that is conducive to entrepreneurial activity, *'because policies ensuring institutional transparency, predictable taxation, and secure property rights do not require policymakers to compute specific outcomes in order to achieve their intended goal of promoting entrepreneurial ventures'* (Koppl & Minniti, 2010: 240).

Based on these considerations, it is possible to outline an appropriate research method for the thesis. The described complexity of public policy has led to a growing use of policy assessment methods at the national and European level (Erawatch, 2009: 33; Nilsson et al., 2008: 336)[19]. These standard policy analysis methods are not very well suited for the current objectives, for two reasons. First, in spite of available data from dedicated statistical databases and European performance reviews, the

[18] This is supported by EU evaluations (e.g. CER, 2008: 2); it is *'hard to establish a clear link between the Lisbon agenda and Europe's economic performance [as it] depends on various factors that have little to do with Lisbon'*.
[19] E.g. the *Better Regulation* initiative (EC, 2006; Radaelli, 2007)

strategies are still being implemented and there is no adequate longitudinal data to support an assessment of the long-term impact. Second, the aim of this thesis is to explore *how* institutional environments for entrepreneurship are constructed through policy. In order to overcome the data availability problem, and to better focus on the implementation and potential impact of institutional change, Kuhlmann and Wollmann suggest basing the analysis of institutional reform on *'hypotheses that are theoretically derived and empirically informed through secondary analysis'* (2011: 484).

With regard to the theoretical basis, the literature review has described relevant contributions in the fields of institutional and entrepreneurship research. Thus, this thesis follows the recommendations of Bruton et al. (2010) and Veciana and Urbano (2008) to base the analysis of entrepreneurship on an institutional perspective. This agrees with the fact that both the Innovation Union and the Danish reform programme seek to improve the institutional environment for entrepreneurship. Building on this, the analytical framework includes the institutional environment as an endogenous determinant of entrepreneurship (cf. section 4.2).

With regard to the empirical basis, Kuhlmann and Wollmann (2011: 485) argue that the analysis of institutional policy must draw on *'pertinent information and data available from other sources in order to narrow the information gap; [i.e.] academic work as well as to reports of governmental, parliamentary and other commissions that may have been set up to prepare and monitor reform measures'*. This basis for selecting and collecting empirical data is well-suited for this thesis. As the next section describes, the analysis draws on secondary data from governmental and parliamentary sources, as well as quantitative and qualitative reviews from public and private organisations. Thus, the methodological paradigm of the thesis is distinctly pragmatic (Downward & Mearman, 2006). It responds to the emerging demand for more qualitative evaluations of European policy development (Hoerner & Stephenson, 2013: 702; Bachtler & Wren, 2006: 145-146).

The research method outlined here has certain similarities with the case study approach (Yin, 2009). Specifically, the study of the European policy model through the Innovation Union and the Danish reform programme resembles an *embedded case study* (Yin, 2009: 50). This involves in-depth study of a phenomenon, e.g. an economic policy (Yin, 2009: 30), as well as one or more sub-units of the phenomenon; the Danish strategy in this instance. This method is also based upon the combination of quantitative and qualitative evidence to allow for a better understanding of the case in question.

3.1.3. Empirical selection

It follows from the previous section that the analysis relies primarily on secondary data in the form of strategy documents, reports, reviews, and discussion papers from various relevant sources. These include European institutional bodies, national governments, regional actors, as well as internal and external reviews. Some of the most prominent sources include the European Commission, the European Council, the Centre for European Reform, the OECD, and the Danish Ministry of Science, Innovation and Higher Education.

In order to illustrate and substantiate certain arguments in the course of the analysis, the thesis also draws on a broad array of statistical databases and economic information from global organisations. These sources include the Global Entrepreneurship Monitor (GEM), the OECD and OECD-Eurostat collaboration on the Entrepreneurship Indicators Programme (EIP), the Global Entrepreneurship and Development Index (GEDI), and performance reviews from the World Economic Forum, the European Research Area Committee, and the Innovation Union Scoreboard.

In the case of both the quantitative and qualitative documents and reports, a broad set of evaluation criteria have been applied in the empirical selection (cf. Scott, 1990: 6; Stewart & Kamins, 1993: 17; Bryman & Bell, 2007: 575-576). These criteria can be divided into two main categories;

First, the credibility and authority of the organisations and institutional bodies have been evaluated. Thus, only organisations that are recognised as credible and representative in terms of European or Danish policy have been included in the thesis. In addition, the selection of sources has placed great emphasis on the authority of the organisations, in the sense that they must be recognised as relevant and potentially influential contributors to the economic debate. This is to ensure that the information does in fact reflect the current policy debate.

The second category has to do with the reliability and objectivity of the sources. This is particularly relevant since much of the available data comes from key policymakers themselves. For instance, a primary source for this thesis is the European Commission, including reviews done on the request of the Commission. Thus, it has been necessary to critically evaluate the information derived from these sources, given the high risk of bias and selective presentation in public documents (Bryman & Bell, 2007: 564). Therefore, to the extent possible, the thesis has used these mainly in regard to the structure and initiatives of the strategies; not as valid sources of analytical perspectives.

3.2. Analytical framework

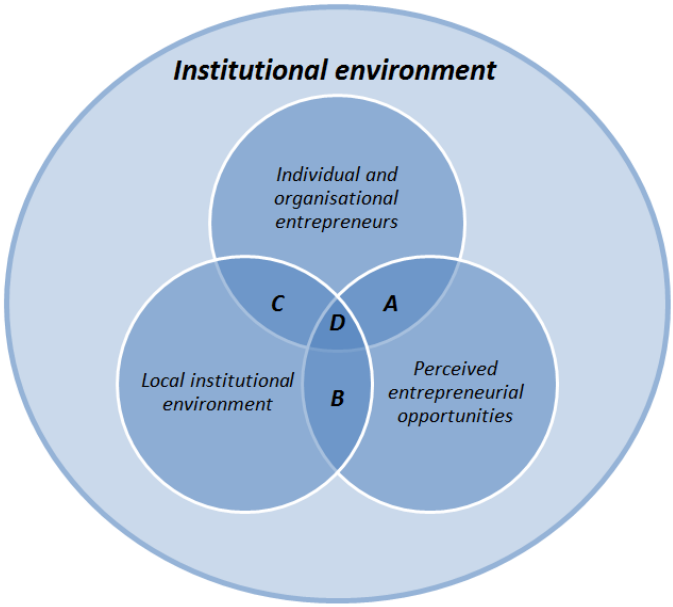
This section builds on the insights from the literature review in order to create an analytical framework for the thesis. The framework defines an expanded role for the institutional environment in the process of fostering entrepreneurship and growth in an economy. By incorporating the institutional environment as an endogenous aspect of the economic environment, it is possible to study how both policymakers and economic actors affect the potential for entrepreneurship through their interaction with the institutional environment.

3.2.1. The entrepreneur-institution-opportunity framework (EIO)

The configuration of the framework is inspired by and adapted from the model originally proposed by Busenitz et al (2003: 297). Their model was the result of a thorough review of the entrepreneurship field with the intention of defining the conceptual domain for entrepreneurship research. The intersection of individuals, opportunities and organisational forms within an institutional environment was defined as the central research domain, which is largely consistent with the individual-opportunity nexus (Shane, 2003). While their model was not designed as an analytical framework, Fortunato and Alter (2011: 4) argue that the model may serve as a platform for studying the interaction of entrepreneurs, opportunities, and local institutions within a broader environment in order to understand '*how local and regional institutions associated with entrepreneurship may also play a part in the development of opportunities along with individual entrepreneurs'*. Thus, they expand the original nexus of entrepreneurs and opportunities to also include the institutional environment as an endogenous variable, in the sense that regional economic actors can interact with the institutional environment to create new opportunities. In this section, these views are developed and expanded to create the EIO framework[20] (Figure 2).

[20] Note that the term *individual* is replaced by *entrepreneur* to denote how both individual and organisational agents can act entrepreneurially and as institutional entrepreneurs.

Figure 2 - The Entrepreneur-Institution-Opportunity Framework



The fundamental logic of the framework is that the rate of entrepreneurship in a given economy is dependent on the ability of potential entrepreneurs to exploit perceived economic opportunities. As recognised in the individual-opportunity nexus, institutional environments determine the expected value of discovering and exploiting existing opportunities (Shane, 2003; Eckhardt & Shane, 2010). Exogenous changes to the environment may influence the opportunities that can be perceived. This fundamental logic is maintained in the EIO framework. Thus, *institutional environment* refers to the overarching conditions and institutions that impact the entrepreneurial process. The formal part of this environment is influenced by European and national policymakers through institutional reforms such as those being studied here. The institutional conditions provide incentives and constraints for entrepreneurship in local economic markets[21] (cf. Sobel, 2008: 644; Wennekers et al., 2002: 41).

The local entrepreneurship process is constituted by the three overlapping categories in the model, all of which are derived from the literature review. The *individual and organisational entrepreneurs* category represents the amount of potential entrepreneurs in the local economy. This thesis does not accept the assumption that the supply of entrepreneurs is similar across countries. Instead, it adopts the view that the ability of individuals to act entrepreneurially is determined by their capabilities, as influenced for instance through education (Shane, 2003: 69; Leitão et al., 2011: 135), culture (Zwan et al., 2013: 809; Verheul et al., 2002: 22), and the availability of resources (Busenitz et al., 2003:

[21] Local refers here to any given national or regional economic environment.

297; Eckhardt & Shane, 2010: 63)[22]. The analysis examines how the Danish and European strategies ensure the capabilities of potential entrepreneurs.

The *perceived entrepreneurial opportunities* category represents the extent to which the conditions of the local economy enable the perception and/or creation of entrepreneurial opportunities. This is related to research on how the institutional environment impacts the type and characteristics of the perceived opportunities (Acs et al., in press: 3; Sine & David, 2010: 2). The institutional environment is assumed to influence the investment in new knowledge and the degree of knowledge exchange and collaboration (Acs, et al., 2009). In addition, it determines the incentives and ability of potential entrepreneurs to perceive or create opportunities on the basis of this new information, as well as to commercialise it to create growth and employment (Audretsch & Thurik, 2010: 17; Short et al., 2010: 56). The last point reflects the individual-opportunity nexus, where capable individuals perceive and exploit opportunities embedded in the overall institutional environment (labelled **A**). Based on this category, the analysis examines how the Danish and European strategies impact the opportunities for entrepreneurship and the conditions for exploitation.

The *local institutional environment* category refers to the set of institutions that are particular to the economic market in question, whether at the national or regional level. In other words, it represents the set of institutional arrangements that are specific to a particular country or region, as opposed to the broad institutional environment that imposes similar conditions across these economic markets. The rationale for including this local institutional environment is twofold. First, it shapes the economic context for local actors by enabling and constraining the perception and exploitation of opportunities (Huggins & Williams, 2011: 909); labelled **B** in the model. Second, economics actors are expected to be able to exert a greater influence on the local institutional environment through collaboration and institutional entrepreneurship (cf. Hung & Whittington, 2011; Garud et al., 2007: 960); labelled **C**. As the analysis will show, this category is important, because it captures the European focus on regional specialisation.

The interaction of the three categories within the broader institutional environment represents the rate of entrepreneurial activity and potential economic growth (labelled **D**). This is not proposed as a full model of entrepreneurship in an economy, but it represents some of the key determinants of entrepreneurship that are amenable to the influence of policy and institutional change. The construct validity of this model is compromised by the fact that several determinants of entrepreneurship have

[22] Resources are defined broadly as the necessary means for opportunity exploitation; e.g. availability of capital and the ease of creating an organisation.

been excluded. However, the included constructs are assumed to represent key areas of impact for institutional reform. The relevance of the constructs is based on the literature review. It is recognised that the model cannot claim a high degree of internal and external validity, due to the problems of causality and conceptualisation described above (Yin, 2009: 40).

3.2.2. Epistemological and ontological assumptions of the analytical framework

The analytical framework builds on certain ontological and epistemological assumptions that shape the analysis and the nature of the conclusions. The primary behavioural assumption of the model is that economic actors have agency within the institutional and economic environment. This assumption diverges to some extent from much of the National Innovation Systems literature (Acs et al., in press). Implicit in this perspective is the understanding that the environment constrains and enables the actions and interpretations of individuals, but that actors remain reflexive within these environmental constraints (cf. Seo & Creed, 2002: 223; Leca et al., 2008: 7).

This fundamental assumption reflects a constructivist view, which *'challenges the suggestion that categories such as organization and culture are pre-given and therefore confront social actors as external realities that they have no role in fashioning'* (Bryman & Bell, 2007: 22). Thus, the institutional environment is not understood as a set of brute facts that structure perceptions and actions. Rather, the institutional dimension is interpreted and imbued with meaning in economic and social contexts (Jupille, Caporaso & Checkel, 2003: 14). The level of heterogeneity or institutionalisation in a given field determines the extent to which actors are structured in their perceptions and actions; competing logics may in turn open up the institutional field to entrepreneurial change (Leca et al., 2008: 7). The ontology of the framework may be termed *'mutual constitution'* (Jupille et al., 2003: 14), which reflects the fact that neither structure nor individuals can be 'reduced to the other'. This paradigm enables the inclusion of social and institutional structures in the study of entrepreneurship, while maintaining the agency of individuals.

3.2.3. The structure of the analysis

As described in this chapter, the analysis first investigates the overall policy priorities of the Lisbon Strategy, and the governance mechanism used to ensure implementation and commitment. The aim is to identify the primary explanations for the failure. Second, the Europe 2020 framework and, in particular, the Innovation Union are examined. The structure and general objectives of the Innovation Union are analysed in order to determine how the Lisbon problems have been addressed, and to

identify other potential concerns in the objectives and implementation of the strategy.

Building on this initial analysis, the Innovation Union and Danish reform programme are examined in depth to understand how the European and national strategies seek to improve the institutional conditions for entrepreneurship and economic growth. This examination is structured on the basis of the three analytical perspectives in the EIO framework. First, the three perspectives are applied to the Innovation Union, followed by a similar analysis of the Danish reform programme. On the basis of observations and insights from this analysis, the relation of the strategies to the economic growth objective is discussed.

4. Analysis of contemporary frameworks

This chapter examines the European model of economic policy coordination, which underlies both the Lisbon Strategy and the Europe 2020 Strategy. The initiatives and governance structure of the Lisbon Strategy are addressed first in order to identify the primary reasons for its failure.

4.1. The failure of the Lisbon Strategy

The Lisbon Strategy aimed to improve employment, growth, and international competitiveness by means of considerably broad reforms. A broad framework of policy initiatives was defined in order to meet these objectives. The core economic initiatives focused on coordination of macroeconomic and fiscal policies; research incentives and finance; completing the internal market and European Research Area; enabling entrepreneurial ventures by improving technical and regulatory conditions; and increasing labour utilisation through active employment policies (EC, 2000: 2-3; ECL, 2000). These initiatives resulted from public debate initiated by the *Green Paper on Innovation* (EC, 1995). The breadth indicates how stakeholders recognised the need to address multiple framework conditions (cf. EC, 2004: 5);

'While confirming the main challenges in the Green Paper, respondents highlighted a wide array of areas for action, making it clear that there is no silver bullet for creating a more entrepreneurial Europe [that] appears to derive from a complex set of mutually interacting framework conditions'

The strategy reflected an implicit optimism with respect to the ability of European entrepreneurship to address the *'quantum shift resulting from globalisation and the challenges of a new knowledge-driven economy'* (ECL, 2000: 1). It was assumed that Europe would be particularly suitable for entrepreneurial policy initiatives, due to the availability of comparatively skilled labour, potentially excellent research institutions, and the promise of cultural diversity as a source of differentiated knowledge and innovation (ECL, 2000: 3; EC, 2005a: 5; Thurik, 2009: 234). The proposed method of implementation and governance for the strategy also reflected an optimistic expectation; the aim was institutional and economic convergence of European economies. The intent was to implement the proposed policy initiatives in all member states (EC, 2004: 6; Samardžija & Butković, 2010: 5). Internal reviews pointed out that in order for the intended reforms to be achieved, it was necessary *'that these objectives and reforms are taken on board by all the various players'* (EC; 2005b: 14). In some policy areas, the European Union aimed to use its supranational position to implement broad institutional reforms. For instance, the goal of improving the regulatory conditions for entre-

preneurship involved EU efforts to reduce the administrative and financial costs of international collaboration (EC, 2000: 2-3). Most policy reforms also called on member states to support European initiatives by working toward certain goals, such as *'the transposition of Community legislation into national law'* or annually increasing per capita investments in human resources (ECL, 2000: 17). In addition, the strategy established uniform, quantitative targets for member states, including an employment rate of 70% and national R&D expenditure of 3% of GDP (EC, 2004: 11).

4.1.1. The governance structure of the Lisbon Agenda

The Lisbon Strategy was framed by broad dialogue on the need for a coordinated approach to policy implementation (EC, 1995: 46; 2004: 6). This was based on the lack of European political authority to coerce member states. The implementation of the Lisbon initiatives therefore came to depend on the involvement of national policymakers (ECL, 2000: 7; EC, 2005b: 14). This represented a fundamental shift in European economic governance toward '*soft law governance mechanisms such as the Open Method of Coordination* (Samardžija & Butković, 2010: 4; cf. EC, 2004: 6). This governance framework (OMC) was expected to ensure that the main reforms were properly adapted and implemented at the national level. It was intended as an alternative to uniform rules and delegation. The necessary coordination would be achieved by embedding national policy formulation in a set of common, European policy guidelines (ECL, 2000: 37);

- Fixing common guidelines for national policies
- Developing indicators of national performance to compare best practice
- Asking countries to adopt National Action Plans to implement the guidelines
- Joint monitoring and review of results[23]

The national adaptation and implementation of the common objectives relied on best practice policy benchmarks being shared among member states (EC, 2000: 1; ECL, 2000: 37-38). The legislative competence of the European Council was thus replaced by a more coordinating role (ECL, 2000: 7). In turn, national actors were given some room to adapt the broad initiatives to local conditions. Yet, this national codetermination and its expected economic results were not achieved.

4.1.2. The failure of Lisbon as the basis for contemporary policy

In the initial phases of the strategy, the common objectives were used to construct specific policies to be implemented at the national level (ECL, 2000: 37; Samardžija & Butković, 2010: 5). Despite

[23] Cited from Sapir et al. (2003: 84), who were skeptical of this governance model.

progress on certain objectives, this first phase failed to deliver on the key measures of improvement. This has been attributed primarily to unclear responsibilities and the complexity of the objectives (Danish Technological Institute, 2005: 4). Reviews from the EU High Level Group[24] concluded that policy revisions were necessary in order to restructure the framework to focus on quantitative goals for growth and employment. This occurred in 2005 with the formal redefinition of the strategy (EC, 2005b: 3-6; 2005c)[25]. Yet, the most relevant implication of this revision was the reorganisation of governance and national involvement. Up until this point, the OMC had worked mainly though best practice policies, with the aim of facilitating member state convergence on the Lisbon objectives. With the revision, it was restructured to formally recognise the competence and mandate of member states to formulate national and regional strategies (EC, 2005c; Audretsch et al., 2009: 482);

Table 1 - Lisbon Strategy Performance	2002	2003	2004	2005	2006	2007	2008	2009	2010
R&D Expenditure - EU27 Percent of GDP	1.87	1.86	1.83	1.82	1.84	1.84	1.92	2.01	2.00
Employment Rate- EU27 Age 15-64	62.4	62.6	63.0	63.4	64.4	65.3	65.8	64.5	64.1
Summary Innovation Index - EU27 2010 Time Series	N/A	N/A	N/A	N/A	0.505	0.518	0.517	0.515	0.516
Summary Innovation Index - EU27 2008 Time Series	N/A	N/A	0.429	0.431	0.447	0.466	0.475	N/A	N/A
Summary Innovation Index - EU27 2006 Time Series	0.45	0.45	0.45	0.45	0.45	N/A	N/A	N/A	N/A

Source: Eurostat, 2013; EIS, 2006; 2008; IUS, 2010

This turn to multilevel governance and implementation was strengthened in later revisions of the Lisbon framework (EC, 2008a: 2; 2008b: 3; Ágh, 2010: 38). Yet, progress remained unsatisfactory. Table 1 lists the annual average member state expenditure on R&D as a percentage of GDP; the Lisbon Strategy had an explicit goal of 3%. The annual employment rate is also listed, for which the Lisbon Strategy aimed at 70%. It is clear that neither of these primary targets was met. In particular, the R&D expenditure increased only marginally. In a Lisbon Strategy review by the World Economic Forum (2010), performance and competitiveness in eight key reform areas was shown to have

[24] Cf. the Kok Report (Kok et al., 2004)
[25] Cf. Johansson et al. (2007: 19-23) for a detailed discussion of the midterm review.

remained behind U.S. and East-Asian performance (Appendix B). It is possible to identify some convergence between the EU27 and the U.S., but the performance scores indicate that important differences remain between member states, specifically old (EU15) and new (EU27[26]). Thus, the poor results hide the fact that several EU countries are either on par with or exceed U.S. performance. For instance, seven EU countries[27] outperformed the U.S. and East Asian countries in most areas of competitiveness (Appendix C), and Finland, Sweden, and Denmark were the only EU countries to exceed the 3% R&D mark by 2010. These well-performing EU countries also rank at the top of the European Innovation Scoreboard (EIS), an instrument developed to track performance on the Lisbon Strategy (EIS, 2001: 3). The EIS ranks member states on innovation performance and the viability of their research and innovation systems. Many key indicators are measured to produce a combined Summary Innovation Index score (Appendix D), which divides member states into four performance categories. Of the seven member states on par with East Asia and the U.S., four make up the entire group of high performance countries, the *innovation leaders*; the other three are placed in the second category (IUS, 2010: 4; Appendix E). Yet, as shown in Table 1, the aggregate average for the Summary Innovation Index shows no extraordinary increase in innovation and entrepreneurship, aside from the shift between time series which is due to slight changes in country and variable compositions (EIS, 2006: 38-45; 2008: 55-58; IUS, 2010: 65-68). This lack of progress is consistent with results from the 2011 GEDI index. The seven, high-performing member states discussed here are ranked among the 18 leading countries globally, and it also indicates a large divergence among the worst and best performers in Europe (Szerb et al., 2013: 18).

Unsurprisingly, the goal of becoming the *'most dynamic and competitive knowledge-based economy in the world'* has been widely regarded as unsuccessful (EC, 2013c: 3)[28]. Proponents of the Lisbon Strategy have emphasised the disruptive effects of the sovereign debt crisis as the main explanation for the overall failure (EC, 2010a: 7). However, scholars maintain that the onset of the crisis cannot adequately explain the disappointing outcomes (Stahl & Spinaci, 2010: 59), which is corroborated by the unconvincing progress demonstrated above. Performance reviews have revealed that prior to the economic crisis, the strategy had led to only '*mixed results, unevenly distributed among Member States and falling distinctly short of its core mission of improving Europe's competitiveness, productivity and innovation capacity"* (Cohen-Tanugi, 2010: 80). Indeed, the EU has stated that *'there has simply not been enough delivery at European and national level [which] also results*

[26] Cf. Appendix B. Note that the 2013 accession of Croatia is omitted.
[27] Sweden, Finland, Denmark, the Netherlands, Luxembourg, Germany, and Austria.
[28] As argued by van Ark, O'Mahony & Timmer (2008: 26) and Cameron et al. (2007: 33) before the end of the strategy.

from a policy agenda which has become overloaded, failing co-ordination and sometimes conflicting priorities' (EC, 2005b: 3-4; 2013a: 5-6).

Despite these shortcomings, the economic crisis no doubt drowned out some gradual improvements in the governance and policy focus of the Lisbon framework in the late stages of the strategy (cf. EC, 2010a: 7; Ágh, 2010: 35-42). For instance, multilevel governance was improved through an emphasis on regional cohesion and better regulation (EC, 2008a; 2008c). This motivated European policymakers to construct Europe 2020 as a continuation of the Lisbon Strategy. In relation to this, the thesis identifies two major shortcomings of the Lisbon Strategy, aside from the economic crisis, which the Europe 2020 is forced to overcome.

The first major shortcoming of the Lisbon Strategy has to do with the shared guidelines and objectives. These were defined to support member state convergence on European economic objectives. Though the responsibility for defining national strategies was partly delegated to the member states, their strategies were expected to conform to the objectives and integrated guidelines defined in the overarching Lisbon framework (EC, 2005d: 9; cf. Mrak, 2010: 72). In this context, it is relevant to note that both the Centre for European Reform and external reviews of the Lisbon outcomes have demonstrated how these undifferentiated guidelines, combined with soft governance, led to a lack of compliance, as well as diverging performance between the best and worst member states over the course of the strategy (CER, 2010: 3-11; Pisani-Ferry & Sapir, 2006: 12-13)[29]. In turn, the progress that was actually achieved, particularly in large member states, has been shown to stem primarily from domestic policy initiatives (CER, 2008: 116-117). There was *'no more policy convergence within the EU than there has been between the EU and the rest of the Organisation for Economic Co-operation and Development"* (CER, 2010: 3; cf. Samardžija & Butković, 2010: 7).

The second major criticism has to do with the underlying expectation that all member states are able to adhere to the overall objectives and goals. It was observed that the OMC governance method has been unable to ensure the necessary member state commitment to European objectives (EC, 2005b: 3-4; 2010e; CER, 2010: 92-93; Sapir et al., 2003: 156). This has been attributed to the lack of a *'solid legal basis, a weak decision-making capacity because of the requirement of consensus, and decisions limited to soft law outside the realm of Community hard law'* (Cohen-Tanugi, 2008: 47). However, these criticisms of soft governance cannot sufficiently explain the identified problems. The undifferentiated objectives and guidelines failed to foster commitment among member states,

[29] Cf. Appendix B and F.

because they were not adapted to the particular economic models and levels of development in individual countries. In this perspective, the weakness of the OMC is not related to the soft law aspect per se, but rather to the fact that member states are expected to define national strategies that adhere to and are measured in terms of inappropriate objectives. Thus, the real failure of the OMC is the lack of effective policy coordination and commitment, which resulted in member states selectively opting in and out of the common objectives, according to their existing national priorities and capabilities[30] (cf. CER, 2008: 2). Europe 2020 must consider these governance issues in order to ensure better policy adaptation and broader commitment to the main economic and social objectives of the European strategy. It is also clear that the solution must go beyond the question of soft and hard governance. It must address the question of how national strategy can be made to incorporate and realise the European objectives. Thus, the goal of institutional and economic convergence and prosperity requires that '*a progressive growth policy must be combined with a new mode of cooperation - in fact, it depends upon it'* (Kellermann, Ecke & Petzold, 2009: 4). This thesis shows that the Innovation Union has not gone for tighter integration, as others have proposed (Lundvall & Lorenz, 2012: 347-349), but rather improved structures for involving and supporting regional and national actors in the strategy process.

[30] Consider here the previous point on how the sovereign debt crisis exacerbates existing differences in administrative and financial capabilities of individual member states.

4.2. The Europe 2020 framework

The formulation of the Europe 2020 framework was based mainly on analyses of the shortcomings and achievements of its predecessor, including a comprehensive understanding of the economic and political landscape left behind (EC, 2010a: 7-10; 2013c: 3). The most pressing concern of the policy framework was of course to stem the consequences of the financial and sovereign debt crisis, but the economic objectives of Lisbon were retained as the medium-to-long term priorities (EC, 2013c: 1). It is important to note that the choice to maintain the economic objectives was consistent with several reviews done to inform the post-Lisbon strategy. These found no reason to drastically change the core objectives (e.g. CER, 2010: 91-92; Mrak, 2010: 74). In a series of studies commissioned by the European Policy Centre, this was further supported, as they found no relevant problems with the general Lisbon objectives (Samardžija & Butković, 2010: 23; Goulard & Bailey, 2010: 53). These studies pointed to the timeliness of the objectives and focused instead on the need to consider the economic differences among member states, as well as important problems in the OMC as an implementation mechanism (Mrak, 2010: 71). This is consistent with the short-comings identified in the previous section.

4.2.1. The Innovation Union

The primary objective of the Innovation Union is to *'improve framework conditions and access to finance for research and innovation so as to ensure that innovative ideas can be turned into products and services that create growth and jobs'* (EC, 2010a: 5). While it represents only one aspect of the overall strategy, it is the flagship initiative that most directly addresses the European economic challenges. Thus, the Innovation Union is a direct response to the economic objectives that are common to the Europe 2020 and Lisbon strategies; i.e. fostering employment and growth through entrepreneurship and innovative start-up. However, before considering the implementation and economic consequences of the Innovation Union, the structure and governance mechanism of the strategy must be examined. This is done in order to determine how it takes account of the shortcomings identified above in the Lisbon Strategy. Thus, in the rest of this section, the main policy areas of the strategy are outlined, along with the overall governance structure.

The aim of the Innovation Union is to develop a favourable environment for entrepreneurial activity and growth (EC, 2010b: 7; 2010c: 6). Thus, the strategy seeks to improve the process from basic research to commercialisation for both individual and organisational entrepreneurs. At the European level, this is addressed through several initiatives (cf. EC, 2010b: 13-19). One example is the aim of

improving access to finance for innovative firms by enabling cross-border venture capital flows[31], and by strengthening the pairing of innovative firms and investors across member states[32]. Another example is the establishment of the single innovation market, which involves demand side reforms to improve the market pull and opportunities for entrepreneurial activity. For instance, standard-setting across the EU will be accelerated in order to support transnational collaboration. Member states are expected to increase their national budget allocations to pre-commercial procurement of innovative products and services in order to bolster opportunities and demand for entrepreneurship (EC, 2013d: 19)[33]. The strategy is not only concerned with facilitating entrepreneurship and start-up of innovative firms. It emphasises the need to base entrepreneurship and innovation on important societal challenges and areas of comparative advantage (EC, 2010b: 7-12; 2013c: 3). For instance, the strategy contains several proposals for so-called European Innovation Partnerships (EIP). These partnerships are based on particular societal problems and/or opportunities, identified through the collaboration of a broad set of relevant actors; e.g. European bodies, national governments, private companies, and interest organisations (EC, 2010b: 22). In these forums, the actors analyse the challenges in order to identify avenues for possible solutions. This may for instance result in new or intensified research efforts and investment; institutional or regulatory change to remove barriers or enable new ventures; or changed funding procedures (EC, 2010b: 22; 2011b: 13). As demonstrated in section 4.3, arrangements such as these constitute an important mechanism for the implementation of the Innovation Union.

These examples are in no way exhaustive. The initiatives and reforms of the Innovation Union span a very broad spectrum, including incentives for innovation and entrepreneurship, improved property rights; technical and innovative education; cross-national partnerships; and reform of regional innovation systems to promote business-research collaboration (EC, 2010a: 12-13; 2010b: 2-3; 2013b: 28-29). Relevant initiatives are presented and discussed in the analysis of the implementation and economic impact of the Innovation Union. Before getting to that, the next section examines how the governance mechanisms of the Innovation Union have taken account of the Lisbon problems.

4.2.2. The Innovation Union as a solution to the failure of Lisbon

While the initiatives described above were implemented mainly by the European Union, most of the

[31] Cf. the recently proposed regulations of European Venture Capital Funds (EC, 2011a).
[32] Cf. the expert group report on cross border matching of investors and innovative firms (EC, 2012a).
[33] This will also support transnational procurement and problem-based research; i.e. the joint Danish, Dutch, Swedish, Finnish, and British call for robotics solutions to shared challenges in elderly care (EC, 2013d: 19).

policy areas in the Innovation Union are defined as either partly or entirely within the scope of national responsibility. This indicates the realisation among European policymakers that the general growth and employment objectives can only be achieved through complementary reforms at European and national levels (EC, 2010a: 27-30). This is consistent with the thesis discussion of the Lisbon Strategy, which indicated the need for a multilevel approach to the implementation of differentiated policies. Communication from the European Commission (2013a: 3) has stressed the importance of enabling national and regional actors to participate in the realisation of the European strategy. Thus, *'the structural weaknesses in Europe's economy exposed by the crisis can only be addressed by moving ahead with structural reforms: reforms that are based on national efforts, but build on European assets such as the single market, the common trade policy and other EU-level policies'*. Entrepreneurship and economic growth are expected to result from the combined effects of reforms at European, national and regional levels. While the national and regional reforms are expected to align with the objectives and common targets of the European framework (EC, 2010a: 5; 2010d: 5), it is at the same time recognised that member state reforms must be adapted to local conditions and strengths (EC, 2010c: 31).

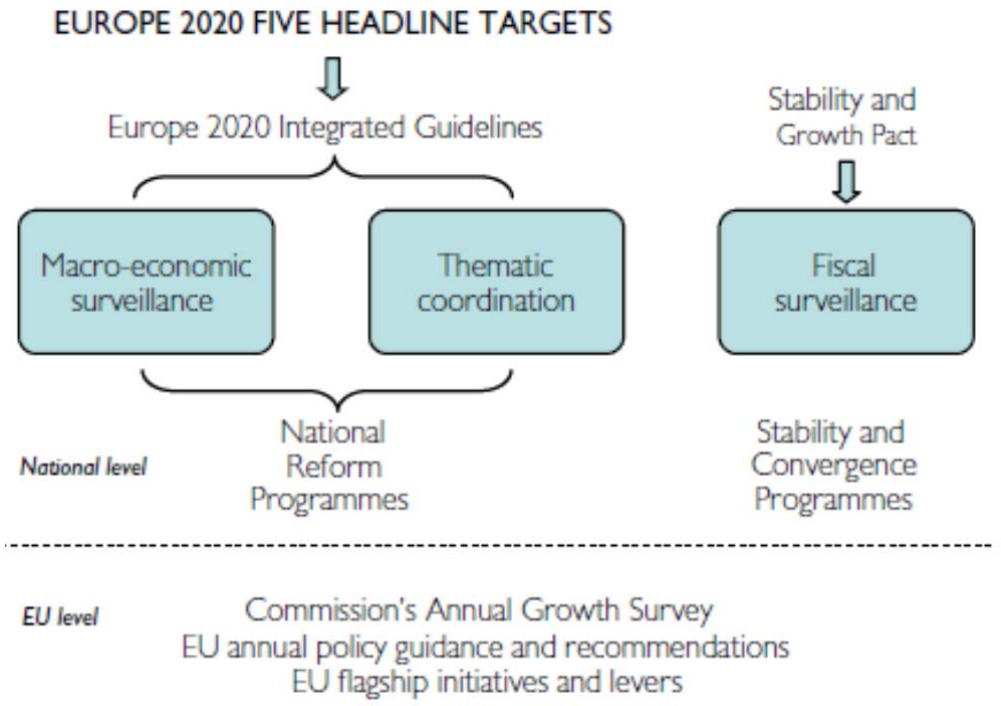


Figure 3 - Governance of the Europe 2020 Strategy (EC, 2010d: 2)

The point that the European economic objectives cannot be met without national participation is clear in the revised governance and coordination framework of the Innovation Union (Figure 3). In it, the European Council and Commission take on a mainly guiding and coordinating function. They define and implement the broad institutional framework for entrepreneurial activity. However, the concrete strategy initiatives are implemented mainly through national reform programmes. National governments are expected to prepare an annual reform programme that explains how the economic objectives of the framework will be pursued. In addition, they must include a strategy for macro-economic stability and convergence (SCP), which describes how the given member state will ensure fiscal stability and long-term sustainability of public finances (EC, 2010d: 5-6).

In the Lisbon Strategy, member states were also given some strategic and executive responsibility through the OMC. However, the responsibility and latitude of member states has increased greatly. Figure 3 indicates how the European function has turned to *thematic coordination,* which involves reviewing and providing recommendations for the national reform programmes (EC, 2010a: 27-30; 2010b: 30-31)[34]. Thus, the new governance framework has clearly not adhered strictly to those post-Lisbon critics, who have advocated a governance structure with more formal implementation power for the EU relative to member state governments (Lundvall & Lorenz, 2012: 347-349; Ágh, 2010: 52-54; Kellermann et al., 2009: 4). In fact, quite the opposite has happened; the governance framework has been revised to not only allow for national participation, but to formalise and encourage it outright. National involvement is recognised as an important means of ensuring economic growth and entrepreneurship, because it provides a way of translating the European objectives to concrete initiatives that are consistent with the economic conditions and comparative advantages in individual member states and regions (EC, 2010c: 31; cf. Estrin et al., 2013: 565).

The first shortcoming of the Lisbon Strategy had to do with the low commitment that resulted from relatively undifferentiated guidelines and objectives. It hindered the adaptation of objectives to local conditions. In contrast, the Innovation Union encourages and enables member states to differentiate initiatives. This is supported by the described thematic coordination method, which allows for better EU guidance and recommendations to member states in the formulation of their national reform programmes (EC, 2010a: 33; 2010d: 2). This governance process has been strengthened even further by a new policy cycle for economic coordination; the *European Semester*. This cycle coordi-

[34] The national programmes are compared with the current progress on the Europe 2020 objectives, as evaluated by the *Annual Growth Survey* (EC, 2010d: 7-8).

nates the interaction between European policy recommendations and the formulation of national reform programmes. Based on an annual survey of the overall strategy progress, policy guidance is provided to member states in order to assist with the national reform programmes and budgetary objectives. The programmes are then submitted to the Commission for review, which leads, in turn, to new country-specific recommendations. The main contribution of the European Semester is the integration of medium-to-long term growth objectives with the short-term budgetary goals, as a way of making member states address the aftermath of the economic crisis (EC, 2010e).

This improved differentiation and support does not automatically resolve the second shortcoming of the Lisbon Strategy. This had to do with the fact that national commitment and economic outcomes do not depend only on improved policy recommendations and guidance. It also depends on the capacity of member states to implement and support the recommended reforms. Although the new governance framework and policy cycle assist member states in the prioritisation of relevant policy reforms for entrepreneurship and growth, the actual formulation and implementation depends on the ability of national and regional bodies to either reform existing innovation systems and institutions that support entrepreneurial activity, or to construct new institutions to support these recommended reforms[35]. Thus, viewing the Innovation Union in isolation, it is reasonable to argue that it lacks a way of ensuring implementation at the national and regional level, despite the improved governance mechanism. This should be considered in light of the fact that the Innovation Union has put the regional level at the forefront of the strategy, both as a way of recognising regional differences and to ensure convergence across all regions (EC, 2010a: 12-13; 2010b: 20-22). Thus, European ministers have recognised that *'the objectives of the EU defined in the Europe 2020 Strategy for smart, sustainable and inclusive growth can only be achieved if the territorial dimension of the strategy is taken into account, as the development opportunities of the different regions vary'* (ECL, 2011: 4).

As a consequence of this dependence on national and regional capacities and institutional environments, there is a risk that certain nations and regions in Europe will not be up to the task of defining and implementing the ambitious reforms. This thesis argues that the Innovation Union risks the so-called '*regional innovation paradox*'. This refers to '*the apparent contradiction between the comparatively greater need to spend on innovation in lagging regions and their relatively lower*

[35] This observation is corroborated by a European Policies Research Centre study, which concludes that regions *'set out from different starting points with differences in their initial conditions, notably in terms of institutional capacity* (2012: 1); in turn, *'some regions lack fundamental capacities to develop an innovation strategy and lack the tools to prioritise regionally-based innovation actions'* (2012: 47).

capacity to absorb public funds earmarked for the promotion of innovation and to invest in innovation related activities compared to more advanced regions' (Oughton, Landabaso & Morgan, 2002: 97). The main explanation for the existence of this paradox has nothing to do with a poor availability of funds in lagging regions. Instead, it has to do with *'the nature of the regional innovation system and the institutional capacity in these regions*' (Grillo & Landabaso, 2011: 550). This paradox can be demonstrated in the Lisbon Strategy by considering available data on regional innovation performance, R&D expenditure, and the distribution of Regional Policy funds for innovation and new firms (2010f: 3-6; EC, 2011b: 3-5)[36]. When compared, these three indicators show considerable geographic overlap. Thus, regions with relatively high innovation expenditure and performance also absorb larger amounts of available funds. The Commission has recognised that this skewed distribution exists and that it is '*reinforcing a virtuous circle of innovation-driven growth'*. It is therefore necessary to ensure *'that all regions are capable of absorbing and putting to effective use innovation'* (EC, 2010f: 5)[37]. In other words, if the goal of economic convergence and growth is to be realised, all regions must be capable of attracting and supporting a certain level of entrepreneurial activity. This is necessary in order to commercialise available knowledge, attract new investments, and create growth and employment through new start-ups (Delmar, Wennberg & Hellerstedt, 2011: 201; Acs et al., 2008). It is therefore relevant to consider if the Innovation Union and the national reform programmes are able to overcome the regional innovation paradox in order to improve conditions for entrepreneurship across all member states and regions

In order to explore the implementation and economic consequences of the strategies, the following sections discuss relevant initiatives in the Innovation Union and, subsequently, in the Danish reform programme on the basis of the EIO framework outlined in chapter 3. It is demonstrated how the impact and effect of institutional reforms are determined by national and regional actors, as well as the existing institutional environment.

[36] See Appendix F for concentration maps for all three variables.

[37] This observation is corroborated by data compiled in the Regional Innovation Scoreboard 2012 (EC, 2012b: 22), which indicates higher regional variation in innovation performance compared to national variation.

4.3. Implementing the Innovation Union

This section builds upon the previous discussion of the Innovation Union. Relevant initiatives are discussed in accordance with the EIO framework. The selected initiatives do not exhaustively cover all facets of the European strategy. However, they do represent a significant part of the Innovation Union Commitments, which constitute the backbone of the strategy (EC, 2010b).

4.3.1. How the Innovation Union ensures the capabilities of potential entrepreneurs

In terms of the analytical framework of the thesis, the concept of entrepreneurial capabilities refers to the ability of entrepreneurs to perceive and exploit economic opportunities within the institutional environment. It is also related to the ability of entrepreneurs to interact with and change the institutional environment as a way of enabling new opportunities (Hung & Whittington, 2011: 528). In the literature review, the ways in which policy impacts individual capabilities involved education and the development of a socio-cultural environment in support of entrepreneurial activity (Verheul et al., 2002: 22; Zwan et al., 2013: 806-809).

In the Innovation Union, the socio-cultural environment is recognised as an important determinant of entrepreneurial activity and growth. It is accepted that the objectives of employment and economic growth are dependent on *'thorough, far-reaching cultural change'* (EC, 2013b: 4). In the 2012 State of the Innovation Union report, the European Commission emphasised the need to *'foster the specific development of an innovation and entrepreneurship culture'* (EC, 2013d: 13). It is worth noting, however, that an entrepreneurial culture is expected to arise as a consequence of the educational reforms that aim to improve the skills and capabilities of potential entrepreneurs (EC, 2012c: 2; 2013d: 13). This is in line with the view of the OECD (2010: 11) that *'education and training policies should help foster an entrepreneurial culture by instilling the skills and attitudes needed for creative enterprise'*, even though scholars remain unsure about the impact of education on entrepreneurial intentions and preferences (Zwan et al., 2013: 807).

As stated in the *Rethinking Education* report (EC, 2012c: 3), the educational initiatives for entrepreneurship are mainly defined and implemented at the member state level, in line with the national recommendations from the European Semester[38]. However, several supporting initiatives are carried out at the EU level. One example is the *Knowledge Alliances* initiative, which is a core commitment of the Innovation Union (EC, 2010b: 9; 2012c: 17). The alliances represent structured collaboration

[38] As discussed below in section 4.4.1.

between large and small businesses, universities, research centres and other educational institutions with the purpose of delivering *'new curricula and courses that develop new and innovative ways of delivering education and knowledge'* (EC, 2011c: 2). This is meant to ensure that potential entrepreneurs and innovators acquire necessary skills, including *'adaptability and entrepreneurial, creative, and innovative attitudes'* (EC, 2011c: 2).

There is growing evidence that the Knowledge Alliance initiative has become an important factor in the development of entrepreneurial and innovative skills at the national level. In 2012, the second call for projects led to more than 100 applications. For instance, the Dutch Zuyd University in collaboration with universities and companies from the Netherlands, Slovenia, and the Czech Republic, obtained co-funding for the *European Real Life Learning Lab Alliance*. It aims to give students and young entrepreneurs the opportunity to work and learn under the mentorship of industry and university professionals to obtain the technical knowledge and entrepreneurial skills necessary to drive the transition to sustainable energy (EC, 2013e).

Another relevant Innovation Union Commitment is the E-Skills programme. It has the purpose of improving education and the development of ICT-based innovation skills for entrepreneurs (EC, 2011d: 2; EC, 2010b: 10). Partnerships between governments, industry, and research are set up to monitor and address the supply and demand of these skills. This leads to the development of new educational guidelines, as well as awareness campaigns based on role models and information on possible careers (EC, 2011d: 2). One relevant partnership example is the *e-skills UK* programme. It involves high growth digital SMEs in England in collaboration with large, international firms such as IBM, Accenture, and Royal Mail. The purpose of this partnership is to define and promote educational strategies to meet the needs of digital companies and allow them to innovate and grow (Sector Skills Council, 2013).

Projects similar to those described here can be found in several European member states. They have a clear link to the EU view that *'the starting point for the Innovation Union is to create an excellent, modern education system in all Member States ... so that skills better match industry needs'* (EC, 2010b: 8-9). The perceived importance of developing technical and entrepreneurial skills to support and stimulate entrepreneurial activity is consistent with the research underlying the analytical framework (e.g. Acs et al., 2008: 229; Levie & Autio, 2008: 31; Shane, 2003: 69). Thus, increasing the educational attainment and relevant skill set of individual actors is expected to impact the ability to create, perceive, and assess the value of opportunities in a given economic environment. It is also

expected to improve the capability to define a strategy and acquire resources needed for exploitation (Bowen & De Clercq, 2008: 750-751; Wennekers et al., 2002: 40-41; Shane, 2003: 69-75). Similar arguments are made for the (expected) entrepreneurial culture (Verheul et al., 2002: 22; Henrekson & Stenkula, 2010: 10).

The expected benefits are not, however, simply a matter of course. In the described initiatives, the definition and implementation of concrete initiatives is driven by national and regional actors. This is consistent with the previous discussion on governance, which showed that the implementation of member state reforms depends on national and regional competences; even though the Innovation Union is able to provide recommendation and certain institutional conditions to underpin the reform efforts. In the Knowledge Alliance and E-Skills cases in this section, the EU has set out an over-arching strategic goal to foster entrepreneurial skills and culture, as well as provided the framework and co-funding for national and regional action. However, the quality and effect of the concrete projects depends on institutional actors. These actors use the framework conditions as a springboard to collaborate and address perceived challenges or opportunities in their given environments. In the described cases, the firms and universities perceived a lack of technical and entrepreneurial skills across their respective countries that were considered necessary to address the issues of sustainable energy and future growth prospects, respectively.

It is important to note that these actors are not responding to any short-term profit opportunities, nor do they directly resolve the perceived problems. Instead, they contribute to the institutional environment by working to change the educational system. This is expected to lead to individuals with the necessary entrepreneurial and technical knowledge to understand and resolve existing problems, as well as perceive related, new opportunities. In turn, this would result in innovative solutions being commercialised to create employment and growth; as reflected in the statement that *'education, and its links with research and innovation, plays a crucial role [in] providing the highly skilled human capital […] that Europe needs to create jobs, economic growth and prosperity'* (EC, 2011d: 2).

It is argued here that the framework conditions provided by the EU may be classified as field-level enabling conditions, as discussed in the literature review (Leca et al., 2008: 7). In case of the Knowledge Alliances and E-Skills programme, the 'framework conditions' refer not only to the described arrangement set up by the EU to allow actors to apply and collaborate. They refer also to the underlying strategic direction and the *'major societal challenges'* identified and communicated by the EU through their recommendations for national reforms (EC, 2010b: 7). Thus, both the EU and national

reforms are expected to address challenges such as climate change, sustainable growth, and demographic change. Solutions to these problems will come from innovation (EC, 2010b: 6); innovative ideas can then be commercialised to create growth and jobs. By providing framework conditions, as well as guidance and funding, the EU enables actors to take on the role of institutional entrepreneurs. In this role, actors work to create institutional changes that address both the societal challenges and the future exploitation of perceived entrepreneurial opportunities (cf. Hung & Whittington, 2011: 526; Pacheco et al., 2010: 975).

In the following sections, this idea of institutional entrepreneurs as important drivers of economic and institutional change is elaborated. This is done in order to demonstrate how the implementation and effect of the Innovation Union are determined by the capabilities of local, institutional actors and the concentration of them (the degree of regional clustering).

Before moving to the next section, it should be noted that most of the policies described in this analysis are accompanied by reforms of the European and national funding mechanisms. This is important, because the availability of resources and the ease with which entrepreneurs can access these is key to entrepreneurial activity (Acs et al., in press: 4; Kotey, 2006: 22). However, these reforms are not considered in the analysis.

4.3.2. How the Innovation Union ensures entrepreneurial opportunities and exploitation

In this section, the analysis moves from the capabilities of potential entrepreneurs toward a focus on entrepreneurial opportunities. It addresses the ability of the Innovation Union to foster the creation of opportunities, as well as to provide the necessary incentives for exploitation. With regard to the creation of opportunities, it is necessary to examine how the strategy supports and stimulates the sources of opportunity.

In the analytical framework and the literature review, the primary sources of entrepreneurial opportunities were shown to be knowledge investments and knowledge-based collaboration, as both contribute to the development of new information and, in turn, to the perception of new possibilities for entrepreneurship (Audretsch & Thurik, 2010: 17; Short et al., 2010: 56)[39]. In relation to this, it should be recalled that knowledge investments represent a headline target of the Innovation Union

[39] These two broad sources of opportunity assume that individual perception and/or creation of opportunities may be based on completely new information (e.g. new technologies), or on information that is new to the entrepreneur (as obtained for instance through collaboration). Thus, they encompass the Schumpeterian and Kirznerian sources discussed earlier.

and the overall Europe 2020. The strategies aim for R&D investments of 3% of GDP (EC, 2010a: 5). However, in the review of the Lisbon Strategy, it was shown how the EU remains behind the U.S. and East Asia in terms of knowledge investments and overall innovative performance.

In terms of fostering knowledge investment and knowledge-based collaboration, the most important Innovation Union Commitment is the completion of the European Research Area. It seeks to create a *'unified research area [where] researchers, scientific knowledge, and technology circulate freely and through which the Union and its Member States strengthen their scientific and technological bases, their competitiveness and their capacity to collectively address grand challenges'* (EC, 2012d: 3). The ERA vision is based on a wide collection of planned reforms that fall into two main priorities; first, to strengthen national research systems to increase knowledge investments and competition, and second, to foster collaboration between member states based on common research agendas and societal challenges in Europe (EC, 2012d: 3; 2010b: 10-11). These improvements in knowledge investments and collaboration are expected to *'bring efficiency, quality and impact gains and new opportunities for all Member States. It is an opportunity for less well-performing Member States to take responsibility for reforming their research systems [and] to close the innovation divide'* (EC, 2012d: 4).

The first priority, to boost investment and competition by improving national research systems, is delegated primarily to member states. Thus, they are expected *'to identify the national reforms and actions needed for achieving the ERA in the context of the Innovation Union … according to their national specificities'* (EC, 2013f: 2; ECL, 2012: 6). The EU evaluates these national reform proposals and provides recommendations, as discussed earlier. However, it is recognised that national improvements are likely to occur from mutual, cross-border learning. The EU is therefore actively working to remove barriers to transnational collaboration. One particular example has to do with member states being able to attract researchers from outside the EU to boost national research. This has motivated efforts to improve the conditions and training for doctoral candidates (EC, 2011e: 2), including better options for industry placement during training and an emphasis on the attractiveness of working conditions and career opportunities. This is expected to strengthen the knowledge base and *'attract a sufficient number of highly skilled third country nationals to stay in Europe'* (EC, 2011f: 1). A more radical initiative to improve national and regional research systems is the recent EU launch of the Smart Specialisation Platform. It is designed to help regions to focus their research and entrepreneurship efforts in areas with a regional advantage (cf. section 4.3.3).

The second priority, to foster knowledge based collaboration between and within member states, is also a means of improving the national research systems. The main intention is to create conditions for public-private partnerships in member states in order to *'coordinate national research activities, pool resources, benefit from complementarities and develop common research agendas* (EC, 2012d: 60). This is pursued through a number of institutional platforms that are comparable in several ways to the ones discussed in the previous section. Two central platforms are the Joint Programming initiatives and the ERA-NET networks. Both provide framework conditions and co-funding for *'transnational research and innovation in selected areas with high European added value'* (ERA-NET, 2013)[40]. One example of a Joint Programming initiative is the Urban Europe project, which builds on the participation of several EU member states. The project aims to transform European cities to innovation hotbeds in a sustainable and eco-friendly manner. This is based on a range of collaborations between universities, companies, and public organisations across member states. For instance, universities in Austria, Denmark, Turkey, and the Netherlands are collaborating with firms such as Heineken and Procter & Gamble to improve inner city logistics and the efficient distribution of goods (FIVU, 2013).

In terms of the analytical framework, the most important point to note is how the knowledge investments and collaborations underpin the creation and exploitation of entrepreneurial opportunities (cf. Audretsch et al., 2008: 689; Audretsch & Keilbach, 2007). By facilitating member state interaction on research, innovation, and funding, the Innovation Union provides a framework for the development and commercial spillover of knowledge. The initiatives are based on the expectation that collaboration will lead to *'gains and new opportunities for all Member States'* (EC, 2010b: 4). It is assumed that the collaborations will provide less well-off regions with the necessary access to knowledge, best practice, and joint funding to be able to reform their research systems and *'close the innovation divide'* (EC, 2010b: 4). However, there is little reason to believe that the expected benefits will be distributed easily or equally across regions and member states; even if they participate in some or all of the proposed collaborations.

This argument follows from the observation that regions are not equally equipped to exploit and build on new knowledge[41]. Participation in the knowledge collaborations and ERA-NETs gives regions a way to access new knowledge and innovative solutions that would have otherwise been

[40] Joint Programming refers to concrete research collaboration across member states to address societal issues, whereas ERA-NET networks are a means of dedicating more national funds to joint research efforts.
[41] Recall the high regional variance in innovation performance and absorption of available funds (Appendix F)

out of reach. In order to turn this into sustained entrepreneurial activity and growth, however, regions need an entrepreneurial base with the capabilities to perceive and create new opportunities on the basis of this new knowledge, as well as commercialise it within the given region. This relates directly to the previous section on entrepreneurial skills and culture. Besides access to knowledge, participating regions may also observe and learn from other research systems. This is expected to be a way for them to define and implement the necessary institutional changes to improve their own environment for entrepreneurship and growth (EC, 2013g: 9). As discussed in the previous section, the ability to define and carry out such changes depends to a large extent on institutional actors and their ability to act as institutional entrepreneurs (cf. Hung & Whittington, 2011: 537). Therefore, the potential benefits of the improved framework conditions and collaborations may not be realised to the desired extent in regions and member states that cannot support institutional actors and clusters. The next section expands on this concern, and discusses the *Smart Specialisation Platform* as a potential solution.

4.3.3. How the Innovation Union enables regional adaptation and growth

In the analytical framework, the local institutional environment is included to indicate important differences in the ability of geographic regions to attract investment, support clustering of economic and institutional actors, as well as generate innovation and entrepreneurial activity (cf. Grillo & Landabaso, 2011: 550; Oughton et al., 2002: 97). This was discussed above as the *regional innovation paradox*. The recognition of large, regional variances in Europe has prompted the call for a more territorial dimension in the implementation of the Innovation Union (cf. Capello, 2013: 187; Camagni, 2011). This implies tailoring the innovation reforms to the competitive strengths and weaknesses of different regions.

This is even more relevant in light of the discussion in the previous sections. Those sections demonstrated how several reform efforts are dependent on bridging the gap and promoting collaboration between industry, higher education, and policymakers (cf. EC, 2011c: 2; 2010b: 10)[42]. Knowledge production and institutional change were shown to depend on the ability of institutional actors in the given member state or region. In turn, regional differences may make it difficult for less well-off regions to capitalise on the access to new knowledge, as well as make the necessary institutional changes to become more innovative and entrepreneurial. The idea of devoting more attention to the existing strengths and capacity of regions is a plausible alternative to the view that regions compete

[42] This is closely related to the logic underlying the Triple Helix model (Etzkowitz & Leydesdorff, 2000: 111).

and collaborate on equal terms and with equal benefits.

The EU has realised this problem, and the territorial dimension has been introduced in the strategy. Thus, it is recognised that *'the Innovation Union must involve all regions [to avoid] undermining recent convergence. Europe must avoid an 'innovation divide' between the strongest innovating regions and the others'* (EC, 2010b: 20). This focus on regional differences in the Innovation Union is based on the insight that *'there is no simple one size fits all policy prescription'* (EC, 2010c: 74). In order to resolve the regional paradox and the potential undersupply of regional competencies and entrepreneurship, the Innovation Union has had to look beyond its own borders to European Regional Policy and, above all, to the *Smart Specialisation Platform*. This European initiative provides support to member states and regions in the development and implementation of strategies for entrepreneurship and economic growth. Specifically, it assists national and regional actors in the development of smart specialisation strategies, which are based on the regional prioritisation of key areas of competitive advantage. This prioritisation is carried out in partnership between businesses, public bodies, knowledge institutions, and other relevant actors. The goal is to focus regional funds and investments in areas where local capabilities and opportunities are comparatively strong, and to help regions build on existing advantages and create new opportunities through research and innovation. In this way, regional diversity is expected to be the source of improved regional competitiveness and innovative activity (EC, 2010c: 31; 2010f: 11; cf. Foray, 2011). It is assumed that by prioritising and specialising their efforts, every region can develop a particular role in the European knowledge economy. This is, in turn, expected to improve their ability to absorb available funding and stimulate investments (EC, 2011c: 6). The smart specialisation platform provides information, material, and training to policymakers, in addition to organising seminars, mutual learning sessions, peer reviews that provide feedback on member states' smart specialisation strategies, as well as access to experts and best practice examples from similar regions (EC, 2011b).

Strategies are currently being outlined and put into action in several European regions. For instance, several comparatively weak regions in terms of knowledge intensity and innovation have recently registered for participation in the smart specialisation platform; e.g. the West Region of Romania and Crete in Greece (West, 2012; Crete, 2013). Similar for both regional strategy proposals is the strong optimism with regard to sectoral specialisation and the ability to support a knowledge economy. For instance, the West Region intends to *'establish innovation as a regional priority'* (West, 2012: 29) and specialise in areas in which the region perceives a competitive strength; e.g. ICT and

agro-food. These initiatives build on previous attempts to develop regional specialisation and innovation, most recently the regional innovation strategy from 2009-2013 (West, 2009). The primary goal has been to ensure the development of new projects and clusters to support innovation in the private and public sector, and to improve the ability of regional businesses to innovate and absorb innovation. To achieve this, the West Region strategy intends to build on recent improvements in the regional (and Romanian) education system[43]. At first glance, these priorities fit well with the discussion in the previous sections about the importance of capabilities and knowledge collaboration. However, there are several problems in the region and Romania, which could undermine these good intentions. Romania lags considerably behind the EU27 average in almost every indicator in the Innovation Union Scoreboard (IUS, 2013: 49). Along with Bulgaria, it ranks lowest in terms of research and innovation among EU member states (Appendix E). West Region faces problems of outdated infrastructure, insufficient public funding, low retention and attraction of academic staff, low research expenditure, and an inadequate ability of local companies to absorb or carry out innovation (West, 2009: 35-36). It is no surprise that the region has registered for the smart specialisation platform with one, overarching priority: *'to stay attractive'* (West, 2012: 11). The ability to retain and attract capable individuals and businesses is key to building critical mass.

The relevant question that arises from this example is whether the smart specialisation platform is in fact able to ensure the development of all European regions toward knowledge based economies. It is clear that the smart specialisation platform has a number of positive aspects. First, it fills a gap in many regions in terms of expert advice, public funding, exchanges of best practice and knowledge, and the potential for cross-border collaboration (cf. EC, 2010f: 6-9; Foray, David & Hall, 2009). It is widely assumed that this will *'help regions to concentrate resources on a few key R&I priorities rather than spreading investments thinly [in order to] exploit regional diversity'* (EC, 2011b: 6). Second, the platform provides a forum for regional actors to interact with international experts in the development of a common strategy for the region. This relates to the discussion on institutional entrepreneurship, in the sense that regional actors are able to influence the priorities of the region. For instance, businesses and universities can impact the existing allocation of funding or shape the development of new clusters and collaborations. Third, the development of the regional capability for knowledge-based collaboration and research may help strengthen the competitiveness and prosperity of the entire European Union. This is based on the assumption that stronger regions would be

[43] The region has a relatively high concentration of universities (West, 2009: 29-30). At the national level, human resources is one of few areas, where Romania exhibits positive growth (IUS, 2013: 49).

engaged in more cross-border collaboration and lead to an increase in specialised clusters across the EU (cf. Scott, 2006: 4-6; EC, 2010f). Fourth, successful specialisation could resolve the regional innovation paradox by ensuring *'a more effective and complementary use of EU investments in the regions and help leverage private investments towards the regions' areas of specialisation'* (EC, 2011g: 2). Despite the positives, the Romanian example indicates the very different starting conditions of European regions. This gives rise to the concern that some European regions may lack the fundamental conditions and capabilities to benefit from and build on the support. In addition, it is relevant to question whether the smart specialisation platform is able to address the basic economic and institutional problems in weak European economies. These concerns are elaborated in the final sections of the analysis. Before doing so, the Danish response to the Innovation Union is examined.

4.4. The Danish response to the Innovation Union

Denmark is included in the analysis as an illustration of the national level reform initiatives in the Innovation Union. The purpose is to demonstrate how the EU reforms and institutional framework conditions described in the previous sections form the basis for complementary reforms at national and regional levels. Before addressing these reforms and their link to specific Danish challenges, the Danish economic position in terms of innovation and growth is briefly outlined

With regard to research and innovation, the Danish system consistently ranks as a leading performer (Erawatch, 2013: 3; IUS, 2013: 31). Along with Finland and Sweden, the Danish economy has met and surpassed the Europe 2020 objective of 3% R&D intensity (Eurostat, 2013), significantly above the EU27 average of 2.03%. Recent evaluations have similarly indicated a strong Danish position in terms of open and attractive research conditions (IUS, 2013: 31); availability and transfer of technology and knowledge to SMEs and potential entrepreneurs (GEM, 2011: 98-99); above average human resources with high tertiary education attainment (EC; 2013f: 70)[44]; and comparatively high rankings on most science, technology, and innovation scores (Erawatch, 2013: 11; UIS, 2013: 31). These areas are only indicative of overall performance, but they nevertheless paint the picture of a well-performing member state. The European Research Area Committee has partly attributed this high-end performance to *'a unique Danish approach and culture for innovation and innovation policy, which strongly reflects the country's open and dynamic welfare society'* (ERAC, 2012: 1; cf. Erawatch, 2013: 3)[45]. These positive conditions have manifested in the ranking of Denmark as one of four European *innovation leaders* (Appendix E).

In spite of the well-functioning research and innovation system, consideration of the Danish economic situation reveals important challenges to prospective economic growth. Competition is deemed too low in several sectors, acting as a drag on total factor productivity (OECD, 2012a: 16; Danish Economic Council, 2010: 354). In addition, productivity growth rates have been disappointing for a decade, with negative rates since 2007 (ERAC, 2012: 15). Thus, within the OECD, Danish productivity growth has been comparatively low. The Danish Ministry has concluded that '*in Denmark the level of prosperity is developing less favourably than it is in most other OECD countries'* (FIVU, 2012: 3). Several other problematic areas have been identified in various economic reviews (cf.

[44] Despite some concern over late completion (OECD; 2012a: 26).
[45] This *'dynamic'* role of the Danish welfare system is highly debatable. Thus, extensive social security schemes could be detrimental to entrepreneurial motivations and culture. See also Faria et al. (2010: 1283).

Erawatch, 2013: 20-25; OECD, 2012a), and some are discussed in the following sections. The primary point, however, is that despite a strong research and innovation system, there is still scope for improvement in order to realise the full potential and translate innovative capacity to growth and productivity (ERAC, 2012: 16). In order to address these issues, the Danish Ministry has defined an innovation strategy that complements the EU-mandated reform programme;

In order to increase long-term growth opportunities, the Danish government has introduced an ambitious reform agenda. A number of steps have already been taken to create jobs and growth, [and] with the innovation strategy, the Danish government will ensure that the substantial public investments in research, innovation, and education will translate to more growth and job creation (FIVU, 2012: 3).

As elaborated in the next sections, the strategy addresses several criticisms, including the level of entrepreneurial education; the availability of financial resources and overall fiscal stability; the tax structure; ease of entry for SMEs; and the degree of competition in the internal market. It aims to foster competitiveness and improved opportunities for SMEs by complementing and utilising the Innovation Union. In addition, the strategy intends to identify and prioritise innovation in areas of Danish competitive advantage (FIVU, 2012: 15).

4.4.1. How the Danish strategy ensures the capabilities of potential entrepreneurs

Despite comparatively high tertiary educational attainment and human resource quality (EC, 2013h: 70), as well as above average entrepreneurial skills in the general population (73 percentile rank, cf. GEM, 2011: 88-89), several shortcomings have been identified in the Danish development of entrepreneurial capabilities. Thus, the number of doctoral candidates and graduates in science and engineering is considered relatively low (Erawatch, 2013: 30; EC, 2013h: 70). Yet, there have been gradual improvements in these areas recently (IUS, 2013: 31). In addition, expert assessments indicate a comparatively low ranking of Danish education in terms of the development of skills for entrepreneurship and new business start-up (46 percentile rank, cf. GEM, 2011: 86-87). This is echoed by the OECD in their recommendation for more practical experience in Danish entrepreneurship education (2009: 90), and the ERAC call for *'suitable measures to promote entrepreneurship and start-up creation for young graduates'* (2012: 4).

These perceived problems are consistent with the view that despite excellent framework conditions and high technology and knowledge transfer, the Danish innovation system has not managed to rea-

lise its full potential in terms of commercialising the strong knowledge base (DASTI, 2009). This led to calls for improved entrepreneurship education (e.g. Erawatch, 2013: 24). In response, Danish ministries formulated an educational strategy for entrepreneurship in 2010 in an attempt to increase the rate of Danish high growth SMEs (DASTI, 2010: 2), and based on European recommendations, entrepreneurship education has become an essential pillar of the new Danish reform programme and innovation strategy (FIVU, 2012: 25-28; EC, 2013g: 20-24). Most of the Danish initiatives involve the integration of entrepreneurial and innovative elements in existing educational programmes from primary education to university. The primary initiative that has been undertaken to ensure this is the Next Generation project, which involves collaboration between three Danish universities, including their student incubators for entrepreneurship (e.g. Copenhagen School of Entrepreneurship, Stardust DTU, and Katalyst (KU)). In addition, the collaboration involves organisations and institutions related to entrepreneurship and business start-up, e.g. the Venture Cup competition for innovative business ideas and the Symbion science park. By drawing on existing competences in the Danish environment, the project enables the actors to function as institutional entrepreneurs in order to foster '*changes in the dominant culture*' and '*incorporate innovation, entrepreneurship and intrapreneurship in the university'* (cf. Next Generation).

In terms of the Innovation Union, the interesting point to note is that these Danish efforts have been influenced by European recommendations and reviews of the Danish economy (cf. EC, 2013g: 20), and that the current initiative is partly funded through the European Horizon 2020 framework. In terms of the analytical framework, it is important to consider how the Danish efforts draw heavily on existing institutional actors, who have relevant competences and an interest in the promotion of entrepreneurship education. Thus, Danish policymakers are able to mobilise and provide support to a relevant set of actors, who are expected to contribute with experiences and insights from different sectors and areas of the Danish economy in an effort to shape the existing educational institutions. As the next sections will show, this strong base for improvements in Danish entrepreneurship capacity is central to the efforts to improve Danish knowledge commercialisation, new start-up, as well as the attempts to increase regional innovation and specialisation.

4.4.2. How the Danish strategy ensures entrepreneurial opportunities and exploitation

Denmark is one of the few countries to have surpassed an R&D investment of 3% GDP (Eurostat, 2013), but the knowledge intensity of the business sector and private R&D investment are still considered low compared to reference countries such as Finland and Sweden (EC, 2011h: 2; Erawatch,

2013: 21). This may be attributable to the composition of the Danish business sector, with few large companies and decreasing knowledge intensity in traditional business sectors such as food products and machinery. In addition, the relative weight of some high and medium-high tech sectors has decreased; e.g. the communication equipment sector (EC, 2011h: 4). Underlying the concern in these areas is the observation that Denmark is not producing enough new growth companies and that public research is not being sufficiently translated to entrepreneurial opportunities (Pro Inno Europe, 2011: iii-iv; Erawatch, 2013: 5). To improve commercialisation and growth, the innovation strategy of Denmark has a central focus on the need to improve collaboration between public knowledge institutions and the private business sector (FIVU, 2012: 20).

In relation to this need for more private R&D investment and better knowledge commercialisation, there are relevant examples of how the Danish strategy builds on and complements the Innovation Union. For instance, the Danish strategy seeks to further increase the role of universities in terms of innovation, as well as increase their cooperation with enterprises and other organisations in order to better translate knowledge into exploitable opportunities (FIVU, 2012: 23). One particular initiative in this regard is the intent of DTU to participate in the 2014 EU Knowledge and Innovation Community on raw materials (cf. DTU)[46]. Thus, DTU builds on framework conditions and support from both the Danish strategy and the Innovation Union in order to collaborate with universities and industry in Iceland, Greenland, Norway, and Portugal. The project aims to develop innovative technologies for raw materials in Arctic regions and to stimulate the start-up of new production on the basis of these.

Similar to most other initiatives considered in this thesis, the collaboration has not been realised yet. Nevertheless, the planned role of DTU is consistent with the perspectives underlying the analytical framework. By enabling and encouraging actors like DTU to contribute to these collaborations, the Danish and European strategies become complementary. The actors build on the framework conditions and support from both strategies to act both as institutional entrepreneurs and 'regular' entrepreneurs. Thus, while DTU engages in the collaboration to support and benefit from the emerging knowledge cluster, they simultaneously aim to use the new knowledge to foster new start-up ventures in Denmark (cf. DTU). This is explored further in section 4.5.

[46] These communities are institutional collaborations between education, enterprise, technology and research, similar in many respects to the institutional platforms discussed earlier. They represent the implementation of the European Institute of Innovation and Technology (a key Innovation Union Commitment), which aims to increase knowledge collaboration and ensure *'better exploitation of the commercial potential of innovation'* (EC, 2011i: 1).

4.4.3. How the Danish strategy enables regional adaptation and growth

Despite the strong framework conditions, Denmark is not exempt from having a regionally skewed distribution of innovation and entrepreneurship activity. Thus, nearly a third of the European funds allocated to Denmark in the period 2007-2013 went to applicants in the Copenhagen area, and when combined with the figures for East Jutland, the share of funds approaches 50% (EC, 2011h: 8). This is consistent with the observation that R&D investments and productivity are highly variable across Danish regions, along with sectoral composition. Thus, the Capital Region invests 5.31% of GDP in R&D, while the corresponding rate is 0.74% in Southern Denmark and 1.19% in Central Denmark (RIS, 2013). Similarly, the 2011 figures for GDP per capita were roughly 30% higher in the Capital Region than Southern and Central Denmark (Statistics Denmark, 2011). In light of this skewed distribution, the Danish innovation strategy has recognised the need to increase critical mass and support the development of *'clusters, specialised regions and global knowledge and innovation networks [that] contribute to knowledge exchange and cooperation'* (FIVU, 2012: 21). This national focus is starting to manifest in regional efforts to improve economic activity and growth.

In the Southern and Central Denmark regions, strategies have been put forward to address regional economic challenges; e.g. lagging productivity growth, low private R&D intensity, and un-favourable demographic conditions for entrepreneurship (cf. OECD, 2012b: 159; 2012c: 14; RegX, 2013). It is relevant to note that both strategies (ambitiously) seek to promote entrepreneurship, innovation, and the development of new firms and clusters, which are expected to result in global competitiveness and strong growth within a decade. To support regional development, partnership agreements have been made between regional growth forums and the Danish government in order to streamline public support and help regional actors identify areas of potential, regional strength for specialisation. In the Central Denmark region for instance, this partnership has produced a strategy that focuses on specialising the region in the food sector (RegX, 2013). This strategy seeks to build on existing competences among private and public organisations in the region to establish an innovative, Danish food cluster. It is recognised that the region is dependent on collaborations with knowledge institutions and authorities at the national level, as well as international industry. Therefore, the region registered for the Smart Specialisation Platform in 2013 in order to receive feedback and support, and to prepare for participation in the 2016 Food4Future Knowledge and Innovation Community.

This is interesting for several reasons. First, it demonstrates the regional variance that exists within

all European countries despite strong institutional conditions for innovation and entrepreneurship. Second, it indicates how the European objective of ensuring entrepreneurship and innovation-driven growth across member states and regions is, to a large extent, dependent on the interaction of regional, national, and European conditions. Third, and perhaps most important, the examples indicate how even comparatively weak regions in Denmark seem to be able to initiate the specialisation process. While it remains to be seen whether the regions can successfully develop and support the proposed reforms and clusters, they have identified and engaged important regional actors that may help drive the process, in addition to partnerships with the Danish government and the specialisation platform.

4.5. The prospects for entrepreneurship and economic growth

The analysis of the Innovation Union and Danish strategies has provided insights and observations on the main research question of this thesis; i.e. how European and national policymakers construct institutional frameworks for entrepreneurship. It has also shed light on the role of institutional entrepreneurs in this process, thus addressing one of the secondary research questions. The purpose of this section is to expand on these observations in order to address the last research question;

> *Sub-RQ: How do the European and Danish strategies relate to the proposed objectives of long term economic growth?*

First, a synthesis of the findings from the analysis is provided. It forms the basis for the discussion of the economic growth perspectives.

4.5.1. Main findings on the construction of institutional frameworks for entrepreneurship

In the Innovation Union, member states have been given a far greater responsibility in terms of defining national reform programmes and adapting the European objectives to national conditions. This differentiation of national reforms is a response to the first shortcoming of the Lisbon Strategy; that the strategy failed to build member state commitment due to undifferentiated guidelines and goals. With regard to the second major failure of the Lisbon Strategy, the Innovation Union response has not been equally clear. This failure had to do with the dependence on the ability of member states and regions to define and implement relevant reforms, including their ability to benefit from the improved framework conditions such as better funding and cross-border collaboration. The concern that comparatively weak member states and regions would be less able to improve their position and benefit from framework conditions was termed the *regional innovation paradox*. In the Innovation Union, this problem is addressed through a closer collaboration between the EU and member states in the European Semester, as well as regional support through the smart specialisation platform. Both provide recommendations, support, and feedback on reform efforts. Yet, implementation still depends on member states and regions, and there is no guarantee that the improved guidance and support will translate to successful reform.

To explore this concern, the analysis has examined the implementation of the Innovation Union and the Danish reform programme. Following the EIO framework, the analysis has shown how the strategies have initiated a broad set of complementary reforms. These reforms address many significant and academically substantiated determinants of entrepreneurship; e.g. the capabilities and resources

of potential entrepreneurs, the intensity of knowledge investments, the conditions for collaboration and commercialisation, as well as shared national and European support for regional specialisation. The impact of these initiatives on economic growth is addressed in the following section. The most relevant observation made in the course of the analysis, however, is that a substantial share of the European and national reforms depend on institutional actors. These reforms involve the creation of particular institutional arrangements, such as Knowledge Alliances, Joint Programming initiatives, or Knowledge and Innovation Communities. These arrangements do not directly increase the rate of entrepreneurship. Instead, they represent sets of enabling conditions for institutional entrepreneurship (cf. Leca et al., 2008: 6). These conditions allow and encourage organisations and institutional actors to collaborate with the aim of improving the conditions for entrepreneurship. The motivations of these actors differed widely, from formal requests to profit opportunities, but the common result of the collaborations was the definition and implementation of concrete institutional improvements. These include educational changes, new cluster development, and new technologies for commercialisation. In turn, these enable entrepreneurial activity.

In summary, the most important observation is that many institutional reforms must be interpreted and implemented through the collaborations of national or regional institutional actors; e.g. universities, firms, public organisations, and individual entrepreneurs. The number and quality of institutional actors, as well as their ability to collaborate, would therefore seem to be a key constraint on institutional improvements for entrepreneurship at the national or regional level. This is explored in the following.

4.5.2. The objective of European economic growth

Based on the European vision of smart, sustainable, and inclusive growth, the Innovation Union and the national reform programmes seek to *'improve framework conditions and access to finance for research and innovation so as to ensure that innovative ideas can be turned into products and services that create growth and jobs'* (EC, 2010a: 5). The core logic of this objective is consistent with research on the relationship between institutional environments, entrepreneurship, and economic growth (e.g. Koppl & Minniti, 2010: 238-240; Boettke & Coyne, 2009; Audretsch et al., 2008).

Furthermore, the analysis has demonstrated that the European and Danish reform initiatives address many of the institutional framework conditions that scholars consider important for entrepreneurial activity. For instance, the strategies seek to increase the entrepreneurial capacity through education and the attraction of doctoral candidates (cf. Leitão et al., 2011: 135; Shane, 2003: 69). In addition,

entrepreneurship is supported by improved financial incentives and property rights protection (cf. Wennekers et al., 2002: 41; Holcombe, 2003: 40; Kotey, 2006: 22). Other examples of this fit with research include the emerging focus on regional specialisation (Capello, 2013; Foray et al., 2009), and the emphasis on cross-border collaboration and innovation as a basis for the commercialisation of new opportunities and knowledge (Audretsch et al., 2008: 687; Acs et al., 2008). However, this academic support for the European and Danish priorities is only a tentative indication of the potential growth impact. The actual economic impact is determined by the implementation.

The findings of the analysis with regard to the mechanisms of governance provide some insights on the question of future economic growth. The analysis demonstrated how the Innovation Union has addressed some of the key shortcomings of the Lisbon Strategy. Member states have become more involved in the adaptation of overall objectives to national and regional conditions. The analysis of Denmark demonstrated how several reforms build on the EU recommendations from the European Semester; e.g. the educational initiatives. At the regional level, the comparatively weak regions of Southern and Central Denmark were shown to have developed economic specialisation strategies in partnership with the central government. They have now registered for the smart specialisation platform in order to receive support for economic cluster development, and to prepare for participation in future Knowledge and Innovation Communities. Thus, without restating the details of the Danish case, it is clear how the new multilevel governance model has enabled a greater differentiation of economic reforms to suit national and local conditions and strengths. This improved differentiation and assistance would, *ceteris paribus*, be expected to improve economic growth prospects. Support for this view is found in Capello (2013: 187) and Foray et al. (2009).

As described in the previous section, the second major finding of the analysis has to do with the importance of institutional actors in the interpretation and implementation of concrete initiatives. This finding has important implications for the economic growth debate. The analysis has shown how several European and Danish reforms take the form of institutional arrangements, which provide the conditions and resources that enable institutional actors to become institutional entrepreneurs. For instance, the Knowledge Alliance on the *European Real Life Learning Lab Alliance* involved cross-border collaboration between universities, which acted on a perceived deficit in entrepreneurial skill to address future societal problems and opportunities in sustainable energy. The smart specialisation examples also demonstrated a wide range of actors coming together in order to shape the economic structure and priorities of a given region; possibly to the particular benefit of the participants. This activation of national and regional actors as institutional entrepreneurs may contribute to economic

growth and development in several ways. First, by enabling and encouraging actors to influence and possibly change institutional conditions, the described platforms arguably represent a new source of entrepreneurial opportunities. For instance, DTU openly states that it aims to use the knowledge and technologies developed in the Knowledge and Innovation Community on raw materials to stimulate new business start-up in Denmark. Second, and related to the first, the institutional entrepreneurs may take on a dual role. Here, actors not only foster new opportunities through institutional change, but they also exploit the new opportunities themselves. In the example of the Urban Cities initiative, large companies contributed to the vision of developing innovative clusters in European cities, and to concrete improvements in inner city logistics and living conditions. These logistic changes are, in turn, expected to provide new distribution opportunities for these firms; e.g. Procter & Gamble. In this sense, the thesis challenges the standard view that *'institutional entrepreneurship is not entrepreneurship'* (Acs et al., in press: 3). Third, in a more macro perspective, the central role played by institutional actors in national and regional economies is assumed to result in greater adaptability to external shocks. The ability of an economy to pick up on external shifts and overcome inertia may increase when a broader set of actors can deliberately influence the institutional environment. This idea is reflected in literature on entrepreneurship as a major factor in the adjustment of economies (e.g. Arzeni & Pellegrin, 1997: 27).

So far, the discussion has mainly indicated the positive economic potential of the Innovation Union and Danish strategies. However, there are a number of reasons to believe that the expected improvements in entrepreneurship, economic growth, and employment will only be realised in some regions and member states. First, the finding of the analysis with regard to the importance of institutional actors is not only positive; it also has a negative implication. To the extent that national and regional reforms depend on institutional actors, the effect of these reforms will be determined by the number and capabilities of these actors, including their ability to collaborate. In other words, regions with a low degree of clustering, few or no high-quality universities, or inadequate government support, are unlikely to have the institutional actors needed to drive the interpretation and implementation of the relevant reform initiatives. In the example of West Region, Romania, the local context is marked by low knowledge investment, inadequate human resources, few competitive advantages, and a weak infrastructure, to name a few issues. Clustering is unlikely to occur without changes to these fundamental economic conditions, and the goal of entrepreneurship and innovation-driven specialisation is therefore questionable. It is relevant to note that a recent UK-based debate on smart specialisation recognised that *'the capacity of organisations to engage with the smart specialization process … is*

clearly an issue for the business community [and] is something of a concern to many' (Healy, 2012: 2). By registering for the smart specialisation platform, the region has requested support to become attractive and, in turn, better able to stimulate cluster development and institutional change. The question remains whether the platform will be able to address these underlying economic disparities in Europe. The concern of this thesis is that the platform is not geared to this type of support. It is mainly created to help regions identify areas of advantage, as well as provide expert advice and best practice examples on how to exploit these advantages on the basis of innovation (e.g. EC, 2010f: 7).

The second reason why entrepreneurship and growth are unlikely to occur across all regions follows from the first. Regions with weak institutional and economic conditions are unlikely to benefit as much as stronger regions from the improved framework conditions created by the EU. Specifically, when regions such as West Region, Romania, have a low concentration of clusters and institutional actors, it impacts their ability to absorb available funding (cf. Appendix F). In addition, the new knowledge that has become available through collaborations may not be as easily absorbed or commercialised. This argument is supported by Sousa (2013: 21), who states that *'many EU regions lagging behind in terms of competitiveness have been inefficient in taking advantage of the existing institutional environment to boost their competitive performance* (Sousa, 2013: 21).

In conclusion, the thesis argues for a potentially skewed distribution of the impact of the Innovation Union. It has demonstrated how the reforms and priorities are likely to support entrepreneurship and growth in member states and regions with good institutional conditions. Support from the EU and smart specialisation platform is expected to strengthen growth in these areas. However, in regions with weak institutional conditions and low clustering, this effect may be absent. The results of the most recent Innovation Union Scoreboard tentatively support this argument; in 2013, the trend of convergence among member states has been replaced by growing divergence in innovation growth (IUS, 2013: 6-7). This throws the long-standing objective of economic and institutional convergence in Europe into question (cf. Bongardt et al., 2013).

5. Conclusion

The thesis examined the European model of economic policy coordination that underlies the Lisbon Strategy and Europe 2020. This model involves policy coordination between the EU and individual member states. The research agenda was motivated by scepticism of the European model, following the disappointing economic results achieved under the Lisbon Strategy. In order to explore how the European and national policymakers construct institutional frameworks for entrepreneurial activity, the thesis investigated the Innovation Union flagship initiative and the Danish reform programme. This investigation was based on the EIO framework, which was constructed to represent the relation between entrepreneurial activity and the institutional environment. In relation to the main objective, the thesis also explored the role of institutional entrepreneurs in fostering entrepreneurship, as well as the relationship between the European and national strategies and the goal of economic growth.

With regard to the European and national construction of institutional frameworks, the analysis has demonstrated significant improvements in the Innovation Union over the Lisbon Strategy. Member states have more responsibility and latitude in defining national reforms and adapting the European objectives to national conditions. This process builds on European support and recommendations, and it is expected to foster greater national commitment.

Following the EIO framework, the analysis has shown how European and Danish reforms address many important determinants of entrepreneurship. However, a substantial share of these reforms is based on the creation of institutional platforms that function as enabling conditions for institutional entrepreneurship. These conditions enable organisations and institutional actors to collaborate with the aim of improving the institutional environment for entrepreneurship. The collaborations were shown to have several positive relationships with economic growth. For instance, they may generate new opportunities for entrepreneurship, improve the capabilities and resources of potential entrepreneurs, and improve the adaptability of the economy to future economic changes. However, regions and member states that lack the economic and institutional conditions to support and attract institutional actors may not derive these benefits from the strategy. This inability to act upon the improved framework conditions may lead to a skewed distribution of entrepreneurship and economic impact.

5.1. Political and academic perspectives

This thesis has important implications for the European model of economic policy coordination and

for the European vision of economic and institutional convergence. The analysis demonstrated that the Innovation Union may result in skewed economic progress among European member states and regions. If correct, this could aggravate the *regional innovation paradox* and perhaps reinforce the tendency of divergence that was recently observed in the EU (EC; 2013f: 7). However, it is risky to propose an alternative to the current European model, given the complexity of this system. It would be pretentious to claim to know the solution. Nevertheless, this thesis argues that a necessary first step in order to improve growth and development in all member states may be to give up the *heroic* aspect of the strategy. This heroic aspect refers to the underlying view that every member state has the potential to catch up and become competitive, when they are provided with expert advice, best practice, and reform funding. If this expectation is given up, it may open up the discussion on the need for a more redistributive Europe. This would involve greater reallocation of financial means to address the fundamental disparities between European regions, as discussed for instance in the case of West Region, Romania. However, this is a thorny subject, to say the least. In the aftermath of the sovereign debt crisis, it may be exceedingly hard to push a more intensive redistribution agenda. As argued by Marján (2010: 202), *'the time will come when Europe must decide what is more important: national interests or European competitiveness'*.

In academic terms, there is room for an improved understanding of the determinants and effects of entrepreneurship at the national and regional level. There is a recognised need to break away from existing models that either address the *structure* of the national innovation system (e.g. Lundvall, 2007) or, on the contrary, models that describe an individual-centric entrepreneurship process (e.g. Shane, 2003). This has led to an increasing amount of research on the integration of individual and structural/institutional perspectives (Acs et al., in press; Szerb et al., 2013; Hung & Whittington, 2011). The thesis contributes to this academic debate by proposing the EIO framework as a useful framework for the study of institutional reform and entrepreneurship. This framework incorporates the individual-institutional interaction as a key driver of entrepreneurship and growth.

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7. Appendices

This chapter contains the appendices referred to throughout the thesis. They are enumerated from A to J, totalling 11 sections. While these appendices are not part of the main thesis, the tables and arguments contained herein provide valuable information and explanations. The academic literature used in this section is included in the bibliography in chapter 6.

7.1. Appendix A

The following sections review the main contributing factors to the emergence of the entrepreneurial economy in Europe and globally. In addition, debates on the changing paradigm of public policy are considered in detail.

7.1.1. Globalisation and the shift to the entrepreneurial economy

Globalisation is commonly seen as the growing impact of distant events in local settings (Meyer, Drori & Hwang, 2006: 29; Giddens, 2003: 10-13). It includes social, economic and political inter-dependencies (Keohane & Nye, 2000: 106-107). The Lisbon Strategy is a reaction to *'the new challenge … resulting from globalisation and the challenges of a new knowledge-driven economy'* (EC, 2000: 1; ECL, 2000: 1). The current acceleration of globalisation has led to particular structural changes in the economic landscape (Leitão et al., 2011: 132; Audretsch & Sanders, 2007: 1). In turn, these changes have served as important catalysts for the growing economic significance of entrepreneurship (Casson, 2005: 343-344; Thurik, 2009: 220). The structural changes are mainly related to improved mobility of people, capital, goods and knowledge (Audretsch & Thurik, 2010: 7). This has given rise to various economic effects, including dynamic growth in international trade, financial flows[47], and technological knowledge exchange (Acs et al., 2001: 236; Greenhalgh & Rogers, 2010: 243-245), a growing policy focus on regional economics and SMEs (Gatewood & Boko, 2009: 124; Audretsch & Thurik, 2009: 14), and a broader competitive scope for domestic firms (Wright & Dana, 2003: 137).

Globalisation has been criticised as a *'malleable catchall term'* (Scholte, 2002: 7; Vinig & Kluijver, 2007: 6), but studies have demonstrated consensus on the relationship between the economic importance of entrepreneurship and the increasingly global integration of economic and political activity (cf. Greenhalgh & Rogers, 2010: 243-245). Thus, several scholars describe how the progressive

[47] The author excludes the relevant discussion of financial globalization and European financial market integration.

thickening of globalisation[48], in combination with the ICT-driven increase in the supply of unskilled, low-wage labour, caused the existing comparative advantage of developed economies to be broadly displaced in favour of knowledge-intensive economic activities (Audretsch & Thurik, 2001a: 6; 2009: 14; Leitão et al., 2011: 131). Thus, the organisation of Western developed economies has experienced a shift from a *managed economy model*, characterised by relatively predictable and routinised production and positive returns to scale, towards *entrepreneurial economies* in which knowledge and the start-up of innovative SMEs constitute the main elements of comparative advantage and, therefore, of public policy (Audretsch & Thurik, 2001b: 275; 2000: 23; Wennekers, van Stel, Thurik & Reynolds, 2005: 4; Thurow, 2002: 25). However, the implications of globalisation for entrepreneurship and economic strategy did not arise simply from trade liberalisation and shortened economic distances that led to a rise in entrepreneurial activity (Audretsch & Sanders, 2007: 1). The described structural changes derive also from certain political and technological developments that interacted with the growth in globalisation to foster the transition from industrial to entrepreneurial production (Persson, 2011: 224-226; Audretsch et al., 2007: 2).

7.1.2. The political and technological facilitation of the entrepreneurial economy

In the post-war era, important technological developments[49] introduced new economic opportunities for the increasingly dominant MNCs; these firms were driven to adapt their existing business model to exploit the cost advantage of relocating production activities to low-wage locations (Audretsch & Thurik, 2001b: 271). This reorganisation initially confirmed the conventional Schumpeterian prediction of large firms as dominant (Schumpeter, 1942: 106; Audretsch, 2007a: 64)[50]; yet, as the ICT revolution generated an increased use of outsourcing arrangements, comparative advantage in developed countries moved toward knowledge-based economic activity (Audretsch & Thurik, 2010: 2). Scale-based organisational forms were at pains to maintain their competitive advantage (Nooteboom, 2000: 5-6). The strategic relocation of routine production tasks led to greater economic value of radical innovation and product development; the related creation of new industries and markets allowed SMEs to compete in the early life cycle stages (Klepper & Simons, 1997: 379-380; 2005:

[48] Cf. Keohane & Nye (2000: 114) for a thorough review.

[49] As constituted primarily by innovative breakthroughs in information and communication technologies (ICT); e.g. microprocessors and their application in telecommunication (Audretsch & Thurik, 2001b: 271) and flexible automation (Thurik, 2009: 5).

[50] Economic growth was attributed mainly to capital and labour (Solow, 1956; Thurik, 2009: 3-6); large firms were seen as superior in terms of efficiency, innovative activity, and overall economic contribution (Audretsch & Thurik, 2010: 2-3).

23-24). Significantly lower communication and transaction costs for small firms (Persson, 2011: 225), combined with the possibility of outsourcing late life cycle tasks, caused an increase in the relative competitiveness of SMEs, due to their capacity for exploring variation and knowledge co-operation (Audretsch & Thurik, 2010: 6-8; Loveman & Sengenberger, 1991: 4). This development is corroborated by studies documenting the recurrence of small business and entrepreneurship in North America and Europe from the 1970s onward (Acs & Audretsch, 1993; Wennekers & Thurik, 1999; Carree, van Stel, Thurik & Wennekers, 2002; Audretsch, 2003).

These technological changes enabled the integration of new geographic and socioeconomic spheres into the global economy (Leitão et al., 2011: 132; Audretsch & Thurik, 2010: 3-4). The entrepreneurial function and SMEs were increasingly recognised as central to economic activity (Audretsch, Baumol & Burke, 2001: 618-621; Brock & Evans, 1989: 7). International trade increased in scope and quantity due to lower trade tariffs and the increasing returns to specialisation (Dean & Sebastia-Barriel, 2004: 317), accompanied by technological improvements that enabled an intensification of transnational knowledge exchange and innovation (Keohane & Nye, 2000: 108-114). Yet, these economic changes, as well as the policy responses to the new economic realities, did not occur homogeneously across nations and regions (Audretsch & Thurik, 2001a: 4; Acs & Audretsch, 1993: 227). Instead, the national responses were determined by key political developments. Specifically, '*globalisation would not have occurred to the degree that it has if the fundamental changes were restricted to the advent of the microprocessor and telecommunications. It took a political revolution in significant parts of the world to reap the full benefits from these technological changes'* (Audretsch & Thurik, 2010: 7). Thus, the increases in international trade, foreign direct investments, and relocation of mature industry were severely limited during the post-war era due to political instability and extensive regulation related to the Cold War (Grilo & Thurik, 2006: 83; Smallbone & Welter, 2001: 66-68; Audretsch & Thurik, 2009: 16). As economic activity was confined mainly to North America, Europe and select Asian economies, the fall of the Berlin Wall came to signify a *'political counterpart of the technological revolution'* (Audretsch & Sanders, 2007: 3). The decline in communism and the socialist economic system[51] caused a radical increase in inward and outward FDI from both developed and emerging countries (Dunning, Kim & Park, 2006: 3-6; Gammeltoft, 2008: 6; Audretsch & Thurik, 2010: 9). Yet, the increase in developed economy FDI consisted mainly of outsourcing and offshoring arrangements (EIM, 2009: 19), which involved significant downsizing and employment displacement in these countries (Casson, 2005:

[51] Cf. Audretsch & Thurik (2010: 9-11).

343-344; Audretsch, Grilo & Thurik, 2012: 6-7). This enabled a surge in nascent entrepreneurship, as the unemployed segment of an otherwise competent workforce created and were employed in new entrepreneurial ventures (Thurik et al., 2008: 682; Audretsch & Thurik, 2010: 9)[52].

7.1.3. The importance of entrepreneurship and SMEs for entrepreneurial growth

The important consequence of the described developments was a shift in the comparative advantage of developed economies. It is important to note that this was only partly due to the possibilities for outsourcing and reorganising of the existing modes of production. It was also a consequence of the technological advances that introduced a great number of opportunities for innovation in products and services (Acs, 2006: 100). As emphasised by Casson (2005: 343), the changes in international competition led to new and amplified patterns of economic volatility, which favoured adaptable and innovative organisational forms (Aldrich & Martinez, 2001: 44; Wennekers & Thurik, 1999: 32). Thus, SMEs have been hailed as *'contributing not just to employment and social and political stability but also to innovative and competitive power'* (Thurik, 2009: 8). Yet, it is necessary to consider an important point presented by Wennekers and Thurik (1999: 29); entrepreneurship cannot and should not be defined as synonymous with SMEs. Instead, SMEs function as entrepreneurial agents, who generate economic growth by acting upon new knowledge and opportunities in order to commercialise this knowledge through innovation (Zwan et al., 2013: 804; Audretsch, 2007a: 65). This is an important point, because it illustrates how entrepreneurship is essentially the link between investments in new knowledge and the spillover of this knowledge to create employment and economic growth (Acs, 2006: 105; Audretsch, Keilbach & Lehmann, 2006: 35). In terms of policy, such understandings of entrepreneurship have led policymakers to prioritise increased investments in knowledge and R&D to foster opportunities for entrepreneurship (Audretsch & Keilbach, 2004: 951; Carree & Thurik, 2005: 22)[53]; yet, it has also been recognised that policies should improve the institutional environment that enables the perception and exploitation of opportunities (Hwang & Powell, 2005: 179; Acs, 2006: 105; Stenholm et al., 2013: 177).

The role and recognition of SMEs as entrepreneurial agents in economic policy was facilitated also by a parallel development. Thus, knowledge and technology were integrated in macroeconomic growth models as endogenous variables (Romer, 1986); previous models had marginalised entrepre-

[52] While unemployment enabled an increase in entrepreneurship and SME activity, the generalisation of this causality is widely contested (Verheul et al., 2002: 34-35; Wennekers et al., 2005: 298; Faria et al., 2010: 1283).
[53] Both Lisbon and Europe 2020 have set a headline target of 3 % GDP invested in R&D (EC, 2004; 2010).

neurship (Solow, 1956; 1957). In the endogenous growth model, knowledge was considered a public good, and knowledge investments were expected to spill over automatically and without cost *'from the firm or organization generating that knowledge for commercialisation by third-party firms'* (Audretsch, 2007a: 66; cf. Greenhalgh & Rogers, 2010: 227). Thus, policymakers recognised the importance of encouraging public and private knowledge investment to ensure economy-wide benefits and generate innovation opportunities (Audretsch & Thurik, 2010: 16). However, the underlying expectation of unimpeded spillover ignores the *problem of appropriability* (Arrow, 1962: 616-617); if knowledge is diffused freely, the incentive to produce it disappears. Thus, incentives for investment and innovation depend on the ability of investors to capture the value of knowledge through intellectual property rights and similar arrangements (Scotchmer, 1991: 30; Maurer & Scotchmer, 2004: 1; Stiglitz, 2008: 1696). In addition, the effect of public policy support for such investments is impeded by the existence of a *knowledge filter*[54] in developed economies, which prevents knowledge from Thus, the central role for economic policy overcoming the knowledge filter and the appropriability problems (Audretsch et al., 2006: 34-42; cf. Casson, 2005: 344-345)[55].

These developments in macroeconomic growth models and public policy are important to the thesis for two reasons. First, since knowledge investments do not spill over automatically for commercialisation, it is required that *'an entrepreneur provides a conduit for knowledge spillovers by creating a new firm'* (Audretsch & Thurik, 2010: 18; Minniti & Lévesque, 2008: 605; Grilo & Thurik, 2006: 75). This need for entrepreneurial conduits is met by several actors, including SMEs that function as institutional mechanisms for evaluating and commercialising knowledge and innovation. Second, the knowledge filter and appropriability problems offer explanations for the observed lack of economic growth fostered by Lisbon Strategy knowledge investments; these explanations have to do with how the structure and governance of the strategy acted as knowledge filters on the expected entrepreneurship and commercialisation.

7.1.4. The entrepreneurial economy in Europe

The previous sections have described economic, academic, and political developments that have all contributed to an increased economic importance of entrepreneurship and entrepreneurial firms. The

[54] The barriers to knowledge commercialisation; e.g. public institutions, university policy, or the inherent uncertainty and asymmetry in assessments of the economic value of knowledge.
[55] The macroeconomic growth model developments and the problems of public innovation and knowledge policy are reviewed in depth in Appendix A-2.

perceived importance of entrepreneurship has been reflected in economic policy (Audretsch & Keilbach, 2004: 957; Audretsch et al., 2009: 467). Thus, the Lisbon and Europe 2020 frameworks are embedded in these developments and cannot be properly understood in isolation.

The gradual transformation of managed economies that began in the 1970s led to political and economic responses in both public and private sectors, but the North American and European responses were significantly different in terms of timing and political support (Audretsch & Thurik, 2010: 12). Thus, the U.S. *'suffered the consequences of and therefore began to respond to the consequences of globalised production earlier than did Europe'* (ibid.). In the first decades of the change, European governments largely ignored the entrepreneurial phenomena in the U.S. (e.g. Silicon Valley); they instead maintained their focus on the perceived competitive threat from large MNCs (Audretsch, Thurik, Verheul & Wennekers, 2002: 4). This indicates the essentially Schumpeterian view of large organisations as drivers of economic growth. However, evidence continued to accumulate on the recurrence of SMEs in North America and European countries (Loveman & Sengenberger, 1991; Acs & Audretsch, 1990), as well as on the economic contribution of these firms in terms of job creation (Acs & Audretsch, 1993; Audretsch & Thurik, 2000: 24-29). The economic viability of entrepreneurial SMEs was further corroborated by productivity studies, which indicated *'that while between 1945 and 1995 the main EU countries had been closing the gap with the United States, since 1995 the United States [had] reversed this trend'* (Greenhalgh & Rogers, 2010: 76; van Ark, O'Mahony & Timmer, 2008: 25). In turn, European policymakers were compelled to recognise the need to focus economic policy on entrepreneurship and SMEs (Mowery, 2005: 40; Audretsch, 2007: 64). It was noted that this policy response would have to consider the institutional environment, as European institutions had been demonstrated to be less conducive to radical innovation compared to the U.S. (Mowery & Rosenberg, 1993: 29; Audretsch & Thurik, 2010: 13). This importance of institutional framework conditions for entrepreneurship and economic growth was corroborated by several studies of the relationship (OECD, 1998: 14; GEM, 2000: 22; 2002: 33). The response of the European Union is evidenced by the European Green Papers on innovation and entrepreneurship (EC, 1995; 2003); yet, the most important reaction to declining employment and growth was the Lisbon Strategy, which was defined with the distinct objective of becoming *'the most dynamic and competitive knowledge-based economy in the world ... [through] a systematic approach to foster entrepreneurship in the new economy'* (EC, 2000: 1). The strategy was designed to improve employment, growth, and competitiveness in European economies by exploiting existing advantages of high education levels, skilled labour, capable research institutions, and the innovative

potential of widespread cultural divergences (EC, 2005a: 5; ECL, 2000: 3; cf. Thurik, 2009: 11).

7.1.5. The changing paradigm of economic policy

The emergence of entrepreneurship and knowledge-based competition as important areas of comparative advantage for North American and European economies was accompanied by changes in the paradigm of economic policy (Dana, Bajramovic & Wright, 2005: 102: Carree & Thurik, 2005: 22). These changes relate to the proclaimed demise of the nation state and the transfer of political and economic influence to a broad array of institutional actors at supranational and regional levels (Marks & Hooghe, 2004: 15; Ohmae, 1993: 78). Thus, the traditional set-up of economic activity *'in which business activity is organised largely around the segmentation of factor and product markets into distinct nation-states, is giving way to a new paradigm [involving the] diminution of national power, and its transfer to supranational or global levels'* (Wright & Dana, 2003: 136-137). Globalisation has been emphasised as the primary catalyst of this diffusion of economic and institutional influence, which has led to changes in the content and structure of economic policy (Meyer et al., 2006: 33-35; Audretsch, 2001a: 26); in the case of the European Union, these developments have entered the economic policy debate in two primary areas.

First, it has been observed that the influence of the European Union on the economy and policies of member states is not restricted to areas falling under Community law or to the effects of European integration (Bruno et al., 2006: 519). Following the Maastricht initiatives for economic integration, soft economic policy coordination has since been evolving within the European Union. The term *Europeanisation* has been coined to describe this non-constraining mode of policy coordination, which relies on particular mechanisms of governance and strategic coordination to define and distribute economic priorities and recommendations, as well as to foster the necessary institutional and policy change at the national level (Radaelli, 2001: 110; Zirra, 2010: 6). It is argued here that the Lisbon and Europe 2020 frameworks represent examples of such strategic coordination and governance; yet, the analysis finds that they differ with respect to how member states and regional actors are involved in the strategic process. Thus, while Richardson (2012: 5) argues that *'the erosion of national sovereignty ... means the erosion of the power of the member states exclusively to decide much of their public policy via domestic policy-making processes and institutions'*, the thesis shows how member states and particularly regions have the ability to impact the strategic priorities in the Innovation Union.

Second, the concept of Europeanisation is embedded in the fundamental discussion on how political

power is and should be distributed in a globalised world; Rodrik (2011: 201) has described this as the political trilemma of the world economy, with obvious reference to the well-known impossible trinity in macroeconomics. The political trilemma is constituted of democratic politics, national sovereignty, and hyperglobalisation[56]. The argument is simply that a nation cannot achieve all three simultaneously. The underlying observation is that the authority to define economic policy cannot be given simultaneously to global institutions, national governments, and the participants in democratic processes. It is possible to reduce democratic influence, and instead leave governments to implement policies in accordance with global markets and institutions. It would also be possible to think along the lines of the Bretton Woods regime, which would involve putting more emphasis on national self-determination on the basis of democratic input. The remaining possibility is most characteristic of the European Union; it involves the diminution of member state influence, while European institutions determine and coordinate a growing share of domestic policy (Rodrik, 2011: 203; Richardson, 2012: 5); in this set-up, democratic influence resides mainly with European regions, as they adapt the general strategy to local economic conditions.

While it is perhaps obvious that the political trilemma is an over-simplification, the thesis analysis demonstrates that the trilemma and similar views conceal important interactions between regional, national, and European levels. Nonetheless, Marján (2010: 202) is correct in pointing out that '*the political climate is very different from two decades ago; … The time will come when Europe must decide what is more important: national interests or European competitiveness'*.

[56] With European integration and policy coordination being a prime example of hyperglobalisation.

7.2. Appendix A-2

The broad proliferation of the neoclassical, exogenous growth model advocated by Solow (1956; 1957) contributed to the marginalisation of entrepreneurship in economic theory, due specifically to the econometric emphasis put on physical capital and labour as the primary means of production, productivity and, consequently, economic growth (Greenhalgh & Rogers, 2010: 215-217; Audretsch, 2007: 65-66; Carree & Thurik, 2005: 13). Despite Solow recognising the limited explanatory potential of this model with regard to variations in economic growth (Audretsch, 2007: 66; Nelson, 1981: 1033), which led to the introduction of a residual factor in the model representing technological change[57], technology and human capital remained exogenous contributors that fall *'like manna from heaven'* (Solow, 1956). This is evidenced by the formal expression of the exogenous growth model (2.1.), in which the level of technology (A) is included purely as an input multiplier.

$$Y = A\, f(K, L) \qquad (2.1)$$

While specific forms of this model, e.g. the Cobb-Douglas production function (2.2), can be rewritten to account for the impact of a technological in-crease on output per worker or capital (Greenhalgh & Rogers, 2010: 223-225), the fundamental assumption of exogenous technology growth is not realistic in developed economies (Stiglitz, 2008: 1693).

$$Y = AK^{\alpha} L^{\beta} \qquad 0 < \alpha < 1;\ 0 < \beta < 1 \qquad (2.2)$$

Thus, concurrent with the political and technological developments towards a knowledge-based economy, the 1980s marked the emerging formalisation of knowledge and technology as endogenous variables in macroeconomic growth models (Romer, 1986; Audretsch, 2007: 66). By linking the endogenous changes to long-run economic growth, Romer (1990) reintroduced knowledge as an important component of growth theory, emphasising in particular the economic effects of externalities and the public good characteristics associated with knowledge investments. Specifically, knowledge and technology were assumed to spill over automatically and without cost *'from the firm or organization generating that knowledge for commercialisation by third-party firms'* (Audretsch, 2007: 66; cf. Greenhalgh & Rogers, 2010: 227; Griliches, 1992), thus allowing un-

[57] Indeed, Solow (1957) demonstrated how 88 pct. of GDP per capita growth in a US sample remained unaccounted for by the factors of capital and labour, which was in-stead attributed to the residual factor of total factor productivity growth (technical change) (Greenhalgh & Rogers, 2010: 78-79). Despite subsequent studies finding varying and often decreased rates of contribution (e.g. Young, 1992), they anticipated the need for an expanded model of economic growth (cf. Nelson, 1981: 1033).

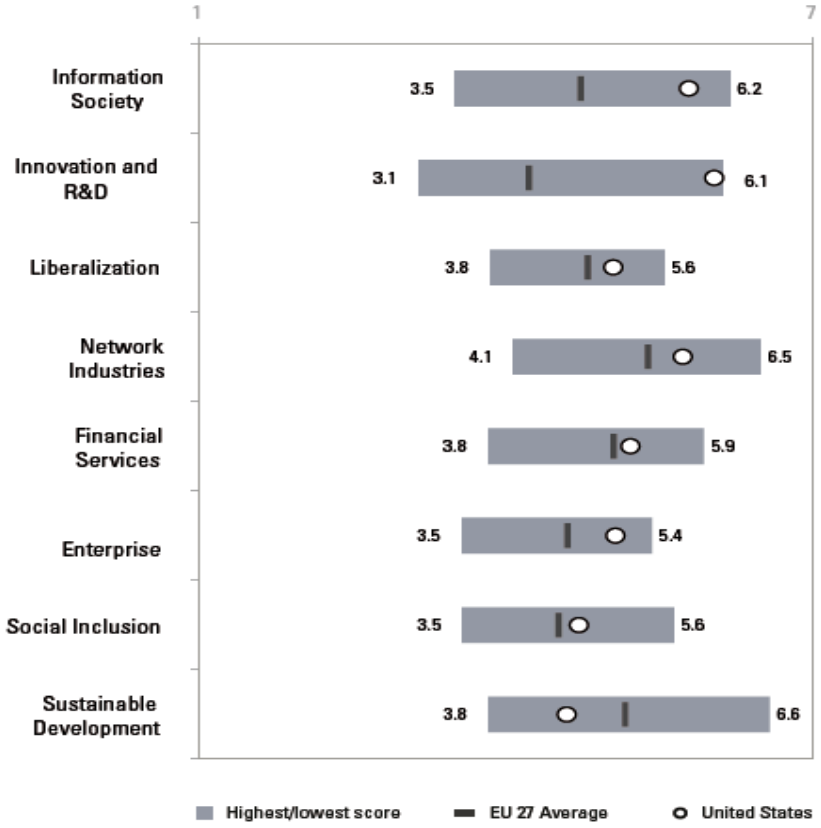
constrained exploitation of technological advances. Consequently, public policy became particularly aware of the importance of encouraging knowledge investments[58] as a means of ensuring economy-wide benefits (Audretsch & Thurik, 2010: 16), mainly because the traditional factors of physical capital and labour do not exhibit similar spillover effects (Audretsch, 2007: 66). While the endogenous growth model has been reinterpreted and expanded into several rederivations, a common characteristic of these models is therefore the emphasis on *'systematic investment by firms to create knowledge and new ideas, and subsequent [economy-wide] efforts to appropriate the returns accruing from those investments through commercialisation'* (Audretsch, 2007: 66).

However, the assumption of unimpeded spillover ignores the *problem of appropriability* related to innovation and knowledge diffusion, as emphasised by Arrow (1962: 616-617) in his remark that *'in a free enterprise economy the profitability of invention requires a suboptimal allocation of resources'*. In other words, while the free diffusion of knowledge would be optimal with regard to public welfare, incentives for innovation and invest-ment would be absent in this arrangement. In terms of public policy, this inherent underprovision of knowledge has been thoroughly addressed in academic debates on intellectual property regimes and other methods of incentivising research (Scotchmer, 1991; Maurer & Scotchmer, 2004; Stiglitz, 2008); prominent examples include government intervention through either *Pigovian subsidies* or direct public provision of knowledge (Pigou, 1932; Greenhalgh & Rogers, 2010: 23-27). However, encouraging investment in and optimal use of knowledge is also impeded by significant transaction costs, which stem from the fact that the expected economic (and social) value of new knowledge cannot be objectively or universally assessed, as both the feasibility and profitability of an innovation are inherently uncertain and asymmetric[59] (Casson, 2005: 344-345). These knowledge and research characteristics have been augmented by several public institutions and regulations (Audretsch, 2007: 67), prompting scholars to argue for the existence of a k*nowledge filter* in developed economies (Acs et al., 2008; Audretsch et al., 2006: 34-42), which arguably accounts for the observed disparity between knowledge investment and spillovers into commercialisation (Audretsch et al., 2009: 467).

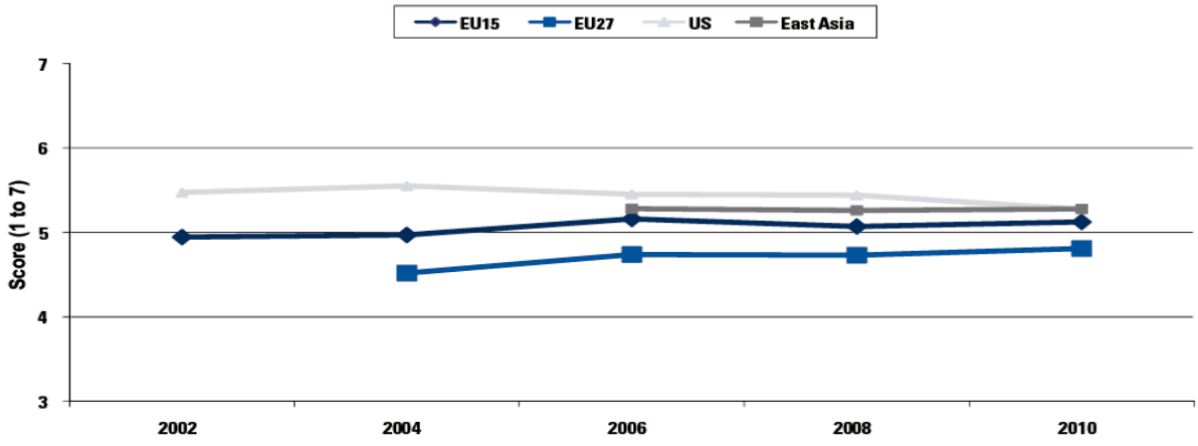
[58] E.g. technological R&D, education, as well as university and collaborative research.
[59] In this context, asymmetry refers to the notion that evaluation of the economic value of an idea is often contingent on individual expertise and/or background (Audretsch, 2007: 67).

7.3. Appendix B

Score Dispersion among EU Countries



Europe's Comparative Performance on the Lisbon Scores (2002-2010)



Source : World Economic Forum (2010 : 8, 12)

7.4. Appendix C

Rankings and Scores of EU Countries

	Final Index		Subindexes															
			Information Society		Innovation and R&D		Liberalization		Network Industries		Financial Services		Enterprise Environment		Social Inclusion		Sustainable Development	
Economy	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Sweden	1	5.83	1	6.20	2	5.64	1	5.55	2	6.19	1	5.93	4	5.15	3	5.42	1	6.57
Finland	2	5.72	5	5.51	1	6.12	7	5.26	8	5.96	3	5.86	2	5.27	2	5.59	3	6.19
Denmark	3	5.61	3	5.74	3	5.33	5	5.39	4	6.09	6	5.60	7	5.05	1	5.64	5	6.07
Netherlands	4	5.51	2	5.81	5	4.94	2	5.54	7	5.98	7	5.54	6	5.06	4	5.31	6	5.91
Luxembourg	5	5.43	7	5.43	12	4.17	6	5.29	5	6.08	2	5.90	1	5.43	5	5.31	7	5.87
Germany	6	5.39	9	5.27	4	5.10	4	5.39	1	6.49	9	5.36	17	4.50	9	4.85	2	6.19
Austria	7	5.39	6	5.45	8	4.65	3	5.42	6	6.08	4	5.70	10	4.79	8	4.91	4	6.14
France	8	5.22	10	5.21	9	4.62	11	5.10	3	6.17	5	5.61	12	4.78	13	4.71	9	5.54
United Kingdom	9	5.15	4	5.61	7	4.71	10	5.12	9	5.77	14	5.10	11	4.78	14	4.61	10	5.48
Belgium	10	5.15	14	4.71	6	4.78	8	5.22	11	5.76	11	5.28	8	4.88	6	5.08	11	5.46
Ireland	11	5.00	13	4.78	10	4.47	9	5.20	18	5.24	17	4.87	5	5.08	11	4.72	8	5.64
Estonia	12	4.96	8	5.33	14	3.99	14	4.84	13	5.47	10	5.33	3	5.17	16	4.47	14	5.07
Cyprus	13	4.83	16	4.44	21	3.71	13	4.91	10	5.76	12	5.28	13	4.73	7	5.03	18	4.77
Slovenia	14	4.79	12	4.84	11	4.28	18	4.49	15	5.37	19	4.75	15	4.61	15	4.56	12	5.43
Czech Republic	15	4.71	17	4.43	13	4.02	12	4.96	20	5.11	15	5.00	19	4.47	10	4.73	16	4.96
Portugal	16	4.70	15	4.64	16	3.92	19	4.47	12	5.69	16	4.97	16	4.50	17	4.18	13	5.20
Malta	17	4.58	11	5.15	23	3.50	16	4.73	16	5.30	8	5.49	23	3.99	12	4.71	27	3.80
Spain	18	4.53	20	4.21	15	3.93	15	4.73	14	5.37	13	5.10	25	3.94	21	3.92	15	5.06
Slovak Republic	19	4.45	18	4.42	25	3.46	17	4.70	23	4.64	20	4.75	9	4.81	18	3.98	17	4.86
Lithuania	20	4.39	19	4.38	20	3.76	24	4.15	19	5.11	21	4.58	18	4.49	20	3.93	19	4.73
Hungary	21	4.28	22	4.12	18	3.79	21	4.35	21	4.85	23	4.42	20	4.40	23	3.79	22	4.50
Latvia	22	4.21	21	4.15	24	3.48	22	4.21	24	4.57	26	4.27	14	4.72	26	3.61	20	4.68
Greece	23	4.18	25	3.55	17	3.81	25	4.10	17	5.25	18	4.81	26	3.62	24	3.75	21	4.54
Poland	24	4.07	26	3.50	22	3.64	20	4.44	26	4.12	22	4.46	24	3.95	19	3.96	23	4.49
Italy	25	4.03	23	3.74	19	3.78	23	4.16	22	4.81	24	4.31	27	3.54	25	3.64	24	4.28
Romania	26	3.96	27	3.48	26	3.37	26	4.04	27	4.05	25	4.30	21	4.38	22	3.89	25	4.19
Bulgaria	27	3.77	24	3.63	27	3.12	27	3.82	25	4.23	27	3.80	22	4.22	27	3.55	26	3.82
EU 27	-	4.81	-	4.73	-	4.23	-	4.80	-	5.39	-	5.05	-	4.60	-	4.51	-	5.16
United States	-	5.27	-	5.79	-	6.03	-	5.05	-	5.73	-	5.22	-	5.07	-	4.71	-	4.59
East Asia	-	5.28	-	5.56	-	5.24	-	5.10	-	6.06	-	5.41	-	5.17	-	4.93	-	4.74

Source : World Economic Forum (2010 : 9)

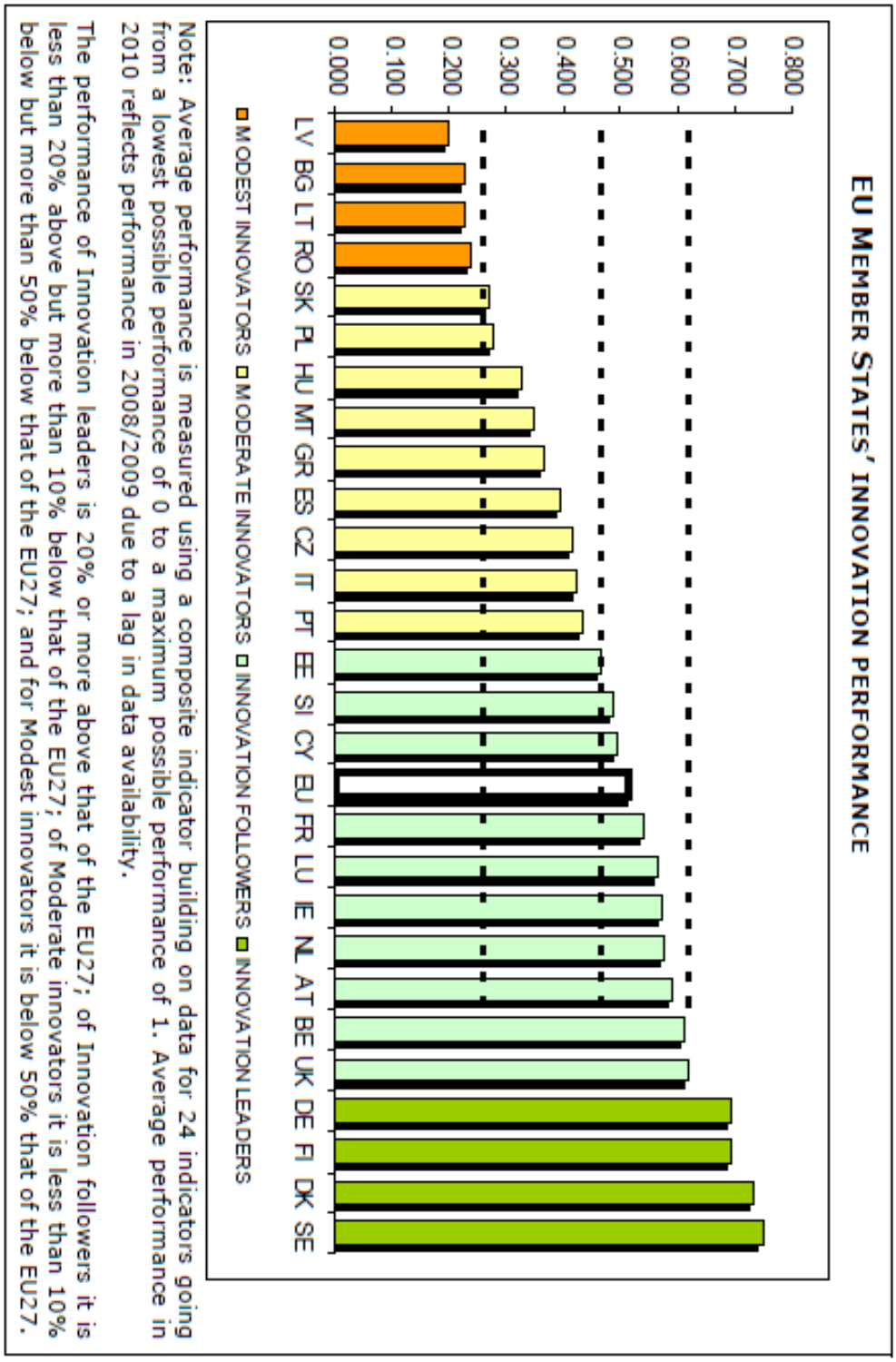
7.5. Appendix D

Main type / innovation dimension / indicator
ENABLERS
Human resources
1.1.1 New doctorate graduates (ISCED 6) per 1000 population aged 25-34
1.1.2 Percentage population aged 30-34 having completed tertiary education
1.1.3 Percentage youth aged 20-24 having attained at least upper secondary level education
Open, excellent and attractive research systems
1.2.1 International scientific co-publications per million population
1.2.2 Scientific publications among the top 10% most cited publications worldwide as % of total scientific publications of the country
1.2.3 Non-EU doctorate students[1] as a % of all doctorate students
Finance and support
1.3.1 R&D expenditure in the public sector as % of GDP
1.3.2 Venture capital investment as % of GDP
FIRM ACTIVITIES
Firm investments
2.1.1 R&D expenditure in the business sector as % of GDP
2.1.2 Non-R&D innovation expenditures as % of turnover
Linkages & entrepreneurship
2.2.1 SMEs innovating in-house as % of SMEs
2.2.2 Innovative SMEs collaborating with others as % of SMEs
2.2.3 Public-private co-publications per million population
Intellectual assets
2.3.1 PCT patents applications per billion GDP (in PPS€)
2.3.2 PCT patent applications in societal challenges per billion GDP (in PPS€) (environment-related technologies; health)
2.3.3 Community trademarks per billion GDP (in PPS€)
2.3.4 Community designs per billion GDP (in PPS€)

OUTPUTS
Innovators
3.1.1 SMEs introducing product or process innovations as % of SMEs
3.1.2 SMEs introducing marketing or organisational innovations as % of SMEs
3.1.3 High-growth innovative firms
Economic effects
3.2.1 Employment in knowledge-intensive activities (manufacturing and services) as % of total employment
3.2.2 Contribution of medium and high-tech product exports to the trade balance
3.2.3 Knowledge-intensive services exports as % total service exports
3.2.4 Sales of new to market and new to firm innovations as % of turnover
3.2.5 License and patent revenues from abroad as % of GDP

Source : IUS (2013 : 9)

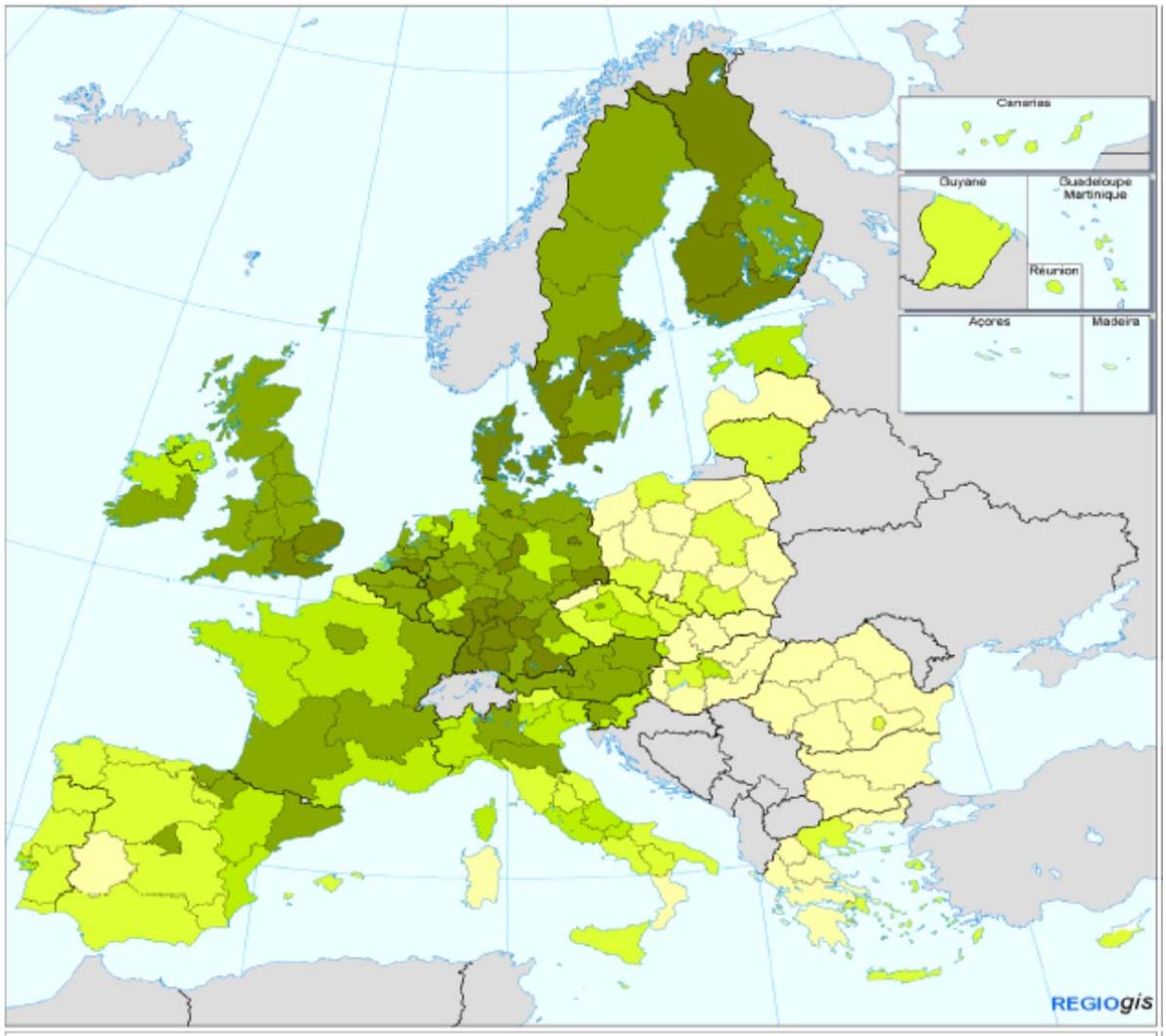
7.6. Appendix E



Source : IUS (2010 : 9)

7.7. Appendix F

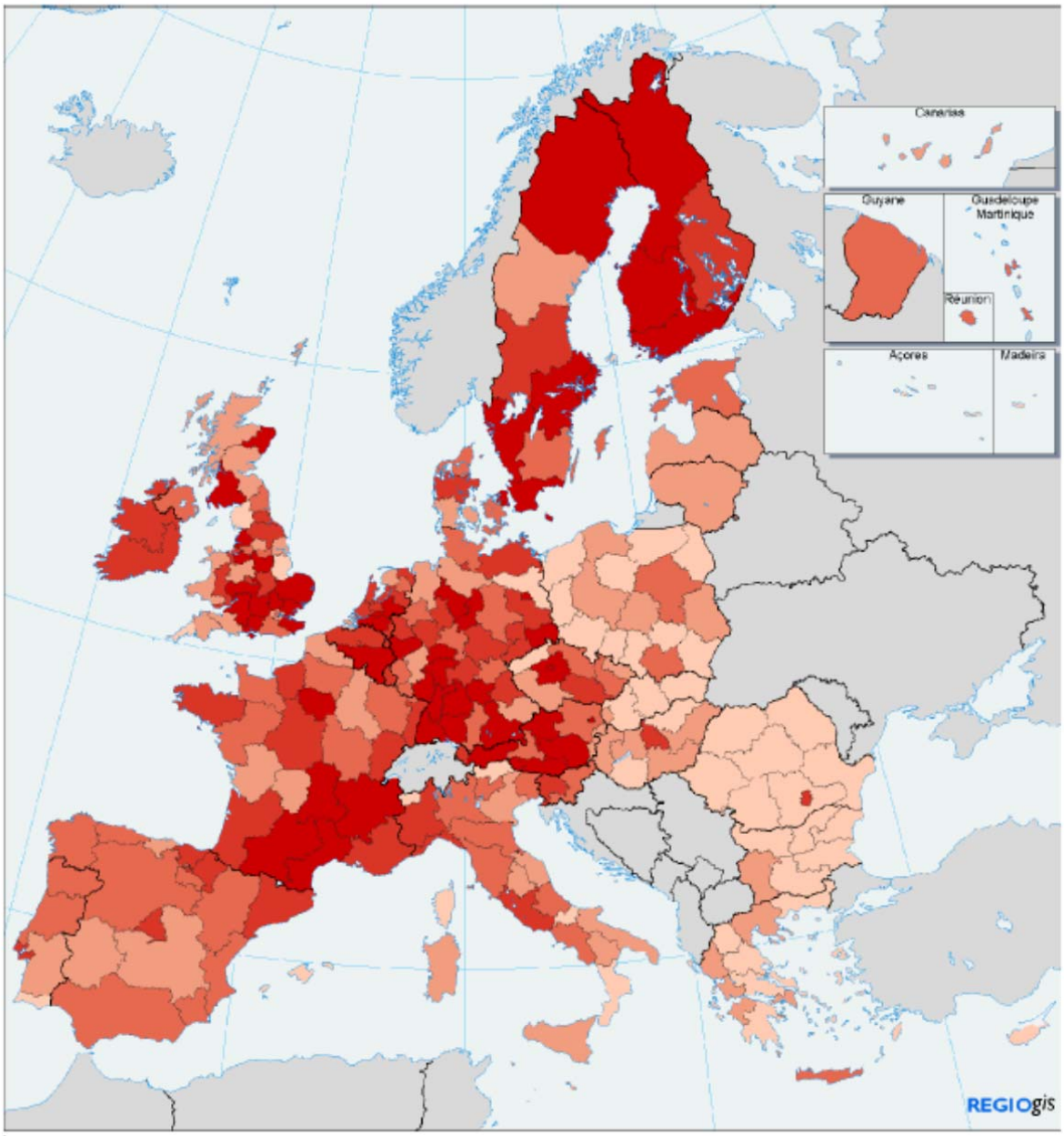
Map 1: Regional Innovation Performance Index



Regional Innovation Performance Index, 2006

Note : Dark green signifies high innovation performance. Performance decreases with brightness.

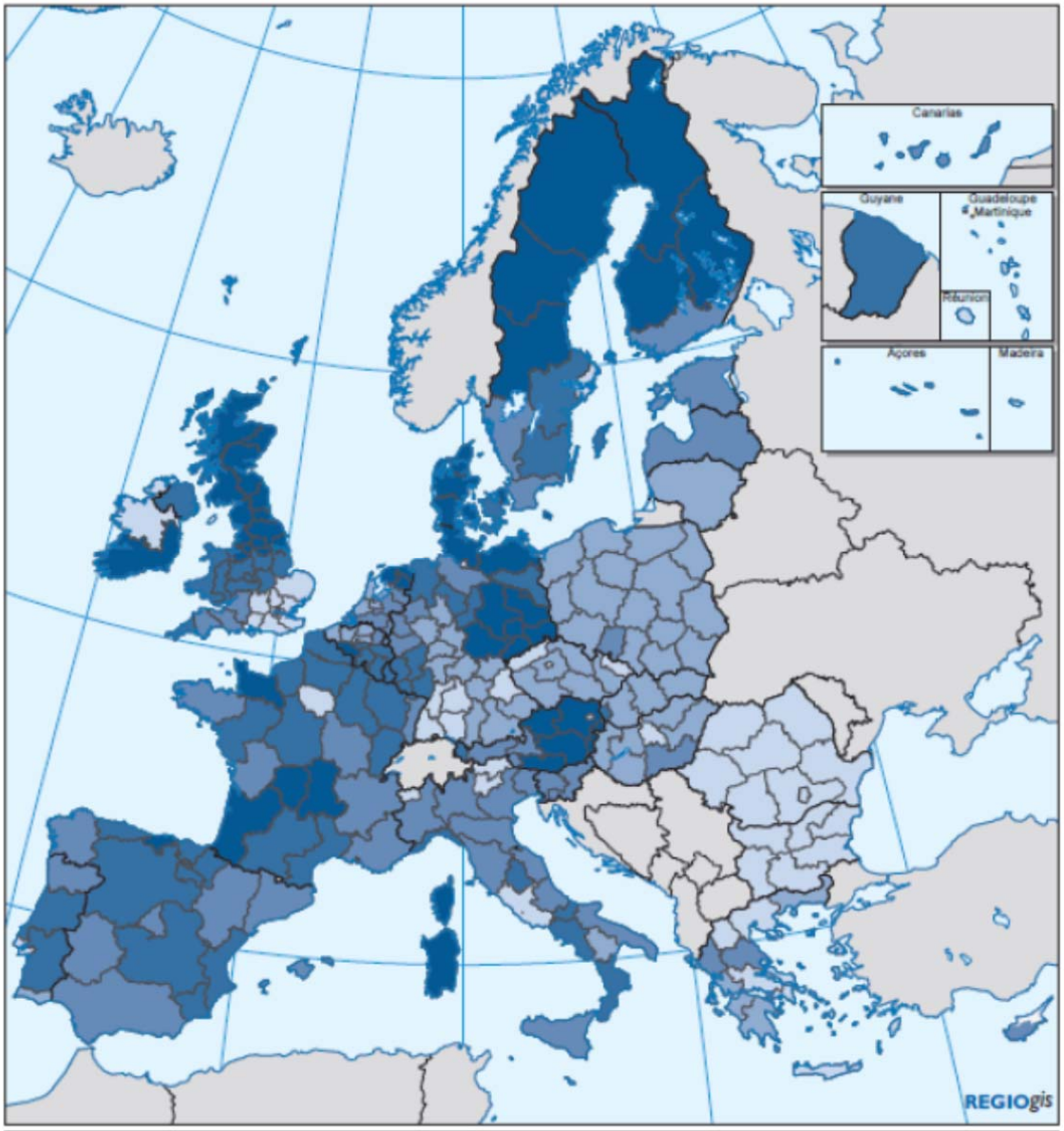
Map 2: R&D expenditure



Total Intramural R&D expenditure (GERD), 2007

Total Intramural R&D Expenditure, 2007. Dark red indicates high expenditure.

Map 3: Cohesion Policy Funding for RTD and innovation, 2007-20



Planned investments of Cohesion Policy in RTD, innovation, enterprise environment, 2007-2013

Dark blue signifies a high rate of planned investments of Cohesion Policy funds in RTD, innovation, and enterprise environment (2007-2013)

Source: EC (2010f: 3-5)