THE POLITICAL ECONOMY OF ADAPTATION AND RESILIENCE IN OLD INDUSTRIAL REGIONS: A COMPARATIVE STUDY OF SOUTH SAARLAND AND TEESSIDE

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ABSTRACT

This project aims to make a conceptual, methodological and empirical contribution to the burgeoning field of Evolutionary Perspectives in Economic Geography. To date, Evolutionary Perspectives have tended to underplay the role of the state and macro-institutions, and how notions of agency, power, and scale feature in the evolution of a regional economy. This thesis draws upon Geographical Political Economy to develop an Evolutionary Perspective that is more sensitive to these concerns. In particular, I have focussed on aspects of policy and governance in the long-term adaptation and resilience of old industrial regions coping with disruptive structural change. Based on the Path Dependency perspective – which within Evolutionary Perspectives seems best suited to theorise aspects of policy and governance - I have developed an analytical framework and detailed a methodology of 'deep contextualisation', to understand (1) how policies and institutions evolve over time, (2) what role they play in long-term adaptation and resilience, and (3) how this may be shaped by the wider institutional environment. This framework and methodology (with these three distinct levels of analysis) was subsequently used to study and compare two cases: the old steel regions of South Saarland in Germany, and Teesside in the United Kingdom. These regions both experienced a crisis in their economies in the 1970s and 1980s. South Saarland has been able to adapt successfully, whereas Teesside continues to struggle. The study presents compelling evidence that this has to a considerable extent been a result of (1) different priorities and consistency in the policies implemented, (2) the more robust governance arrangements present in South Saarland compared to Teesside, and (3) the federal government structure and more cooperative form of capitalism in Germany, which appears to have been more conducive for long-term resilience than the centralist structure and more liberal model in the United Kingdom.

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Although the main theme of this project is the transformation of old industrial regions, it is nevertheless very personal to me. I feel like I have also undergone a transformation in the past 4 years, having to switch from a career in consulting to a career in academia, having to move to a new city in a different country, and having to get acquainted with a discipline in which I had no background. It have been very exciting and edifying times, but also demanding and uncertain. So I have had to show plenty of adaptability and resilience myself, and as this study of old industrial regions shows, you cannot successfully do this without ample support from others.

First of all, I want to thank my friends and colleagues, both new and old. There are too many to mention them all here (and I am afraid that if I do, I will overlook a few…). Especially my friends and colleagues in the Geography PGR-room (of my own cohort of 2011 and various cohorts before and after) have been a constant source of warmth, comfort, distraction and inspiration. Over the 4 years I spent in North East England, and during my 4-month stay in Germany (Berlin and Saarbrücken) for fieldwork there, I have met many people through various circles, some of whom I would now count among my best friends. Thank you for being a greater or smaller part of this journey. And then there is also a steady group of friends in The Netherlands and former colleagues at Rebel Advisory, who have shown great interest and encouragement, but also made sure that I would continue to call Rotterdam my home.

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ACRONYMS

BDA	Bundesvereinigung der Deutschen Arebeitsgeberverbände (Federal Association of German Employer Organisations)
BSC	British Steel Corporation
BOS	Basic Oxygen Steel
CBI	Confederation of British Industry
CDU	Christlich Demokratische Union Deutschlands (Christian Democratic Union of Germany)
CME	Coordinated Market Economy
CPI	Centre for Process Innovation
CSU	Christlich-Soziale Union in Bayern (Christian Social Union in Bavaria)
DGB	Deutscher Gewerkschaftsbund (German Labour Federation)
DM	Deutsche Mark (German Mark)
ECSC	European Coal and Steel Community
EEC	European Economic Community
ERDF	European Regional Development Fund
ESF	European Social Fund
EU	European Union
FDP	Freie Demokratische Partei (Free Democratic Party)
GDP	Gross Domestic Product
GIU	Gesellschaft für Innovation und Unternehmensförderung (Corporation for Innovation and Enterprise Promotion)
GVA	Gross Value Added
GW Saar	Gesellschaft für Wirtschaftförderung Saarland (Corporation for Economic Promotion Saarland)
GRW	Gemeinschaftsaufgabe für Verbesserung der Regionalen Wirtschaftstruktur (Joint Task for the Improvement of the Regional Economic Structure)
ICI	Imperial Chemical Industries
IHK	Industrie- und Handelskammer (Chamber of Industry and Commerce)

ISTC	Iron and Steel Trades Confederation
LEG Saar	Landesentwicklungsgesellschaft Saarland (State Development Corporation Saarland)
LME	Liberal Market Economy
MSC	Manpower Services Commission
RDA	Regional Development Agency
Saar.is	Saarland Innovation und Standort (Saarland Innovation and Location)
SBB	Saarland Bau und Boden (Saarland Build and Land)
SIKB	Saarländische Investitionskredit Bank (Saarland Development Bank)
SME	Small and Medium-sized Enterprise
SPD	Sozialdemokratische Partei Deutschlands (Social Democratic Party of Germany)
STI	Science Technology Innovation
TUC	Trades Union Congress
UDC	Urban Development Corporation
ZPT	Zentrale für Produktivität und Technologie Saarland (Centre for Productivity and Technology Saarland)

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Chapter 1. INTRODUCTION

“Here in northeast Ohio
Back in eighteen-o-three
James and Danny Heaton
Found the ore that was linin' Yellow Creek
They built a blast furnace
Here along the shore
And they made the cannonballs
That helped the Union win the war

Here in Youngstown
Here in Youngstown
My sweet Jenny I'm sinkin' down
Here darlin' in Youngstown

Well my daddy worked the furnaces
Kept 'em hotter than hell
I come home from 'Nam worked my way to scarfer
A job that'd suit the devil as well
Taconite coke and limestone
Fed my children and make my pay
Them smokestacks reachin' like the arms of God
Into a beautiful sky of soot and clay

Here in Youngstown
Here in Youngstown
Sweet Jenny I'm sinkin' down
Here darlin' in Youngstown

Well my daddy come on the Ohio works
When he come home from World War Two
Now the yard's just scrap and rubble
He said ‘Them big boys did what Hitler couldn't do.’
These mills they built the tanks and bombs
That won this country's wars
We sent our sons to Korea and Vietnam
Now we're wondering what they were dyin' for

Here in Youngstown
Here in Youngstown
My sweet Jenny I'm sinkin' down
Here darlin' in Youngstown

From the Monongahela valley
To the Mesabi iron range
To the coal mines of Appalachia
The story's always the same
Seven hundred tons of metal a day
Now sir you tell me the world's changed
Once I made you rich enough
Rich enough to forget my name

And Youngstown
And Youngstown
My sweet Jenny I'm sinkin' down
Here darlin' in Youngstown

When I die I don't want no part of heaven
I would not do heaven's work well
I pray the devil comes and takes me
To stand in the fiery furnaces of hell"

Bruce Springsteen – "Youngstown" (1995)

1.1. The constancy of change: adaptation and resilience in regional economic development

Heavy industry transformed a large number of places in Europe and North America (like Youngstown) from rural paltriness to industrial greatness in the second half of the 19th and early 20th century. But by the 1970s and 1980s this greatness turned out to be very transient indeed, as these places often went through a period in which many plants closed and manufacturing employment rapidly dwindled. The loss of industry proved to be a hugely disorienting and traumatic experience for the communities and people within these places. This manifest fleetingness (and sense of profound loss), have been a source of fascination and anger; as is clear from the lyrics above, but also from numerous other pop songs, television series, documentaries, films, books, photo series, etc.[1]. The

[1] With regard to pop songs, beside Bruce Springsteen – "Youngstown", for example Billy Joel – "Allentown" (1982), Chris Rea – "Steel River" (1985; about Middlesbrough), and John Rich – "Shuttin' Detroit Down"

instability of capitalism (as witnessed most clearly by the loss of entire industries in places, and the ways of life associated with these industries) is thus a major aspect of modern life.

Naturally, this has also been a central theme within Economic Geography. How places are affected by economic changes, and the ways in which they cope with such changes, is a key concern within the field (see e.g. Storper and Walker, 1989). Indeed especially in the 1970s and 1980s, many studies appeared on the (successful or less successful) adaptation and renewal of local and regional economies in the face of fast-paced deindustrialisation. Many of these were studies of single localities or regions[2]; but also a few wide-ranging comparative studies were undertaken[3]. More recently however, in the light of the financial crisis of 2008 and subsequent economic downturn – and influenced by debates on ecological change (especially climate change) – attention has shifted to the concept of 'resilience'. Meanwhile a considerable debate has emerged on regional economic resilience, with regard to its added value, its conceptualisation and its operationalisation[4]. The concept has been applied mostly to assess how various regions have been affected by and have recovered from recessions, particularly the most recent one[5]. However, the concept has now also been used to understand the capacity of regional economies to deal with more long-run structural changes[6].

Also this project takes a more long-term view on adaptation and resilience in regional economies. I want to understand adaptation and resilience as dynamic and

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(2009). With regard to TV-series, industrial decline is a major theme in e.g. "Boys from the Blackstuff" (1982) and "Our Friends in the North" (1996); and with regard to documentaries, e.g. "Roger and Me" (1989) and "Tie Xi Qu: West of the Tracks" (2003). Only about Detroit, and its decline and current 'ruins', there exist more than 20 books (both more journalistic accounts and photography books).

[2] E.g. Checkland (1976); Hudson (1989); Grabher (1993); Beynon et al. (1994).

[3] E.g. Cooke (1986, 1989); Hamm and Wienert (1990).

[4] E.g. Swanstrom (2008); Hassink (2010a); Pike et al. (2010); Simmie and Martin (2010); Bristow and Healy (2014a, 2014b); Boschma (2015); Martin and Sunley (2015a).

[5] E.g. Cambridge Econometrics (2010); Davies (2011); Groot et al. (2011); Hill et al. (2011); Fingleton et al. (2012); Doran and Fingleton (2013).

[6] E.g. Cowell (2013; 2015); Evans and Karecha (2014); Boschma (2015); Hu and Hassink (2015).

transformational qualities in regional economic development. Such a concern is of course worthwhile for its own sake. As Ron Martin and Peter Sunley (2015b) note:

> "Ultimately, economic development is about the capacity of an economic system – be it a firm, an industry or a local economy – to adapt over time in response to or in anticipation of a changing market, technological and regulatory conditions and opportunities. How such adaptability arises, the forms it takes and the direction(s) it assumes all help shape the 'big processes' and 'large structures' of capitalist development, and those big processes and large structures in turn stimulate and condition the process of adaptive growth." (pp. 727-728)

But my ambition with this project goes beyond this. I believe that by studying long-term adaptation and resilience in old industrial regions – and specifically aspects of policy and governance within this - it is possible to make a contribution with particular theoretical, methodological, and empirical relevance to Evolutionary Perspectives in Economic Geography. I will further elaborate on this in the next sections.

1.2. The rise of Evolutionary Perspectives within Economic Geography

Over the past decade a considerable strand of literature has emerged within Economic Geography in which evolutionary thinking is applied to the discipline[7]. This has led to the emergence of a new field of literature which is usually referred to as Evolutionary Economic Geography (Boschma and Martin, 2007; Boschma and Martin, 2010a, 2010b; Boschma and Frenken, 2011). However, following MacKinnon et al. (2009), Coe (2011), Hassink et al. (2014) and Pike et al. (2015), I prefer to speak of Evolutionary Perspectives in Economic Geography. Rather than a distinctive, self-contained, and (to some extent) coherent 'school', the undertaking should instead be seen as a movement to incorporate more evolutionary understanding in Economic Geography in general. This implies the integration of certain notions, concerns, and methods which emphasise *evolution* in the economic landscape, with notions, concerns and methods of established schools of thought within the discipline (particularly within Political Economy, Institutional and Relational Approaches).

[7] See Boschma and Lambooy (1999); Boschma and Frenken (2006, 2011, 2015); Frenken (2007); Grabher (2009); Hassink and Klaerding (2010); Coe (2011).

Evolutionary Perspectives have in common that they examine "the processes by which the economic landscape – the spatial organisation of economic production, circulation, exchange, distribution and consumption – is transformed from within over time" (Boschma and Martin, 2007, p 539; Boschma and Martin, 2010a, pp. 6-7). They highlight the ways in which such processes are dynamic (instead of stationary or tending to some sort of equilibrium), irreversible (they are rooted in real historical time, and hence the order of events is essential), and are the result of novelty (i.e. they take the creative capacity of economic agents as a starting point) (Boschma and Martin, 2007; Boschma and Martin, 2010a). Another defining presupposition of these perspectives is that the spatial dimension of such processes is essential: the economic landscape is not just an 'outcome or by-product', but a 'determining influence' as well (Boschma and Martin, 2007; Boschma and Martin, 2010a). Within Evolutionary Perspectives the themes of adaptation and especially resilience have (naturally) assumed central significance (e.g. Simmie and Martin, 2010; Martin, 2012; Boschma, 2015; Martin and Sunley, 2015a): how do regional economies cope with change, and what determines their success or failure in this respect?

An important critique levelled against Evolutionary Perspectives as it has developed so far, is the relative neglect of several important basic entities such as the state and institutions, and of social processes that highlight collective agency (beyond individual firms) and uneven power relations (MacKinnon et al., 2009; Coe, 2011; Hassink et al., 2014; Martin and Sunley, 2015b; Pike et al., 2015). This critique can be extended to the theorisation and operationalisation of regional economic resilience, in which the agency of actors – and with this the role of policy and institutions – have not received adequate attention (MacKinnon and Derickson, 2013; Bristow and Healy, 2014a, 2014b; Martin and Sunley, 2015a). This project is explicitly intended to address these shortcomings, and wants to contribute to developing a more holistic approach to evolution in Economic Geography, which reconnects with "a sense of political economy" (Martin and Sunley, 2001, p. 155). Hence in this project I will try to integrate central concerns within

Evolutionary Perspectives (adaptation and resilience) with traditional concerns of Political Economy approach: the role of the state and macro-institutional structures, the relations between capital and labour, uneven territorial development and the geography of socio-economic inequalities (Hudson, 2006). I will build on the conceptual and methodological papers by MacKinnon et al. (2009), Hassink et al. (2014), Martin and Sunley (2015b) and Pike et al. (2015), which have offered many promising avenues of exploration to integrate Evolutionary Perspectives and a Geographical Political Economy approach (with supplementary insights from Institutionalist and Relational approaches). It will require additional conceptual efforts however. Moreover, so far there have been few attempts (if any) to operationalise such an approach and undertake empirical work.

1.3. Revisiting deindustrialisation and old industrial regions

In developing a more holistic approach that integrates Evolutionary Perspectives and a Geographical Political Economy approach, I will specifically examine aspects of policy and governance in the adaptation and resilience of old industrial regions. The focus on old industrial regions is a strategic choice. Old industrial regions are paradigmatic cases of regions that have undergone a comprehensive adaptation process in the face of disruptive structural change in the 1970s and 1980s (which in many cases seriously affected their economic base). Adaptation and long-term resilience are thus particularly pertinent for these regions. At the same time, the adaptation process in these regions has often been marked by many policy interventions and significant institutional change (e.g. Hamm and Wienert, 1990; Hudson, 1994; Cooke, 1995; Birch et al., 2010). Given the central importance of the notions of adaptation and resilience in Evolutionary Perspectives, and the perceived gaps in Evolutionary Perspectives with respect to the role of the state and institutions (and attendant notions of agency and power), how old industrial regions have coped with structural change seems an ideal topic to further develop the 'Evolutionary Geographical Political Economy' approach.

Deindustrialisation refers to a process of structural change in which the importance of manufacturing is declining (Pike, 2009). In many of the advanced economies in Western Europe, North America and to a lesser extent Japan, deindustrialisation set in in the 1960s but became particularly manifest after the first oil crisis of 1973 and subsequent recession. Employment and (to a lesser extent) output in traditional segments of manufacturing (such as steel, coal mining, automotive, shipbuilding, textiles, etc.) dropped markedly. Manufacturing firms in Europe and North America – especially those that still relied on relatively cheap and semi-skilled labour – had lost part of their competitiveness vis-à-vis firms located in other parts of the world (in particular East Asia). Some of these firms had moreover been poorly managed, and were in an unfavourable strategic, technological and financial state (Rowthorn, 1986; Pike, 2009; Hudson, 2011a). Because many of these industries were concentrated in particular regions, the subsequent closures and downsizing / rationalisation operations hit these regions especially hard. This has been true for e.g. the North of England, South Wales, central Scotland, the Ruhr Area and Saarland in Germany, Wallonia in Belgium, Lorraine and Pas de Calais in France, parts of the East Coast and the Midwest of the United States and parts of Ontario in Canada. Unemployment rose rapidly in these regions, and often long-lasting problems emerged with regard to poverty, despair, dereliction and crime.

Over time however, new activities did normally develop in services, the public sector, and sometimes manufacturing again (e.g. new branch plants). Hence employment in many old industrial regions recovered to some extent. Feyrer et al. (2007) find that counties and metropolitan areas in the US that experienced waves of job losses in automobile and steel production, regained their pre-shock job-levels 5 years later (although outmigration from these regions has also been considerable). Also Beatty et al. (2007) note that employment in the former UK coalfields has significantly (but not completely) recovered, twenty years after the closure of most of the mines in these areas. Performance in terms of employment but also in terms of other indicators, has been very uneven however between old industrial regions (Hamm and Wienert, 1990; Birch et al., 2010; Power et al., 2010; Hobor, 2013; Cowell, 2015). Such unevenness points to significant differences in

the long-term resilience of such regions. This may be driven by a combination of factors, such as differences in size, centrality / peripherality, economic make-up, historical assets, natural resources, etc.

1.4. This project

Notwithstanding other factors, a key guiding proposition in this project, is that the long-term resilience of old industrial regions has been significantly influenced (though certainly not wholly determined) by differences in policy and governance. Policies here refer to the authorised and asserted intentions to strive for certain collective objectives. Policies are normally subject to political processes, in which various political actors struggle for powers and resources[8]. Governance arrangements are a type of institutions that regulate policy-making (as a political process), and structure the implementation of policies (and thus facilitate "the steering and coordination of society" (Peters and Pierre, 2006; p. 209)).

However, I want to develop a more multi-scalar and broader perspective on the evolution and role of policy and governance (consistent with a Geographical Political Economy approach), which does not only focus on processes and structures within these regions, but takes the wider context into account in which such regions are embedded, made up by the territorial and functional organisation of the government, and by other macro-institutional structures (following also Birch et al., 2010). Hence another guiding proposition is that differences in policy and governance in old industrial regions are strongly conditioned by the wider institutional environment. By examining these propositions from an Evolutionary point-of-view, we will thus need to address three distinct levels of analysis, which in turn touch upon several central concerns of a Geographical Political Economy approach:

[8] Following Harold Laswell's (1936) definition of politics: 'who gets what, when, how'.

- Relevant structures and processes in the *wider institutional environment*, in particular the role and organisation of the state, and the role and composition of other macro-institutional structures.
- The *evolution* of policies and governance within regions during and after structural change.
- The *role* of policies and governance in the adaptation process in old industrial regions, and thus in their long-term resilience.

The overall aim of this project is thus clear: to contribute conceptually, methodologically and empirically to the formation of a more holistic 'Evolutionary Geographical Political Economy' approach, that integrates notions from Evolutionary Perspectives in Economic Geography and Geographical Political Economy. It wants to do this by examining the aspects of policy and governance in adaptation and resilience in old industrial regions coping with disruptive structural change. I have argued that this particular focus will address central concerns in both Evolutionary Perspectives (adaptation and resilience) and a Political Economy perspective (the state, institutions, scale, collective agency, and power)

To attain these objectives, I will first have to do some conceptual work enriching Evolutionary Perspectives with notions that help understand how policies and institutions evolve over time, what role they play in adaptation and resilience, and how this may be shaped by the wider institutional environment. This will result in an analytical framework, which will then be used to analyse and compare two cases: the old steel regions of South Saarland in Germany, and Teesside in the United Kingdom, which were both hit hard by the steel crisis in particular and deindustrialisation more generally. The two cases have been selected because in important ways they are typical and exhibit typical patterns *within* their respective contexts, but are embedded in two 'extremes' with regard to the type of wider institutional environment. Germany has a federal government structure while the United Kingdom (and in particular England) has a unitary and centralist structure, which means that Saarland has been able to dispose over many more resources

and powers at the regional level while Teesside has been very dependent on London in this respect. Furthermore, Germany is characterised by a more cooperative model of economic organisation (in which there is much more explicit coordination between actors), whereas the United Kingdom has a much more liberal model (in which more indirect coordination through market transactions is more dominant). A comparison between two 'extremes' on a spectrum, should yield conclusions with a broader validity, i.e. that have bearing for regions embedded in a context in-between these extremes. This broader validity means that these conclusions can thus inform theory development about long-term adaptation and resilience in regional economies (George and Bennett, 2005; Flyvbjerg, 2006; Gerring, 2007). Such a research design as applied in this project, also answers the call by various authors for more rigorous comparative work in Economic Geography in general and Evolutionary Perspectives in particular[9].

The research questions are as follows:

With regard to adaptation and resilience in regional economies faced with disruptive structural change:

- *How can the evolution and role of policy and governance be understood conceptually within Evolutionary Perspectives in Economic Geography?*
- *How have policies and governance evolved, and what role did they play in South Saarland (Germany) and Teesside (United Kingdom)?*
- *How did differences in the wider institutional environment matter in this regard?*

In Chapter 2 I will start by conceptualising adaptation and resilience. Subsequently I will review the three theoretical frameworks within Evolutionary Perspectives in Economic Geography (Generalised Darwinism, Complexity Theory and Path Dependency Theory) with regard to how they understand adaptation and resilience in regional development,

[9] E.g. MacKinnon et al. (2009); Boschma and Frenken (2009); Birch et al. (2010); Gertler (2010); Hassink (2010b); Boschma and Frenken (2011); Pike et al. (2015).

and assess how they accommodate aspects of policy and governance therein. In Chapter 3, I will then develop an analytical framework to analyse processes and structures at the three levels of analysis identified: structures and processes in the wider institutional environment, the evolution of policy and governance, and the role of policy and governance in regional adaptation and resilience. I will use Path Dependency Theory as the main building block, but will also incorporate many other insights from within Economic Geography (mainly Complexity Theory, and Institutionalist approaches) but also from Political Science (using Historical Institutionalism, State Theory, and Varieties of Capitalism). Chapter 4 outlines the methodology of the comparative case study of South Saarland and Teesside I have undertaken. In Chapter 5 I will first briefly sketch deindustrialisation and the steel crisis as major shocks in advanced economies in the 1970s and 1980s, and then turn to a discussion of the national (and also European) context in which South Saarland and Teesside were embedded. This thus addresses the first level of analysis about the relevant structures and process in the wider institutional environment. Central in Chapter 6 and Chapter 7 are an examination of the evolution of policy and governance since about 1970, in South Saarland and respectively Teesside (the second level of analysis). These Chapters also contain some contextual information of the two regions about their basic characteristics and their economic development prior to the 1970s; and include a discussion of how they were affected by deindustrialisation and the steel crisis. Chapter 8 will attempt to address the third level of analysis: what role did policy and governance play in adaptation and resilience? This Chapter however also analyses the relationships between the three levels of analysis: how has the particular evolution of policy and governance impacted on the role of policy and governance in the two regions in their adaptation and resilience, and how has this in turn been conditioned by relevant differences in the wider institutional environment? In Chapter 9 I present the conclusions with regard to the main findings, conceptual and theoretical advances, and methodological contributions. I will then also reflect on the limitations of the research, avenues for future research, and policy implications.

Chapter 2. EVOLUTIONARY PERSPECTIVES ON POLICY AND GOVERNANCE IN ADAPTATION AND RESILIENCE

2.1. Introduction

This chapter offers a review of Evolutionary Perspectives in Economic Geography with regard to their potential to conceptualise aspects of policy and governance in adaptation and resilience. Within Evolutionary Perspectives in Economic Geography we can distinguish three distinctive, albeit overlapping, theoretical frameworks, originating in different conceptual foundations: Generalised Darwinism, Complexity Theory and Path Dependence Theory (Boschma and Martin 2010a).[10] I thus maintain a broad notion of Evolutionary Perspectives, encompassing the entire variety of work that is situated within these three different frameworks. I want to be precise about the value of each of these theoretical frameworks for understanding policy and governance aspects in adaptation and resilience, hence I will discuss the frameworks separately, even though in many accounts, ideas of two or all three of the frameworks are combined.[11] In the next chapter (Chapter 3), I will then draw together the most useful notions from these theoretical frameworks, and will combine these with notions from other strands of literature, to develop an analytical framework for analysing the policy and governance aspects of adaptation and resilience. As defined in the Introduction, policies refer to the authorised and stated intentions to pursue certain collective objectives, and governance arrangements are a type of institutions that structure policy-making and the implementation of policies.

[10] Simmie and Martin (2010) distinguish a fourth approach: Panarchy. In a footnote also Boschma and Martin (2010a) suggest that Panarchy may constitute a fourth field, but has not been sufficiently developed yet. Panarchy seems however closely related to Complexity Theory, and is here subsumed under Complexity Theory.

[11] Although especially in what is more narrowly delineated as Evolutionary Economic Geography, notions from Generalised Darwinism seem to be the most dominant.

I will start by distinguishing between different conceptions that exist with regard to adaptation and resilience in regional economic development, and examine which conception is the most suited to capture how regions cope with the disruptive effects of structural change. Next in section 2.3, I will discuss the three theoretical frameworks, with particular attention to how adaptation and resilience feature in these frameworks, and how aspects of policy and governance may be theorised. In the last section, I will draw some conclusions on this issue.

2.2. Conceptualising adaptation and resilience in regional economic development

In defining adaptation, three elements are important to consider. First, it concerns *a process of alterations* within a regional economy. Second, it concerns alterations *to cope with changes in the broader context* in which a regional economy operates. The immediate alterations brought about by changed circumstances - i.e. the shock or disturbance – will not be part of the process of adaptation; neither will alterations that occur autonomously within the region (and hence independent of changes in the broader environment). Adaptation is about alterations that result in or aim for (in case of a deliberate effort at adaptation, which may then also be anticipatory) a greater suitability of the operation of a regional economy vis-à-vis the changes in the broader context.[12] And third, such alterations can be purely internally focussed, in which case we can speak of a *reorganisation*, or they can also be directed externally, which means a *reorientation* (see also Martin, 2012, pp. 11-13).

Resilience refers to a "*capacity* to withstand or recover from market, competitive and environmental shocks" (Martin and Sunley, 2015a, p. 13); hence it should be seen as an underlying capacity to adapt. Resilience is seen as a property that is present (or absent) on a continuous basis, and is about engaging and coping with change in general.

[12] Needless to say, what 'greater suitability' means will be problematic and not always be straightforward; hence the necessity and character of adaptation may well be subject to contestation (and thus to political processes).

Adaptation on the other hand is more episodic: i.e. handling a particular shock or disturbance. The difference between an actual process on the one hand (adaptation), and an underlying capacity on the other (resilience) is quite crucial, as the former can be observed from the alterations that take place, whereas the latter cannot, and can only be inferred from studying actual adaptation processes and then analysing the underlying factors that are important for successful adaptation. It should be clear nonetheless that the two concepts are intimately related: resilience as a capacity to adapt may be affected by the reorganisation and reorientation processes that have occurred during previous shocks (see Martin, 2012), or adaptation in response to indeterminate and inchoate shocks may consist of strengthening all-round resilience. Resilience is thus not always a stable property, but may be susceptible to change over time (also Swanstrom, 2008; Martin, 2012). Moreover, a regional economy may exhibit resilience towards some shocks (e.g. macro-economic recession), but not towards others (e.g. structural changes, or certain disasters).

The most important aspect along which further distinctions can be made between conceptualisations of regional economic adaptation and resilience, is whether a return to some equilibrium or development path is presupposed, or not. Grabher (1993) and Pike at al. (2010, p. 62) for instance, distinguish between moving along or towards a preconceived path in the short run, and a capacity to effectuate new development trajectories in the longer run (which they call 'adaptability'). This is analogous to the so-called 'sailing-ship effect': vigorously trying to make improvements to an existing technology (sailing ships), rather than making the transition to a superior, substitute technology (steam ships) (see Grabher, 1993; Henning et al., 2013). Simmie and Martin (2010), Martin (2012), and Martin and Sunley (2015a) have developed this idea further. They make a distinction in between engineering resilience, ecological resilience and adaptive resilience. Engineering resilience implies a return to some previous equilibrium; ecological resilience suggests that a shock can force a regional economy into a different equilibrium state or growth trajectory; and adaptive resilience assumes a dynamic process of constant renewal in which regional economies are never in any type of

equilibrium (though renewal may at times be more intense). These same distinctions may also be applied to the idea of adaptation.

The distinction between engineering, ecological and adaptive adaptation and resilience, imply different predispositions with regard to the understanding of the complexity of the processes of reorganisation and reorientation in response to change. The engineering and ecological conceptions are primarily concerned with the dimensions of resistance (depth of the initial reaction), recovery (speed and degree of rebound) and renewal (shift to new equilibrium / development path) (Martin, 2012, p. 12). The engineering conception does not problematise the underlying processes of reorganisation and reorientation at all; whereas in the ecological conception there is only the presupposition that changes do indeed take place in orientation and/or organisation but at its core the identity of the system in question remains the same, i.e. thresholds that define the basic operation and functionalities of the system are not crossed (see Maru, 2010, p. 16). In the adaptive conception the processes of reorientation and reorganisation take centre stage however. In this conception, adaptation and resilience are then essentially equated to the process of, respectively capacity for, *transformation* (also Pendall et al, 2010)[13]. One consequence of this will be that it will make the concepts less precise and distinctive. But at the same time, it may rid these concepts of any conservative overtones and the tendency of privileging the preservation of existing social relations.[14] Maintaining an existing system is then no longer a point of reference; and the processes of reorganisation and reorientation behind adaptation and resilience are seen as entirely open-ended.

We now have two important dimensions along which to make relevant distinctions when conceptualising adaptation and resilience:

[13] Polèse (2010) makes a distinction between a-Resilience and b-Resilience in the context of urban economies; with a-Resilience referring to the ability to survive shocks and b-Resilience referring to the ability to constantly transform the economic base and reinvent oneself.
[14] A critique levelled by for instance Swanstrom (2008) and MacKinnon and Derickson (2013).

- Actual process (adaptation) or underlying capacity (resilience). Adaptation will be episodic (i.e. a one-off process), while resilience is more continuously present. The adaptation process may take a short or a long time period, while resilience will normally require a longer period to exhibit itself.
- Engineering, ecological or adaptive (or rather transformative) conceptions. This determines the complexity of understanding of the mechanisms of reorganisation and reorientation within the adaptation process or the capacity for resilience.

The following table shows the six different conceptions of adaptation and resilience in regional economic development, along these two dimensions:

	Return to equilibrium or steady state	**Move to new equilibrium state or growth trajectory**	**Dynamic process of renewal and creative destruction (transformation)**
As an under-standing of an actual process	**'Absorb and rebound'** *Timing*: episodic *Periodicity*: short or long *Reorganisation*: not problematised *Reorientation*: not problematised	**'Adaptation as shift'** *Timing*: episodic *Periodicity*: short or long *Reorganisation*: some changes in configuration / composition, but within limits (as basic operation and functionalities remain the same) *Reorientation*: some development of some new activities (micro-level) and new functions (system-level), but within limits (as basic operation and functionalities remain the same)	**'Adaptation as transformation'** *Timing*: episodic *Periodicity*: short or long *Reorganisation*: permanent changes in internal structure and relations between agents *Reorientation*: permanent development of some new activities (micro-level) and new functions (system-level)

	Return to equilibrium or steady state	Move to new equilibrium state or growth trajectory	Dynamic process of renewal and creative destruction (transformation)
As referring to an <u>underlying capacity</u>	**'Engineering resilience'** *Timing*: continuous *Periodicity*: long *Reorganisation*: not problematised *Reorientation*: not problematised	**'Ecological resilience'** *Timing*: continuous *Periodicity*: long *Reorganisation*: 'plasticity' to reconfigure and change composition, but within limits (as basic operation and functionalities remain the same) *Reorientation*: generation of new activities (micro-level) and new functions (system-level), but within limits (as basic operation and functionalities remain the same)	**'Adaptive resilience / adaptability / transformative capacity'** *Timing*: continuous *Periodicity*: long *Reorganisation*: continuous changes in internal structure and relations between agents *Reorientation:* continuous generation of new activities (micro-level) and functions (system-level)

Table 1: Six conceptions of adaptation and resilience in regional economic development

From an evolutionary perspective, an 'adaptive' or 'transformative' conception of adaption and resilience is the most interesting (Simmie and Martin, 2010; Pike et al., 2010; Martin, 2012; Boschma, 2015).[15] As Boschma (2015) notes: "this approach focuses more on the long-term evolution of regions and their ability to adapt and reconfigure their industrial, technological and institutional structures in an economic system that is restless and evolving" (p. 735). Such a conception is also the most suitable for the purposes of this study, as it aims to highlight the nature of the processes of reorganisation and reorientation in connection to structural change (i.e. regional transformation), and specifically the role of policy and governance arrangements within these processes. In relation to such 'transformative' conceptions of adaptation and

[15] Many recent quantitative studies of resilience, especially vis-à-vis macro-economic shocks, have however employed a conception predicated on some notion of equilibrium (either engineering or ecological conceptions) e.g. Cambridge Econometrics (2010); Davies (2011); Groot et al. (2011); Hill et al. (2011); Fingleton et al. (2012); Martin (2012), Doran and Fingleton (2013). There may be a trade-off between on the one hand, adaptation and resilience taking on the more limited conception employing some notion of equilibrium, which can then be operationalised for quantitative measurement, and on the other hand, a broad and rich, adaptive conceptualisation which is more suitable for a full analysis of the mechanisms behind adaptation and resilience, but which then cannot easily be quantified into simple indicators.

resilience, two further issues need to be discussed however: the type of shock hitting a region, and the role of (collective) agency.

With regard to the type of disturbances that a regional economy may face, we can distinguish between system shocks and slow-burn disturbances (Pendall et al., 2010). System shocks may be of two kinds: one-off events such as disasters, and cyclical perturbations such as macro-economic fluctuations. Slow-burn disturbances on the other hand, are more long-term processes with possible structural ramifications, such as the erosion of the competitive position of certain key industries, technological changes, global climate change, demographic developments, etc. Deindustrialisation and structural change are clearly incidences of slow-burn disturbances. In the case of such slow-burn disturbances, it will be less easy to analytically separate the alterations that make up the adaptation process in the region, from the alterations that constitute the disturbance itself or that occur autonomously. Martin and Sunley (2015; pp. 14-16) thus warn that if shocks may also include such slow-burn processes, the notions of adaptation and resilience risk losing some of their distinctive meanings. However, though slow-burn disturbances may be less clear-cut, they can be particularly disruptive, often even more so than system shocks.[16] Furthermore, slow-burn disturbances will often become manifest during a system shock, and certain tipping points or thresholds are reached. This seems to have happened with deindustrialisation when the Oil Crisis of 1974 and subsequent recession laid bare underlying problems in manufacturing, and triggered plant closures, restructuring operations, the introduction of new technologies, etc. (Pike et al., 2012).

Also the role of agency in adaptation and resilience needs to be considered. Actors within a regional economy, can anticipate on and prepare for disturbances, will actively cope

[16] Both structural changes as well as macro-economic fluctuations may be seen as emergent phenomena of the system of all the connected regional economies in the world, with a downward causation with regard to individual regional economies (see Martin and Sunley, 2012; and discussion in section 2.3.2). So ontologically the disturbance in both these cases is not purely external to regions, although it does make sense to conceptualise and analyse it in this way.

with shocks, and can learn from previous experiences (Bristow and Healy, 2014a; 2014b). This is true at the level of individual actors, but also at level of a collective of actors. As a collective, actors may come together in the face of (potential) disturbances, and draw upon their various available resources and capitals (economic, financial, social, political, legal, intellectual, reputational, etc.). Moreover, actors will have to make sense of the outside world and their position in it (which is also a collective process); and hence there will be arrangements in place to develop intelligence, formulate alternative plans and scenarios, and communicate and debate opportunities, risks and options (also Weick et al., 2005; Pike et al., 2010). This points to the important role of relations and interactions between actors for adaptation; not only between actors in the private sector (mainly businesses), but also between actors in policy and civil society, and citizens (Bristow and Healy, 2014a; 2014b). Moreover, it also points to the important role of institutions in organising these relations and interactions, and coordinating efforts of various actors; and thus to arrive at "purposeful collective action" (Lang, 2012, p. 290). The state may be a particularly important actor in this regard, not only because of its sizeable resources and powers in various domains (e.g. financial, legal, symbolic, intellectual), but also because it is in a unique position to potentially facilitate networking and interactions, and put in place suitable institutional arrangements (see Hill et al., 2012; Cowell, 2013; Cowell, 2015; Eraydin, 2015). It is precisely this relational, institutional and political understanding of the role of collective *agency* that I hope to capture by focussing on governance and policy. We need to expand this understanding still further, to also include "contextual factors" (Martin et al., 2015, p. 143): the interactions with actors and arrangements beyond the region in question, at 'higher' levels of scales (national, supranational). Actions and policies of the national government, supranational bodies such as the European Union, or multinational corporations, may have a large influence on the performance of a region during and after a shock (Pike et al., 2010; Lang, 2012). And processes and frameworks at higher scales may be important in shaping the capacities available to different actors within a region, by granting certain powers and providing adequate resources to cope with disturbances.

2.3. Adaptation and resilience, and aspects of policy and governance within Evolutionary Perspectives

As noted, within Evolutionary Perspectives in Economic Geography, three distinctive theoretical frameworks can be distinguished: Generalised Darwinism, Complexity Theory and Path Dependence Theory. In this section I will highlight how each of these three frameworks emphasises different mechanisms through which the evolution of the economic landscape takes place, and consequently also emphasises different mechanisms with regard to 'transformative' adaptation and resilience, and the role of policy and governance within this. In what follows I will briefly describe the main features of the respective frameworks, and examine what they suggest concerning adaptation and resilience in regional development. I will then critically discuss each framework with respect to their potential to also theorise aspects of policy and governance.

2.3.1. *Generalised Darwinism*

Main features

Generalised Darwinism involves the explanation of evolution through population dynamics, in particular the Darwinian principles of variation, inheritance and selection (Hodgson and Knudsen, 2010). Following Nelson and Winter (1982), the starting point for an analysis of the spatial economy along these lines, are 'organisational routines' (see Boschma and Frenken, 2006; Boschma and Frenken, 2011). These routines have their basis in the idea of bounded rationality (Simon, 1957; also Malmberg and Maskell, 2007), and with this the importance of routine behaviour; but operate on an organisational level rather than the level of individuals. They consist of physical technologies (see also Essletzbichler and Rigby 2007; Essletzbichler and Rigby, 2010), but also standardised patterns of social interactions both within the organisation, and between the organisation and the outside world. They have a strong cognitive dimension as they consist for a large part of experience knowledge and tacit knowledge, which make them hard to imitate by

other firms (Boschma and Frenken, 2006). Furthermore, such routines have a political dimension, as they regulate potential conflicts of interests between different stakeholders (Boschma and Frenken, 2009). These routines are relatively stable over time, although firms have some scope in amending them when it is clear they are not working well (Boschma and Frenken, 2006).

Within a region different firms with different routines exist within several different industries, and new firms with new routines will appear constantly. Hence within each industry there will be firms operating through a variety of routines. There will be a mechanism of selection working (Vromen, 1995) as market competition will drive out unfit routines, and cause smart, fit routines to diffuse and spread out, mainly through differential profit rates. Hence the task is to analyse "the creation and diffusion of new routines in space, and the mechanisms through which the diffusion of 'fitter' routines occurs" (Boschma and Frenken, 2006, p. 278). The proposed mechanisms of replication (Vromen, 1995) and diffusion are quite various: firms with fit routines will grow much faster and hence come to represent a larger share of the industry in a region, successful firms will also produce more spin-offs which will likely locate near the parent firm, and some of the successful routines will spill-over to other firms through labour mobility, professional networks, and inter-firm collaborations (Boschma and Frenken, 2006). Moreover, routines are further diffused through the relocation of firms, merger and acquisition activity, and the establishment of new plants and offices by firms in other locations (Boschma and Martin, 2010a). Though all these mechanisms may play a role, there is meanwhile some evidence that replication and diffusion through spin-offs seem more important than replication and diffusion through localisation economies (e.g. Klepper, 2007; Boschma and Wenting, 2007; Boschma and Frenken, 2011).

The replication and diffusion of routines will have a strong spatial dimension as the growth of a successful firm and the spin-offs and/or spill-overs it will generate, will likely be in one geographical location, and hence over time industry clusters will emerge. Moreover, through co-evolution – strictly understood as the parallel and reciprocal

development of a second, distinguishable population that impacts on the selection and retention mechanisms affecting the first population (Schamp, 2010)[17] – also the development of institutions, networks, agglomerations, and other meso- and macro-level phenomena can by analysed from a Generalised Darwinism perspective (Frenken, 2007; Boschma and Martin, 2010b). In this way the 'selection environment' is further expanded and endogenised; as from routines and local industry dynamics, higher-level patterns develop, which impact on the selection and diffusion on the micro-level, etc.[18]

Adaptation and resilience

Within the framework of Generalised Darwinism applied to regional economic evolution, the prime locus of agency is the individual firm. Thus in its most basic form, when 'neutral space' is assumed, adaptation in regions is just an aggregate of the adaptation processes that relate to firms: in the way they adjust their routines in the case those do not work well, and especially in the way that firms with unfit routines go out of business, whereas those with good routines grow and diffuse their practices (Boschma and Frenken, 2006). Adaptation processes on the level of regional economies, are then entirely a function of these processes at the micro-level of individual firms within the respective regions. Hence engineering and ecological resilience will largely depend on the region's portfolio of firms: the more varied and diversified, the more resilient, and the more uniform and specialised, the less resilient. Furthermore, on the longer run, adaptive resilience will also depend on the degree to which regions can qualify as appropriate environments to take advantage of new rounds of innovation and entrepreneurship when so-called 'windows of locational opportunity' are open. Under conditions of 'neutral space' however, many regions will normally meet the most important requirements for new industries to settle, and hence

[17] Though it should be noted that the concepts of 'co-evolution' and 'emergence' are often used interchangeably in this context, though co-evolution does not necessarily refer to the occurrence of higher-level patterns, as emergence would necessarily entail; and emergence may occur through a number of processes not all of which imply co-evolution in a strict sense (see Schamp, 2010; and Martin and Sunley, 2012). The concept of emergence is further discussed in the next section on Complexity Theory.

[18] This dynamic process connects with the idea of path dependence, discussed further on.

the emergence of a new industry in a particular region would be largely determined by chance events (Boschma and Frenken, 2006).

As described above however, the framework suggests 'neutral space' will be gradually transformed into 'real places'. Over time, an infrastructure at higher aggregation levels will 'co-evolve' with the evolution of firms in a region: knowledge and competence bases, innovation networks, specific institutions, agglomerations, etc. This will have two consequences for adaptation and resilience as understood within this framework. First, in generating innovative activity and the development of new industries, the framework highlights the importance of related variety: a degree of cognitive proximity between economic activities that is not too large, to ensure effective learning; nor too small, as agents with the same knowledge will have nothing to learn from each other (e.g. Frenken et al., 2007; Boschma and Frenken, 2011; Asheim et al., 2011). Hence, on the longer run, 'adaptive' or 'transformative' resilience will also crucially depend on the related variety between industries within a region, as this will be important for the continued emergence of new economic activities (also Boschma, 2015). Second, the higher-level infrastructure that emerges, can over time act as constraining rather than enabling, and reduce the development of new initiatives and hence the variety available (Schamp, 2010; also Boschma, 2004). Hence for adaptation and resilience it is important that such constraints are removed in time and variety-reducing processes are offset by variety-creating processes (e.g. through extra-regional linkages; Boschma, 2004; Bathelt et al., 2004; Boschma, 2015).

Policy and governance aspects

The framework of Generalised Darwinism has important limitations regarding a role for policy and governance. There has recently been an acknowledgement of the importance of institutions – including the state and policy interventions – in the long-run development of regions (e.g. Boschma and Capone, 2015; Boschma, 2015; Boschma and Frenken, 2015). However, when the framework is strictly applied, it seems important to make a distinction between those institutions that could (to an important degree) come

about through the operation of co-evolution with firms and industries in a region (mainly pertaining to e.g. production practices, regulation of conflicts within firms, specialised education and training, patenting, social capital, representation of interests, etc.), and those institutions that could *not* plausibly be explained by co-evolution (such as the state and many forms of policy interventions, but also aspects that make up overarching institutional frameworks, such as industrial relations, corporate governance, or the general education system). The former category can be to an important extent incorporated, and can be made endogenous to the framework. But the latter category will need to remain exogenous to the framework strictly speaking, and will have to be addressed by trying to combine the Generalised Darwinism framework with other theoretical approaches (e.g. Coenen et al., 2015).

The basic ontology of the Generalised Darwinism framework seems to be one of methodological individualism, which explains the emergence of phenomena on higher scales from the population dynamics and interactions between micro-level actors (primarily firms). This leaves scope for the incorporation of the emergence and evolution of *some* institutional arrangements (and possibly also some governance arrangements) through co-evolution. Furthermore a notion of collective action of different firms (and other micro-level actors) deliberately working together to achieve common objectives, could also be included within the framework (Boschma and Frenken, 2009, p. 155; Boschma and Frenken, 2015, pp. 9-10). Importantly though, there appears little room to analyse a role for the state or policy interventions in the adaptation and resilience of regional economies (see also MacKinnon et al., 2009). These are strictly speaking, exogenous forces within the framework.

2.3.2. *Complexity Theory*

Main features

In comparison to Generalised Darwinism, the framework of Complexity Theory has been worked out less extensively with regard to formulating specific mechanisms for the evolution of the economic landscape. However, the central idea is to see cities, clusters, or regions and other spatial units as so-called 'complex adaptive systems'. From this point of view, we may postulate a set of components (firms, institutions, infrastructures, individuals, etc.) which, through the outputs they generate (relations, behaviours, knowledge, incomes, etc.), fulfil functions for other components, and can consistently reproduce themselves (Martin and Sunley, 2007). This may be said to form a coherent whole: a system. But the complexity-aspect implies that these components in turn respond to the patterns they create together, and hence the system is not coherent in a fixed manner, and will normally evolve over time as components create patterns, and these patterns impact on the components, etc. (Arthur, 2009). Complex adaptive systems have a number of features, as listed in Table 2.

Property	**Attributes**
Openness	The boundary between a complex system and its environment is neither fixed nor easy to identify, making operational closure dependent on context (and observer). Such non-isolated systems tend to be dissipative – subject to constant interaction and exchange with their environments.
Distributed nature and representation	The functions and relationships are distributed across system components at a whole variety of scales, giving the system a high degree of distributed connectivity
Non-linear dynamics	Complex systems display non-linear dynamics because of various complex feedbacks and mutually self-reinforcing interactions amongst components. Complex systems are thus often characterised by path dependence.
Limited functional decomposability	Because of its high degree of connectivity, and the open, dynamic nature of its structure, there is limited scope for decomposing a complex system into stable components.
Non-determinism and non-tractability	Complex systems are fundamentally non-deterministic. It is not possible to anticipate precisely their behaviour even if we completely know the function of their components. This does not imply, however, that the behaviour of such systems is random, in the sense of being haphazard.

Property	Attributes
Emergence and self-organisation	There is a tendency for macro-scale structures (including spatial structures) and dynamics to emerge spontaneously out of the micro-scale behaviours and interactions of system components.
Adaptive behaviour and adaptation	The same processes of self-organisation imbue complex systems with the potential to adapt their structures and dynamics, whether in response to changes in external environment, or from within through co-evolutionary mechanisms or in response to 'self-organised criticality'

Source: Reproduced from Martin and Sunley (2007), p. 578.

Table 2: Some features of complex adaptive systems

Complexity theory as applied to (spatial-)economic systems, highlights their dynamic aspects. Instead of an ontology of closed, linear, and equilibrium systems as in neoclassical economics, systems are posited to be open, nonlinear and far-from-equilibrium (Beinhocker, 2007). At the same time, the aspects of self-organisation and emergence are stressed. The on-going interactions and dynamics between the individual components at one level 'spontaneously' (i.e. in a way that is not planned or imposed) lead to relatively stable patterns on a higher-level (e.g. at the level of a city, cluster or region). As Martin and Sunley (2012) point out, the form of emergence proposed here is of a particular kind: so called third-order emergence. Not only are these higher-level patterns supervenient on and irreducible to the properties of the lower-level components, they also exercise downward causation (i.e. the higher-level patterns impact on the lower-level components), in a way that implies 'selection' and 'memory'. That is to say, micro-level components are selective in the way they adapt to the changing conditions (and hence the nature of downward causation will also change over time), and because of this, specific higher-level patterns will exert an irreversible and lasting impact on the direction in which the system will develop in the future.[19]

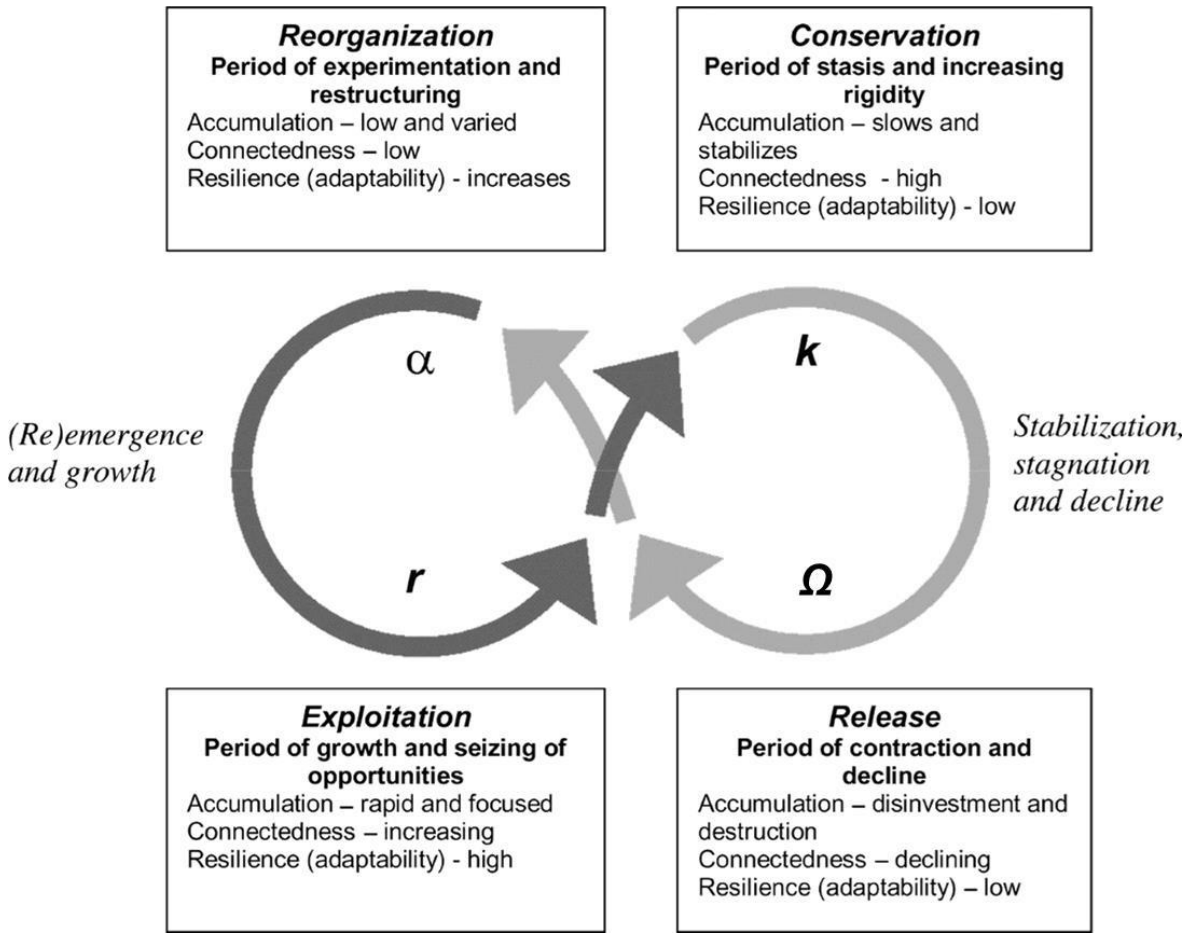
Adaptation and resilience

Complex adaptive systems will have a high degree of resilience as they are marked by distributed and dispersed (rather than centralised) control, by strong positive and

[19] This clearly resonates with the idea of path-dependence, as discussed below (Martin and Sunley, 2012, p. 11).

negative feedback loops, and by a degree of redundant variety (Martin and Sunley, 2007, pp. 598-590). Hence adaptation from this point of view, will take place through a restructuring of the relations between components utilising some of the resources and aspects within the system which were not fully used yet, and the feedback loops will abate the effects of the shock through the system (though in some cases feedback loops may actually compound and reinforce these effects).

These supposed relations between the 'connectedness' and resources in the system on the one hand and resilience on the other, have been further worked out in the Adaptive Cycle Model (Holling and Gunderson, 2002), which postulates a dynamic relation between these three aspects. The model suggests complex systems go through a four-phased process: first connectedness and accumulated resources build up until a period of stability sets in (from exploitation to conservation phase), then at a certain point the system contracts and declines and loses connectedness and resources (release phase), after which it starts to restructure and recombine again (reorganisation phase), subsequently the cycle starts again and a period of growth and increasing connectedness sets in (from reorganisation to exploitation phase). The degree of resilience – within this model seen as 'ecological resilience', i.e. the ability to maintain similar operations and functionality during shocks and disturbances from the outside – will vary in each of these phases. The model is depicted in the following figure.



Source: Reproduced from Martin and Sunley (2011), p. 1307

Figure 1: Adaptive Cycle Model

Another feature of the model is that it postulates adaptive cycles at various scales, with those at lower scales 'nested' within those at higher scales. The higher scale cycles will go through the cycle at a much lower speed, than those at lower scales; hence they will normally have a stabilising influence on the smaller scale cycles they also encompass. However, within the model it is also possible in certain situations for small scale processes to act back on larger scales, and cause a 'revolt' from below.

Translated into a regional economic context, we may see accumulated resources as e.g. production equipment, physical infrastructures, skills of workers, experience and competence, a distinctive business culture, mutual trust, etc. Connectedness may refer to knowledge and innovation networks between firms, fixed supply chain relations between

firms, local elite networks, formalised institutional arrangements between different organisations, formation of interest groups and associations, etc. It is mainly this element of connectedness as a result of the 'self-organising tendencies' in a Complex Adaptive System that has received a lot of attention in the context of regional economic adaptation. This has been worked out in two directions: one strand in the literature has emphasised the development and role of interfirm relations and knowledge and technology networks (e.g. Cooke, 2012; Crespo et al., 2013; Wink, 2013), while another strand has focussed on connections between actors for collaboration and coordination and thus arrive at collective action (e.g. Safford, 2009; Cowell, 2013, 2015; Bristow and Healy, 2014a, 2014b, 2015). This latter direction clearly touches on the role of governance and policy, and will be discussed more extensively below.

Within this framework, the adaptive cycles at different scales could represent how economies and institutions at the regional level are embedded within those at national, supranational and global levels (Simmie and Martin, 2010). Martin and Sunley (2011) have extended and modified the adaptive cycle model somewhat to make it less deterministic, and to better account for the agency and intelligence of actors in the setting of a regional economy, as compared to ecological systems (for which this model was developed). They propose that there is no necessity for a regional economic system to go through the four phases, but instead they may also exhibit constant mutation (and hence stay in the exploitation phase), stabilisation (stay in the conservation phase), re-orientation (go from stabilisation onto reorganisation without going through a release phase), or permanent failure (despite efforts to reorganise, the economy does not enter a new cycle of growth).

Hence the framework suggests that there seems to be a 'natural' tendency for connections to ossify, and accumulated resources to become obsolete, which will then diminish ecological resilience; while on the longer run a regional economy may successfully restructure after a severe crisis and find new growth again (a type of transformative 'meta-resilience' in the model). However, following the modifications by

Martin and Sunley (2011), depending on the circumstances and the actions of actors involved, a regional economy may also display the on-going creation of new connections and the constant upgrading of its resources, avoiding decline altogether, hence showing a more persistent adaptive resilience. Or – on the downside – an economy may also never really recover from a severe crisis, thus dismissing the existence of any type of inherent 'meta-resilience'. The framework also suggests that the interactions with higher scales may be important for the adaptation processes and capacity for resilience at lower levels; but in the context of regional economic development it has yet to be worked out in what ways exactly.

Policy and governance aspects

The idea in the Complexity Theory framework, that the 'connectedness' between different actors in a region may play a crucial role in collective action, and thus make a region more resilient, clearly has bearing on the aspects of governance and policy. This idea has meanwhile been worked out in several studies. Sean Safford (2009) has provided a detailed account of 'the strength of weak ties and the weakness of strong ties' (after Granovetter, 1973), in his comparative study of the responses to deindustrialisation in Allentown (Pennsylvania) and Youngstown (Ohio). The more loosely connected elite network in Allentown facilitated a more effective response to the crisis in its local economy in the early 1980s, and the subsequent challenge of renewing the local economy. The tightly knit network in Youngstown proved very brittle by contrast: it fell apart during the crisis and no fall-back options were available. Thus Youngstown was not able to muster an effective response, and has been struggling to renew its economic base. Gillian Bristow and Adrian Healy (2014a, 2014b, 2015) have explicitly theorised the role of policy and governance in regional resilience from a Complex Adaptive Systems framework. They have also highlighted the interactions and connections between actors to be able to arrive at an adequate response in the face of a shock. But they have furthermore drawn attention to the importance of anticipation, information, communication and narratives for such collective agency. Moreover, they have distinguished between immediate policy responses to manage an emerging crisis, and

interventions aimed at the longer-term transformation of the regional economy. Also Margaret Cowell (2013, 2015) has explicitly analysed the role of policy and governance (under the heading of 'leadership') in 'transformative' adaptation and resilience from a Complex Adaptive System perspective. She has compared how eight metropolitan regions in the American Midwest have dealt with deindustrialisation. She concludes that regions in which a diverse set of actors was involved in the decision-making, have generally performed better than regions that lacked such diversity. Furthermore, regions that responded early to deindustrialisation, and diversified into new economic activities, fared better than region that responded relatively late and focussed on retaining manufacturing.

So aspects of policy and governance in adaptation and resilience can be explicitly addressed within the Complexity Theory framework. The framework highlights the importance of connectedness and collaboration between various actors, and the collective agency and leadership they may exhibit though this. However, three important limitations need to be pointed out. First, the framework has not much to offer with regard to the question of how governance arrangements and policy *evolve* over time. The only guidance available in this respect would be the Adaptive Cycle (or its modified version), but the role of agency in pushing the development of connectedness, governance arrangements, and policy would then be importantly downplayed. Consequently the analysis of policy and governance so far has remained essentially static, i.e. purely as structures ('networks') or agency ('leadership'[20]) at certain points in time, without much reference to an 'internal dynamic' between structures and agency, that would explain the development of policy and governance over time. Second, conceptualising governance arrangements in terms of 'connectedness' highlights the fact whether or not connections between actors exist (or not), but overlooks the exact nature of these connections. That is, governance arrangements are more than just 'networks',

[20] Compare the notion of 'place-renewing leadership', introduced by Bailey et al. (2010): "a form of public-private strategic leadership that empowers institutional and social forms of decision-making to absorb and adjust (proactively and reactively) to path-breaking economic change." (p. 462).

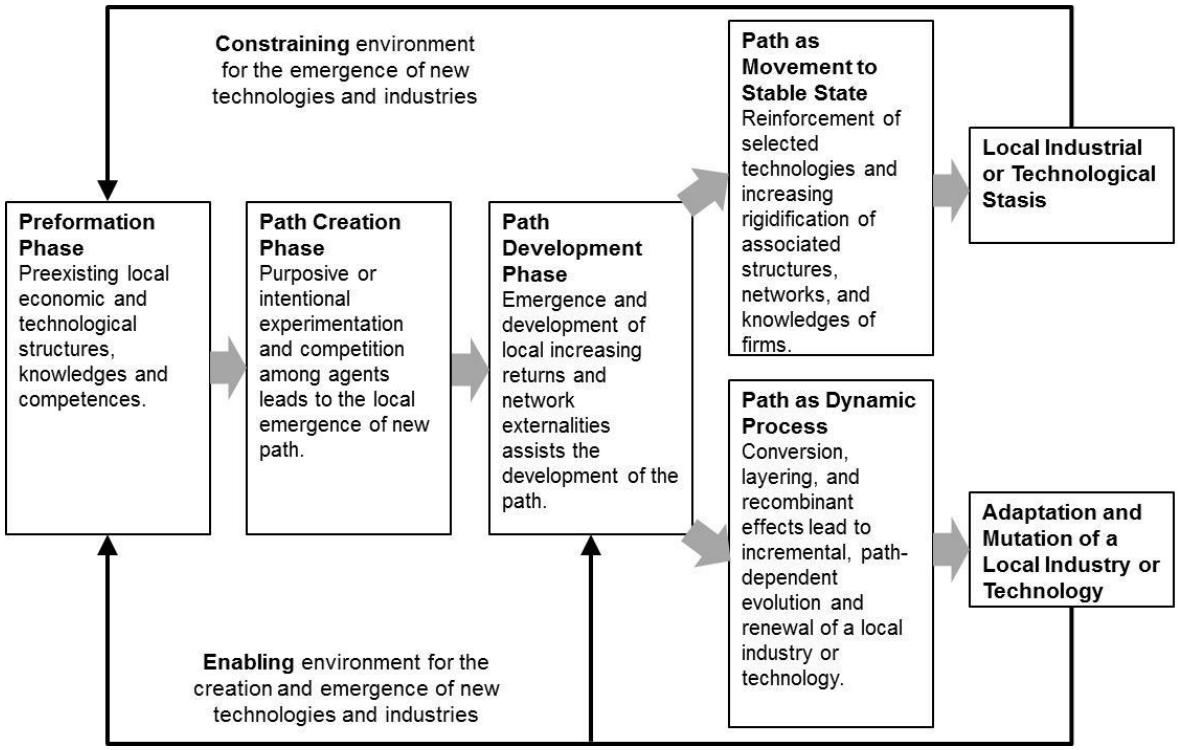
especially when they involve coordination and decision-making; and the way arrangements structure the interactions between actors, and the way they shape the use of powers and resources, should take centre stage. That Bristow and Healy (2014a, 2014b, 2015) have drawn attention to the processes of anticipation, sense-making, and communication, constitutes an important addition in this context, as such processes may also be embedded in governance arrangements. Third, the role of relations with actors *external* to the region is yet to be worked out within this framework. With regard to interfirm linkages and knowledge and technology networks, this has already been done (e.g. through the idea of 'global pipelines' (Bathelt et al, 2004)), but for connectedness between actors for policy and governance this has been neglected so far.

2.3.3. *Path Dependency Theory*

Main features

The 'canonical' model of path dependence – as based on the works of Paul David and W. Brian Arthur – has three main features (Martin, 2010, p. 4): a seemingly small event has significant and unpredictable long-run effects ('nonergodicity'); this event becomes progressively 'locked-in' through various self-reinforcing mechanisms (e.g. increasing returns, network effects, coordination effects, learning effects, self-reinforcing expectations, sunk costs, etc.), which limit the scope for alternative development paths; and this pattern is then assumed to remain stable until disrupted or dislodged by a shock of some kind. Within evolutionary accounts of regional economic development, especially localisation economies (e.g. spill-overs, common pool of specialised labour, dedicated suppliers, etc.; e.g. Boschma and Frenken, 2011), technological / innovation platforms (distinctive technological regime or innovation system; e.g. Maskell and Malmberg, 2007), and the development of region- or cluster-specific institutions and social norms (e.g. Maskell and Malmberg, 2007; Strambach, 2010), have been discussed as drivers for path dependent development.

Within the canonical model, path dependence hence seems to inevitably imply a movement to a state of stasis and equilibrium, as part of being 'locked-in'. Martin and Sunley (2006) and Martin (2010) have taken issue with this element in the model when applying the concept of path dependence in the context of regional economic development. Instead they argue that path dependence should also be able to capture situations which are 'metastable' (Martin and Sunley, 2006, p. 419): i.e. regional economies still exhibit continuous incremental development, renewal activity and the emergence and disappearance of industries and technologies, but in a manner that somehow builds on the assets and legacies of the past. Hence instead of seeing the path as a movement to a stable state, the path is then seen as an on-going dynamic process (Martin, 2010, p. 21; also Garud and Karnøe, 2001a). This is captured in the following figure.



Source: Reproduced from Martin (2010), p. 21.

Figure 2: Path as on-going dynamic process rather than inevitably ending in a stable state

As a corollary, the idea that this state of being 'locked-in' can only be dislodged by an external shock must also be qualified. As there is on-going endogenous dynamism, the directions for future development may be shaped from the inside, including events that lead to the creation of a new path, the 'branching' of paths, or the 'breaking' of paths (see Garud and Karnøe, 2001b).

In applying the concept of path dependence to regional economic development, we should be explicit about the level of analysis (Henning et al., 2013). Path dependence can be used to explain the development of a locality or a region as a whole, a cluster or industry within a certain region, or - even more particular – the development of certain components within such clusters or industries, such as the technological / knowledge base, networks, cluster institutions, etc. (Martin and Sunley, 2006). The evolution of each of these specific components will have a logic of its own, based on their own self-reinforcing mechanisms; but at the same time there will likely also be interactions between the development paths of the various components, as well as between the development paths of various regional industries. For this Ron Martin and Peter Sunley (2006, p. 413) have introduced the term 'path interdependence'.

Adaptation and resilience

Within the framework of Path Dependency especially the idea of 'lock-in' directly relates to adaptation and resilience. As discussed above, a lock-in in the context of regional economic development is a 'rigidification' of structures, technologies, networks, ideas, knowledges, etc. which will significantly constrain the options available for further development. Hence lock-ins will inhibit adaptation to new and changing circumstances, and diminish resilience. Gernot Grabher (1993) in a study of the development of the Ruhr Area – once dominated by the coal and steel industries – has distinguished between lock-ins at three levels within a regional economy:

- Functional lock-ins: rigidities that inhibit entrepreneurship of people and firms, because a lack of boundary spanning functions (marketing, R&D, long term strategy department) as a result of strong and tight relations between firms in the supply

chain, and investments in specific assets and technologies within these cooperative relations.

- Political lock-ins: arrangements between local businesses and the political leadership that ensure that vested interests are protected, and policies are enacted that support the status quo and inhibit renewal.
- Cognitive lock-ins: rigidities in the world views and ways of thinking of key regional actors, because of complacency and a lack of critical reflection.

As discussed earlier however, path dependent development does not necessarily imply a state of lock-in, but may also exhibit on-going incremental development, new path creation, and path branching. With regard to adaptation and resilience within this framework, the question then becomes: what determines whether a regional economy comes to be dominated by self-reinforcing processes that increase rigidification, constrain opportunities and produce strong lock-ins; or alternatively, whether it maintains its dynamism and continues to exhibit renewal based on the – enabling instead of constraining – legacies and structures built up in the past (also see Hassink and Shin, 2005; Martin, 2010)? To start answering this question we should – following Henning et al. (2013) – focus on the 'self-reinforcing mechanisms' behind different types of path dependency. Moreover, we should be explicit about the level of analysis at which these mechanisms are suggested to operate: what processes at which levels of scale and in which domains may be susceptible to mechanisms of path dependency? In other words, the notions of 'regional path dependence' and 'regional lock-in' need to be disentangled, and instead the focus should be on their constituent components and the interactions between these components (the 'path interdependencies' (Martin and Sunley, 2006)). It is only by the identification of distinct mechanisms and by circumscribing the domain and level of scale of the operation of these mechanisms, that the concepts of path dependence and lock-in can be adequately operationalised in the context of regional economic development. As noted, Gernot Grabher (1993) has distinguished between the functional, political and cognitive domains. Within these domains we may distinguish many mechanisms of lock-in (inhibiting adaptation) but also mechanisms of renewal

(facilitating adaptation). Within the functional domain, we can further distinguish between mechanisms that operate in clusters and industries, in the regional labour market, or in the built environment. By theorising the possible mechanisms of path dependence in the political and cognitive domains, aspects of policy and governance may then be incorporated into the framework.

In the functional domain, the orginal paper by Grabher (1993) primarily highlighted the close relations between firms in the supply chain and the subsequent investments in relation-specific assets and technologies, as a self-reinforcing mechanism of lock-in. But sunk costs in the capital base and infrastructures may also represent a self-reinforcing mechanism especially in heavy industries, as these will make more radical strategic options or exit less likely, and hence facilitate continuation along the same development path (Martin and Sunley, 2006). Furthermore, the industrial organisation among firms may result in self-reinforcing mechanisms. When a few large firms dominate the local industry this may result in a lack of competition and reduced pressures for continuous renewal (Hassink, 2010b; Hervas-Oliver et al., 2011); or alternatively it can lead to 'structural congestion': too many firms in the area which then causes cooperative efforts to break down, and a lack of investment in innovation as a result of fierce competition (Popp and Wilson, 2007). Furthermore, clusters will over time develop specific institutional arrangements and norms for standard practices, quality certification, skills training, registration, industry representation, etc. which may lead to a reduction of variety and stifle innovation (e.g. Boschma, 2004; Bailey et al., 2010). Lastly, the one-sided composition of a regional economy, as a result of the dominance of only one or several industries, may lead to insufficient scope for new path creation and path branching (Martin and Sunley, 2006). In the long run, an important mechanism for positive path dependency encompasses a certain amount of diversity in the economic structure, and in particular some related variety in the knowledge and technological base, from which continued dynamism and renewal will arise (Neffke et al., 2011).

The mechanisms listed so far will mainly operate at the level of cluster and industries – within and between firms. Such clusters and industries can, however, have a significant lasting impact on the region as a whole if they dominated the economic base. This is especially true in the case of heavy industries. In his depiction of the economic development of Glasgow since the mid-1900s, Sydney Checkland has captured the phenomenon that the dominant presence of heavy industries seems to inhibit the emergence of new economic activities, with the metaphor of the Upas Tree: a tree in the vicinity of which nothing else will grow because of its poison (Checkland, 1976). Some of the particular mechanisms that may explain this, are the long term impacts of heavy industries on the local labour market and on the wider environment, which may subsequently produce persistent rigidities of their own. With the dominance of certain (heavy) industries, certain type of skills important for the work within these industries will co-evolve in the local labour market. Moreover, a 'culture' will develop with certain distinctive attitudes towards work (diligence, reliability, etc.), initiative (compliance, cooperation, etc.), and community (cohesion, relatively inward-looking, etc.) (Cooke and Rehfeld, 2011). As these (heavy) industries contract, the labour market will be characterised by skills that are largely obsolete and a culture that does not promote entrepreneurship and enterprise (Hudson, 1994; Huggins and Thompson, 2015). A 'low-skill equilibrium' may result, in which only new economic activities will emerge in the region that will try to capitalise in on low skills and this characteristic culture, without much prospect of investments in upgrading these skills (Finegold and Soskice, 1988; Finegold, 1993; Dawley et al., 2014). In addition, heavy industries often mean "significant environmental degradation of urban spaces and surrounding countryside through industrial smoke stacks, slum housing, chemical outpourings and concentrated human waste" (Power et al., 2010). This will also constitute a rigidity as such conditions will not easily be remedied. Because of such a lack of attractiveness, private sector investments in improving the circumstances may not be seen as viable, which may then result in a further deterioration of the urban environment, etc. But likewise, such mechanisms of path dependence with regard to the labour market and the built environment, do not necessarily have to be negative but can also be positive. In some regions, a 'high-skill

equilibrium' prevails, in which existing high human capital attracts and fosters firms that capitalise in on this human capital, and then leads to continued investment in skills. An attractive built environment may lead to on-going investments in improvements and new amenities.

Policy and governance aspects

By way of the Path Dependency framework, we can thus foreground the various mechanisms of positive and negative path dependency at different levels and in different domains, in the economic adaptation and resilience of regions. Mechanisms of path dependency may not only appear in the functional domain, but also in the political and cognitive domains. This is indeed how aspects of policy and governance may be integrated into the Path Dependency approach. The original study of Grabher (1993), suggested that politicians, business leaders, and trade union officials may have constituted 'growth coalitions' in which they protected each other's interests. As a result they failed to facilitate renewal on time, and the crisis in the steel and coal industries in the 1970s and 1980s took them by surprise. In the cognitive domain, forms of complacency and myopia may create rigidities in the outlook of local elites (also Maskell and Malmberg, 2007). But also in this domain, mechanisms of positive path dependence may exist, which facilitate renewal and ongoing development based on the legacies of the past. I will discuss these in the next Chapter. Figure 3 presents an overview of the various mechanisms of negative and positive path dependence that may be relevant in various domains and at several levels of scale, for the adaptation and resilience of regions.

Functional domain:

Mechanisms of path dependence in clusters / industries, with regard to technology, networks, industrial organisation (scale of clusters / industries)	• Continued dominance by the same industries, or alternatively creation of new paths / path branching as a result of dynamism, entrepreneurship and innovation conditioned by existing technologies / knowledge bases, assets , and capabilities (in particular when the technologies and knowledge bases of prevailing clusters / industries exhibit 'related variety') (Neffke et al., 2011). • Close relations between firms in a supply chain, and investment in relation-specific assets, through which certain technologies and types of knowledge are favoured (Maskell and Malmberg, 2007; Sydow et al., 2006) • Sunk costs in capital base and infrastructure , which make divestment very expensive (Martin and Sunley, 2006). • Development of a particular industrial organisation through which there may be too little or too much competition, which inhibits investment in innovation and renewal (Hassink, 2010; Hervas-Oliver et al., 2011; Popp and Wilson, 2007). • Development of cluster specific institutional arrangements, such as standard practices, quality certification, registration, skills training, etc., which stifle renewal (e.g Boschma, 2004; Bailey et al., 2010).
Mechanisms of path dependence in labour market and skills (scale of regions)	• 'Low-skill equilibrium' in which only new economic activities emerge or are attracted to a region which capitalise in on low skills (Finegold and Soskice, 1988; Finegold, 1993; Dawley et al., 2014); or 'high-skill equilibrium' in which a regional economy can constantly renew itself because of large subset of population that is skilled and entrepreneurial (e.g. Glaeser, 2005). • Dominance of certain industries leads to prevalence of certain skills in labour market, and a distinctive culture (e.g. 'culture of dependency') (Cooke and Rehfeld, 2011; Hudson, 1994).
Mechanisms of path dependence in built-environment and amenities (scale of regions)	• Attractiveness of urban spaces and surrounding countryside, or lack of attractiveness because of environmental degradation, smoke stacks, slum housing, chemical outpourings and waste (Power et al., 2010), which results in a in lack of investment because improvements are seen as less viable; or alternatively attractiveness may induce more investments, and development of more amenities (new shops, cultural institutions, leisure facilities, etc.).

Political / institutional / cognitive domain:

Mechanisms of path dependence in institutions and policies (scale of regions)	• 'Local growth coalitions' with tight relations between politics, (sections of) local business, and labour unions, which may result in the protection of vested interests and support for the status quo (Grabher, 1993). • Complacency, myopia, escalating commitment, etc. in policy-making, instead of an on-going search for alternative options and new possibilities (Staw, 1976; Maskell and Malmberg, 2007).

Figure 3: Interdependent mechanisms of lock-in and path-dependence operating in different domains and at different levels

Within the literature on Path Dependency in the development of institutions and policies in regional economic development, recent contributions have focussed on the one hand on contingency of forms of lock-in and path dependency on certain circumstances, and on the other hand on the interplay between structure and agency. Robert Hassink and colleagues have shown in a comparison of shipbuilding and textile regions in both Germany and South Korea, that political lock-ins are also contingent on context-specific circumstances during periods of industrial restructuring; sometimes they arise (shipbuilding in Mecklenburg-Vorpommern, textiles in Daeugu), and sometimes they are more or less absent (textiles in Westmünsterland, shipbuilding in Gyeongnam) (Eich-Born and Hassink, 2005; Hassink, 2010b). Moreover, these studies also point to the positive role in adaptation and resilience, that governance arrangements and policy may also play (as apparently they have in Westmünsterland and Gyeongnam). Hence while the development of governance arrangements and policies may be path dependent, they do not necessarily entail 'lock-in' and their development may depend on certain

circumstances. These findings suggest the importance of a more open-ended notion of path dependence that emphasises on-going dynamism (as suggested by Martin (2010)), and also point to the importance of examining the wider context in which mechanisms of positive and negative path dependence take place.

The interplay between structure and agency in the path dependent evolution of especially institutions is captured by the two, very similar, concepts of 'path contingency' and 'path plasticity'. The idea of 'path contingency' was introduced to counter the tendency within path dependence to afford primacy to structure, i.e. to see only a very minor role for agency in the development of a path; agency instead being limited to 'critical junctures' when new paths were being created (Johnson, 2001; Hudson, 2005). Path contingency wants to focus instead on the dynamic interaction between agency and structure both in the continued development of the path, and also in times of critical junctures. Hence within the path dependent development at various levels regions there should be room for choices and entrepreneurship within the broad structures that are laid out. The role of the state and in particular of certain policy choices may then be more easily fit into this framework (Hudson, 2005; Morgan, 2013; Dawley et al., 2015). A second suggested refinement – somewhat similar to path contingency – is the idea of 'path plasticity' (Strambach, 2010; Strambach and Halkier, 2013): starting from the presumption that paths are not completely coherent in themselves, a broad range of options will exist at any moment to combine different elements that have been handed down from the past within the path. Hence path plasticity refers to "the dynamics within a path and the way actors use the narrowed down or the limited range of choice (…) in creative ways for the development of innovation without breaking out of the path." (Strambach and Halkier, 2013; p. 1). The flexibility in the further development of the path, and the active shaping of the path are thus highlighted. Strambach (2010) notes how actors managed to adapt existing institutions in Germany (which are historically mainly geared towards the needs of advanced manufacturing) to better accommodate the requirements of developing the customised business software sector.

The Path Dependency framework thus offers a good basis for analysing the aspects of policy of governance in regional economic adaptation and resilience. It directs attention to the various interdependent mechanisms of continuity and change in different domains and at different levels of scale. The role for policy and governance in adaptation and resilience will be to break through mechanisms of lock-in, and try to create mechanisms of positive path dependence (based on on-going dynamism) in the functional domain instead. However the framework as worked out so far, does have two important omissions. First, the exact mechanisms of path dependence by which the evolution of policies and governance could take place in the context of regional development, have not yet been sufficiently theorised. The conceptualisation in this regard, needs to go beyond lock-in, as Hassink (2010b) and Martin (2010) have suggested. The notions of path contingency and path plasticity help in directing our attention to the interplay of structure and agency. However, we still need to identify and work out more concrete mechanisms. Second, studies within this framework have paid very little attention to the importance of structures and relations that go beyond the region concerned. The main focus seems to be on mechanisms that operate within a particular area, which so far inhibits the importance of more multi-scalar processes and structures for path dependence and lock-in within a region (Martin and Sunley, 2006; Hassink, 2010b). Especially the role of the national state and national institutions needs to be further examined, as these will importantly determine the scope and form of specific arrangements and policies within a region (Hudson, 2005; Dawley, 2010; Hassink, 2010b; Morgan, 2013; Dawley et al., 2015).

2.4. Conclusions

At the start of this chapter I examined different conceptions of adaptation and resilience in regional economic development. I concluded that an 'adaptive' or rather 'transformative' conception will be the most suitable for our purposes: a conception that highlights the process of, respectively the capacity for, transformation in the face of economic change. Such a conception can also incorporate the idea that adaptation and resilience may also be applied in the context of slow-burn and structural disturbances

(such as deindustrialisation) and not only discrete events and cyclical fluctuations (such as macro-economic recessions). Furthermore, because the focus will be on the underlying processes of reorganisation and reorientation (rather than the patterns of resistance and recovery), such a conception is much better suited to problematise collective agency and a role for policy and governance (Bristow and Healy 2014a, 2014b).

Next I analysed the three different frameworks (Generalised Darwinism, Complexity Theory, and Path Dependency Theory) that constitute Evolutionary Perspectives in Economic Geography, in terms of the mechanisms they proposed with regard to (transformative) adaptation and resilience in general and more specifically on what each of these frameworks had to contribute to understanding aspects of policy and governance. An overview of the discussion can be found in Table 3 below.

	Main mechanisms of adaptation and resilience	Aspects of policy and governance arrangements	Critique
Generalised Darwinism	• In first instance, aggregate of adaptation processes in relation to firms (change of routines; survival or demise), and thus emphasis on the importance of varied and diversified portfolio of firms. • Related variety may play an important role in diversification and continual renewal, and may shape the locations of new rounds of innovation and entrepreneurship. • Gradual ossification of co-evolved knowledge and technology networks, linkages between firms, and institutions may explain how industries and clusters become 'maladapted'.	• Some institutions in cluster and regions emerge and develop as a result of co-evolution with populations of firms. • Potentially a role for collective action by groups of firms.	• A role for the state, many types of governance arrangements, and policy interventions, is exogenous to the framework. Hence these cannot be examined within the framework, and the framework will need be combined with other frameworks for this.
Complexity Theory	• Highlights the rebundling / recombining of assets, and the restructuring of linkages (both in interfirm networks as in connections between various local actors) in adaptation and resilience. • Relatively loose connectedness and diverse set of resources important for resilience. • Adaptive Cycle model may serve (in extended, less deterministic variant) as heuristic model for the evolution of the capacity for resilience in the system.	• A role for policy and governance arrangements can be incorporated within the framework, as (place renewing) leadership and / or as social networks between multiple actors. • Policy and governance may also play a role through anticipation, provision of information, communication and creation of narratives, to cope with shocks.	• Offers little guidance to conceptualise the evolution of governance and policy over time (other than the Adaptive Cycle Model, in which the role of agency, and the indeterminacy of outcomes, would be downplayed). Focus is either purely on agency ('leadership') or purely on structure (networks), but not on their interactions. • Understanding governance arrangements primarily in terms of 'connectedness' is quite limited: the exact nature of relations between actors and the various functions governance arrangements may fulfil, are neglected. • The role of connections to entities outside the region in question, in place-renewing leadership, has not been worked out yet

	Main mechanisms of adaptation and resilience	Aspects of policy and governance arrangements	Critique
Path Dependence Theory	• Presence of interdependent mechanisms of positive and negative path dependence, operating in different domains (functional, political, cognitive) and at different levels of scale. • Ongoing renewal, and hence adaptive resilience, depends on maintaining dynamism and creating renewal through e.g. diversification into (technologically) related industries, indigenous creation of technologies and industries, upgrading of existing industries, heterogeneity and diversity, transplantation from elsewhere (Martin and Sunley, 2006, p. 420).	• The evolution of policy and governance arrangements may easily be integrated into the framework, by focussing on mechanisms of path-dependence and lock-in in the cognitive/political and institutional domains. • The role of policy in adaptation and resilience would be to break through self-reinforcing mechanisms of lock-in in the functional domain, and generate mechanisms for positive path dependency instead. • Path dependency in these domains should however be more refined, and allow for sensitivity to the context in which forms of path dependency are said to operate, and a more thorough conceptualisation of the interactions between agency and structures (building on notions of path contingency and path plasticity).	• The exact mechanisms of evolution of governance arrangements and policy in regional development have remained undertheorised. • Little attention to the importance of structures and relations that go beyond the region concerned, including the role of the national state and national institutions.

Table 3: The three frameworks in light of adaptation and resilience and aspects of governance and policy

The three frameworks highlight somewhat different mechanisms with regard to adaptation and resilience, and may actually seem broadly complementary. However, in the ways the three frameworks understand the role of policy and governance arrangements, there are large differences. The Generalised Darwinism approach offers little scope to examine the role of policy and governance arrangements: only a limited subset of institutions and policies can be made endogenous within the framework. The Complexity Theory framework offers some useful insights, especially concerning the importance of connectedness and collaboration, and of anticipation, intelligence, and communication, in coping with shocks. It has also been suggestive of the importance of

relations and higher-level systems, beyond the region concerned (though this has not really been worked out yet). However, the framework has not offered much concerning the theorisation of the evolution of policy and governance over time (beyond the Adaptive Cycle), and hence has emphasised either 'leadership' or 'networks' in this regard (with little insight in how these develop). The Path Dependence framework seems the most encompassing for further theorising the aspects of governance and policy in adaptation and resilience. Through this framework we can analyse regional adaptation and resilience, through different mechanisms of positive and negative path dependence at different levels and in different domains, including the domain of policy-making and governance. I will hence take this framework as the principal basis of the analytical framework that I will develop in the next chapter, and will then also address the two important omissions in the framework: the mechanisms by which policy and governance evolve over time, and the impact of structures and processes at other scales beyond the region in question.

Chapter 3. Analysing the Role and Evolution of Policy and Governance in Adaptation and Resilience in a Multi-scalar Context

3.1. Introduction

In the previous Chapter I concluded that within Evolutionary Perspectives, the Path Dependence framework offers the best prospects to further theorise the policy and governance aspects of adaptation and resilience. I also observed that it still has several important lacunas. On the whole the evolution of policy and governance from a path dependency perspective has remained undertheorised and underspecified. Although there have been some interesting developments recently with regard to this matter: a dynamic conception of path dependency has come to the fore, refined by notions of path plasticity and path contingency, which put more emphasis on the interactions between agency and structures in the shaping of policy and governance. Furthermore, so far the relations, structures and processes that go beyond the region – and how these condition forms of path dependence within a region – have received very little attention in this framework. The aim of this Chapter is to address these gaps, and in doing so to further work out a more holistic Evolutionary Geographical Political Economy approach to regional adaptation and resilience. I will do so by combining insights from the Path Dependence framework, with concepts from other strands of literature within Economic Geography (mainly Institutionalism and the Complexity Theory framework), but also from Political Science and other social sciences (specifically from Historical Institutionalism, State Theory, and Varieties of Capitalism). I will develop an analytical framework that seeks to cover the *dynamic and multi-scalar aspects* of the role and evolution of policy and governance in adaptation and resilience in old industrial regions.

I will start this Chapter with an outline of how I intend to develop the analytical framework (covering the three distinct levels of analysis mentioned in the Introduction). I will also discuss some key concepts and the theoretical debates surrounding these, in this

section. Next I will further examine the *role* of policy initiatives and governance arrangements in adaptation and resilience in old industrial regions coping with disruptive structural change. In section 3.4 I will further theorise how policies and governance arrangements *evolve* over time (in a path dependent way). In section 3.5 I will turn to a discussion of the various elements within the *wider institutional environment* that may be important for regional adaptation and resilience. I will end with presenting the completed analytical framework, and with some further conclusions, in section 3.6.

3.2. Outline of an analytical framework

The framework I intent to develop in this Chapter consists of three core elements:

- The *role* of policies and governance in adaptation and resilience. The way that policies and governance in old industrial regions, can overcome the various mechanisms of lock-in and put in place mechanisms of positive path dependence instead, needs to be considered further. Success in this regard will be visible in the development of key indicators, such as GVA per head, total employment, and unemployment. Moreover, when a region has successfully adapted it will face new challenges and pursue new opportunities in economic development, while regions that are not successful will continue to struggle with generating new economic drivers and catching up.
- The *evolution* of policies and the evolution of governance arrangements in response to the disruptive effects of structural change. The mechanisms and patterns through which policies and governance can evolve, need to be further analysed.
- The responses in terms of policies and governance will be shaped by the *wider institutional environment* at especially the national and transnational (i.e. European) levels. The most important dimensions by which wider institutional environments may differ from each other, need to be specified and the possible influences of differences needs to be examined.

The figure below shows how these different elements of the analytical framework are related. It is important to note that the links between these elements are not as simple as

represented in this figure. The responses to the disruptive shock (in terms of policies and governance arrangements) are importantly mediated by a process of interpretation and diagnosis of what is going on (the disruptive and structural nature of changes and shocks in the regional economy is often not immediately straightforward). Moreover, responses are only enacted after a decision-making process between various actors, which can be highly political. In addition, differences in the wider institutional environment merely condition these responses, but certainly leave much scope for agency of actors. However the wider institutional environment does structure the powers and resources available to the various actors at different scales, and how these actors interact with each other. The outcomes with regard to adaptation and resilience will furthermore not only be determined by the responses in policies and governance, but also a broad range of other factors, such as size, location, differences in economic make-up, historical assets, chance events, etc.

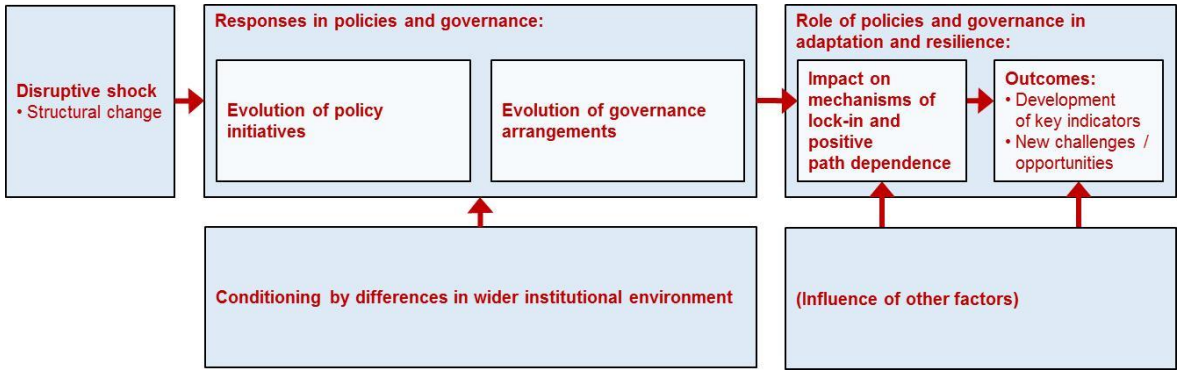


Figure 4: Outline of analytical framework

In the remainder of this section I will discuss and specify the basic concepts within this framework: institutions, governance, policy, and institutional environment, and place these within wider theoretical debates.

Since the early 1990s there has been increasing interest in the role of institutions within Economic Geography (Amin, 1999; Martin, 2000; Peck, 2000; Wood and Valler, 2001). This 'institutional turn' has coincided with a 'rediscovery of the region': the supposition

that regional processes and assets are crucial for firms to be able to compete in a globalised economy (see Amin, 1999; Peck, 2000; Martin, 2000). These developments have given rise to a diverse set of concepts to conceptualise the role of institutions in regional development, such as Regional Innovation Systems (Cooke et al., 1998; Cooke, 2004; Asheim and Gertler, 2005; Asheim et al., 2011), the Learning Region (Morgan, 1997; Hassink, 2005), and Local Production Systems (Crouch et al., 2004; Bailey et al., 2010). Common to these concepts is a concern for innovation, and how the processes that underlie innovation (such as the generation, diffusion, application and exploitation of knowledge; social learning; monitoring; and absorption of information) are conditioned, facilitated, or hindered by institutions. The focus here can either be on specific clusters – defined as geographic concentrations of firms specialised in a particular field, and horizontally and vertically linked (Porter, 1998) – or on regions as a whole (also Gertler and Wolfe, 2002; Cumbers et al., 2003; Gertler, 2004; Tödling and Trippl, 2004; Tödling and Trippl, 2005; Farole et al., 2011).

Institutions can be conceptualised in various ways and from several different approaches (see Hall and Taylor, 1996; DiMaggio, 1998; Nielsen, 2001). Without going into a full discussion however, here it will be useful to highlight several points. On the one hand institutions constrain and regulate behaviour[21], but on the other hand institutions also have generative and enabling qualities, as they make interaction, coordination, and organisation possible (also Wolfe and Gertler, 2002; Cox, 2011; Rodríguez-Pose, 2013; Bathelt and Glückler, 2014). Institutions may be formal - such as laws, structures, procedures, contracts, statutes, etc. - and informal - such as norms, conventions, traditions, routines, etc. (e.g. Gertler, 2004; Rodríguez-Pose, 2013). Furthermore, we can distinguish between institutional arrangements, and the institutional environment (Martin, 2000). *Institutional arrangements* refer to the particular organisational forms institutions may take, such as organisations, regulatory agencies, bargaining structures, cooperation agreements, etc. *Institutional environments* provide the larger framework for

[21] Following the definition of institutions by North (1990), as "the rules of the game in a society; more formally, the humanly devised constraints that shape human interaction" (p. 3).

these arrangements, and will consist of "both the systems of informal conventions, customs, norms, and social routines (such as habitual forms of corporate behaviour, consumption cultures, socialised work practices, transaction norms, and so on), and the formal (usually legally enforced) structures of rules and regulations (for example, laws relating to competition, employment, contract, trade, money flows, corporate governance, welfare provision)" (Martin, 2000, pp. 79-80). The idea of 'institutional thickness' was introduced by Ash Amin and Nigel Thrift (1995), and captures how institutional arrangements in a region, may make a region more adaptive and resilient in the global economy. They have operationalised 'institutional thickness' in terms of four elements: a strong institutional presence (many institutions, and of different types), high levels of interaction between these institutions, shared norms and values, and a common purpose (Amin and Thrift, 2005, p. 102 and p. 104). They go on to argue that the institutional infrastructure in old industrial regions is often too narrow and one-sided (geared towards dominant businesses), and lacks inclusiveness, overall cohesiveness, and a common agenda (also Tödtling and Trippl, 2005).

Governance arrangements were already defined earlier as the institutional arrangements which fulfil functions of governance, i.e. "the pursuit of collective interests and the steering and coordination of society" (Peters and Pierre, 2006; p. 209). [22] This includes setting collective priorities and goals, resolving conflicts, organising accountability, and implementing initiatives (Peters and Pierre, 2006). Governance is a broader notion than government, and draws attention to the fact that steering and coordination normally involves multiple actors – both within the public sector, and also in society and in the economy at large (Sørensen, 2006). Moreover, governance may take place across scales, in networks made up of actors at supranational, national and subnational levels; this is further highlighted by the term 'multi-level governance' (Bache and Flinders, 2004; Piattoni, 2009). Governance – as 'the steering and coordination of society' – expresses

[22] An even broader notion of governance exists, which encompasses all sets of mechanisms by which behavioural regularities are maintained in society. Such mechanisms may also be more implicit or informal, such as markets, hierarchies, associations, and communities. See e.g. Crouch (2005). However, for the purpose of this research, the narrower definition will be used.

itself through policies, defined as the explicit and authorised intentions to achieve certain goals in 'the pursuit of collective interests'. Policy-making will involve various stages: agenda setting, problem definition, policy formulation, implementation and evaluation (see Palumbo et al., 2004). Moreover, for policies to be effective and influence events, they require both sufficient powers and sufficient resources. Because such resources and policies are scarce, and various actors will differ in the policies they favour, policy-making will inherently be a political process in which each set of actors struggles to have their preferred policies implemented.

There is an extensive debate about how regions relate to structures and processes at higher levels of scale, and what actually constitutes 'a region'. There are three main conceptions with reference to this issue: a 'classic' territorial conception, a relational conception, and a position in between (MacKinnon, 2011; Cox, 2013). The 'classic' territorial conception tends not to problematise scale, and sees regions, nations, localities, etc. as 'natural' and relatively unchangeable units that indicate a certain territory. Furthermore, spatial scales have an innate verticality and hierarchy, with the central state constraining or even determining processes at lower levels. The relational conception dismisses such an 'essentialist' and 'fixed-state' perspective, and sees spatial scales as products of wider processes, discourses, and politics. This conception is explicitly process-based, and sees spatial units as more fluid and subject to the 'politics of scale'. In addition, horizontal relationships through space are stressed: state hierarchies give way to networks that have no real centrality. Following this through, the very notion of territory is questioned: attachments to a certain place and locally dependent connections lose relevance. The position in between tries to reconcile these two conceptions (Pike and Tomaney, 2009; MacKinnon, 2011; Cox, 2013). It concurs with the relational conception that scales are socially constructed and are social representations, and thus subject to political processes. However, it emphasises the material and affective forces that tie actors to territories. Hence despite the fact the scales (and thus also 'regions') are social constructions, they have a certain reality nevertheless. Moreover, notwithstanding the increasing importance of global networks, the verticality of certain relations cannot be

denied: considerable powers are still concentrated within the central state and its institutions, which thus still implies a certain hierarchy (though more qualified and dynamic than in the 'classic' territorial conception). The notion of '*nestedness*' refers to this embeddedness of institutional spaces at 'lower' spatial scales (in regions and localities) into institutional spaces at 'higher' levels (at the national or supranational levels), and the conditioning of lower levels by higher levels (Martin, 2000; Bathelt and Glückler, 2014). In the following, I will proceed from this in-between position, recognising that both territorial and relational aspects are important, but may not always be aligned.

3.3. The role of policy and governance in adaptation and resilience

Before deindustrialisation and structural change, old industrial regions – especially when they relied on heavy industry – were extraordinarily coherent: technology, organisational forms, social relations, physical and social infrastructures, etc. formed a tightly-knit and synergistic whole. David Harvey has described this as 'structured coherence' (1985, pp. 139-144). And in a later work he theorised the incidence of such coherent places, as a 'permanence': a relative stability in a certain place and at a certain time, with its own internal order, carved out from the flow of processes that create and shape spaces (p. 261). But such 'permanences' are nevertheless ephemeral and transient, as they are contingent on the processes that sustain them. The structured coherence of places only exists "in the midst of a maelstrom of forces that tend to undermine and disrupt it" (1985, p. 143), such as technological change, product innovation, class struggles over distribution, shifting space relations, etc. Hence what was occurring in old industrial regions after structural change set in[23], may be analysed as the dissolution of their 'structured coherence' (also Hudson, 1994). As Harvey notes:

> "The tension between place-bound fixity and spatial mobility of capital erupts into generalised crisis, however, when the landscape shaped in relation to a certain phase of development becomes a barrier to further accumulation. The geographical

[23] As discussed in section 2.2, the slow-burn process of structural change became manifest with the 1973 oil crisis and subsequent recession, which then triggered large disruptions (plant closings, restructuring operations, introduction of new technologies, high unemployment, etc.).

> configuration of places must then be reshaped around new transport and communications systems and physical infrastructures, new centres and styles of production and consumption, new agglomerations of labour power, and modified social infrastructures (including, for example, systems of governance and regulation of places). Old places have to be devalued, destroyed, and redeveloped while new places are created." (1996, p. 296)

Through the Path Dependency framework we can further analyse this coherence, its subsequent dissolution and renewal, and the role of policy and governance. As discussed in section 2.3.3, the framework draws attention to various interdependent mechanisms that produce continuity in different domains in regional economic development. During the period of 'structured coherence' the mechanisms of path dependence in the various domains were well-attuned, reinforced each other, and had a positive effect; i.e. they provided a stable and well-directed basis for the economic prosperity of the region. This situation was contingent however on a particular set of circumstances, and when these circumstances changed, the main industries in such regions started to experience severe difficulties (as a result of e.g. high relative costs, new substitutive products, overcapacity, new competition because markets are opened up, etc.) (Lagerholm and Malmberg, 2009). The mechanisms of path dependency within the dominant industry / cluster, may at this point severely inhibit adaptation. The positive effects of structured coherence, now turn into negative effects: the specialisation and mutual dependencies lead to a quick deterioration in key economic indicators, such as regional GVA, employment within the region, and the unemployment rate. The structured coherence will then partly dissolve: the mechanisms of lock-in at the industry / cluster level will mostly disappear with the dwindling of the dominant (heavy) industries. Other mechanisms of negative path dependency and lock-in will continue to operate however: the mechanisms that shaped continuity in the labour market, built-environment, and in policy-making and governance may remain relevant long after the previously dominant industries have downsized or disappeared. These mechanisms may often inhibit the attraction and creation of a new economic base.

The role for policy and governance in adaptation then, is to help overcome the various, interrelated mechanisms of lock-in in a number of domains, and support the generation of mechanisms of positive path dependency (which should then form the basis for on-going renewal). This will require a *comprehensive, coordinated, and long-term effort* that simultaneously addresses the regional economic base, the labour market, and the built environment; to bring about a transformation to a new form of 'structured coherence' (in which various components are again well-attuned and mutually supporting), which should however be less rigid and allow for more dynamism than the earlier phase.[24] However, this process will be made more difficult by the fact that also the political, institutional and cognitive domain, where policy and governance take shape, is susceptible to mechanisms of path dependency conditioned by the earlier phases of a region's development. The mechanisms that promote continuity in policy and governance, should hence also be examined closely with regard to their propensity to impede or facilitate renewal (this will be addressed in the next section). The *role* of policy and governance in supporting (or hindering) adaptation and resilience in old industrial regions, and their path dependent *evolution*, is depicted in Figure 5.

[24] In that sense, there are similarities to 'sustainability transitions', in which also multiple domains need to be addressed in a coordinated manner over a long period of time, for a transition to take place from one 'regime' or 'system' to another (see e.g. Geels, 2004; Grin et al., 2010; Truffer and Coenen, 2012).

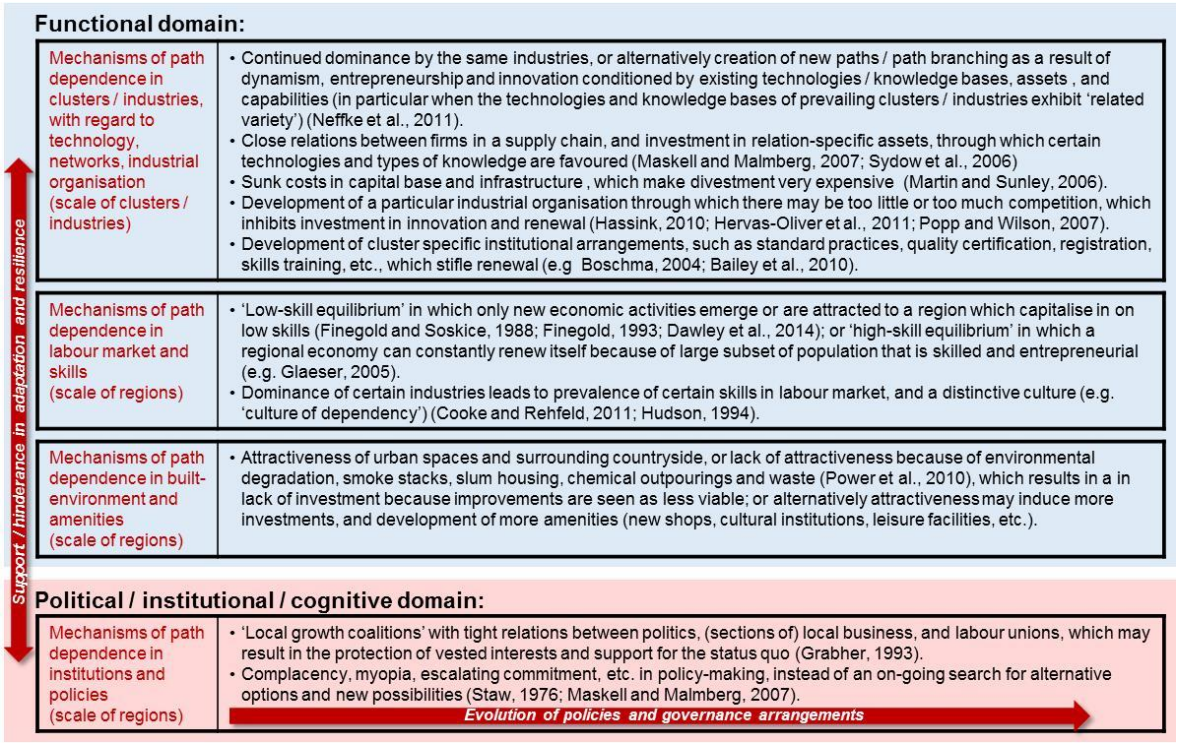


Figure 5: The role of policy and governance in adaptation and resilience, and the (path dependent) evolution of policies and governance

Policies and governance arrangements hence play a crucial role in adaptation and resilience in old industrial regions from this perspective: they should be the locus for the collective agency within a region for the renewal of its clusters and industries, its labour market and its built environment.

With regard to policies to guide along and promote adaptation in the face of disruptive structural change, we can distinguish between immediate responses to manage the emerging crisis, and interventions aimed at the longer-term transformation of the economy (following Bristow and Healy, 2014b). With regard to the immediate responses, the most important measures will be:

- *Special support measures for affected industries*: providing direct financial support to large industrial companies in the area to support their restructuring and modernisation.

- *Active labour market policies for redundancies*: proactive labour market interventions such as phasing of lay-offs, temporary labour subsidies, generous redundancy payments, intermediation and retraining, and make work schemes (also see Bristow and Healy, 2015).

On the longer run, policies should support and facilitate the growth of a new economic base, and address the negative mechanisms of path dependency outlined above. We can distinguish the following major categories within such policies (based on types of policies listed in Hudson (1994), Trippl and Otto (2009) and Bailey et al. (2010)):

- *The attraction of inward investment and businesses*: Attracting inward investment, specifically by multinational companies, and attracting businesses from outside to settle within the area.
- *Science, Technology, Innovation (STI) policies*: Stimulate knowledge generation (at universities and public research organisations within the area), and facilitate knowledge transfer to and application within local and regional industries and clusters.
- *Enterprise and business support*: Facilitating entrepreneurship by small and medium-sized businesses (especially by improving their accessibility to finance) and supporting start-ups within the locality or region.
- *Training and skills policy*: Assistance in the attainment and development of skills and the (re)training of workers and unemployed.
- *The upgrade of the built environment and urban regeneration*: Investment in new infrastructure, and in urban development and regeneration, to remediate polluted sites, develop new commercial space, upgrade the existing housing stock, create new amenities, and improve overall attractiveness.

Governance arrangements may serve two main functions in the process of adaptation (and in overall resilience): strategic functions and operational functions. Governance arrangements with strategic functions help *generate* policies, whereas arrangements with operational functions instead *follow* from policies. Thus strategic functions, are the functions governance arrangements fulfil in drafting and deciding about the type of

policies to pursue and the way to implement those. Such arrangements have also been called 'meta-institutions' through which deliberation, diagnosis, and design of new arrangements takes place (Hall and Soskice, 2001, pp. 11-12; Hall and Thelen, 2009; p. 12). As we saw in the discussions of the role of agency in adaptation and resilience in section 2.2, and of the role of policy and governance in the Complexity Theory framework in section 2.3.2, one aspect that is important in this respect, is *connectedness and collaboration*: the inclusion of relevant actors within the public sector, the private sector and civil society in decision-making, coordination, conflict resolution, and the mobilisation of resources (Safford, 2009; Hill et al., 2012; Lang, 2012; Cowell, 2013, 2015; Wink, 2013; Bristow and Healy, 2014a, 2014b). A second aspect, through which governance arrangements may fulfil strategic functions (also identified in section 2.3.2) is by producing and disseminating *strategic intelligence* with regard to the local and regional economy: analyses, indicators, forecasts, scenarios, strategic options, etc. This intelligence will be crucial for the way actors – individually and collectively – can interpret potential disturbances, make sense of what is going on, and produce narratives and perspectives (Weick et al., 2005; Pike, 2010; Bristow and Healy, 2014a; Bristow and Healy, 2014b). This may then allow actors to plan ahead, to develop alternative scenarios, and take anticipatory measures if needed. On the other hand, governance arrangements may fulfil important operational functions, as mandated entities or dedicated organisations, to deliver one (or sometimes several) of the policies listed above. For instance: agencies for the attraction of inward investment, offices for technology transfer, urban development corporations, etc.

The discussion about the functions of various types of policies and governance arrangements in relation to adaptation and resilience in the face of disruptive structural change, is summarised in Figure 6.

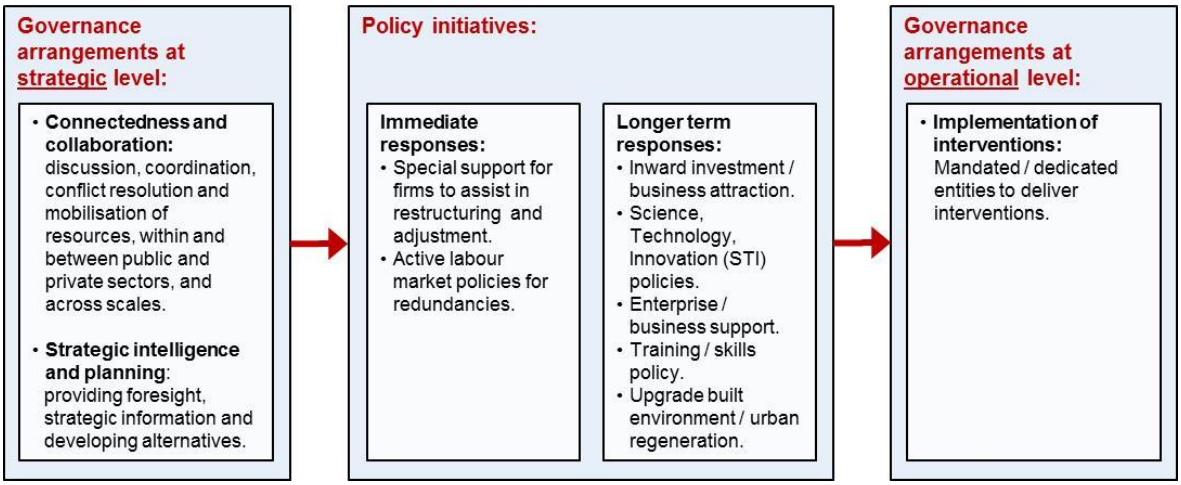


Figure 6: Functions of different types of policy initiatives and governance arrangements in adaptation and resilience

3.4. The evolution of policy and governance

The evolution of policy and governance will be to some extent path dependent; i.e. subject to a process in which past legacies and inheritances condition future developments (see section 2.3.3). I will explicitly employ the dynamic process conception of path dependency, in which paths continue to evolve and hence do not reach a state of complete 'stasis' (following Martin (2010), and building on e.g. Crouch and Farrell (2004), Boas (2007), and Schneiberg (2007)). This conception also leaves more room to integrate forms of agency: future states are not wholly determined by past states, but actors can actively shape paths and productively employ and recombine elements inherited from the past to face new challenges (see Johnson, 2001; Garud and Karnøe, 2001b; Hudson, 2005; Garud et al., 2010; Strambach, 2010; Strambach and Halkier, 2013; Bathelt and Glückler (2014)). In the next section, I will shift attention to the multi-scalar context in which regional policy and governance evolve: the fact that these trajectories also depend on a wider set of structures and relationships that impinge on and shape the processes by which paths evolve. In the following discussion of the evolution of policy and governance in regional economic development, I thus want to highlight several key dimensions of path dependency: the open-ended and dynamic nature of the process, the interaction

between agency and structures, and the impact of configurations at, and relations to, other spatial scales, for mechanisms of path dependence in a region.

In this section then I will discuss the mechanisms and patterns of path dependence – in accordance to the dynamic process conception - of policy and governance in regional economic development. I will first examine how the evolution of policy can be path dependent, and subsequently I will do the same for governance. It should however be noted, that policy-making by its nature carries a greater element of agency, while the development of governance arrangements is much more conditioned by past legacies. Moreover, as also discussed earlier, policy initiatives and governance arrangements depend on each other: some governance arrangements (notably those that play a role in collaboration and in strategic intelligence and planning) structure policy-making, while some policies will cause changes in governance arrangements (especially in the arrangements to manage specific interventions).

Although policy-making is in essence an expression of agency, it too may be subject to constraints and the influence of legacies from the past. On the one hand, the timing of policy initiatives will be crucial: options for intervention may only exist for a short time, after which the number of options may be considerably reduced. And on the other hand, certain cognitive and discursive factors may impact on policy-making, through which some options become more salient while others are not considered (also Schmidt, 2008, 2010). With respect to the timing of policies, the concept of '*critical juncture*' has been used to analyse patterns in which during a relatively short period agents face a broader range of options, and the choices during this period will have a long lasting effect in the subsequent period (as alternative options are then effectively foreclosed) (Collier and Collier, 1991; Capoccia and Kelemen, 2007). In the context of policies for regional economic development, such 'critical junctures' may be witnessed in particular in the immediate responses to moments of crises, e.g. whether or not to provide support for firms or industries that face financial difficulties, or to institute proactive labour market policies to prevent, or cope with, redundancies (also Bristow and Healy, 2014b). Such

measures can only be implemented for a limited period of time, after which firms may have gone bankrupt or have been broken up, and workers have been made redundant (and a substantial portion may now be unemployed). With regard to cognitive and discursive factors, it is important to consider that those involved in policy-making will have to make sense of what is happening, and that this is by nature subject to certain limitations. Such a process of 'sensemaking' builds on previously established identities, memories, experiences, habits, frames, labels, etc., and is a collective process (Weick et al., 2005; also Pierson, 2000; Schmidt, 2008, 2010). As a result, only certain pieces of information may be picked up and be given weight, while other information is ignored or rejected (perhaps also as a result of processes of cognitive dissonance). Furthermore, only certain options for policy will be considered and debated, as it may not be possible to imagine and oversee the full range of alternatives, and within certain dominant discourses some options are seen as legitimate while others are immediately dismissed. A degree of '*myopia*' (based on past repertoires) is hence inevitable and may result in 'cognitive lock-ins', especially when there is insufficient openness to outside influences (Maskell and Malmberg, 2007). Moreover, the tendency to uphold a measure of rationality and consistency, may lead to policies which exhibit '*escalating commitment*': the tendency to commit more and more resources to a course of action, even though this has so far been to no avail or has only resulted in negative outcomes (Staw, 1976). 'Escalating commitments' may be reinforced by a desire to 'save face' in the political arena, and to prove the ultimate rationality of decisions to critics (Staw, 1976; Tuchman, 1984). Through the process of collective sensemaking, the mechanisms of 'myopia' and 'escalating commitment' may thus condition policy-making, and tie policy options at any point in time to past legacies.

The path dependence of the evolution of institutions – and governance arrangements – has been the subject of numerous reflections and studies in diverse fields within the social sciences (e.g. Mahoney, 2000; Pierson, 2000; Thelen, 2003; Thelen, 2004; Crouch and Farrell, 2004; Boas, 2007; Schneiberg, 2007). 'Institutional rigidities', 'institutional ossification' or 'institutional sclerosis' have been identified as a major factor in the lack of

renewal in certain economies, either because they caused excessive constraints, led to fragmentation or strong mutual dependencies between actors, or presented possibilities for vested interests to obstruct changes (e.g. Olson, 1982; Elbaum and Lazonick, 1986; Hodgson, 1989; Setterfield, 1993). To facilitate adaptation, more 'adaptive' and 'flexible' forms of governance seem more appropriate: forms of governance that promote the formation of new relationships and networks and that promote and leave space for bottom-up processes, self-organisation, and learning (Folke et al., 2005; Rijke et al., 2012; Bristow and Healy, 2014b). Institutional change can take place during a 'critical juncture' (such as a revolution or a regime change), in which many changes take place in a short period of time (Capoccia and Kelemen, 2007), but institutional change can also be much more gradual and incremental (Streeck and Thelen, 2005; Mahoney and Thelen, 2010). With respect to governance arrangements in regional economic development, such processes of more gradual institutional change seem much more relevant, as the sovereignty of subnational units will by definition be partial, and thus the scope for radical changes and revolutions will be limited.

When conceptualising gradual and incremental institutional change, it is important to distinguish between mechanisms and patterns. Mechanisms refer to the processes through which actors drive institutional change; while patterns are the different configurations that institutional change may come to exhibit. With regard to mechanisms, it makes sense to distinguish between three broad types, especially in the context of a more multi-scalar approach to institutional change: institutional change through reinterpretation and subversion from below, institutional change by decree, and institutional change through mutual consent between actors. In the first type of mechanisms, actors induce or create institutional change in the governance arrangements that exist between them or to which they are subject, through so-called 'institutional entrepreneurship'. Arrangements may leave some space for change agents (alone, or as part of a coalition) to effectuate changes, because of some ambiguity in the arrangements or because other actors cannot block changes from happening (Crouch, 2005; Mahoney and Thelen, 2010). In institutional change by decree, change is ordained

or effectuated by actors with authority at the regional level or at higher spatial levels, in particular through changes in policy of subnational or central governments. This will usually take the form of restructuring, reform or re-organisation of governance arrangements (Boyer, 2006; Hall and Thelen, 2009; Pike et al., 2015). Lastly, in institutional change through mutual consent, new governance arrangements may be created by actors wishing to cooperate with each other, or arrangements are adapted to involve new actors that were not previously involved (Boyer, 2006).

Such mechanisms may give rise to various patterns of gradual institutional change:[25]

- '*Layering*' or '*Sedimentation*': Addition of new institutional arrangements to the existing institutional framework (based on Streeck and Thelen, 2005, pp. 22-24; Boyer, 2006, p. 48; Wood and Lane, 2012, p. 18).
- '*Conversion*': Redeployment of existing arrangements for new purposes (based on Streeck and Thelen, 2005, pp. 26-28; Boyer, 2006, p. 48; Wood and Lane, 2012, p. 18).
- '*Drift*': Considerable loss of relevance of arrangements (but these will continue to exist). (based on Steeck and Thelen, 2005, pp. 24-26; Wood and Lone, 2012, p. 18).
- '*Displacement*': Gaining in relevance of arrangements, which may cause other arrangements to be supplanted (based on Streeck and Thelen, 2005, pp. 19-22; Wood and Lane, 2012, p. 18).

[25] The patterns of layering, conversion, drift, displacement and exhaustion, are based on a discussion of the 'modes of institutional change' in Streeck and Thelen (2005), pp. 19-30 (also see Mahoney and Thelen, 2010, pp. 15-18). My characterisation of these patterns is however considerably different. The modes as distinguished by Wolfgang Streeck, Kathleen Thelen and James Mahoney, are associated with only the mechanisms of institutional change, based on reinterpretation and subversion from below. However, I wish to keep mechanisms and patterns analytically separate. Moreover, Streeck, Thelen and Mahoney employ a rather narrow definition of institutions as 'formalised rules' (Streeck and Thelen, 2005, p. 10), which seems to highlight institutions as constraints on the actions of actors. My definition of institutions and governance arrangements is more encompassing: institutions also have an enabling quality, as they "provide the necessary conditions under which continuous interaction is made possible" (Bathelt and Glückler, 2014, p. 351). By broadening the field with regard to the mechanisms of institutional change and with regard to the definition of institutions, we then create conceptual space for further patterns of institutional change, such as recombination and churning.

- '*Exhaustion*' or '*Dismantling*': Disappearance of arrangements from the landscape, because of a breakdown or because they are abolished (based on Streeck and Thelen, 2005, pp. 29-30; Pike et al., 2015, p. 189)
- '*Recombination*': Redesign and reamalgamation of the links and arrangements between actors (based on Crouch, 2005, p. 22; Boyer, 2006, p. 18; Wood and Lane, p. 18; Pike et al., 2015, pp. 188-189).
- '*Churning*': Repeated restructuring and refitting of institutional arrangements (mainly as a result of dictates from above) (based on Mulgan, 2010, p. 18; Pike et al., 2015, p. 190).

3.5. The multi-scalar context: diverse institutional environments

Policy-making and governance arrangements concerning a region's economic development, will be embedded in a wider institutional environment, which will shape and condition policies and arrangements. In the discussion of dimensions within the wider institutional environment that follows I will focus especially on differences in the formal structures, and hence not on more informal aspects (such as culture, traditions, attitudes, religious outlook, etc.). There are two dimensions within these more formal structures that will be of particular relevance for policy and governance in regional economic development: government structure and economic organisation.

Within government structure there are two main options: a unitary government structure, or a federal government structure. Within a *unitary government structure*, sovereignty only resides in the central government, and subnational units of administration (such as regional or local governments) derive their authorities and resources from the central government. In *federal government structures*, sovereignty resides in multiple tiers of government, both at the central level as well as at the level of the constituent units. Hence each level has substantial autonomy and independence in their respective spheres, and the powers of each tier of government and the interrelations between them are normally covered by a written constitution (Harman,

2004; Anderson, 2008). The type of government structure will thus strongly determine the division of powers and resources: whether these are decentralised and subject to local discretion (as will normally be the case in a federal system), or whether these are reserved and subject to central control (as will be the case in highly centralised unitary systems) (also Pike, 2011, p. 17). In other words, in unitary states there will normally be a greater degree of 'power dependence' and 'resource dependence' of local and regional governments on the central government; whereas such dependence will be more limited and more constitutionally regulated in federal systems (see Anderson, 1992).

However, also in unitary government structures, some powers and resources may be decentralised, and devolved to subnational territorial units. Intergovernmental relations within a nation are hence certainly not static and fixed. In fact, the 'new regionalism' in Economic Geography (touched upon briefly in 3.2) coincided with a drive towards increased decentralisation, especially in economic development policies. Hence instead of universal and 'spatially blind' policies by central governments that do not take geographical factors into account, there has been a move since the early 1990s in many industrialised countries towards economic development policies that are more 'place based', and formulated and implemented by subnational governments (Amin, 1999). It has been postulated that a certain '*economic dividend*' could be derived from such a transfer of powers and resources, as regional and local governments could formulate and enact policies that would better fit local circumstances and would capitalise in on the particular opportunities offered by a place. Moreover, regional and local actors should have a better knowledge of what is required for their economic development. Evidence that such an 'economic dividend' has indeed materialised, has remained elusive however (Pike et al., 2012; Ezcurra and Rodríquez-Pose, 2013).

This dynamism in the relations between governments at various spatial scales within nations, is part of a larger movement towards more '*multi-level governance*' (e.g. Bache and Flinders, 2004; Sørenson, 2006; Piattoni, 2009). 'Multi-level governance' indicates the increased interdependence of governments operating at different territorial levels, not

just with regard to national and subnational levels, but also with regard to the supranational level (in particular the European Union for European countries). The concept arose in the context of European cohesion policy, to stress the direct involvement of subnational governments in policy-making, 'bypassing' the central government (Piattoni, 2009). However, over time the meaning of the concept has expanded somewhat, as it has been applied to policy-making in other fields. The concept now not only encompasses vertical dimensions (the development of a complex set of relations between supranational, national and subnational governments), but also horizontal dimensions: the increased involvement of non-governmental actors (representatives from businesses, civil society organisations, labour unions, etc.) at various territorial levels (Bache and Flinders, 2004). So the concept underlines the blurring of the traditional distinctions of central and subnational, of domestic and international, and of state and society (Piattoni, 2009). Nevertheless, this is still consistent with a Geographical Political Economy approach that presumes that governments (especially the central state) are particularly influential actors (more so than any other single actors involved), by virtue of their powers, resources, and the role they play in shaping the framework of governance arrangements.

With regard to economic organisation, a basic typology is offered by the Varieties of Capitalism model. Within Varieties of Capitalism the firm takes centre stage, as its competitiveness is analysed with reference to the relations it maintains with the institutional frameworks within it operates. The approach then postulates that within this context, the institutional frameworks in various domains will be mutually attuned in systemic ways, producing so-called 'institutional complementarities' (Hall and Soskice, 2001; Hancké, 2009). In particular, such complementarities will exist between the frameworks offered with respect to the capital market, industrial relations, education and training systems, the internal structure of a firm, and inter-firm relations (with competitors and in the supply chain). Next, the model assumes that the relationship between firms and these frameworks can be based on two principal types of coordination: coordination through market transactions and contracts, or coordination

through collaboration and active management (so-called 'strategic coordination'). The first type is of coordination is associated with *Liberal Market Economies (LME)*, while the second type of coordination is the primary mode in *Coordinated Market Economies (CME)*. In Table 4 the characteristics are listed for both these 'ideal types'. The USA, the UK, and other Anglo-Saxon economies are normally categorised as LMEs, while Germany, the Scandinavian countries and other Continental European economies are classified as CMEs.

	Liberal Market Economies	**Coordinated Market Economies**
Capital markets	Relatively large role for equity markets, which constitute the primary source for capital.	Banks play a key role, hence long-term relations develop between firms and banks.
Industrial relations	Flexible labour markets based on decentralised wage bargaining, with a small role for labour unions and worker representation.	Regulated labour markets based on more centralised wage bargaining, with comparatively powerful labour unions and various arrangements for worker representation.
Education and training	An emphasis on transferable skills rather than firm- and industry specific skills.	More investment in firm- and industry-specific skills, e.g. through dual provision of vocational training by both schools and firms.
Internal structure of a firm	Strong top management, and relatively hierarchical organisations.	Top management more geared towards creating consensus among stakeholders, and hence forms of organisation that leave more responsibility at lower levels.
Inter-firm relations	Highly competitive relations with competitors, and more arm's length and formal contractual relations with firms down the supply chain, which will thus invest more in switchable assets.	More collaborative relations also with competitors, especially through business associations; and long-term relations with suppliers, based on mutual trust and asset specific investments.

Based on Hall and Soskice (2001), pp. 21-33; Peck and Theodore (2007), p. 746.

Table 4: Characteristics of Liberal Market Economies and Coordinated Market Economies

An important implication of the complementarities that arise between the various frameworks in the different domains, is that LMEs and CMEs will develop different types of 'comparative institutional advantage'. The competitive strength of firms in LMEs will be

in sectors that rely on the flexibility, decentralised decision-making, and/or the strong tendencies for price competition allowed in this system, such as high-end business services, software development, biotechnology, and standardised manufacturing. While the competitive advantage of CMEs will lie in sectors that would benefit from more explicit coordination between stakeholders, and the more long-term and high-quality orientation that goes with it, such as machinery, car manufacturing, and the manufacturing of other capital goods. Crucially, LMEs facilitate more radical innovation, based on the development of entirely new products or major changes in the production process. CMEs on the other hand, stimulate more incremental innovation, based on more continuous and small-scale improvements to existing product lines and processes (Hall and Soskice, 2001; Hancké, 2009).

The Varieties of Capitalism model has been critiqued extensively (see Crouch, 2005; Hancké et al., 2007; Peck and Theodore, 2007; Wood and Lane, 2012). Three points of critique are particularly relevant in the context of this research, as they prompt further refinements of the basic model. First the presumption of an equilibrium in the model as a result of institutional complementarities, which would not allow for a dynamic analysis based on ongoing changes in institutions. Second, the neglect of the role of the state in economic coordination, as a consequence of the firm-centeredness of the approach. Third, the 'methodological nationalism' in the model, which stresses coherence between institutions at the national scale, but ignores the variegation of institutional frameworks at regional and local scales. I will discuss these points of critique in turn, and as a result I will qualify the Varieties of Capitalism model on these aspects. It is this qualified version of the model that will feed into the analytical framework I am developing.[26]

First, the Varieties of Capitalism model can accommodate institutional change *when* it is presumed that institutional complementarity does not entail a strict form of coherence, with tight couplings, between institutional frameworks. If instead a notion of

[26] This qualified version of Varieties of Capitalism comes closer to the approach of 'variegated capitalism' outlined by Peck and Theodore (2007).

complementarity is assumed which allows for more loose forms of coupling and a constant process of reconfiguration between actors, then institutional change can be incorporated (Hancké et al., 2007; Hall and Thelen, 2009; Wood and Lane, 2012). Incremental change can in that case occur in a given institutional architecture without changing the nature of core complementarities, or alternatively changes could take place in one segment of the economy without spilling over or snowballing into other segments[27] (Hancké et al., 2007, p. 11-12).

Second, the presumption that governments have an important role, is somewhat implicit in the Varieties of Capitalism model. They normally play a significant part in the operation of 'meta-institutions' through which overall coordination across the various domains takes place (through deliberation, conflict resolution, rule-making, generation of intelligence, etc.) (Hall and Soskice, 2001, pp. 11-12; Hall and Thelen, 2009; p. 12). Moreover, governments provide important framework legislation that underpins the institutional infrastructures in either LMEs or CMEs, and enact policies that support the right incentives for their functioning (Hall and Soskice, 2001; Wood, 2001). However, governments may also take on a direct and coordinating role in the economy, by direct ownership of firms in strategic sectors, steering investments and innovation, regulation of economic activities, and other forms of industrial policy. To incorporate such an active role for the state within the model, the typology of LME and CME can be expanded to also include e.g. 'dirigiste' economies (such as France before the 1990s) or 'compensating' economies (such as Italy and Spain) (Hacké et al., 2007, pp. 24-28). However, it is important to note that also in the basic ideal type of the CME the role of the state is quite constrained, and governments do not have a central role in the 'strategic coordination' process (see Wood, 2001).

Third, the model may also be stretched to accommodate regional and sectoral variations. In the context of this project – and for Economic Geography and regional studies more

[27] Alternatively, more systemic change could take place when changes in one segment spread out into other segments and undermine core complementarities.

broadly – this is a significant refinement, as it allows for a better examination of the many variegations of capitalism, not only between nations but also between regions (Peck and Theodore, 2007). Recently, a strand of literature has appeared which highlights the *Regional and Sectoral Varieties of Capitalism* (Crouch et al., 2009; Wood and Lane, 2012; Schröder and Voelzkow, 2014; Ebner, 2015). This strand suggests that economic organisation in local and regional economies will normally mirror national economic organisation. However, for some sectors following the national model will adversely affect their competitive position (e.g. software development or creative industries in Germany, or high value manufacturing in the UK), and at the regional level an alternative institutional infrastructure may develop to provide for the needs of these sectors. Hence at the regional level, divergences from the national Variety of Capitalism model may emerge (so-called 'productive incoherences'), based on the needs of particular sectors which are strongly represented in that region. However it is likely that such regional divergences will more easily develop and persist in federal states rather than centralised states, as federal scales offer more opportunities for very different focal points in the policies of regional governments and other regional actors (Sternberg et al., 2010). Hence, this expansion of the Varieties of Capitalism model to Regional and Sectoral Varieties, allows for a more multi-scalar perspective in which the institutional arrangements at the regional level are 'nested' in the institutional infrastructure for economic organisation on the national level (and the supranational level). Moreover, the relations between the regional level and higher levels of scale can be quite dynamic, as arrangements maybe reconfigured and recombined to cope with changes in the economy (following e.g. Strambach, 2010).

3.6. Analytical framework and conclusions

This Chapter set out to develop an analytical framework to better conceptualise the *dynamic and multi-scalar aspects* of policy and governance with regard to adaptation and resilience, as part of an approach that combines Evolutionary Perspectives and Political Economy concerns (mostly building on Path Dependency Theory). Figure 7 shows the

main elements of this analytical framework. It should again be noted that the links between these elements are not as clear-cut as they appear in the figure. The responses in policies and governance to a disruptive shock as a result of structural change, will be mediated by firstly a process of interpretation and sense-making, and secondly a process of political decision-making. The wider institutional environment will *condition* these two processes, and will also condition the feasibility and attractiveness of different options to respond, but will certainly not completely *determine* the responses (i.e. it will leave room for the agency of various actors). And the role of the responses in policies and governance in the adaptation and resilience of a regional economy, will also depend on many other factors.

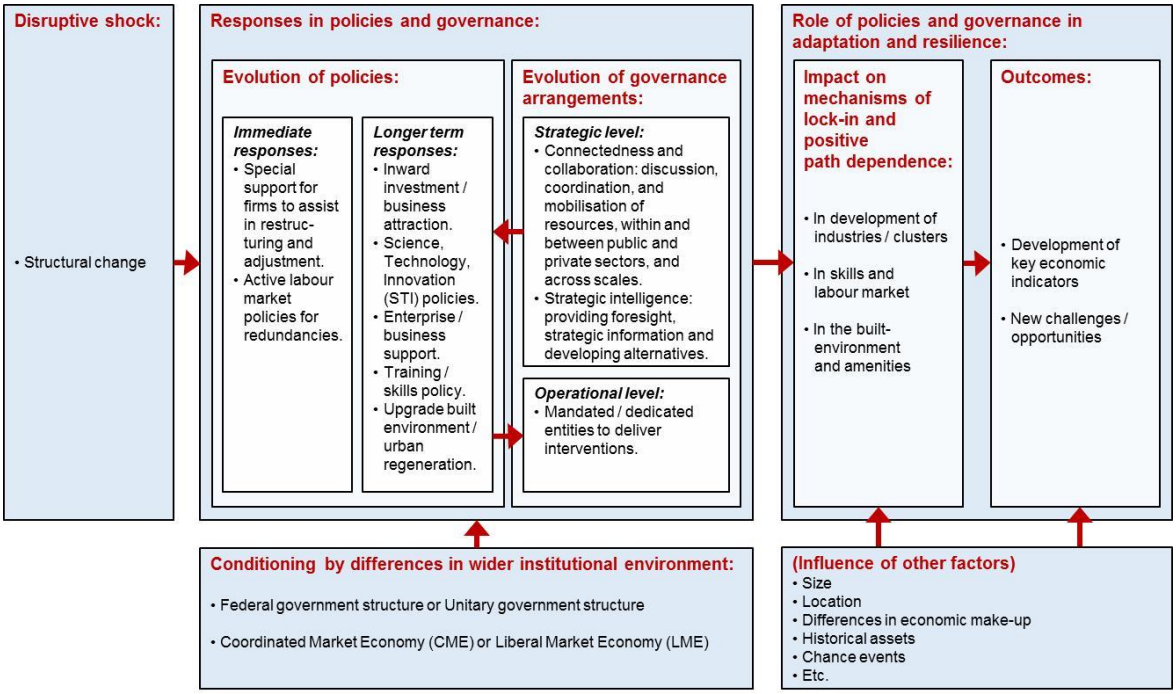


Figure 7: Analytical framework: the evolution and role of policy and governance in adaptation and resilience, conditioned by the wider institutional environment

The framework distinguishes between different types of policies and different types of governance arrangements. With regard to policies, the framework makes a distinction between immediate responses to disruptive structural change (support for firms, or

policies to cope with redundancies), and longer-term policies in various areas to develop new economic drivers. Also with regard to analysing governance arrangements, we should be precise about the type of arrangements concerned. On the one hand, there are arrangements at the strategic level, to facilitate connectedness and collaboration between different actors, and to generate strategic intelligence and undertake strategic planning. And on the other hand, there are arrangements at the operational level, to deliver and manage specific interventions and policies. These policies and governance arrangements can play a role in adaptation and resilience by breaking through interdependent mechanisms of lock-in, and trying to install mechanisms of positive path dependence instead. The will require a comprehensive, coordinated, and long-term effort however, as a transformation is required which addresses several fields: clusters and industries, skills and the regional labour market, and the built environment. Success in adaptation will subsequently be visible in the development of key indicators and in the new challenges and opportunities a region will face when developing a sustainable economic base is no longer the primary concern.

The evolution of policies and governance arrangements will follow a particular logic, which we need to analyse as well. The evolution of policies will depend on their timing: certain options for intervention may only exist during 'critical junctures', while at other points such options are not really open. The evolution of policies will also be subject to certain cognitive and discursive factors, as a result of the process of collective sense-making and the framing of issues in certain discourses, which are part and parcel of policy-making. Hence, policies may reflect 'myopias' or 'escalating commitments'. The evolution of governance arrangements in a region on the other hand, can be driven by three different mechanisms: reinterpretation and subversion from below, by decree of governments at the regional or central levels, or by mutual consent between actors. The evolution of such arrangements may then show a variety of patterns: 'layering' or 'sedimentation', 'conversion', 'displacement', 'drift', 'exhaustion' or 'dismantling', 'recombination', and 'churning'.

To analyse the conditioning of policies and governance in a region by the wider institutional environment, we focussed on two important dimensions in the formal structures in which a region is embedded: the government structure and economic organisation. Concerning the government structure, we can make a basic distinction between a federal structure and a unitary structure. However, also in a unitary government structure, there may be a substantial amount of decentralisation, and thus devolution of powers and resources to governments at the subnational level. Over the last 25 years or so, such decentralisation has been a trend in economic development policy (though by no means uniform), as it would allow for more sensitivity to local particularities and circumstances (instead of more generic, spatially blind policies) (Amin, 1999; Martin, 2000). Hence, it has been postulated that an 'economic dividend' can be derived from devolution of powers and resources in economic development to the subnational level. Such processes of shifting responsibilities between governments at different territorial levels, can be seen as part of a larger process in which relationships between governments across spatial scales, and between governments and non-government actors, have become more blurred. This is what is indicated by 'multi-level governance'. In relation to economic organisation, we can at a basic level distinguish between Liberal Market Economies (like the USA, UK, and other Anglo-Saxon economies) and Coordinated Market Economies (such as Germany and other Continental European Economies). Also this Varieties of Capitalism model should be qualified and refined, to incorporate processes of institutional change, an explicit role for governments, and variegations and relations across spatial scales. Especially with regard to this last aspect, the notions of Regional (and Sectoral) Varieties of Capitalism (and the hypothesised relations to the national variety) may prove to be useful.

Chapter 4. METHODOLOGY

4.1. Introduction

I have applied the analytical framework discussed in the previous Chapter, to examine empirically the aspects of policy and governance in the adaptation and resilience of regions to disruptive economic changes, in diverse institutional contexts. The analytical framework served as a guide to analyse the evolution of policies and governance arrangements in two regions located in different contexts (South Saarland and Teesside), and the mechanisms through which policy and governance played a facilitating (or inhibiting) role in their adaptation and resilience. Through this guided examination, the empirical part of this study can then also serve to further test, refine, and qualify several important building blocks of an Evolutionary Geographical Political Economy approach. This Chapter details the methodology I have followed.

I will first consider how this project is grounded in a critical realist ontology and epistemology. Next sections 4.3 through 4.6 outline the research design of the comparative case study between South Saarland and Teesside, including a discussion of the selection of the two cases, representativeness, the framework for cross-case comparison, and the use of research techniques.

4.2. Critical realist ontology and epistemology

As stated in the Introduction, this project explicitly aims to contribute to Evolutionary Perspectives in Economic Geography, and in particular by further developing a Geographical Political Economy approach with its emphasis on the relationships between the state, capital and labour, and the tendencies of capitalism for instability and uneven

development[28] (see Martin and Sunley, 2015b; Pike et al., 2015). Such a project presumes particular ontological and epistemological commitments, which are most compatible with Critical Realist philosophy (also Bathelt and Glückler, 2003; Hassink et al., 2014). In the most general terms, Critical Realism postulates that there exists a reality independent of our knowledge of that reality, and that our knowledge of this reality will indeed be anchored within the material world, but in an imperfect and dynamic way (e.g. Pratt, 1995; Sayer, 2010; O'Mahoney and Vincent, 2014). There is much to say about Critical Realism, but I want to highlight four elements of its ontological and epistemological presuppositions that make it especially suitable as a basis for this project:

- Critical Realism presumes a stratified reality, consisting of various levels (Sayer, 1982; O'Mahoney and Vincent, 2014). Higher aggregation levels are made up of lower-level parts, but nevertheless have causal properties of their own. Hence critical realism reserves an important role for 'emergence'. Such an ontology is an alternative for the methodological individualism within the Generalised Darwinism framework, and fits well with the more holistic and multi-scalar approach adopted in this project. Such a stratified ontology also fits well with the emphasis on interactions between different geographical scales in this project. Policies and governance arrangements at the regional level (i.e. meso-level) are central, but these are placed in a wider context of macro-level structures and processes (at the national and European levels) (also Mouleart and Mehmood, 2010).
- The depth ontology of Critical Realism also presumes that behind events that we perceive there is a reality of causal powers, structures and especially mechanisms (O'Mahoney and Vincent, 2014; Næss, 2015). Social mechanisms become a central object of interest: "the recurrent processes linking specified initial conditions and a specific outcome" (Mayntz, 2004). The main objective of social scientific research is thus to explain particular outcomes by reference of the underlying causal mechanism and factors (Næss, 2015; also see Hedström and Swedberg, 1998; Elster, 2007). In the context of this study, the challenge is to explain particular patterns in the economic

[28] In Chapter Chapter 3 this has meant that we have engaged with various branches of institutionalism in especially Political Science (Historical Institutionalism, State Theory, and Varieties of Capitalism).

development (outcome) of regions confronted by a disruptive structural change, from the evolution of policies and governance arrangements (within a particular institutional context) through a series of mechanisms (see the Analytical Framework outlined in the previous Chapter). The adaptation process thus encompasses the evolution of policies and governance arrangements, and the series of mechanisms; while resilience can be seen as the underlying power (possessed by the constellation of actors and structures with regard to a region as a whole) to develop policies and arrangements and then effectuate such mechanisms.

- Relatedly, the emphasis on mechanisms, also directs attention away from the attempt to discover 'universal laws' (which are valid under all circumstances and should yield accurate predictions), but instead leads to a careful consideration of the contextual conditions in which such mechanisms may operate (Sayer, 1982; Sayer, 2010; O'Mahoney and Vincent, 2014). The specific powers and structures that may exist with regard to a region in one institutional environment, may not exist in a different environment, and this may then mean that certain mechanisms cannot occur. Moreover, even if similar mechanisms exist in different regions, other mechanisms or events may inhibit or alter the operation of such mechanisms. In this way, Critical Realism fits well with the approach of 'deep contextualisation' employed in this research (on which I will elaborate later).
- Critical Realism also postulates a dynamic relationship between structure and agency (Sayer, 1982; Næss, 2015). Agents possess basic powers which create, reproduce and transform social structures. But at the same time social structures have particular irreducible properties and capacities, which constrain, condition, and enable agency. In an evolutionary setting, such an ontology will entail a middle ground between too much determinism and too much voluntarism (as a result of an overemphasis on structure and agency respectively). Moreover, Critical Realism has an emancipatory aspect: through better knowledge of the social world, people will be better able to change it for the better (O'Mahoney and Vincent, 2014; Næss, 2015). Hence in Critical Realism, representations of and discourses about the social world are on the one hand seen as a possible part of the causal explanation of certain outcomes in society

(because also ideas can have real powers, and should as such be an object of study). On the other hand, this also means that researchers should continually reflect on the ideas and representations they are propagating, in the first instance in terms of their truth (how well do they reflect reality?), but also in terms of the beneficial or harmful effects these ideas and representations may have in society (also Sayer, 2007).

4.3. Comparative case study and case selection

As suggested in section 2.2 the *underlying* capacity for resilience can only be inferred from *actual* processes of adaptation. By studying the mechanisms of adaptation and the conditions under which they operate over a relatively long period of time, and by comparing different adaptation processes in different regions to the same type of change, we can identify factors that are important for the underlying capacity to cope with economic change. The basic method to be used is the comparative case study.

The set-up of the comparative case study is one of 'most-similar cases' (e.g. George and Bennett, 2005; Gerring, 2007): cases that are in all important aspects quite similar, but one. The impact of this one difference can then be examined. In this study the repercussions of differences in the wider institutional environment are central, and I shall examine how this shapes the evolution of policies and governance, and mechanisms of adaptation, in regions confronted by the disrupting effects of structural change. Cases should thus be dissimilar in terms of relevant characteristics within the institutional environment. However, on other potentially relevant elements, the cases should be as similar as possible. Thus cases should be similar in terms of important functional characteristics at the outset of the adaptation process they went through. Concretely, this means a similar economic structure at the starting point of the period of development under investigation, with the same dominant industry (e.g. steel, coalmining, shipbuilding, car manufacturing, etc.) with a similar configuration in terms of size, product, output, linkages, etc. Cases should also be similar with regard to the type of structural change and concomitant shock – i.e. collapse of the dominant industry – in

both timing and severity. Cases should furthermore be similar with regard to background variables on e.g. population size, proximity to main urban centres and physical geography. In these respects, the regions should be delimited by their functional economic areas (as a clear concentration of economic activities with a shared labour market), rather than their administrative borders.

Other considerations for the selection of cases are more practical in nature. Regions within the cases should maximally be restricted to metropolitan areas which are not too big, as larger urban regions may show very divergent developments, and hence not experience a uniform shock and ensuing responses. Adaptation processes can likely be traced more clearly in medium-sized regions (as also discussed below). Furthermore, the development path since then should be at least several decades, in order for the most important continuities and changes to be identified. As observed in section 2.2, structural change will often be a protracted process that may become manifest through an intense shock (often related to more cyclical patterns), but of which the first signs already become visible earlier, and of which the full extent will take some time to become clear. Furthermore, the responses and their effects will also take time to materialise. The period of investigation should also not be too long ago in time. Many sources of information on the developments within the regions will then be available and more easily accessible; in particular people to interview who have actually lived through the changes.

On the basis of the above considerations, it was decided to compare regions in which the steel industry was particularly dominant in the early 1970s. These regions experienced a similar shock, as there was a steel crisis at that point in time that was global in scope, starting in 1974 and lasting until about 1987. Moreover, due to certain characteristics of the steel industry (especially its capital intensity, and limited possibilities for product differentiation), this crisis was particularly pronounced as an episode within the wider process of deindustrialisation. Also government interference has historically been large within the steel industry (compared to e.g. car manufacturing or shipbuilding), and hence policy responses to the steel crisis more saliently reflect broader patterns in the state-

industry nexus in diverse institutional environments. It would furthermore mean that the period to be examined would be from the early 1970s until present, which would meet the concerns noted above with regard to the length and timing of the period of investigation.

As noted, the key difference between the cases should be the wider institutional environment in which the regions are located. As discussed in section 3.5 two dimensions will be particularly relevant: the type of government structure and the type of economic organisation. With regard to the government structure we have distinguished between unitary and federal governments. I have also argued that even though such a distinction is still valid, it also needs to be qualified somewhat, as unitary states may devolve powers and resources to subnational units, and more multi-level types of governance (involving actors at various territorial levels) is increasingly common. Also with regard to economic organisation, we can – following the Varieties of Capitalism literature - distinguish between two broad ideal types: Cooperative Market Economies (CMEs) and Liberal Market Economies (LMEs). Again this distinction should be qualified: the role of the government may vary within these two types (from more hands-off to more dirigiste, especially in CMEs), and on the regional level substantial variegations may exist (captured by the notions of Regional Varieties of Capitalism and Variegated Capitalism). While taking these qualifications into account, the cases should cover the spectrum defined by these dimensions. The domain of institutional environments in which suitable cases may be found, is further limited by the fact that not all industrialised countries with an advanced capitalist system, have mid-sized old industrial regions in which the steel industry was particularly prominent, and not all countries have an institutional environment which has been stable from 1970 until now. See also the table below.

		Variety of capitalism	
		'Liberal Market Economy'	*'Coordinated Market Economy'*
Government structure	*Unitary*	**United Kingdom (in particular England)**	France (Japan)
	(Con)Federal	United States Canada	**Germany** Belgium

Table 5: Countries placed along the two dimensions with regard to institutional environments

Practical considerations of time and budget available restricted me to two cases. Furthermore, also language and available material should be taken into account, which made France, Belgium, and Japan less practicable. The United States (because of the availability of many mid-sized old industrial regions) and to a lesser extent Canada, would be good options, but in combination with either the United Kingdom or Germany the full spectrum of institutional environments would not be covered (either government structure or economic organisation would then be somewhat similar).[29] Hence the United Kingdom (especially England) and Germany were chosen as the most suitable countries to look for cases of old industrial regions. Because the focus is on mid-sized old industrial regions in which steel was a dominant component, only a few regions in these two countries would meet the requirements: Teesside and South Wales (Swansea, Port Talbot and Llanelli) in the United Kingdom, and South Saarland (Saarbrücken metropolitan area) and Oberhausen and surrounding area in Germany. The institutional context for South Wales has changed substantially however since the early 1970s, not only because of a shift towards a clear LME-type of economic organisation which occurred in the United Kingdom more generally from the late 1970s onwards, but also because from 1998 more powers and resources were devolved towards Wales, whereas Teesside (and North East England) remained more firmly in the centralised government structure. Furthermore, Teesside also had some considerable practical advantages in terms of available material,

[29] Although it should be noted that the federal system in the United States and the confederal system in Canada, is very different from the federal system in Germany, if only because of the size of the states.

and budget and time to be spent (given that I was located in Newcastle). Oberhausen may be said to be part of a larger functional economic area including Duisburg and perhaps the whole of the Ruhr Area, and thus is not a separate functional economic area in its own right. Hence it was decided that Teesside in the United Kingdom, and South Saarland (Saarbrücken metropolitan area) in Germany would be the best options for in-depth analysis. Some key characteristics of these two city-regions are listed in Table 6 below.

	South Saarland (Germany) (Saarbrücken metropolitan area)	**Teesside (UK) (former Cleveland County)**
Population size (1970)	0.926 million	0.569 million
Total area	1,538 km2	583 km2
Total employment (1970)	0.320 million	0.222 million
Percentage employment in steel industry around 1970	±14% (±47,000 workers); 45% manufacturing	±14% (±32,000 workers); 47% manufacturing
Total crude steel production around 1970	5.4 million tonnes	±4 million tonnes
Other significant industries around 1970s	Coal mining, especially before 1970 (8-15%)	Chemicals (13%); Heavy engineering (12%)
Geographical relation to other economic centres	Peripheral, border region. Other major economic centres at 70 / 120 km.	Peripheral. Other major economic centres at 60 / 90 km.
Physical geography	Inland, along river, hilly	Coastal, at mouth of river, flat but surrounding area moderately hilly
Stable institutional context	Consistently federal and CME	Shift from CME to LME in late 1970s and early 80s; but as part of being a unitary state
Socio-economic performance since 1970s	0/+	-
Practicality (travel; available materials, existing contacts, etc.)	**+**	**++**

Sources: Statistisches Landesamt Saarland (Statistisches Handbuch für das Saarland); Institut für Arbeitsmarkt- und Berufsforschung Rheinland-Pfalz-Saarland; Office of National Statistics (Census data; Annual Abstract of Statistics).

Table 6: Relevant statistics and facts for case studies

4.4. Representativeness

As an intensive research design, a case study approach is well-suited to investigate and explain processes of change (like adaptation) and the mechanisms within such processes (Sayer, 2010). Extensive research designs, relying on more quantitative cross-case analysis of a large-N sample based on available statistics or survey-data, are more suitable to investigate regularities and tendencies that are representative for a certain population (George and Bennet, 2005; Gerring, 2007; Sayer, 2010). Such extensive research designs, will however not allow the 'explanatory penetration' and the sensitivity to context which are central in this research. Nevertheless, representativeness is a major concern within this project, and a *comparative* case study, when done in the right way, offers opportunities to attain a relatively high degree of external validity (George and Bennett, 2005; Flyvbjerg, 2006; Gerring, 2007). Hence the ambition is to draw inferences about adaptation to cope with economic change at a regional level, which have validity for a much larger set of cases than the ones investigated.

There are a number of ways in which I have tried to ensure a broader representativeness, both *across* diverse contexts (regarding economic adaptation and resilience in general) as well as *within* the specific contexts of the cases (i.e. what the cases say about economic adaptation and resilience in West-Germany and the United Kingdom). The principal way of ensuring a broader representativeness *across* diverse contexts, is through the selection of cases. Two considerations are worth elaborating upon. First, I have attempted to choose two cases which cover two extremes of a broad spectrum (in terms of different types of institutional environments; see next section), and thus the findings from a study of these cases will have some bearing on other cases within this spectrum. Second, I have selected two medium-sized and peripheral city-regions to compare. The two cases of South Saarland and Teesside are in some ways atypical (deindustrialisation was particularly disruptive, and – compared to other regions - many policy initiatives have been enacted over time to cope with this shock), but in other ways more ordinary (they do not represent central economic nodes (such as Global Cities), and do not have a particular 'symbolic' importance (such as e.g. the Third Italy or Baden-Württemberg) (see

Robinson, 2002). But because of these reasons, the evolution of policies and governance arrangements, and the mechanisms of adaptation, will be particularly salient. In larger and more central city-regions by contrast, there will always be many processes going on at the same time, which makes it much more difficult to isolate particular processes and the mechanism therein.

Within the specific contexts, the cases of South Saarland and Teesside need - as much as possible – to be illustrative of broader patterns for Germany and the United Kingdom. Though of course the case studies of South Saarland and Teesside capture the unique events, processes and structures with regard to these two areas, I have explicitly contextualised these through a form of 'extended case study': "to extract the general from the unique, to move from the 'micro' to the 'macro', and the connect the present to the past." (Burawoy, 1998, p. 5; also Barnes et al., 2007; Burawoy, 2009). In particular, I have paid close attention to how events, processes and structures within South Saarland and Teesside, are conditioned and affected by policies at the national and European levels, and by broader structures with regard to especially government structure and economic organisation. Ron Martin and Peter Sunley (2015b) have recently called such a holistic and systemic approach based on a multi-scalar ontology, 'deep contextualisation': "to consider the full set of entities, factors and influences, including internal (endogenous) and external (exogenous), local and non-local, and structural and contingent, that have conditioned and shaped the evolutionary dynamics and trajectory of the spatial economic developmental system under study" (p. 721; also Pike et al., 2015). For the analysis of disruptive structural change and the process of adaptation in the two cases, this has meant, a systematic comparison (through a framework of comparison), which entails tracing events, processes and structures (through multiple, overlapping research techniques) at and between three levels of analysis:

- The wider institutional environment and any relevant changes in this environment.
- The evolution of policies and governance arrangements with regard to the case study areas.

- How these polices and arrangements then work on mechanisms of adaptation in the regional economy, and what this entails for the factors relevant for regional resilience.

4.5. Framework for cross-case comparison

The framework for comparison between the two cases is a further specification of the analytical framework developed in the previous Chapter. This means that within this framework, the disruptive shock is specified as the deindustrialisation process in the 1970s and 1980 in general and specifically the steel crisis. Moreover, as part of the cross-case comparison I will provide contextual information about the historic development of both regions until the 1970s. As stated earlier, the framework entails an analysis of processes at and between three distinct but interrelated levels: structures and processes in the wider institutional environment, the evolution of policies and governance arrangements, and the role of these policies and arrangements in adaptation and resilience. The framework for cross-case comparison is shown in Figure 8.

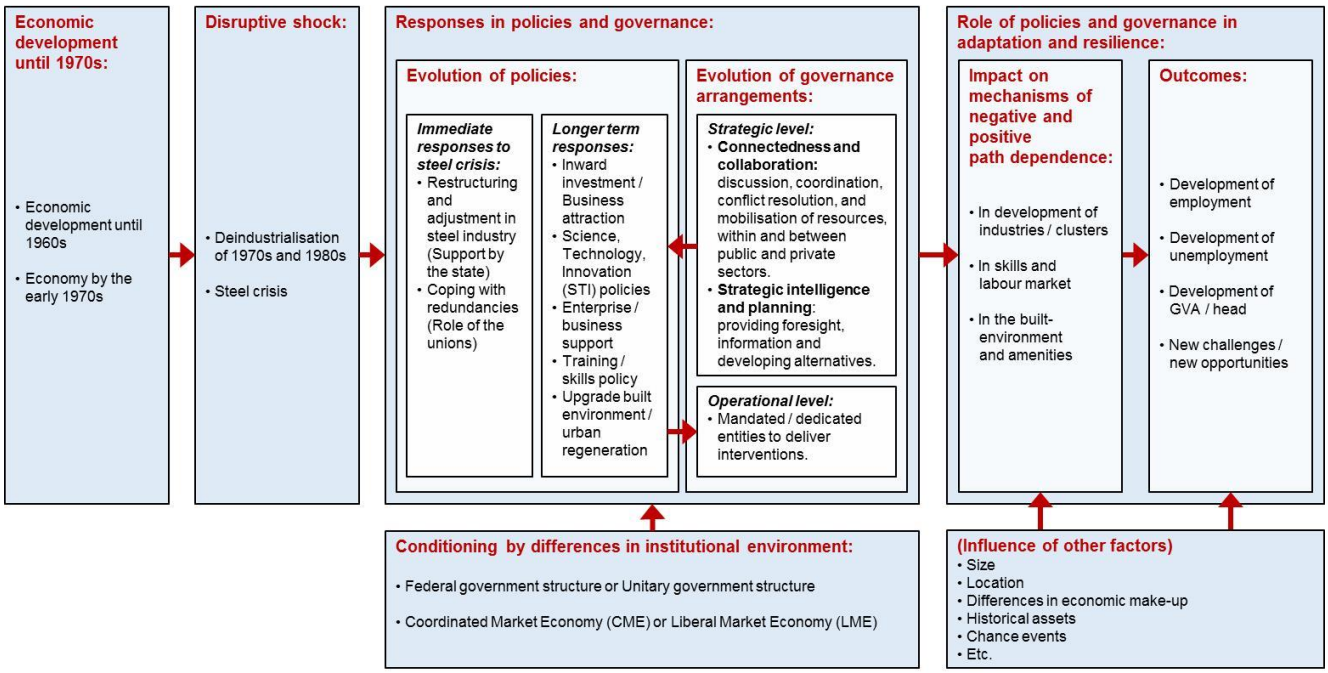


Figure 8: Framework for cross-case comparison

This framework is rooted in a thorough and extensive review of the literature (Chapter 2 and Chapter 3). However, common problems with comparative case studies, especially between cases in different countries, include differences in definitions, meanings, connotations, etc., and the possibility that some concepts of analysis are biased to fit a certain context better than another (Kantor and Savitch, 2005; Ward, 2009). Moreover, despite taking the availability of information and data into account in the selection of the cases, this may still vary and may not match for the two cases. Hence the analytical framework and framework for cross-case comparison has been fine-tuned on the basis of some of the first findings of the field work in Teesside and South Saarland. Availability was a particular issue with regard to quantitative data on indicators that show the aggregate development and outcomes of the adaptation process in both regions. Comparable data for both regions over a longer time period was available on population, employment, structural change in the regional economies, production of steel, unemployment, and GVA per head relative to national GDP per head. But reliable figures for the overall development of regional GVA (in Purchasing Power Parity) could not be obtained, and also comparable data on other more general indicators with regard to wellbeing and quality of life in both regions are lacking. Furthermore, most statistical data was not available for South Saarland, but only for Saarland as a whole (however because South Saarland makes up by far the largest part of Saarland, this is not a large issue). Further fine-tuning has also been applied to the categories used for analysing different types of policy responses and different types of governance arrangements. Although these categories have a basis in the literature, their exact scope and their relevance was determined after a first analysis of the empirical results of the case studies.[30]

Moreover, some ways of analysing the findings of the case studies were more grounded in the particularities of each of the two cases, rather than imposed through the framework. This is true in particular for the periodisation of the evolution of policies into different episodes (as also applied in e.g. Dawley, 2014). These periodisations follow shifts

[30] Which meant that some possible categories (e.g. place marketing or branding as a longer term policy response), were dropped, as this response played only a very minor role in both cases.

with regard to the main focal points in the policies enacted by the principal actors in the two areas (the government of the state of Saarland, and the government of the United Kingdom respectively). However, in each of the two areas there were first attempts at modernisation and upgrading prior to and partly during the onset of structural change, subsequently there was an episode in which new initiatives were being developed to deal with the disruptive and large-scale effects of structural change, and in a third episode the emphasis was on coping with either enduring or new challenges and concerns. Through the comparison between the cases, the specific focal points for policy in each of these episodes come out even more clearly. It then also becomes clear what have been the 'paths not taken' in each of the two regions; in other words the two regions in some ways constitute each other's 'counterfactual development paths' (see George and Benett, 2005, pp. 167-170; Capoccia and Keleman, 2006), which also sheds more light on what is common between the two cases. This is part of the analysis in Chapter 8. Relatedly, along the way I have developed ways to provide overviews of the overall patterns of the evolution of policies and governance arrangements, through bulleted tables (see Table 13 and Table 16) and 'Gantt-type' charts (see Figure 19 and Figure 31) respectively, which further facilitate the structured comparison between the two cases, and thus lead to additional insights.

4.6. Research techniques

Guided by the analytical categories provided by the framework for cross-case comparison, I have traced the processes *at* and *between* the three levels of analysis identified: structures and policy developments at the national and European level, evolution of policies and governance arrangements at the regional level, effects on mechanisms of adaptation in the regional economy. Such 'process tracing' typically draws on many different types of evidence, and thus requires the use of various research techniques (e.g. George and Bennett, 2005; Gerring, 2007' also see Dawley, 2014; Pike et al. 2015). In the first place, this has involved a review of the extensive amount of academic materials (books, journal articles, discussion paper, manuscripts, etc.) available

on the political economy of Germany and the United Kingdom in general, and of Saarland and Teesside in particular, over the last decades. In fact, the historical reconstruction of deindustrialisation, the steel crisis, and the development of economic governance and policy in Germany and the United Kingdom (and at the European level) is almost exclusively based on available academic literature (although also some primary policy documents were consulted). The reconstruction of the evolution of policies and governance arrangements in South Saarland and Teesside however has also entailed archival research and interviews. And the analysis of the effects on the mechanisms of adaptation, has required the collection of relevant statistics, to trace how crucial parameters and indicators have developed (e.g. overall economic structure, employment in key industries, unemployment, GVA per head). Fieldwork in Teesside (for archival research, interviews, and collection of statistics) was for the largest part and intermittently undertaken from January until September 2013 (while based in Newcastle). Fieldwork in Saarland (with a base in Saarbrücken) lasted from January until April 2014.

For the archival research, I first compiled an inventory of key policy and programme documents (and ancillary reports and documents) with regard to the economic development policies for both regions since the 1960s, on the basis of information from academic sources, bibliographies, catalogues, and interviews. These documents were then searched and collected in various archives and libraries. For South Saarland I was able to find the key documents in the main library and the library for Empirical Social Sciences ('Empirische Humanwissenschaften') of Saarland University. For Teesside, I have consulted several archives and libraries to track down documents: Teesside Archives in Middlesbrough, the National Archives in London, Durham University library (including the special and local collections), Teesside University library, and Newcastle University library.[31] Much of the statistical data from before about 2000 is not available online, and also had to be traced in hard-copy statistical handbooks, yearbooks, and abstracts in various libraries. For Saarland and Germany most data was found in the handbooks and

[31] This also seems to be a consequence of the instability in the institutional arrangements in the United Kingdom, which will be developed as an important theme in later Chapters.

yearbooks of the statistical office of Saarland and the federal statistical office. For Teesside and the United Kingdom, some data was available in publications by the Office of National Statistics (mainly various editions of the Census, and of the Abstract of Regional Statistics, Regional Trends, and Region in Figures). But I have also had to use various other sources (academic publications as well as policy reports; cited in the text) to complement this data. To develop consistent, dependable, and comparable time-series from this data from multiple sources in two different countries and over a relatively long time-period, has required some additional operations, to get roughly equivalent categories, definitions, and indicators.

The interviews were complementary to the review of academic materials, archival research and collection of statistical data. The interviews served several purposes, in the spirit of 'close dialogue' between researchers and practitioners (Clark, 1998). First, to get a quick overview of the evolution of policies and governance arrangements, and thus guide the search for relevant policy documents and academic literature. Moreover, through the interviews, my interpretations of events and of the relative importance of specific policies and arrangements could be tested, and I could obtain additional background information. Finally, through the interviews I gained access to materials that were not directly available in public archives and libraries, such as unpublished reports and notes (a few of these are cited in the text). I conducted 21 interviews for South Saarland and 23 interviews for Teesside. The people interviewed can be grouped in four broad categories: experts (mainly academics), policy makers, business representatives, and representatives from labour unions and community organisations. I have tried to interview roughly the same number of people in each category for both cases, with a marked emphasis on interviews with policy makers (politicians and civil servants) who were closely involved in the development of policy for the region in question. Table 7 specifies the number of people interviewed in each category in each case; more details can be found in the Appendix.

	South Saarland (Germany)	Teesside (United Kingdom)
Experts (academics and journalists)	5	4
Policy makers (politicians and civil servants)	10	11
Business representatives	3	4
Labour union officials and community representatives	3	4
Total	21	23

Table 7: Number of interviews by case and category

The starting point for finding interviewees, were academics who had written extensively about the development of the respective regions. On the basis of their recommendations, and subsequent recommendations in the following interviews, relevant representatives in government, business and labour / community were then identified. The most informative interviews were generally with politicians and highly placed civil servants who were closely involved in policy making in the 1980s, 1990s and early 2000s (and to some extent the 1970s, but normally not in a high-level position). Many of these people were already retired, and could only be identified and contacted by talking to contemporary government representatives first. However in some cases these politicians and civil servants also had some wider renown (through media reports and other accounts), as they formerly were (prime-)ministers, Members of Parliament, chairmen, or chief executives.

The interviewees were sent information beforehand (by e-mail or post) on the main aims of the study, and an overview of the preliminary findings on either of the two regions (depending on whether the interview was for South Saarland or Teesside). The conversations were semi-structured, but the topics to be covered strongly depended on the particular expertise and background of the interviewee (see also Yeung, 2007; Sayer, 2010, pp. 245-246). Topics typically included the background of various policies and governance arrangements, the relations between various arrangements and policies (at different scales), why the emphasis was on certain types of policies and not on others, what explained the particular timing of policies, which documents had been particularly

influential, and what the likely impact of policies has been. Interviews lasted about 1 to 1½ hours on average, and were mostly conducted in the original language of the respondents (though several interviews in Germany were in English). I recorded the interviews using an audio recorder. After the interview I listened to the recording again, and drafted extensive minutes of the interview. I decided not to produce full transcripts, as the informational content was central (more easily codified through extensive notes), rather than the personal experiences and forms of expression of the respondents. I have been fully transparent towards the respondents about the purposes of the study, the topics to be discussed, and the way the information from the interview will be processed and used (including my intention of recording the interview, for which I always asked prior consent). Because of these provisions the research meets all ethical standards.[32]

The different research techniques (academic sources, primary policy documents, collected statistics, and interviews) thus reveal different aspects of the multi-scalar and multi-facetted process of adaptation in the two regions (and by extension the factors relevant for their transformative resilience) in a complementary way. However, these research techniques are also partly overlapping, and thus offer opportunities for some methodological triangulation (e.g. Yeung, 2003). By going back to the primary policy documents, interpretations and accounts in the academic literature can be checked. Through interviews the reconstruction on the basis of written sources (both primary documents and more secondary accounts) can be verified. Assessments of failure or success in interviews and in earlier publications can be modified and qualified on the basis of the comparison of long-term trends of key economic indicators. Hence by employing multiple research techniques in a comparative framework, the internal validity of the findings has also been reinforced.

[32] A full ethical approval form was filled out for this project (with a description of the above arrangements to protect the interests of participants), and ethical approval by the Ethics Committee of the Faculty of Humanities and Social Sciences was granted on 28th June 2013.

4.7. Conclusions

Based on the research design considered in section 4.3, and having employed the research techniques described in section 4.6, I have applied the framework for cross-case comparison (discussed in section 4.5) to analyse and compare aspects of policy and governance in the transformative adaptation and resilience in the two cases of South Saarland (Germany) and Teesside (United Kingdom). This follows the three distinct levels of analysis, and is reflected in the way the next four Chapters are structured:

- Chapter 5 will for the largest part be made up of a discussion of the institutional environments and in the development of policies in Germany and the United Kingdom (and at the European level). I will first briefly outline deindustrialisation and the steel crisis as major shocks, which hit both countries, and especially the two regions in question.
- Chapter 6 and Chapter 7 will provide a detailed examination of the evolution of policy and governance in first South Saarland and then Teesside (after I have first outlined some key characteristics and the economic history of both regions, and how they were upset by structural change and the steel crisis).
- Chapter 8 will address the role of policy and governance in adaptation and resilience, but as part of a rigorous comparison between both areas that also draws together the three levels of analysis (and which thus will very explicitly refer back to the comparative framework).

Chapter 5. Structural Change, the Steel Crisis and Regional Development in Germany and the United Kingdom

5.1. Introduction

This Chapter examines the broader context with regard to the basic institutional framework and policies for economic development in Germany, the United Kingdom, and also the European Community (now European Union) since around 1970. The events and processes in South Saarland and Teesside were importantly conditioned by this broader context. I will also consider structural change and the steel crisis as major shocks in the international economy in the 1970s and 1980s. The large scope of this Chapter necessarily meant that I had to be very selective in the events, processes and structures to be covered, focussing on those that are most relevant for the cases of South Saarland and Teesside.

In section 5.2, I will first briefly discuss deindustrialisation and the steel crisis, which affected the economies in Western Europe, North America and Japan in especially in the 1970s and 1980s. In section 5.3 I will then focus on (West-)Germany: I will outline the basic institutional framework for local and regional economic development (in terms of government structure and economic organisation), and the main policy responses to the steel crisis and deindustrialisation (in industrial policy, labour market policy, and urban regeneration policy). In section 5.4 I will then do the same for the United Kingdom. In section 5.5 I will consider relevant institutions and policies at the European level. The Chapter ends with some conclusions in section 5.6.

5.2. Structural change and the steel crisis

Structural change refers to changes in the structure of an economy: certain sectors within an economy grow in importance, while others decline. As such, structural change takes

place in all (advanced) economies at an on-going basis, and is not confined to a particular episode in time. However, structural change can at times be particularly disruptive; especially so when economies go through a process of deindustrialisation. Deindustrialisation refers to the contraction and decline of the weight of manufacturing industry within an economy (Pike, 2009, p. 51). This is usually measured in terms of employment (number of people working in manufacturing compared to the economy as a whole), or output (value produced in manufacturing compared to the total). Moreover, there may only be a relative decline (loss of importance of manufacturing as a proportion to other sectors), or there may also be an absolute decline (decline in employment and output). The advanced economies of Western Europe, North America and Japan, which had industrialised in the 19th and early 20th centuries, were the first to be affected by deindustrialisation. In many of these economies a relative decline of manufacturing already started in the 1960s (with the service sector growing at a faster rate than manufacturing), and in some sections of heavy industry (notably coal mining) a marked reduction in output and employment set in. But especially after the first oil crisis of 1973, the pace of change accelerated, and employment (and to a lesser extent also output) in many traditional segments of manufacturing (such as steel, textiles, shipbuilding, heavy engineering, car manufacturing, chemicals, etc.) started to decline at a rapid rate. This coincided with large-scale rationalisation- and modernisation-operations with concomitant downsizing and plant-closings (Bluestone and Harrison, 1982).

Certain regions, in which such industries formed the backbone of their economy, were hit particularly hard, such as the North of England, the central belt in Scotland, south Wales, the Ruhr Area and Saarland in Germany, Lorraine and Pas de Calais in France, Wallonia in Belgium, and the Great Lakes region in the United States and Canada. In such regions the crumbling of their economic base went hand in hand with among other things a steep rise in unemployment, a high incidence of socio-economic problems, abandoned industrial sites, and a further deterioration of the built environment. The pace of deindustrialisation in these regions slowed down somewhat after the mid-1980s, though the process often continued even up to today. After this initial shock, many of these regions experienced a

growth in service sectors, knowledge-based activities, and newer forms of manufacturing; although the performance has been very uneven (Hamm and Wienert, 1990; Birch et al., 2010; Power et al., 2010; Hobor, 2013; Cowell, 2015). Similar processes of deindustrialisation have taken place at later points in time, in Italy, Spain, Eastern Europe, East Asia and Latin America, though often not as pronounced and fast-paced (Pike, 2009).

Deindustrialisation appears to be at least partly, a 'natural and inevitable' process. It appears that at a certain stage in the development of an economy, services and knowledge-based activities will become more prominent and will grow at a (much) faster rate than manufacturing industries, as the so-called 'maturity thesis' postulates (Rowthorn, 1986; Pike, 2009; Hudson, 2011a). This fits with the *relative* decline in manufacturing. The *absolute* decline can be partly explained by patterns of 'trade specialisation (Rowthorn, 1986; Pike, 2009; Hudson, 2011a). As economies develop, their comparative advantages vis-à-vis other economies will change; so there will be increasing pressures to specialise in more high-value economic activities which correspond with higher wages and higher skill-levels. Forms of manufacturing which mainly rely on cheap and semi-skilled labour will then move to other places where living standards and overall levels of education are lower. But absolute decline may be further reinforced by the poor competitiveness and/or the poor management of manufacturing firms. This is the so-called 'failure thesis', and it has been invoked in particular to explain the intensity of deindustrialisation in the United Kingdom, also discussed later (Rowthorn, 1986; Pike, 2009; Hudson, 2011a). Moreover, macro-economic, industrial and regional policies by governments, may reinforce or alternatively mitigate the process of deindustrialisation. Hence, deindustrialisation is only partly 'natural and inevitable', but is also very importantly shaped by the responses of firms and of governments (Pike, 2009; Hudson, 2011a).

The steel crisis from 1974 until about 1987 forms a particular episode within the first wave of deindustrialisation. Characteristically, the steel crisis was prompted by the oil crisis of 1973, and strongly driven by shifts in the global division of labour and patterns of

diminishing competitiveness in Western Europe and North America. However, the crisis represented an even more disruptive and violent shock, owing to some particularities of the steel industry. And moreover, the element of government intervention is particularly clear (more so than for any other industries, with the exception possibly of coal mining). Below I will list some of the main elements of the steel crisis. The particular responses of firms and governments in (West-)Germany and the United Kingdom will be discussed further on.

- The first oil crisis in 1973 ushered in a recession in the world economy, and thus demand for capital goods in general and steel in particular declined steeply. The macroeconomic situation improved by the end of 1970s and demand for steel picked up somewhat, but the second oil crisis in 1979 triggered a new recession in the early 1980s, and prolonged and deepened the steel crisis. In addition to a fall in demand, the higher prices for energy during this time also led to higher costs for steel producers. However, these events laid bare more long-term trends in the demand for steel. As the post-war economic boom in Europe and North-America was coming to an end, demand for bulk steel (especially heavy plates and long products) was diminishing: many of the main industries that are large consumers of steel (such as shipbuilding, heavy engineering and railways) were starting to experience severe difficulties already before the mid-1970s (Mény and Wright, 1987; Bain, 1992; Hudson, 1992). Demand for flat products (an input for the car industry and white goods), and for more speciality steel products (high specifications, alloys, coatings, etc.) continued to grow however (Messerlin, 1987). Moreover, new substitution products such as aluminium, engineering plastics, ceramics, and fibres, became available, which also affected demand for steel (Hudson, 1992).
- In the 1960s and 1970s some geographical shifts took place in the production of steel. In the 1960s, Japan had rapidly developed into a major producer. In the 1970s also several other countries followed such as South Korea, Brazil, India, Venezuela and Mexico, while steel production continued to expand steadily in the USSR and Eastern Europe (Messerlin, 1987; Hudson and Sadler, 1989; Bain, 1992; Hudson, 1992). Steel

producers in Western Europe and North America thus faced increasing competition in export markets, but also on their domestic markets.

- The steel industry went through a succession of changes in the production technology in the 1960s and 1970s, with the introduction of Basic Oxygen Steelmaking (to replace open hearth and Siemens-Martin processes), continuous casting, and overall automation (Messerlin, 1987; Hudson, 1992). Moreover, there were improvements in blast furnace and coke oven technologies, which allowed for increasing sizes. Economies of scale, and favourable locations at the coast for large imports of iron ore and coal, grew in importance. Producers which adopted these technologies (mainly in Japan, but also in the Ruhr in Germany) had a competitive advantage, while producers that were late and still relied on more archaic plant (mainly in the UK, Belgium and France, but also in Saarland) were at a substantial disadvantage.
- Because of these new technologies and because of optimistic prospects about the development of demand for steel, there were large investments in steel plants in especially Western Europe in the late 1960s and early 1970s (Messerlin, 1987). Because the lead time of these new investments is several years, a lot of new capacity became operational in the latter part of 1970s. At the same time, many of the obsolete plants remained in operation in Western Europe, and were only closed down or downsized at a slow pace (Tsoukalis and Strauss, 1987) (also see next point). There hence was a large amount of overcapacity in the steel industry in the late 1970s and the early 1980s. Combined with a lack of demand, this meant very low prices and massive losses for steel producers (as there costs were to a large extent fixed).
- The problems in the steel industry were further compounded by the fact that national interests weigh heavily with regard to steel production. In many countries the industry was considered of strategic importance, and a certain self-sufficiency in the production of steel was seen as desirable. Moreover, the steel industry was a major employer, especially in regions which were already struggling. Hence many governments adopted an interventionist stance. First to help modernise and restructure the industry (this started already before the steel crisis), and later to support the industry and cope with redundancies during the crisis (Messerlin, 1987).

Thus the late 1960s and 1970s saw the rise of 'national champions' in the steel industry, especially in Western Europe (Mény and Wright, 1987; Tsoukalis and Strauss, 1987). This limited the scope for bankruptcies and capacity reductions. Moreover, the US adopted increasingly protectionist measures after 1969, which hurt the European and Japanese steel industry (and also led to some protectionist measures by the European Community from 1978 onward) (Messerlin, 1987; Tsoukalis and Strauss, 1987; Hudson, 1992). It was only since the early 1990s that government interventions in the steel industry have decreased, and a further internationalisation of the steel industry could take place, with the emergence of multinational companies (as a result of merger and take-overs) (D'Costa, 1999; Dawley et al., 2008; Hudson and Swanton, 2012).

5.3. Structural change, the steel crisis and regional development in Germany

5.3.1. *Structural change and the steel crisis in Germany*

Overall, deindustrialisation has been less pronounced in West-Germany than elsewhere: the share of manufacturing employment in total employment dropped gradually from 48% in 1965 to 36% in 1995, which was still the highest share in Western Europe (Pike, 2009). Underlying this gradual relative decline, is a mixed picture with regard to absolute decline. Job losses in some segments of manufacturing have been considerable but less than in other countries, while value-added and output have continued to grow (Bade and Kunzmann, 1991). Hence, throughout the 1980s and up until today, manufacturing has remained important, both in terms of the share in the economy and in employment. Rather the new information technologies and the growing parts of the service sector associated with these, were an integral part of the on-going modernisation of an industrial economy, in which manufacturing remained central (Katzenstein, 1989). Many German manufacturing firms successfully managed to remain competitive by focussing on quality, innovation, and flexible specialisation, to compensate for the relatively high labour costs (Katzenstein, 1989; Streeck, 1997).

However, structural change during the 1970s and 1980s has led to some changes in the economic geography of Germany. Decline in employment in industry especially hit the industrial regions of the Ruhr area and Saarland, but also other major agglomerations in the North of Germany (such as Bremen, Hamburg and Hannover) were affected. The service sector often did not grow fast enough to make up for some of the job losses in the 1970s and 1980s, and hence unemployment grew (Bade and Kunzmann, 1991; Streeck, 1997). In the southern part of Germany however, places like Munich and Stuttgart saw a continued expansion of manufacturing. In and around these cities, as well as other places such as Frankfurt, Nürnberg, Karlsruhe, and Mannheim, the service sector also grew at a faster pace than in agglomerations in northern Germany (Bade and Kunzmann, 1991).

As with deindustrialisation, also the steel crisis was somewhat less pronounced in West Germany, as compared to other countries in Western Europe. The principal locations for steel production in the early 1970s were the Ruhr Area, which was the centre of operations for several large producers (such as Thyssen, Krupp, Hoesch, and Klöckner), and Saarland, where three smaller firms operated (Neunkircher Eisenwerk, Stahlwerke Röchling-Burbach and Dillinger Hütte). All steel firms in Germany were privately owned.[33] In the Ruhr, the steel industry had modernised and rationalised on a continuous basis during the 1950s and 1960s, and was the most advanced and efficient in Western Europe by the early 1970s (Esser and Väth, 1987). In the first phase of the steel crisis (up until the early 1980s), the steel firms in the Ruhr coped with the crisis on their own, in close consultation with the labour unions but without much government intervention. One important response was to diversify into new activities (such as machinery, industrial construction, and systems technology) (Bain, 1992). From 1979, the Federal government set up programmes to support Research and Development and new investment in the steel industry. Moreover, the Federal government and European Community also provided assistance for redundancies. Only in 1981, did the Federal government (and also

[33] With the exception of Peine Salzgitter in Lower Saxony.

the government of Nordrhein-Westfalen) start to make direct financial support available, but for a large part conditional on mergers, and restructuring and rationalisation efforts by the steel firms (Esser and Väth, 1987). The steel firms could often not agree among each other on the course of action, and mergers and restructuring operations were delayed, despite the worsening situation in especially the Eastern part of the Ruhr, around Dortmund (Esser and Väth, 1987; Mény and Wright, 1987; Bain, 1992). It was not until the 1990s that the major firms merged (Hoesch was taken over by Krupp in 1991; and subsequently Thyssen and Krupp merged in 1999). Financial support by the government increased still further after 1983; but on the whole, the steel industry in the Ruhr Area weathered the steel crisis with less government support in comparison to their competitors elsewhere in Western Europe (Mény and Wright, 1987; Esser and Fach, 1989). The situation in Saarland was very different. There the Neunkircher Eisenwerk and Stahlwerke Röchling-Burbach operated archaic plants, which proved uncompetitive (while Dillinger Hütte had already successfully modernised before and specialised in market segments were demand remained strong). The steel crisis hit the area very hard, and an extensive and lengthy restructuring and rationalisation process started in 1978. The federal government and the government of Saarland provided ample support, starting in the late 1970s and continuing well into the 1980s. In section 6.5, I will discuss the steel crisis and crisis management in Saarland in detail.

5.3.2. *The governance of economic development*

The responses by the governments and by firms to deindustrialisation in general and the steel crisis in particular, were mediated by the particular government structure and the particular type of economic organisation in the Federal Republic of Germany. In this section I will briefly discuss these.

Before 1990 the Federal Republic of Germany, was made up of 10 states (with West-Berlin as a de facto 11th state). After reunification in 1990 a further 5 states were added (and the legal status of Berlin was resolved). These states (‘Länder’) have a constitution of

their own and are sovereign, except in areas in which the federal state ('Bund') has been assigned exclusive or priority competences by the federal constitution. In most states (with the exception of the city-states of Berlin, Hamburg and Bremen), there are further territorial divisions of government, such as municipalities ('Gemeinden') and districts ('Kreise'). In economic development, spatial planning, labour market issues and education, the individual states have powers, but they have to operate within the overall framework provided at the federal level. Typical of the federal system in Germany is its 'cooperative' character: "In contrast to most federal systems, German federalism was not conceived as an instrument and guarantor for territorial diversity, but rather dedicated to the delivery, through institutional cooperation, of common standards of public policy and services across the federal territory" (Jeffery, 2002, pp. 172-173). This has several aspects (Scharpf, 1988; Jeffery, 2002). First, the system is strongly geared towards consensus. The first chamber of parliament – the 'Bundestag' – is directly elected through a system of proportional representation, which makes that coalition governments are the rule. The states are directly represented in the second chamber of parliament – the 'Bundesrat' – through which all federal legislation must pass. This means that the states have substantial influence over federal policy (Schmidt, 2010). Moreover, for the actual implementation of policy, the federal government is in many cases partly dependent on the governments of the states (Scharpf, 1988). Second, the states have comparatively little powers in raising taxes, and hence are for a large part dependent on federal frameworks for their finances. Tax receipts are allocated between the federal government, the 16 states, and the municipalities according to certain criteria. Moreover, several procedures exist for the redistribution of revenues on the basis of special needs of states (Schmidt, 2010). The Fiscal Equalisation Scheme ('Länderfinanzausgleich') regulates a redistribution between financially strong states and financially weak states. Moreover, the constitutional reforms of 1969 reinforced this entanglement (in German 'Politikverflechtung') even further with the introduction of joint tasks and joint investment programmes, which are co-financed by the states and the federal government (Scharpf, 1988; Schmidt, 2010). The most important of these in the context of economic development policy, is the Joint Task for the Improvement of the Regional Economic

Structure ('Gemeinschaftsaufgabe für Verbesserung der Regionalen Wirtschaftstruktur' (GRW)), which regulates support for states that cope with a weak economic structure by the federal government and other states. Since reunification in 1990 however, the cooperative character of federalism in Germany has waned a bit, and there has been a slowly increasing emphasis on differentiation and competition between the states (Jeffery, 2002). The constitutional reforms of 2006 attempted to partly undo some of the 'entanglements', by more strictly separating certain competences between the federal government and the states (although the GRW was not affected by this) (Schmidt, 2010). These reforms, and a further reform in 2009, tried to impose a more stringent discipline in the finances of the federal and state governments, so each government will be self-responsible for their deficits and debts. Among other things, the so-called 'Schuldenbremse' (break on public debts) was introduced, which prohibits governments from 2020 to contract new additional debts (except in extraordinary circumstances).

Typical for the economic organisation in Germany, is the high degree to which 'the economy' is embedded in wider social relationships. This is termed the social market economy ('Soziale Marktwirtschaft'). This has several elements (Streeck, 1997; Martin and Swank, 2012). First, a relatively generous welfare state, which provides social protection primarily through social insurance funds. These funds mostly get their income through equal contributions of employers and employees, and they are also administered by the social partners (i.e. employer associations and labour unions) (Martin and Swank, 2012). Second, the role of the federal and state governments may be described as 'enabling' rather 'dirigiste' (Streeck, 1997). Hence there are hardly any direct interventions into economic affairs. An important reason for this is that power is dispersed vertically and horizontally in the federal system (as discussed above), and so the scope for more far-reaching and swift interventions by governments is limited (Wood, 2001). Instead policies are aimed at providing for a good and stable business environment. Another role is to ensure the framework conditions for the social partners to coordinate on economic affairs. Third, this coordination between the social partners has several layers. The first layer is the system of sector-based collective bargaining between employer's associations

and labour unions. The peak associations (the 'Bundesvereinigung der Deutschen Arbeitsgeberverbände' (BDA)[34]) and the 'Deutscher Gewerkschaftsbund' (DGB)[35]) play limited roles, and instead the lead is taken by the sectoral associations. Especially the negotiations between the metal industry employers association ('Gesamtmetall') and the metal workers union ('IG Metall') normally set the trend for wages and conditions of work in manufacturing (Martin and Swank, 2012). The second layer consists of arrangements for worker representation within firms, both through works councils and through representatives in the supervisory boards (so-called co-determination (or 'Mitbestimmung')) (Martin and Swank, 2012). And a third layer, is the dense network of parapublic institutions and associations, which provide important public goods in the functioning of the economy; for example Chambers of Commerce of Industry, professional associations, agencies for technology transfer or export promotion, and arrangements for the provision of vocational training (Katzenstein, 1989; Streeck, 1997). Especially the vocational training system is a hallmark of the social market economy. Nearly two-thirds of young people enter vocational training after leaving secondary school (Bosch, 2010). It is mostly provided through a dual structure, with part teaching within the public school system and part training at firms through apprenticeships. After the first qualifications are attained, it is possible to keep earning further occupational qualifications. Employers and labour unions are narrowly involved in developing the curricula. Vocational training is well-regarded in Germany; not only for traditional crafts and manual trades, but also for many other occupations in services (such as IT, administration, banking, etc.) (Bosch, 2010).

5.3.3. *Evolution of central government policies*

The government structure and economic organisation in (West-)Germany formed the larger institutional framework for the development of policies by the federal government, to promote economic development in general and to cope with deindustrialisation and

[34] Federal Association of German Employer Organisations.
[35] German Labour Federation.

the steel crisis in particular. In this section I will discuss the most important arrangements and initiatives in the areas of industrial and economic policy, labour market policy, and urban regeneration. In Table 8, the various governments since 1969 are listed. Overall, the evolution of policies in Germany has been characterised by continuity, and radical changes have not occurred (Streeck, 2009). The Kohl-government did proclaim an ambition to carry through a programme of liberalisation and deregulation when it came to power in 1982 (the so-called 'Wende'), but little came of this because it did not have the support of German employers (Katzenstein, 1989; Wood; 2001; Martin and Swank, 2012). However in the latter half of the 1990s and first half of the 2000s, some important changes took place in government policy, especially in social policy and labour market policy (Martin and Swank, 2012). These changes were driven by rising expenditures in social insurance, as an indirect result of the unification in 1990, but also of relatively high unemployment before that. Moreover, the German model was generally believed to have lost some of its competitiveness and flexibility (Streeck, 2009).

1969-1982	'Sozialdemokratische Partei Deutschlands' (SPD)[36], and 'Freie Demokratische Partei' (FDP)[37]	Willy Brandt (1969-1974) Helmut Schmidt (1974-1982)
1982-1998	'Christlich Demokratische Union Deutschlands' (CDU)[38] / 'Christlich-Soziale Union in Bayern' (CSU)[39], and 'Freie Demokratische Partei' (FDP)	Helmut Kohl
1998-2005	Sozialdemokratische Partei Deutschlands (SPD) and 'Bündnis 90/Die Grünen'[40]	Gerhard Schröder
2005-2009	'Christlich Demokratische Union Deutschlands' (CDU) / 'Christlich-Soziale Union in Bayern' (CSU), and 'Sozialdemokratische Partei Deutschlands' (SPD)	Angela Merkel
2009-2013	'Christlich Demokratische Union Deutschlands' (CDU) / 'Christlich-Soziale Union in Bayern' (CSU), and 'Freie Demokratische Partei' (FDP)	Angela Merkel
2013-date	'Christlich Demokratische Union Deutschlands' (CDU) / 'Christlich-Soziale Union in Bayern' (CSU), and 'Sozialdemokratische Partei Deutschlands' (SPD)	Angela Merkel

Table 8: Governments at the federal level in (West-)Germany since 1969 and their chancellors

In industrial and economic policy, the role of the federal government is mostly secondary. It did provide extensive direct financial support to coal mining firms in the Ruhr Area and Saarland from the late 1950s (when the decline in coal mining set in), not only to protect employment in these areas but also to ensure energy security (Dörrenbächer, 2007). However, financial support for the steel firms during the steel crisis, was relatively moderate and tied to conditions for restructuring (Esser and Väth, 1987). In other declining industries, such as shipbuilding and textiles, federal involvement was minimal (Katzenstein, 1989). The Länder are the primary actors for industrial and economic policy.

At the federal level however there do exist some structures which importantly support and shape policy by the states. First, the Joint Task for the Improvement of the Regional Economic Structure ('Gemeinschaftsaufgabe für Verbesserung der Regionalen Wirtschaftstruktur' (GRW)), as already mentioned. The GRW exists since 1968 and

[36] Social Democratic Party of Germany.
[37] Free Democratic Party.
[38] Christian Democratic Union of Germany.
[39] Christian Social Union in Bavaria.
[40] Alliance 1990 / The Greens.

regulates support from the federal government and the Länder for economic development in regions that cope with a weak economic structure. This was the main instrument for regional economic policy at the federal level, instituted among other things in response to the emerging problems of deindustrialisation in several Länder (but also to support economic development in rural areas) (Scharpf, 1988). Since the 1990s it has decreased somewhat in importance however. For regions that meet the criteria an investment programme is decided upon for a certain programming period; for which support is then made available. Nowadays the GRW has been harmonised with the procedures and funds of the European structural funds. Second, since the late 1960s the federal government has enacted policies to stimulate the development of Science and Technology ('Forschungs- und Technologiepolitik') and their contribution to economic development (Dörfler, 2003). This mainly consists of support for research and development programmes in certain fields, and of support for universities and research institutes. Typical for Germany, are several networks of research institutes which are both publicly and privately funded, and bridge fundamental research and applications in industry, such as the Max-Planck Gesellschaft, the Fraunhofer Gesellschaft, the Leibniz Gemeinschaft, and the Helmholtz Gemeinschaft.

Labour market policies are for the largest part a federal issue. Some relatively stringent legal provisions exist to protect employment in Germany. The Protection Against Dismissal Act ('Kündigungsschutzgesetz') stipulates that employers have to prove there is no alternative job in the company before dismissal, and regulates the selection and compensation of dismissals (Otto and Wächter, 1996). Also the Works Councils Act ('Betriebsverfassungsgesetz') offers protection: it requires employers and employees (through the Works Council) to agree on a Social Compensation Plan ('Sozialplan'), in which every effort should be taken to prevent loss of employment, and to try to spread the burden among all employees in the case employment cannot be maintained. Furthermore, the main executive agency for labour market policies is also at the federal level. The Federal Employment Agency ('Bundesagentur für Arbeit', before 2004 'Bundesanstalt für Arbeit') administrates unemployment insurance and carries out active

labour market policies. The agency has its head office in Nürnberg, but also has 10 regional offices with some devolved powers. It is controlled by representatives from employers, employees and different levels of governments (Bund, Länder, Gemeinden); and funded through social insurance premiums paid for employers and employees (with the federal government covering any deficits). These legal provisions and the Federal Employment Agency played a large role in coping with the loss of employment as a result of deindustrialisation and the steel crisis. In general, attempts were made to protect employment and distributing the costs of redundancy more equally over workers through reduction of working time and pay. Moreover, efforts were taken to replace redundant workers, to retrain them if needed, and to compensate any loss of income (Bain, 1992). At the same time, employers and labour unions (who negotiated about the social plans) – often with consent of the federal and state governments - did shift a part of the costs to the social security system (Bain, 1992; Streeck, 2009; Martin and Swank, 2012). Hence the Federal Employment Agency often had to pay a part of the expenses, mainly with regard to redundant employees who went into early retirement or who did not have good prospects for replacement.

The adjustments on the labour market as a consequence of structural changes in the 1970s and 1980s were relatively smooth in Germany, as discussed. Nevertheless, polarisation on the labour market has increased (Streeck, 1997; Martin and Swank, 2012). Relatively high wages, job security, and good provisions continued to exist for the majority of workers. Furthermore, the vocational training system (as discussed above) ensured that high skill levels were maintained and reproduced. At the same time, there was an increasing group of people that could not benefit from these perquisites. They did not possess the skills to participate in the mainstream of the economy. Also some younger people fall through the cracks of the vocational training system (Bosch, 2010). Unemployment has been consistently high in West-Germany in comparison to other countries in Western Europe, and long-term unemployment has been an enduring problem (Martin and Swank, 2012). Through the so-called Hartz-reforms and other measures in the late 1990s and first half of the 2000s, the federal government has

managed to curtail the high and growing expenditures in unemployment insurance. However, these reforms have not improved the prospects for people at the lower end of the labour market, as they hardly contain elements of active labour market policy (such as training, job creation schemes, or special assistance measures) for long-term unemployed (Martin and Swank, 2012).

In spatial planning the federal government provides the general framework, while individual Länder formulate spatial plans for the state as a whole (and Gemeinden prepare plans for their territory) (Jost and Moll, 2007). Investments in federal infrastructure (connections between the Länder and into other countries) are funded by the federal government (though Länder will be involved in the planning). The Federal Urban Development Promotion Act ('Städtebauförderungsgesetz') was introduced in 1971, to promote urban regeneration. Through this act, federal money is made available for urban development projects, which is further complemented by money from Länder and Gemeinden (also urban regeneration is a subject of cooperative federalism). This – together with contributions from the European structural funds – has been the main way of funding the redevelopment of brownfield sites after deindustrialisation (Dörrenbächer, 2013). Since 2004 a similar programme ('Stadumbau West') has been operational (also co-financed by Bund, Länder and Gemeinden) to redevelop urban areas which have been affected by urban decay and high vacancy because of demographic change and economic decline.

5.4. Structural change, the steel crisis and regional development in the United Kingdom

5.4.1. *Structural change and the steel crisis in the United Kingdom*

In contrast to Germany, deindustrialisation has been very pronounced in the United Kingdom: the share of industrial employment dropped from 47% in 1965 to 27% in 1995 (Pike, 2009). This relative decline was the highest of all countries in Western Europe, and

went along with very substantial job losses and a steep rise of unemployment (Townsend, 1983; Martin, 1989). Moreover, also output in manufacturing decreased sharply during the recession of the late 1970s and first half of the 1980s (Townsend, 1983; Rowthorn, 1986). Especially in heavy industry (including steel) some of the problems had their origins already in the interwar years (or even before); which the boom years following the Second World War partly concealed (Martin, 1989). These became visible again in the 1960s and 1970s. For other types of manufacturing (such as textiles and car manufacturing), serious difficulties began to surface only in the late 1960s and 1970s (Rhodes, 1986). Employment in the service sector rose consistently in the UK already since the 1950s, especially in business and financial services, leisure, retail, and public services (healthcare and education) (Damesick, 1987).

In the UK the decline in manufacturing and the growth in services were largely seen as separate processes; the most important new strengths in the service sector (such as finance and banking, and other business services) did not rely much on British manufacturing (Hall, 1986; Martin, 1989; Crouch and Keune, 2005). Moreover, although deindustrialisation had already set in long before 1979, there has arguably also been a 'Thatcher effect' (Martin, 1986, p. 258). The fiscal and monetary macro-economic policies implemented by the Thatcher-government after 1979, prolonged and exacerbated the recession of the late 1970s and early 1980s, and led to a shortage of capital and credit for many firms. As a result many manufacturing firms went bankrupt, and other firms rationalised at a large scale. Many of the bigger manufacturing firms moved some of their operations (and concomitant employment) abroad (Martin, 1986).

Striking about deindustrialisation in the UK is also its geographically uneven character, reinforcing the already existing 'North-South divide'. Rapid loss of employment in manufacturing took place all over the United Kingdom, but for most areas in the South of England job losses were less marked, and these areas were less dependent on manufacturing (with the exception of London, which was a major industrial centre). Moreover, the growth in services and new segments of manufacturing (such as high tech)

mainly concentrated in the regions in the South East of England (Martin, 1989; Pike, 2009). Deindustrialisation and loss of employment had already set in in the more peripheral regions (the North-East, South Wales, and the central belt in Scotland) before the 1970s (as heavy industry traditionally concentrated there). But also in these areas the recession of the late 1970s and early 1980s was felt badly; and since then economic growth in these regions (apart from Scotland) has been lagging (Martin, 2012). The immediate shock of deindustrialisation in the 1970s and early 1980s was perhaps largest in the 'manufacturing heartland' (around Birmingham, Manchester, Liverpool, Leeds, and Sheffield), but since then economic performance in these regions has been somewhat better than in the more peripheral areas (Rhodes, 1986; Martin, 1989; Pike and Tomaney, 2009).

Also the steel crisis was very pronounced in the United Kingdom. The problems in the British steel industry can be traced back to before the First World War (Elbaum, 1986). Many plants were established in the 19th century, and had a location, a lay-out and production technologies that made modernisation difficult. Moreover, the structure of the industry was fragmented and domestic demand was sluggish, which prohibited coordinated efforts of rationalisation and modernisation (also Tolliday, 1986). It was only after nationalisation of the fourteen largest steel producers in 1967, and the formation of the British Steel Corporation (BSC), that these issues started to be addressed. The industry in the UK had fallen behind in terms of technology and productivity in the 1950s and 1960s, compared to e.g. West Germany, France, or Japan (Richardson and Dudley, 1986; Blair, 1997). With support from the government, BSC started a comprehensive programme to modernise and restructure the steel industry. This consisted of closing down inland sites, and concentrating production at five coastal locations: Llanwern and Port Talbot in South Wales, Ravenscraig in Scotland, and Scunthorpe and Teesside in England. This programme also foresaw in the expansion of capacity by about 35% by the early 1980s, mainly by means of a new facility in Teesside (Secretary of State for Trade and Industry, 1973). This expansion of capacity reflected considerable optimism about the growth of the demand for steel in the 1970s; and in particular of domestic demand

(which in turn was based on optimistic prospects for the UK manufacturing industries). Progress with closing down locations was slow however in the 1970s, among other things because in 1974 the new Labour government implemented a review of the closure programme (prompted by resistance by trade unions and localities). It was soon obvious that projected demand would not materialise, and after the steel crisis started in 1974, BSC faced severe overcapacity. With the backing of the government it changed its course in 1977. It accelerated the closure programme and cancelled any further investments for expansion (Secretary of State for Industry, 1978). The government provided ample financial support, first to assist with the invest programme and after 1975 also to cover the very considerable losses (Mény and Wright, 1987). After 1979 the newly installed Conservative government put the pressure on BSC to improve profitability rapidly. As a result, the British Steel Corporation downsized even more radically: whereas from 1975 until 1979 employment was reduced from about 230,000 to 186,000, in the period from 1979 until 1984 employment went down by a further 115,000 to 71,000 (Dudley and Richardson, 1990). Profitability was finally restored in 1986, and the Conservative government privatised BSC in 1988. Hence the restructuring of the steel industry before and during the steel crisis was an arduous and erratic process in which the British government actively participated. Teesside was one of the sites in which this was felt hardest, as I will discuss in section 7.5.

5.4.2. *The governance of economic development*

The responses by the British government and by economic actors in the face of deindustrialisation and the steel crisis, were shaped by the government structure and the economic organisation in the United Kingdom. I will discuss these in turn.

The United Kingdom has a unitary government structure, which means that any powers of local authorities are in principle derived from the sovereignty of the central state. The first-past-the-post electoral system in the United Kingdom usually delivers single-party governments, which can then pursue their own policies without much effective

opposition (Wood, 2001). Especially in England government is highly centralised (Wilson and Game, 2011). A particularity of British system is the fact that at least until 2000 local authorities had no power of general competence, and could not act beyond what they were statutorily permitted to do (Wilson and Game, 2011). Moreover, subnational government is subject to frequent changes in the United Kingdom. There is no codified constitution, which makes that the status, rights, and responsibilities of local authorities, and their relationships with the central government, are not defined. Before the 1974 the local government system had essentially two layers, with county councils as the first tier, and boroughs and districts as a second tier. However, so-called county boroughs (mainly larger urban areas) were an exception, and formed a single tier, independent from county councils. A reform enacted in 1974 applied the two-tier system more uniformly over the whole of England, and so also county boroughs became part of a county council (or a metropolitan county council). Another reform implemented in the mid-1990s (re)introduced a hybrid system of single tier and two-tier local government: some local authorities became so-called unitary authorities (Wilson and Game, 2011).

The central government has been the most important actor in local and regional economic development. However, local authorities do have some responsibilities in this context, with regard to planning, housing, infrastructure, education, and social services. During especially the Conservative administration in the 1980s and early 1990s, the amount of discretion of local authorities was significantly reduced. Local authorities became even more dependent on the central government for their resources and for the exercise of their powers. Moreover, over the years, the delivery of many services has shifted from local authorities to executive agencies (often quasi-autonomous non-governmental organisations (quango's)), or to contracted private companies. After the New Labour government came to power in 1997 it tried to introduce a form of regional government in England, as part of a wider devolution agenda, which also gave Scotland, Wales and Northern Ireland more powers. These plans were only partially implemented, but as part of this exercise Regional Development Agencies were established in 1999 with some discretion and relatively sizeable resources for policies to further the economic

development of their respective regions (Pike and Tomaney, 2009). This episode of 'regionalism' ended in 2010, when the newly elected coalition government of Conservatives and Liberal-Democrats expressed a preference for 'localism' (Tomaney et al., 2012). It abolished the RDAs, and instead promoted the establishment of Local Enterprise Partnerships (LEPs). In these LEPs local authorities and representatives from businesses, work together to stimulate the economic development in an area (usually comprising several local authorities). The resources for the suggested policies of the LEPs are mostly dependent on funds and programmes run by the central government, and this hence constitutes effectively a (re)centralisation of subnational economic development policy (Tomaney et al., 2012; Pike et al., 2015).

In terms of economic organisation (and concomitant economic policy) the United Kingdom has made a large turn-around in the second half of the 1970s and early 1980s in response to its deindustrialisation. After the Second World War, several corporatist institutions were established to manage economic development, which gave a considerable role to employers' associations and trade unions (Hall, 1986; Martin, 1989; Wood, 2001; Crouch and Keune, 2005). Until the mid-1970s various governments were committed to a Keynesian economic policy, aimed at maintaining full employment and providing an extensive welfare state. This was supported by tripartite consultations between the government, employers and trade unions, on economic policy in general (through the National Economic Development Council set up in 1962) and on incomes policy in particular (i.e. limiting wage and price increases to reduce inflation). Also in vocational training and labour market policy tripartite institutions existed: the Industrial Training Boards (set up in 1962) and the Manpower Services Commission (created in 1973) (Rainbird, 2010). Moreover, especially the Labour governments in this period, increased the government's direct involvement with the economy, through a series of nationalisations (among which was the steel industry in 1967), and through more deliberate attempts at planning and controlling economic development (e.g. the National Plan for Economic Development in 1965, and regional policy (to be discussed below)). In 1975 the National Enterprise Board was established to support industrial firms that

experienced financial difficulties, and to invest in new technologies. These arrangements produced poor results however. On the whole they seem to have enabled British industrial firms to resist innovation and restructuring, rather than to pursue it (Hall, 1986). Moreover, the peak-level organisations of employers (Confederation of British Industry) and trade unions (Trades Union Congress), were loosely organised, and could not enforce agreements among their constituencies. Thus both employers and organised labour in the end failed to contribute positively to the corporatist structures, which resulted in increasing strikes and industrial unrest in the 1970s (Hall, 1986; Crouch and Keune, 2005).

The Sterling crisis of 1976 can be seen as the breaking point. Loss of confidence of investors resulted in a rapid depreciation of the pound sterling, which eventually led to the British government having to take out a loan from the International Monetary Fund (IMF). This loan was conditional on large cuts in public spending and increases in taxes to bring down the budget deficit. When the Thatcher government came to power in 1979, this policy was further reinforced. Monetarism (instead of Keynesianism) became the leading macro-economic philosophy: limiting the money supply and raising interest rates to combat inflation, while implementing fiscal austerity (Martin, 1986). Moreover, the corporatist institutions were abolished or side-lined; and an extensive programme of privatisation was undertaken. The power of the trade unions was effectively crushed in a series of strenuous conflicts and by introducing new legal requirements (Martin, 1986; Wood, 2001). The Thatcher government saw labour market rigidities as a major impediment to economic growth; and hence created the conditions for a decentralised and deregulated wage bargaining system (Martin and Swank, 2012). Also the existing industry-wide and nation-wide institutions and arrangements for vocational training were dismantled: involvement of employers became entirely voluntaristic, and so vocational education is mostly supplied and funded by the government (Rainbird, 2010). The result of these reforms in economic organisation was that the circumstances for high-value and high wage manufacturing to thrive were further undermined (Martin and Swank, 2012). However with deregulation in the labour market and the financial sector (and a

historically strong higher education sector) conditions improved for a further growth of financial services and business services (Martin, 1986; Hall, 1986; Crouch and Keune, 2005). The flexible labour market also proved favourable for more low-wage, low value-added services and manufacturing. The New Labour governments from 1997 until 2010 have not been able or willing to counter these patterns (Martin and Swank, 2012).

5.4.3. *Evolution of central government policies*

The shifts in government structure and in economic organisation in the United Kingdom coincided with notable shifts in policies for regional economic development, in particular in the face of deindustrialisation and the steel crisis in large parts of the UK. In this section I will examine the most important arrangements and initiatives by the central government of the UK in the domains of industrial and economic policy, labour market policy, and urban regeneration. Table 9 lists the different governments since 1970. As is clear from the previous section, the evolution of policies in the United Kingdom has been subject to considerable changes over time. The coming to power of the Thatcher government in 1979 brought on large scale policy changes in all domains (as discussed above), but also the New Labour government after 1997 enacted many new initiatives.

1970-1974	Conservative Party	Edward Heath
1974-1979	Labour Party (with support from Liberal Party during 1977-1978)	Harold Wilson (1974-1976) James Callaghan (1976-1979)
1979-1997	Conservative Party	Margaret Thatcher (1979-1990) John Major (1990-1997)
1997-2010	Labour Party	Tony Blair (1997-2007) Gordon Brown (2007-2010)
2010-2015	Conservative Party and Liberal-Democrat Party	David Cameron
2015-date	Conservative Party	David Cameron

Table 9: Governments in the United Kingdom since 1970 and their prime-ministers

In industrial and economic policy, the main focal point for a long time (starting already in the early 1930s) was the attraction of inward investment into regions with relatively high

unemployment (mainly in the struggling centres of heavy industry in the North of England, Scotland, Wales and Northern Ireland), and controls on investment in regions with near full employment (mainly the South and the Midlands) (Martin, 1986; Martin and Tyler, 1992; Wren, 2005). This 'regional policy' was the most important spatial element of the Keynesian economic policy that was dominant in the UK after the Second World War until the late 1970s. Regional policy consisted of various programmes (which were modified at times): development of industrial estates and advanced factory building, but also a system of development controls and of grants, subsidies and tax incentives. The Industrial Development Certificate was needed for investment outside the assisted areas. The Regional Development Grant covered parts of the investment sum and was paid out automatically when certain conditions were met. Regional Selective Assistance was a similar grant scheme but was paid out on a discretionary basis. The Employment Premium (from 1967 until 1977) was a subsidy for each job created. Different regimes of grants and incentives were in place for Development Areas, Special Development Areas, and Intermediate Areas.

The Thatcher government first removed the requirement for an Industrial Development Certificate, and curtailed the Regional Development Grants. In 1988 the Regional Development Grants were abolished altogether, and the remaining elements of regional policy were subsumed under the new Enterprise Initiative (Martin and Tyler, 1992). With this initiative a new funding scheme was introduced (the Regional Enterprise Grant), and the emphasis shifted much more towards support for start-ups, SMEs, innovation projects, and technology transfer (Hassink, 1992). As noted, the Blair government devolved large parts of regional economic development policy to Regional Development Agencies in 1999. These RDAs were abolished again in 2010, and instead Local Enterprise Partnerships were made responsible for formulating local economic development policies. Since the turn of the century however, the Labour government and the Regional Development Agencies, have slowly been developing an institutional framework for STI-policies (Perry, 2007). Science and technology policy had since the 1960s selectively focussed on defence, aerospace and nuclear energy (Hall, 1986; Hassink, 1992), and a

comprehensive framework was lacking. The Technology Strategy Board was set up in 2004 (now Innovate UK), and since 2010 a network of technology centres (the Catapult Centres) has been emerging (on the back of some of the work of the RDAs).

The 'Contracts of Employment Act' of 1963, the 'Redundancy Payments Act' of 1965 and the 'Industrial Relations Act' of 1971, offered some provisions for employment protection in the 1970s and 1980s: it obligated employers to give notice, to pay redundancy payments in case of redundancy, and to give adequate reasons for dismissal. The system of National Insurance provides some minimal protection against unemployment, through a so-called 'jobseekers allowance'. The main government institution for labour market policies in the 1970s and 1980s was the Manpower Services Commission (MSC). It was created in 1973 and part of the more corporatist institutional infrastructure of the UK before the late 1970s. Hence its board was made up of representatives of industry, trade unions, local government and the education sector. It was responsible for labour market intermediation, administrating work creation schemes, and coordinating training programmes. MSC was disbanded in 1990 and replaced by a network of Training and Enterprise Councils; while its labour market intermediation activities were split off already in 1987 and incorporated in the Employment Service Jobcentres (Cole, 2007; Rainbird, 2010). During the late 1970s and 1980s levels of unemployment rose quickly in many parts of the United Kingdom as a result of the loss of manufacturing employment. After the options of a hiring stop and (early) retirement were exhausted, redundant workers were mostly dismissed and received a redundancy payment (Bain, 1992). Schemes for replacement and retraining were not as elaborate as in West-Germany. The Manpower Services Commission was normally involved in large-scale restructuring operations: counselling redundant personnel, offering intermediation services, and if needed, referring workers to various types of training (Young, 1987). Moreover, for the long-term unemployed, MSC ran several make-work and training programmes, such as the Special Temporary Employment Programme, the Community Programme, the Community Industry Scheme, the Training Opportunities Scheme, and the Job Training Scheme (Foord et al., 1985; Finegold and Sockice, 1988).

As a result of the disruptive effects of deindustrialisation, many areas in the UK thus coped with mass unemployment in the late 1970s and 1980s. This added to the already strongly polarised labour market in the United Kingdom. Large segments of the labour market are characterised by a low-skill equilibrium (Finegold and Soskice, 1988; Finegold, 1993; Wilson and Hogarth, 2003). A significant proportion of the economy relies on low wages and produces standardised and relatively low value products and services, which leads companies to underinvest in training and skills of their employees. Young people and workers also lack incentives to pursue the further development of their skills and qualifications, as most jobs available will not require this. In some segments (managerial occupations, business services, high-technology, financial services) a more high-skill equilibrium does exist however, with highly qualified personnel who receive ample opportunities for further training. These patterns have been reinforced by the education system and by government policy. The education system caters well for young people with the ambition and competences to enter higher education, and hence the United Kingdom has a relatively high proportion of people with university education. The system of vocational education is however fragmented and overall poorly regarded (Finegold and Soskice, 1988; Rainbird, 2010). Compulsory education ends at age 16, and for those entering the labour market the dominant policy has been to leave investment in training to businesses and individuals. Apprenticeships and any further training for employees, have thus historically been provided on a voluntaristic basis (with the exception of the period between 1964 and 1981 when a levy-grant mechanism was in place) (Rainbird, 2010). The various governments since 1979 (both Conservative and Labour) have enacted many initiatives to bolster the skill levels at the lower end of the labour market (through various programmes by the Manpower Services Commission and its successors), and to persuade employers to invest more in skills and qualifications (Finegold and Soskice, 1988; Rainbird, 2010; Martin and Swank, 2012). The principle of voluntarism has however not been abandoned, and the low-skill equilibrium has persisted in large parts of the labour market (Wilson and Hogarth, 2003; Martin and Swank, 2012; Dawley et al., 2014).

The main focal point in the policy responses in the United Kingdom in the context of deindustrialisation, has however been urban regeneration. Urban policy had already started in 1968, with the introduction of the Urban Programme, to tackle concentrations of poverty in British cities (Rundle, 2005). However, especially in the Thatcher years, the objective of urban policy changed from combatting poverty and social inequalities, to promoting economic growth. Urban policy became effectively economic development policy, as 'property-led regeneration' was adopted as the leading idea: physical regeneration would stimulate new economic activities, which would 'trickle down' to have wider social benefits, e.g. offering new employment opportunities, remove dereliction, reduce crime, increase options in housing and amenities, etc. (Robinson and Shaw, 1994). This philosophy was among other things influenced by the alleged successes of American cities such as Baltimore and Boston, which had transformed their downtown areas and seemed to have turned around their economic fortunes (Loftman and Nevin, 1995). The main instrument for urban regeneration in the main conurbations of England and Wales, were the Urban Development Corporations (UDCs). The first generation UDCs were established in 1981 (for the London Docklands and for Merseyside), a second generation in late 1980s, and a third generation in the early 1990s. UDCs were assigned particular urban development areas, and, for a limited period of time (usually 10 years), were given wide-ranging powers and resources to regenerate these areas (Robinson et al., 1993). UDCs had significant planning powers within their area, and could bypass the statutory planning permissions of local authorities (though they were obliged to 'consult' with local authorities). Their task was to 'lever in' private sector investment, as such investment would 'naturally' lead to the creation of new employment for local people and other community benefits. From the early 1990s onwards the focal point in urban regeneration again shifted, this time away from an exclusive focus on economic development. Several new programmes were enacted, such as City Challenge (1991-1994), the Single Regeneration Budget (1994-2001), and Urban Regeneration Companies (from 1999), with a greater emphasis on a partnership approach with local authorities and local stakeholders (Robinson and Shaw, 1994; Rundle, 2005).

5.5. Evolution of policies at the European level

European policies have played an important role in the adaptation process of steel communities in Germany and the United Kingdom, affected by the steel crisis and deindustrialisation. First, crisis management of steel crisis was to a considerable extent a European affair. Second, a significant share of the resources for the mitigation of the social consequences of restructuring heavy industries in general and the steel industry in particular, and subsequent interventions to create a new economic base, came from European funds.

The Treaty of Paris between France, West-Germany, The Netherlands, Belgium. Luxembourg and Italy, led to the establishment of European Coal and Steel Community (ECSC) in 1952. The philosophy behind the ECSC was to restore the 'natural unity' of the industrial triangle of Western Europe between the Ruhr, Lorraine, northern France, Saarland, Luxembourg, most of Belgium, and the southern part of The Netherlands (Tsoukalis and Strauss, 1987, p. 188). The objective was to create a common market for steel and coal, by removing internal tariffs, quantitative restrictions and forms of state aid. Together with these intentions to liberalise and deregulate the market for steel and coal, the High Authority of the ECSC was given extensive powers to intervene in case of an imminent or manifest crisis. By means of the subsequent Treaty of Rome, the European Economic Community (EEC) and the European Atomic Energy Community were founded in 1958, to deepen the collaboration on economic and energy matters between the six countries. The executive bodies of the three Communities were merged in 1967, to form the Commission of the European Communities. The United Kingdom (together with Ireland and Denmark) joined the European Communities in 1973. The Treaties of Maastricht in 1992 and Lisbon in 2007 further streamlined and extended the institutional framework of what is now called the European Union (EU).

During the steel crisis the powers that the Treaty of Paris granted to the Commission (the successor of the High Authority for the European Coal and Steel Community) were used

for the first time. Initially the presumption was that the steel crisis would be temporary and would end when the economic situation would improve again. By 1977 however, the problems proved to be more serious and long-lasting than expected, and the Commission intervened for the first time. This coincided with the formation of the European Association of Iron and Steel Producing Industries (Eurofer), as a cartel and representative body for the steel industry in Europe. The overall approach was one of stabilising the market, through voluntary and - if needed – mandatory production and price measures, and through controls on imports from mainly Japan and Eastern Europe (Tsoukalis and Strauss, 1987; Voelzkow, 2004). This stability was seen as a precondition for an orderly process of restructuring and reducing capacity (Commission of the European Communities, 1987). The Simonet-plan of 1977 called for a system of voluntary production quotas. The subsequent First Davignon-plan which was operational from 1977 until 1980, instituted a system of indicative and voluntary minimum prices (with mandatory minimum prices for one product category: reinforcing bars). Moreover, capacity reduction within the European steel industry became an explicit objective. In 1978, agreements on voluntary export restraints with the main steel exporters to Europe were concluded. After the second oil crisis of 1979 the situation in the steel industry changed for the worst, and the voluntary measures implemented by the Eurofer-cartel fell apart. A state of 'manifest crisis' was declared in 1980, which led to the implementation of the Second Davignon-plan, running from 1980 until 1988. This plan introduced a system of mandatory production quotas for most steel products; from 1981 onwards this was supplemented by a system of minimum prices. Furthermore, the Commission put additional pressure on member states and steel firms to downsize and restructure, by only giving approval for state aid when production capacity was reduced (Commission of the European Communities, 1987). The regime of production quotas and minimum prices was gradually relaxed after 1985, and abolished in 1988. Since 1988 the European Commission has applied an essentially non-interventionist policy towards the steel industry, strictly enforcing competition rules and rules prohibiting state aid (Sadler, 1992).

The European Coal and Steel Community and the European Economic Community offered extensive support for the redundant steel workers and communities affected by closures and restructuring. Through the ECSC, 'readaptation aid' was available for redundant steel workers, which would pay for supplementary unemployment allowances, the costs of early retirement, redundancy payments, and expenses for retraining. Also through the EECs' European Social Fund aid was available for reemployment and work creation programmes. These European monies could make up as much as 50% of the total expenses for coping with the immediate effects of restructuring operations (Bain, 1992).

For the more long-term economic development policies, European support was available through several instruments. Through the ECSC favourable loans could be provided for investment projects which offered employment prospects for redundant steel workers (Young, 1987). Also the European Investment Bank could grant such loans. Most importantly however, support was available through the European Structural Funds; mainly the European Regional Development Fund (ERDF) but also the European Social Fund (ESF). The size of these funds increased considerably from 1975 (when the ERDF was established) until the late 1980s, and they were increasingly employed to support regions dealing with the negative effects of deindustrialisation (Michie and Fitzgerald, 1997). In 1988 – following the accession of Spain, Greece, and Portugal in 1986, and anticipating the completion of the common market in Europe in 1992 – the procedures with regard to these funds were reformed, while they again received extra money from the Community budget. The allocation of funds would be less piecemeal, and more programme-based. Furthermore, subnational governments in the member states would have an explicit role in the formulation and execution of these programmes. Hence there was a move to a 'multi-level governance' framework in European regional development policy (Voelzkow, 2004). Support for regions coping with deindustrialisation became an explicit objective under Objective 2: "conversion of regions facing industrial decline". Moreover, a proportion of the Structural Funds (about 15%) was reserved for Community Initiatives (which were not allocated according to specific national quotas, but freely allocated by the Commission according to certain criteria). One of these initiatives (RESIDER) was

aimed at conversion of regions affected by restructuring in the steel industry and ran from 1988 until 1999 (similar initiatives existed for regions which were dependent on the coal mining industry, the shipbuilding industry, and the textiles industry) (Michie and Fitzgerald, 1997). European support under Objective 2 and the Community Initiatives, was mainly spent on urban regeneration projects, investments in infrastructure, and support for SMEs (Sadler, 1992). After 1999, in anticipation of the accession of 10 new member countries (mainly in Eastern Europe) in 2004, the procedures and criteria were reformed once more. The explicit objective for the reconversion of old industrial regions was dropped, and subsumed under a more general objective to promote regional competitiveness and employment. This also meant that the attention increasingly shifted towards innovation and entrepreneurship support policies, and away from urban regeneration and investment in infrastructure.

5.6. Conclusions

In the latter half of the 1970s and first part of the 1980s, many parts of Western Europe and North-America went through a relatively rapid and disruptive process of deindustrialisation. This process strongly affected the economic base in many localities and regions, and meant a loss of employment on a large scale. To some extent deindustrialisation appears to be a 'natural and inevitable' phenomenon, but it was also partly ameliorated or exacerbated by particular reactions of firms and of governments. The process of deindustrialisation itself as well as the recovery from deindustrialisation, have been very uneven between different regions. The steel crisis from 1974 until about 1987, was a particular episode within the deindustrialisation process. Because of certain characteristics of the steel industry (levelling off of demand in Europe and North-America, strong international competition, new production technologies, economies of scale), and because of a high level of government intervention (in expanding and modernising the industry, and in preserving employment and capacity), the steel crisis presented a particularly violent and disruptive shock in the regions where the steel industry was concentrated.

Deindustrialisation and the steel crisis have not been as pronounced and disruptive in West-Germany as elsewhere. Nevertheless, especially the Ruhr Area and Saarland have been hit hard, and have had to cope with large-scale restructuring operations in their industrial base and related losses in employment. During the steel crisis, the federal state has not supported the steel industry as extensively as in other European countries; although by way of exception the steel industry in Saarland has received considerable assistance. The wider institutional environment in West-Germany, is characterised by a federal government structure, which is distinctly cooperative rather than competitive, and an economic organisation which has tried to embed economic relations in wider social relations (the so-called 'social market economy'). The federal government has tried to mitigate the negative social consequences of deindustrialisation and the steel crisis by subsidising provisions for redundant personnel, and through active labour market policies. The more long-term prospects for the regions affected by deindustrialisation and the steel crisis, have been helped by programmes under the Joint Task for the Improvement of the Regional Economic Structure and the Urban Development Promotion Act, and by the excellent networks to support research, technology and innovation. Moreover, the dual vocational system has been successful in producing and maintaining a relatively evenly skilled labour force (though since the late 1990s there has been an increasing polarisation on the labour market).

In the United Kingdom by contrast, deindustrialisation has in substantial parts of the country been traumatic and distressing experience, and particularly so in the regions in which the steel industry was primarily located. The state did provide support for the modernisation of the industry, and later assured the survival of the British Steel Corporation. However, a shift in policy meant a rapid and uncontrolled downsizing in the late 1970s and early 1980s. Little was done in general to keep redundant workers in employment. The Manpower Services Commission did try to cope with high unemployment in certain areas through make-work and retraining programmes. The shift in policy that affected BSC, was also visible in other domains of economic policy,

especially after the installation of the Thatcher-government in 1979: a Keynesian macro-economic policy aimed at full employment was replaced by a Monetarist policy, mainly aimed at combatting inflation. Furthermore, the corporatist institutions that characterised the economic organisation before, were abolished or side-lined, and gave way for liberalisation and deregulation. This was possible because of the electoral system and government structure in the UK gives the ruling government extensive powers. Moreover, the government structure is highly centralised and does not offer any constitutional protection for local governments, which limits the possibilities for alternative policies at the local and regional levels. Also in subnational economic policy this shift could be observed, with policy moving from regional development grants before the 1980s to 'property-led regeneration' in the 1980s and 1990s. In 1999, The New Labour government instituted Regional Development Agencies, with some devolved powers and resources for regional economic development, which were abolished again in 2011. Mass unemployment in the 1980s in some parts of the UK added to the already strongly polarised labour market. In considerable segments, a low skill equilibrium seems to persist, in which many firms do not require better skilled workers. The somewhat fragmented system of vocational education, together with a lack of investment in the further training of young people by firms, has also reinforced this pattern.

At the European level, the European Coal and Steel Community provided a framework for a coordinated management of the steel crisis. Through production quotas, minimum prices and import controls, attempts were made to stabilise the market. Furthermore, the European Commission pushed for the reduction of capacity, but resistance by national governments and steel companies against further closures and against limits on new investments, proved to be strong. Only after 1988 the steel industry became to be regarded as a more or less regular sector, in which the rules for competition and state-aid should be strictly enforced. The effect has been that the steel industry has rapidly consolidated and internationalised, with the rise of multinational companies with production locations in many countries. The ECSC and the European Economic Community, have also been important in providing support for the redundant workers

and affected communities. Moreover, the Structural Funds (the ERDF, ESF and Community Initiatives) have co-financed many initiatives in economic development in regions suffering from deindustrialisation and the steel crisis.

Chapter 6. STRUCTURAL CHANGE, THE STEEL CRISIS AND THE EVOLUTION OF POLICY AND GOVERNANCE IN SOUTH SAARLAND (GERMANY)

6.1. Introduction

In this Chapter I will discuss the process of deindustrialisation, the steel crisis and the evolution of policies and governance arrangements to cope with these changes in the economic structure, in South Saarland. In the next Chapter I will do the same for Teesside. In Chapter 8, I will compare the two cases, examine how both city-regions have fared with regard to adaptation and resilience on the long run, and discuss in which ways the broader institutional environment has been important in shaping policy and governance. I will first outline some key characteristics of South Saarland, and then review the economic development of the area up until the 1970s. In sections 6.4 and 6.5 I will discuss the process of structural change, respectively the steel crisis and crisis management. The evolution of policy and governance since the early 1970s is central in section 6.6. The Chapter will then end with some conclusions.

6.2. Key characteristics

Saarland is one of the Länder which constitute the Federal Republic of Germany. The capital city and largest city of Saarland is Saarbrücken (population currently 177.000). Saarland is Germany's smallest state outside of the city-states of Berlin, Hamburg and Bremen. It is located in the South-West of Germany, on the borders with France and Luxemburg (see Figure 9). Within the Federal Republic of Germany, its location can be considered peripheral: it is located at quite some distance from the main economic centres such as Mannheim to the east – which is nearest at about 120 km from Saarbrücken. Frankfurt to the northeast, Stuttgart to the southeast, and Bonn and Cologne to the north, are even farther away. Within Germany, Saarland only shares borders with the state of Rhineland-Palatinate ('Rheinland-Pfalz'). Over the border with

France to the west and south of Saarland is the region of Lorraine. The main cities in Lorraine – Metz and Nancy – are at about 70km respectively 100 km from Saarbrücken. To the west, Saarland borders Luxemburg; the distance between Luxemburg City and Saarbrücken is about 90 km.

Source: http://www.college.columbia.edu/core/sites/core/files/images/Germany_general_map.png

Figure 9: The location of Saarland within Germany

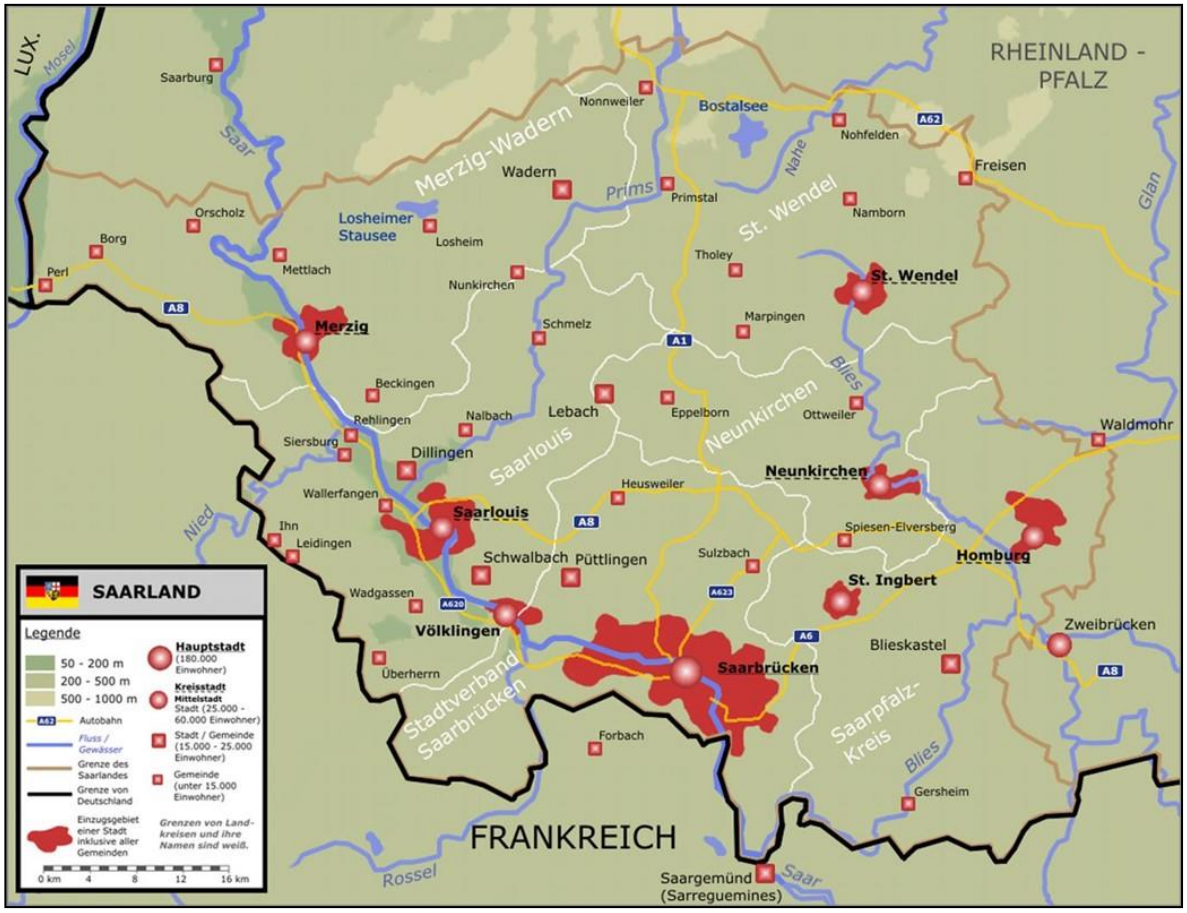
The landscape of Saarland is characterised by thickly forested hills, intersected in the southern part of Saarland by the Saar-valley and Saar-river. The Saar-river flows from the

Vosges Mountains to near Trier – just north of Saarland - where it joins with the Moselle-river (which in turn is one of the major tributaries of the Rhine). The small rivers of Prims and Blies flow into the Saar from the northern parts of the region. To the south of the Moselle-river and to the east of the Rhine is the low mountain range of the Hunsrück, which stretches into the north of Saarland. The state's highest point is in the Weiskircher Heights (near the town of Wadern) at 695 metres. To the south of the Saar-river, the hills surrounding the valley pass into the Lorraine plateau. The area extending from across the French border in the west (into the eastern part of Lorraine) to Saarlouis and Völklingen and further to Neunkirchen in the east, is home to large reserves of coal, and hence made up the Saar coalfield. In Lorraine, to the West of Metz and Nancy significant reserves of iron ore can be found (so called 'minette ore').

At the local level, Saarland incorporates about 50 municipalities (Gemeinden or Kommunen). Before the administrative reform of 1974 there were about 345 municipalities. A district ('Landeskreis') is made up of several municipalities; and Saarland currently contains 6 districts. Saarbrücken used to be a so-called 'kreisfreie Stadt', meaning that it was not incorporated into a district. However, since 1974, it belongs with its surrounding municipalities to the Stadtverband Saarbrücken (since 2008 renamed Regionalverband Saarbrücken). The other five districts in Saarland are: Merzig-Wadern, Sankt Wendel, Saarlouis, Neunkirchen and Saarpfalz.

South Saarland is the larger metropolitan area of Saarbrücken. This is historically the industrial heartland of Saarland. To the west of Saarbrücken, further downstream of the river Saar, lie the towns of Völklingen, Saarlouis and Dillingen, where a lot of economic activity has concentrated. On the eastern side of Saarbrücken, also the towns of Sankt Ingbert, Neunkirchen and Homburg and surrounding areas should be considered part of the conurbation. In the past, this area was the centre of coal mining in the region. For practical purposes South Saarland can be delineated by the Regionalverband Saarbrücken and the Landkreise of Saarlouis, Neunkirchen and Saarpfalz (see Figure 10 below). The northern part of Saarland consisting of the Landkreise of Merzig-Wadern and Sankt

Wendel is more mountainous, much less densely populated, and has remained more rural.



Source: http://upload.wikimedia.org/wikipedia/commons/c/c7/Saarland_karte_neu.png

Figure 10: Saarland, with South Saarland consisting of the Regional- / Stadtverband Saarbrücken and the Landkreise of Saarlouis, Neunkirchen and Saarpfalz.

Even though the area of interest is South Saarland, much data is available only for the Land as a whole. Moreover, the main administrative body for the South Saarland area, is the government of Saarland. In the remainder of this chapter, many statistics refer to all of Saarland (and not just South Saarland), and also many of policies and governance arrangements enacted apply to the whole of Saarland. However, South Saarland is very much the dominant part of Saarland in terms of economic activity and population; so statistics for Saarland as a whole, will be a reasonable reflection of South Saarland (see

Table 10); and the governance arrangements and policies to be discussed were focussed mainly on the issues in South Saarland.

	1970		2010	
	South Saarland	**Saarland**	**South Saarland**	**Saarland**
Population size	926,354	1,121,300	822,128	1,017,567
Total area	1,538 km2	2,570 km2	1,537 km2	2,570 km2
Population density	602 p/km2	436 p/km2	535 p/km2	396 p/km2
Total employment	320,000	410,000	350,000.	455,000

Sources: www.saarland.de; Statistisches Landesamt Saarland (Statistisches Handbuch für das Saarland and Statistisches Jahrbuch Saarland); Institut für Arbeitsmarkt- und Berufsforschung Rheinland-Pfalz-Saarland.

Table 10: Key facts for South Saarland and Saarland

6.3. Economic development until the 1970s

6.3.1. *Economic development until the 1960s*

Saarland has had a particularly turbulent history in the past 150 years. It industrialised rapidly in the latter half of the 19th century, but its further development in the first half of the 20th century was stalled by the First and Second World Wars and two episodes in which the orientation changed from Germany to France and back to Germany. Coal mining and iron and steel became the dominant industries in Saarland. These industries have in more than one way defined the area. In a most literal sense, as Saarland (which was made up of parts of Prussia and Bavaria before 1919), was delineated as a separate territory on the basis of its coal mines and steel plants, when control of the area was transferred to France as part of the German reparations following the First World War. Moreover, coal mining and the iron- and steel industry importantly influenced the development of the built environment in especially South Saarland (housing, settlement patterns and infrastructure), and the social relationships within the community, with the relationships between employers and workers characterised by much paternalism in the past.

Building on several iron works and coal mining operations that were already established in the preceding centuries, Saarland industrialised very quickly and on a large-scale after the unification of Germany in 1871. The German Imperial state invested heavily in new infrastructure and the expansion of coal mining, while private initiative exploited the favourable conditions for the continued expansion of the iron- and steel-industry. In addition to the already existing works in Neunkirchen and Dillingen, new iron- and steelplants were established in Burbach (near Saarbrücken) in 1856, and in Völklingen in 1873. And coal mining grew rapidly in terms of number of mines, production, and number of people employed. The German occupation of parts of Lorraine and the Alsace after the Franco-Prussian war of 1870-71 created new possibilities for the Saarland economy, as industrialists from Saarland could expand in Lorraine and could exploit the large deposits of iron ore ('minette ore') to be found there (Burtenshaw, 1976). Hence in this period, coal mining, iron and steel production and iron ore mining, in Saarland, Lorraine and Luxemburg became closely linked, through interconnecting supply lines, concessions and firm ownership (Burtenshaw, 1976). This region stretches out in a triangular form from the eastern area of South Saarland (Neunkirchen / Homburg) to the area around Nancy, and northwards to Longwy at the border between France, Luxemburg and Belgium; hence the region is also referred to as the 'Montandreieck' (triangle of steel and coal).

By the late 19th century Saarland had become the third-biggest industrial region in the German Empire, after the Ruhr Area and Upper Silesia (Schreiber and Zwick, 2012). This also led to a sizeable migration into Saarland from surrounding regions such as the Eifel, Hunsrück and the Palatinate, and the formation of miner's colonies around coal mines (Warscheid et al., 2011). As a result, the settlement pattern of South Saarland is somewhat distinctive, with many small settlements and towns spread over the landscape with small distances between them, and only a few urban cores (Jost, 1989). The iron- and steel industry was owned by several private entrepreneurs, most notably the Stumm-family in Neunkirchen and Röchling-family in Völklingen; whereas the coal mines continued to be owned by the German Imperial state (Schreiber and Zwick, 2012). In both cases the relations between employees and employers were characterised by a general

'paternalism', in which employers made services like housing and health care available to employees, but also demanded the full compliance of labourers (Schreiber and Zwick, 2012).

The dominance of coal mining and steel industry thus stretched beyond the area's economy: it also had a considerable influence on the built environment and the social relations between workers and industrialists. Moreover, following the First World War, the presence of these two industries would have political and territorial consequences, which would further reinforce their pre-eminence in the years to come. As part of the reparation settlements, France gained control of the coal mines in Saarland and several other key parts of the economy, including the steel plants of Neunkirchen and Dillingen. It was at this time, that Saarland (then called the 'Territory of the Saar Basin') was delineated for the first time as a separate territorial unit, made up of parts which previously belonged to Prussia and Bavaria. It was explicitly defined on the basis of the core of heavy industry and the more rural areas to the north and west of this core, in which many people lived who were employed in these industries (Reitel, 1989).

In the first half of the 20th century the further economic development of Saarland was impeded considerably by the First and Second World Wars, and connected with this, the fact that it changed hands back and forth on two instances between France and Germany. Following the First World War, it was controlled by France, as mentioned.[41] In 1935, the Saargebiet was reunited again with the rest of Germany, then under Nazi-rule. After the Second World War (1939-1945) – in which Saarland suffered from many air raids – France again took on the administration of Saarland (then called the 'Saar Protectorate'), and again attempts were made to integrate Saarland within the French economic and cultural sphere, e.g. by reintroducing the franc as currency, taking over the ownership of the coal mines, and founding the University of Saarland in 1947 which taught in both French and German (and which was at first an annex to the University of Nancy). After the Allied

[41] Though formally it was administered by the League of Nations, with France together with the United Kingdom acting on its behalf. In practice, administration fell mostly to France.

occupation of West-Germany following the Second World War had ended in 1955, the French held a referendum on the future of Saarland. This eventually resulted in Saarland again becoming part of the Federal Republic of Germany, as its 10th state. Full economic integration did not take place until July 1959 however, when the Deutsche Mark replaced the franc as the currency (Burtenshaw, 1976).

The frequent shifts in boundaries and administrative control in the Saarland-Lorraine region between Germany and France, and some of the destructions brought about by the two World Wars, had left a large mark on the prospects for the further development of Saarland. Firstly, because of uncertainties about access to resources and markets, and instability in administration and institutions, new investments in capital and infrastructure were held back (relative to other places) (Burtenshaw, 1972; Burtenshaw, 1976; Rentmeister, 2006). Technologically the region had fallen behind especially in the iron and steel industry and other manufacturing industries (Rentmeister, 2006; Schreiber and Zwick, 2012). Moreover, the infrastructure in Saarland was underdeveloped: under French rule there was no investment in motorways, and Saarland was poorly connected to other centres within Germany (Jost and Moll, 2007). Secondly, due to the French occupation immediately after the war, Saarland missed out on the support from the Marshall-plan and the strong economic growth in Germany in the 1950s (Burtenshaw, 1972; Warscheid et al., 2011). Furthermore, it could not benefit from the resettlement of major companies and plants originally located in the eastern parts of Germany, following the division of the country after the Second World War. The competitiveness of the Saarland economy was further hampered by the high valuation of the franc relative to the Deutsche Mark (Warscheid et al., 2011).

Immediately after reunification several manufacturing firms in for example machinery and consumer goods (e.g. domestic appliances and white goods), could not cope with the competition from other German firms, and they either went bankrupt or were taken over (Warscheid et al., 2011). This further accentuated the one-sidedness of the economic structure. So by the late 1950s, the South Saarland economy was still highly dependent

on steel and coal mining. The steel industry employed about 40,000 people, and produced about 3.5 million tonnes of crude steel per year (Schreiber and Zwick, 2012). The coal mines employed over 60,000 people in 18 mines (Warscheid et al., 2011). Over 55% of manufacturing employment in Saarland was in steel and coal mining, which represented close to 30% of total employment (Warscheid et al., 2011; Lerch and Simon, 2011). Even though Saarland achieved near full employment in the late 1950s, the foundations for economic development were particularly fragile, given the considerable reliance on only two industries, which moreover lacked modern technology, equipment and infrastructure.

6.3.2. *Economy by the early 1970s*

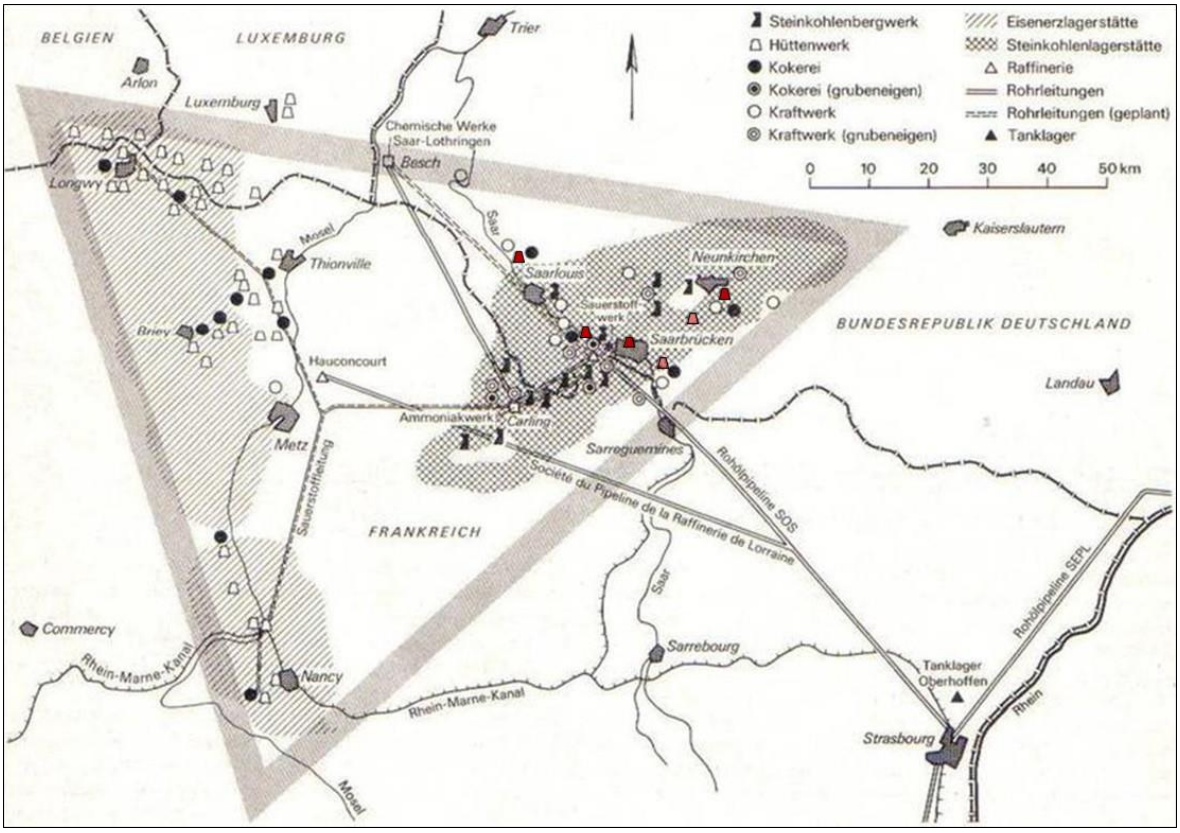
During the 1960s it began to become visible that the reliance on coal mining and iron and steel in Saarland was problematic. While the iron and steel industry still prospered in this period, coal mining started its protracted decline.

After reunification with the Federal Republic of Germany, the steel industry managed to profit from the post-war economic growth in Germany. Because of a backlog in investments, the steel industry invested heavily in modernisation of the plants (Rentmeister, 2006). However, technological advances in steel-making such as large diameter blast furnaces and basic oxygen steel (BOS) converters, benefited iron and steel plants at coastal locations, which mainly used iron-rich ores and coke imported from locations further away (Burtenshaw, 1972; Burtenshaw, 1976). The iron and steel plants in South Saarland were at a disadvantage as large parts of the Saar-river were not suitable for transport of bulk goods, and hence transport of resources and products still relied mainly on the railways. Part of the investments were aimed at improving productivity to offset these disadvantages, which coincided with a diminishing dependence on iron ore from Lorraine and coal from Saarland (though these still represented by far the largest shares) (Burtenshaw, 1976). After a short slump in the German economy in 1966 / 67, the steel producers in South Saarland agreed to a work-sharing arrangement. This

arrangement was later transformed into one of the four rationalisation groups in Germany ('Rationalisierungsgruppe Südwest') in 1971, with the aim to coordinate product specialisation, investment decisions, iron ore purchases and transport arrangements (Burtenshaw, 1976).[42] However, the companies and plants in Saarland remained relatively small, and the ownership remained fragmented, which put limits to the extent of cooperation (Brücher, 1989).

By 1970 there were four integrated iron and steel plants at different locations in South Saarland: the Röchling'sche Eisen und Stahlwerke in Völklingen, ARBED Vereinigte Hüttenwerke in Burbach (owned by the Luxemburg-based firm ARBED), the Neunkircher Eisenwerk in Neunkirchen, and the Dillinger Hütte in Dillingen (indicated in dark red in Figure 11). In addition, two smaller plants were operational: the Halberger Hütte at Brebach (near Saarbrücken), then specialising in pipes and tubes; and Stahlwerk Bous (naar Saarlouis), an electric arc furnace owned at that time by Mannesmann (indicated in a lighter shade of red in the map below). By the early 1970s, the iron and steel industry could look back at a prosperous decade in which crude steel production had risen to about 5.5 million tonnes, with 47.000 people employed. However, despite investments in technological advances and capital outlays, the long-term competitiveness of the industry was already seriously in question (Burtenshaw, 1972; Marzen, 1994; Rentmeister, 2006; Schreiber and Zwick, 2012).

[42] This was sanctioned by the European Coal and Steel Community. The coordination of production quotas or prices was however not allowed.



Source: Rolshoven (1974)

Figure 11: The 'Montandreieck' within Saarland, Lorraine and Luxemburg in the early 1970s, with steel plants in Saarland (in red) and the Saar coalfield

After 1957, the ownership of the coal mines in Saarland was transferred from 'Mission Française des Mines de la Sarre' to the newly founded 'Saarbergwerke AG', owned for 74% by the Federal Government of Germany and for 26% by the Saarland government (Warscheid et al., 2011). Immediately after this, coal mining started to experience serious difficulties as a result of competition from cheaper oil and natural gas, overcapacity because of rapid expansion following the Second World War, and the comparatively high costs of coal mining in Saarland[43] (Burtenshaw, 1976; Dörrenbacher, 2007; Warscheid et al., 2011). Hence coal mining declined dramatically in the 1960s: by the early 1970s, 12 of the 18 mines had closed, employment had fallen from over 60,000 to about 27,000, and

[43] Due to the geology of the coal field, with the need to dig deep under the surface and often mine steeply diagonal coal seams; and the strict health and safety regulations.

output went down from 16.3 million tonnes to about 10.7 million tonnes (Burtenshaw, 1972; Warscheid et al., 2011). So before being faced with a steel crisis, Saarland was already confronted with a coal crisis (‘Kohlenkrise‘ or ‘Erste Montankrise‘) from the late 1950s until the late 1960s.

Already by the early 1960s there was a growing acknowledgement that the crisis in coal mining was structural rather than temporary (Dörrenbächer, 2007). Saarbergwerke adapted by a series of measures to cut costs and rationalise production, by concentrating operations into fewer, larger and more mechanised mines, and by diversifying into new areas (Dörrenbächer, 1989; Dörrenbächer, 2007). The Federal government began to provide long-term subsidies for coal mining, to keep German coal competitive vis-à-vis imported coal from overseas (Dörrenbächer, 1989; Dörrenbächer, 2007).

Despite the loss of over 35.000 jobs in coal mining from 1957 until the early 1970s, unemployment in Saarland stayed relatively low. In the first half of the 1960s this was mainly due to the fact that many miners who were made redundant, were close to their retirement age (Burtenshaw, 1972), and many others could find jobs in the booming iron and steel industry and in other growing sections of the economy (Warscheid et al., 2011). Moreover, about 20.000 younger workers left Saarland in search of better opportunities in more prosperous parts of West Germany (Burtenshaw, 1976; Esser and Väth, 1986). Initially there was resistance from mainly the iron and steel industry and other vested interests to any additional measures to promote the economy and the settlement of firms from outside the region in Saarland, as under conditions of near full employment this would push up wages and hence the costs of labour (Judith, 1980; Jost, 1989). Furthermore, the financial situation of the Saarland government was problematic, due to the investments in the late 1950s and early 1960s associated with the reunification with West-Germany (Hahn, 2003). Hence efforts to diversify the economic base of the Land were deferred, despite calls that this was necessary for the long-term prospects of the economy (e.g. Sievert and Streit, 1964; Müller, 1967; Isenberg, 1968).

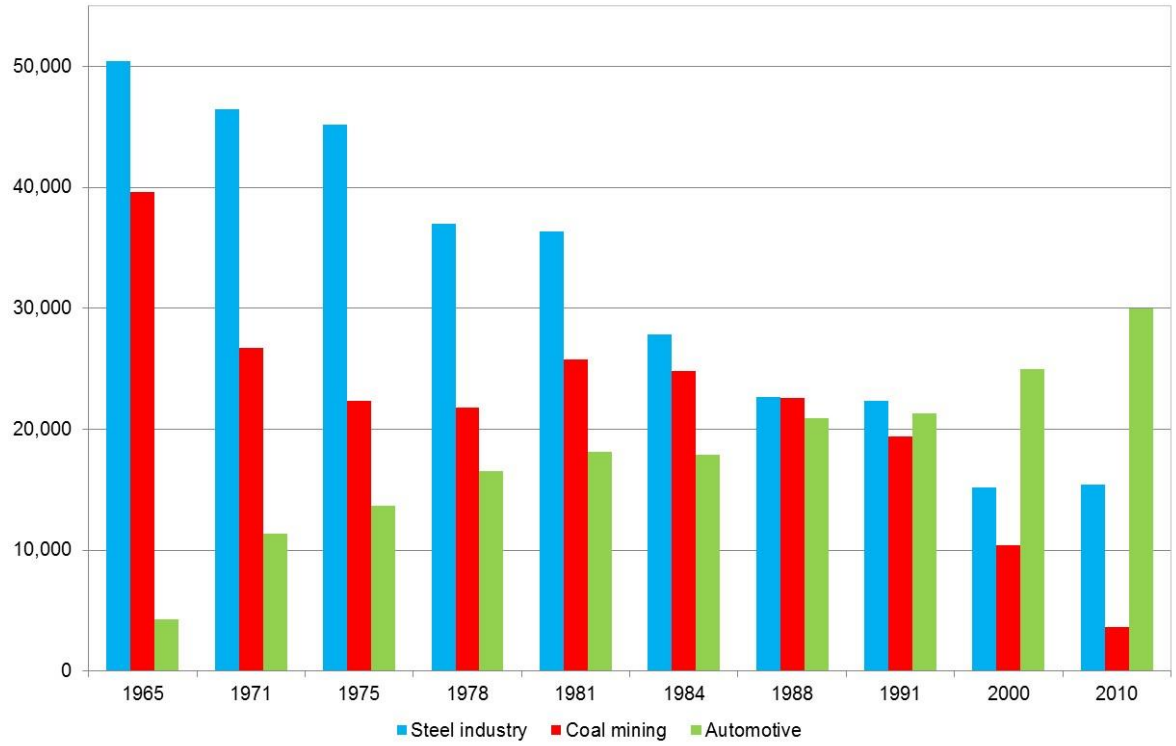
In the recession of 1966-1967 however, unemployment reached 4%, which was the highest in West-Germany at the time. As a response the Saarland government, with considerable support from the Federal government, initiated an extensive programme of measures to generate employment and stimulate the regional economy. The core of these measures consisted on the one hand of investments in infrastructure, and on the other hand in measures to attract inward investment (Minister für Wirtschaft, Verkehr, und Landwirtschaft Saarland, 1969; Burtenshaw, 1972; Burtenshaw, 1976; Warscheid et al., 2011). In section 6.6.2, these efforts will be described in more detail; but they proved very successful. They generated much new employment in the region to offset the job losses in coal mining (and later on in the 1970s and 1980s, also some of the job losses in iron and steel). Moreover, the economic base of South Saarland became more diversified. In the period from 1968 until 1972 around 90 firms were attracted to invest in Saarland (Giersch, 2007), in diverse fields of manufacturing, such as automotive, electronics, household appliances, textiles, machinery, metalworking (Burtenshaw, 1972). The largest and most lasting effect on the regional economy of the influx of inward investment during this period, would come from a number of firms in the automotive sector (both car manufacturing and suppliers), such as Ford (which opened a new production plant in 1968 in Saarlouis), ZF (a producer of gearboxes, which settled in Saarbrücken in 1973), and Michelin (which settled in Homburg in 1971) (Warscheid et al., 2011). These firms, together with a number of firms already present in Saarland, laid the basis for the automotive sector eventually becoming a new mainstay of the regional economy.

In summary, the iron and steel industry in South Saarland was expanding in the 1960s and early 1970s, but nonetheless its competitiveness was already at issue. With the increasing need to use iron ore and coking coal from elsewhere, its inland location proved a disadvantage. This was exacerbated by the comparatively small plants with much out-of-date equipment, together with a fragmented ownership structure. Coal mining started its long-term decline from the late 1950s, which seriously began to affect the Saarland economy in the mid-1960s. With support from the Federal government, the Saarland government enacted a series of measures to modernise and diversify the economy, and

generate new employment, mainly by attracting inward investment. This proved to be successful: with the pouring in of inward investment from other regions in Germany and from abroad, the Saarland economy was experiencing a period of high growth in the early 1970s; and it was catching up with other regions in Germany, in terms of GDP per head and employment (Burtenshaw, 1976; Warscheid et al., 2011).

6.4. The process of structural change

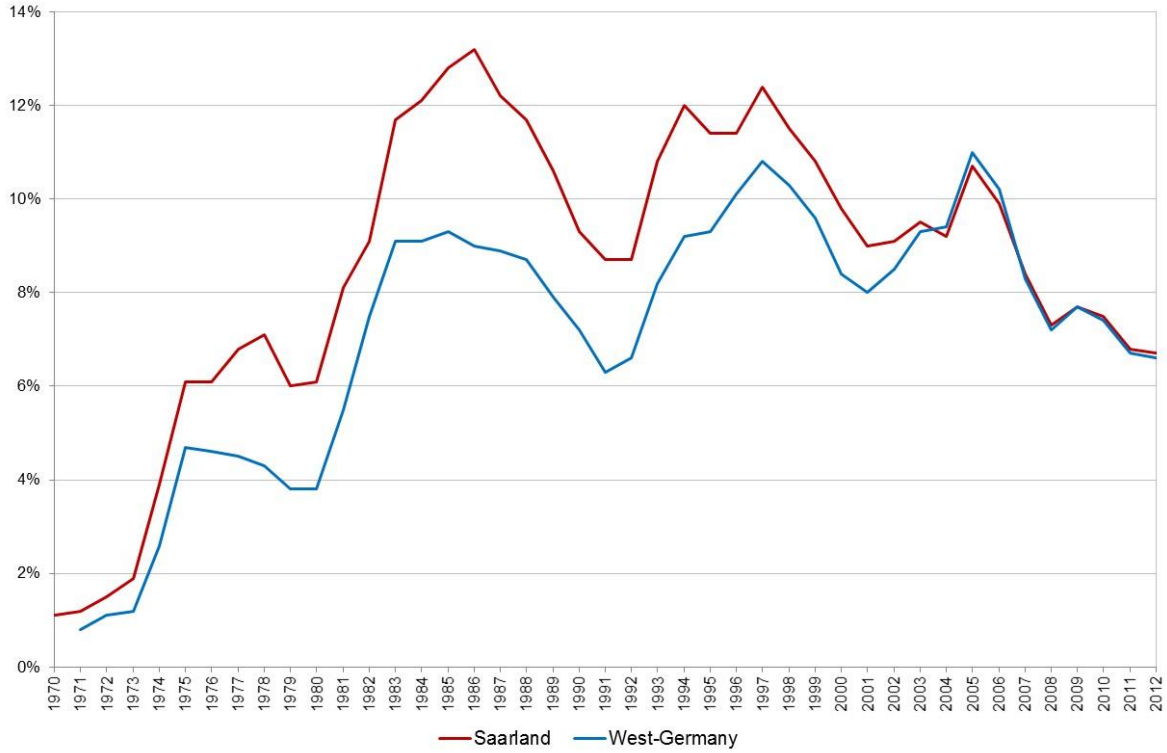
Thus the process of structural change had already started in the 1960s, with the demise of coal mining. In the decades to follow, the economy in South Saarland would undergo even more significant changes. As can be seen in Figure 12, during the steel crisis employment in the iron and steel industry fell rapidly from the mid-1970s onwards, with over 22,000 jobs being lost between 1975 and the end of the 1980s. This will be further discussed in the next section. Also coal mining continued its decline, though less rapidly than in the 1960s. Coal mining actually resurged for a period in terms of employment and output, as a consequence of the oil crises in 1973 and in the beginning of the 1980s (Rentmeister, 2006; Dörrenbächer, 2007; Warscheid et al., 2011). However, from the mid-1980s decline set in again, and after further closures of coal mines in the 1990s and 2000s, coal mining in Saarland ended altogether in June 2012. At the same time coal mining and iron and steel declined, the automotive sector – one of the industries which was attracted at the end of the 1960s – grew quite quickly to become the new backbone of the regional economy (Giersch, 2007; Schulz and Dörrenbächer, 2007; Warscheid et al., 2011).



Sources: Statistisches Landesamt Saarland (Statistisches Handbuch für das Saarland and Statistisches Jahrbuch Saarland, multiple editions), Helfer and Dörrenbächer (2014).

Figure 12: Development of employment in major industries in Saarland

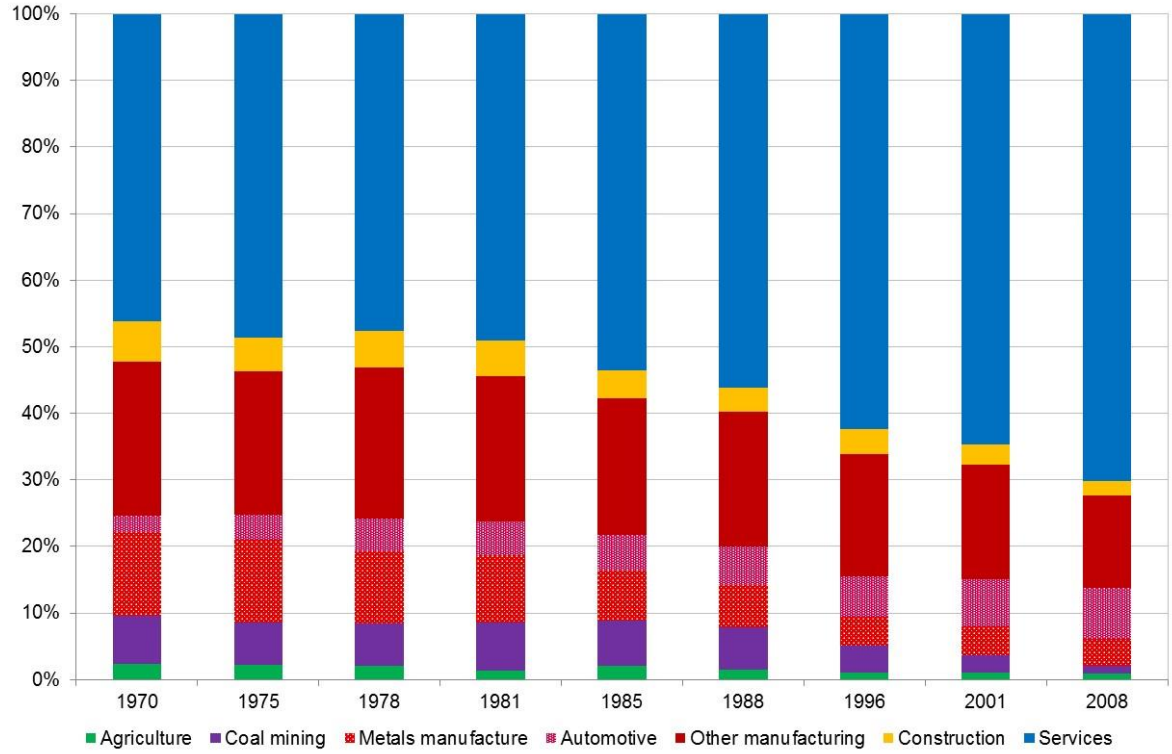
Unemployment rates in Saarland were pushed up to levels which were significantly higher than in the rest of West-Germany, as can be seen in Figure 13. In 1986, the official unemployment rate for Saarland reached about 13%. In certain localities however, with a high dependence on steel and coal mining (such as Neunkirchen, Völklingen, and Saarbrücken-Burbach) unemployment rates will have been higher. Total employment in Saarland remained at around 400,000 from the mid-1970s until the mid-1980s (with a small increase of about 6,000 jobs); and employment in manufacturing (other than steel) also remained quite stable. So besides the loss of employment in the steel industry in this period (employment in coal mining grew somewhat in the late 1970s and early 1980s), also developments in labour demand played a role in pushing up unemployment rates. There was indeed a comparatively large influx of young people entering the labour market in the 1980s, as a result of higher than average birth rates in the 1960s (Giersch, 1989). Since the late 1990s unemployment in Saarland has declined significantly to a rate comparable to the average in West-Germany at about 7% in 2012.



Change in definitions over time, not taken into account.
Sources: Statistisches Amt Saarland (Statistisches Handbuch für das Saarland / Statistisches Jahrbuch, multiple editions); Statistisches Bundesamt (Statistisches Jahrbuch, multiple editions; www.destatis.de)

Figure 13: Unemployment rates in Saarland and West-Germany

As in almost anywhere else in the developed world, manufacturing lost ground in relative terms with regard to employment, while the tertiary sector gained importance (see section 5.2). Loss of employment in manufacturing was manageable however, with a loss of about 45,000 jobs in total from 1970 to 2008 (on a total of around 140,000 in 1970). The growth of employment in the service sector, was more than sufficient to offset this, as it gained nearly 140,000 jobs in this same period. The process of deindustrialisation was hence somewhat less pronounced in Saarland, and manufacturing still accounts for an above average share of the economy in (South) Saarland, with many services also still linked to manufacturing (Lerch, 2007; Lerch and Simon, 2011; Warscheid et al., 2011). The disruptive effects of deindustrialisation were thus kept in check, especially in comparison to Teesside (see section 7.4).



Sources: Statistisches Landesamt Saarland (Statistisches Handbuch für das Saarland and Statistisches Jahrbuch Saarland, multiple editions); Helfer and Dörrenbächer (2014).

Figure 14: Structural change in Saarland in terms of employment

With regard to structural change in (South) Saarland, there is both a clear shift within manufacturing, as well as a shift between manufacturing and the service sector. Concerning the former, it should be noted that the new industries in manufacturing (besides automotive, also machinery has grown significantly, to about 16.000 workers (Warscheid et al., 2011)), build on the older industries, especially the steel industry (Otto and Schanne, 2006; Schulz and Dörrenbächer, 2007). To some extent, the coal-steel complex from the past has transformed into a steel-automotive complex (which stretches out into Baden-Württemberg instead of Lorraine and Luxemburg however). The car industry is now the most important consumer of steel made in Saarland, and so there has been a growing interconnectedness in this regard (Schreiber and Zwick, 2012). Moreover, several firms with a past in the steel industry and machinery, transformed into important suppliers for car manufacturing on the basis of the technology they possess (Strobel, 2011). Furthermore, the steel industry and the automotive sector make use of a common pool of labourers, as required skills and practices (e.g. shift labour) are similar (Otto and

Schanne, 2006). Nevertheless, in the supply chains within South Saarland area itself, the connections are not as strong. Most steel produced for car manufacturing is used by producers in other parts of Germany and Europe (Schreiber and Zwick, 2012). Also within the automotive sector in South Saarland the links are weak: Ford – the only Original Equipment Manufacturer in Saarland – has several immediate suppliers located near its plant in Saarlouis (on a supplier park), but does not have links to the many large first-tier suppliers based in South Saarland, such as ZF (gear boxes), Bosch (injectors), ThyssenKrupp Gerlach (crankshafts), Halberg Guss (motor blocks), and Michelin (tires for trucks). These are in general more oriented on the car manufactures in other parts of Germany (especially Baden-Württemberg) (Schulz and Dörrenbächer, 2007).

Employment in the service sector has grown significantly over the years, and the share of the tertiary sector rose from about 45% in 1970 to over 70% in 2010. Part of the growth in the service sector is still related to manufacturing. Some services have been outsourced from manufacturing firms and plants over the years, and some segments of the service sector such as engineering, industrial design, or logistics, are clearly dependent on manufacturing (Lerch, 2007; Lerch and Simon, 2007). Yet, also some services have emerged strongly since the early 1980s in South Saarland, which do not have a direct connection to manufacturing, such as information technology (IT; about 7,000 employees), health care (around 8,500 employees), and insurance services (about 7,300 employees) (Warscheid et al., 2011).

Related to the rise of the service sector and relative waning of manufacturing, a number of changes have taken place in the labour market (Lerch, 2007; Lerch and Simon, 2011). First of all, employment among women rose from 34% at the start of the 1970s to 65% in 2009 (Lerch and Simon, 2011). There has also been a rise in the number of part time jobs relative to full time jobs, and in addition an overall decline in the number of hours worked (also for full time employees). More flexible forms of employment (such as temporary contracts and self-employment), have gained in importance. In terms of qualifications the economy in South Saarland is still largely dependent on people with a vocational

education (about 60%); the number of people with a college or university degree has risen over the years, but at 8% it is still lower than in other parts of Germany (Otto and Schanne, 2006; Lerch and Simon, 2011). The number of people with no qualifications has fallen significantly over the years. Nevertheless, there seems to be an increasing polarisation within the labour market, with some well-paid, relatively secure, high-skilled jobs; but also many poorly paid, insecure and low-skilled jobs – mainly in e.g. cleaning, retail, hotel and catering industry, etc. – in which women tend to be overrepresented (Lerch and Simon, 2011).

6.5. The steel crisis and crisis management

The steel crisis from 1975 until the mid-1980s is a kick-off point for increased efforts aimed at expanding and renewing the economic base of the region (the subject of discussion of section 6.6). Furthermore, the management of the steel crisis is telling for the way the adaptation process with regard to deindustrialisation was handled from the perspective of heavy industry. Today there is still a sizeable and thriving steel industry in South Saarland, and in the late 1970s and 1980s the social effects of the restructuring operations within the steel industry were kept in check. These outcomes have been the result of on the one hand active government interventions (by especially the Saarland government, which eventually pushed for more local control), and on the other hand, strong labour unions together with a system of corporate governance in which employee interests are strongly represented.

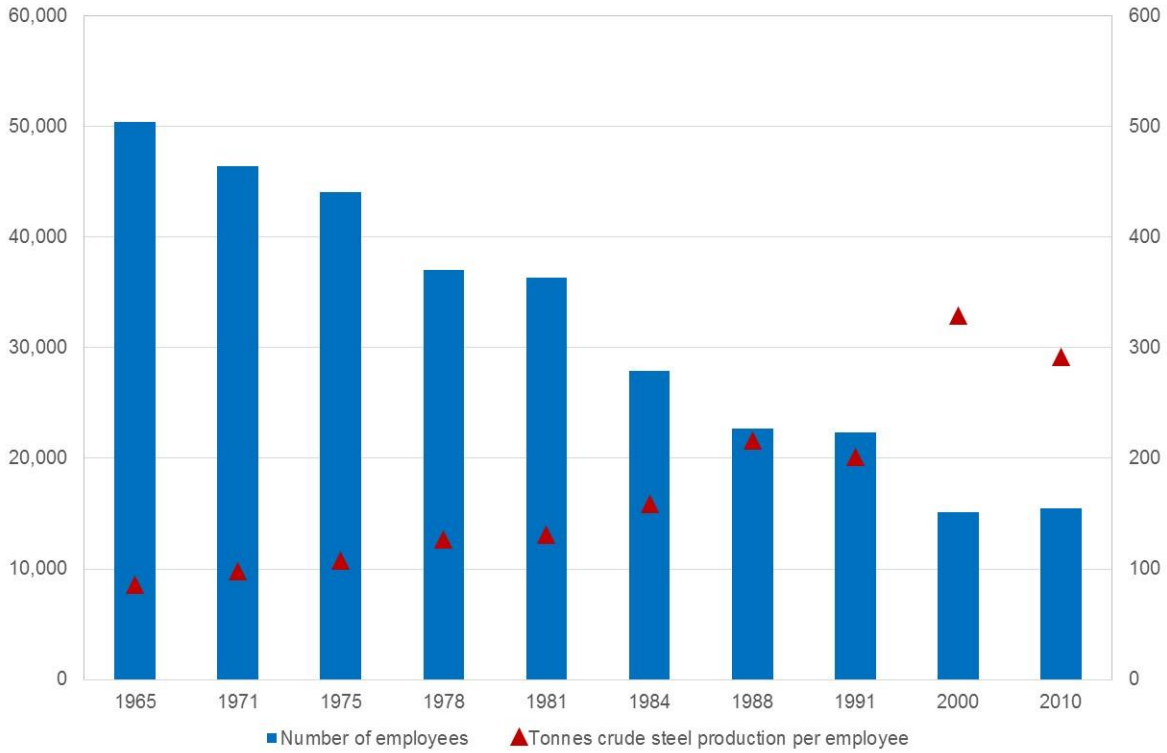
The steel crisis and the development of the steel industry since

In 1970, there were four large integrated iron and steel plants in South Saarland: the Röchling'sche Eisen und Stahlwerke (owned by the Röchling-family), ARBED Vereinigte Hüttenwerke Burbach (owned by the Luxemburg firm ARBED), the Neunkircher Eisenwerk (owned by 'Eisen- und Hüttenwerke AG' from Cologne, and 'Stumm AG'), and the Dillinger Hütte (owned by French corporation SOLLAC (majority) and Neunkircker

Eisenwerk (32.4%)).[44] The industry in South Saarland became increasingly vulnerable by the early 1970s. Its locational advantages had disappeared: coke and iron ore needed to be brought in from outside the region in increasing amounts, the plants were mostly relying on the railways for the transport of supplies and products (as transport over the river Saar was still not possible), many facilities relied on outdated technologies, and operations were comparatively small in scale (due to a lack of investment after the Second World War, and the fragmented ownership of the steel companies).

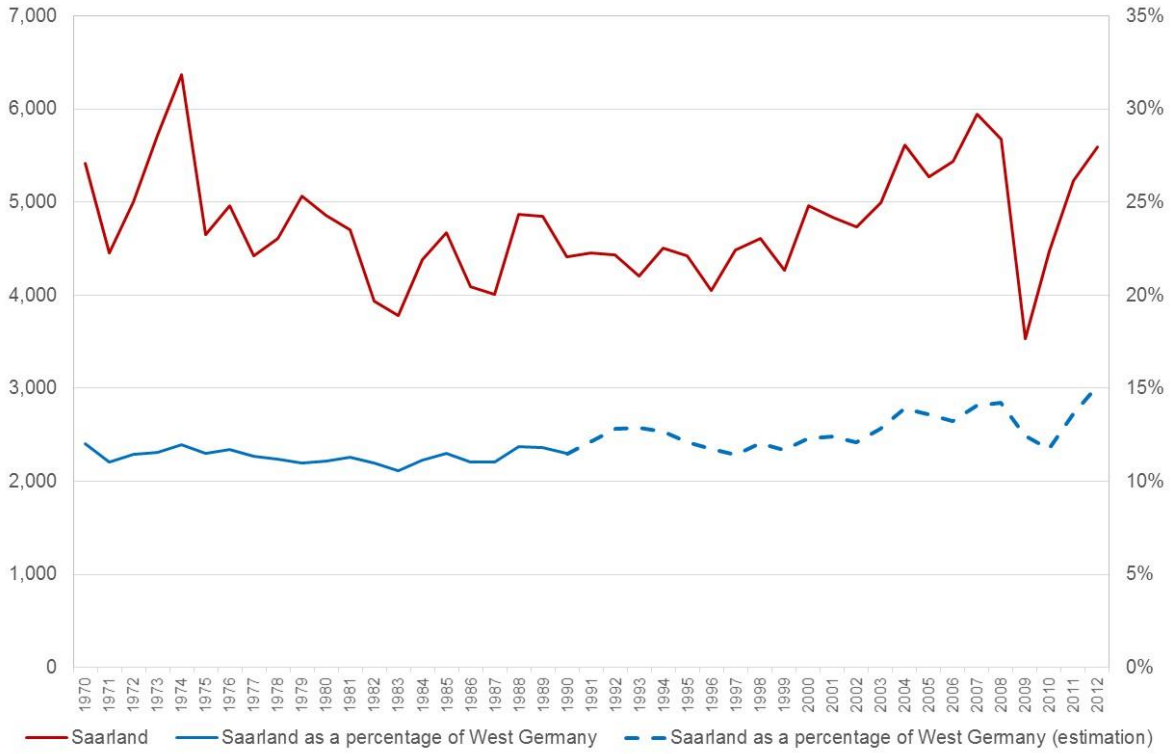
Figure 15 shows that the steel industry lost almost half of its employment between 1975 and 1988 and that employment only stabilised around 2000. In Figure 16 however it can be seen that production levels in term of crude steel, remained more or less stable at around 5 million tonnes per year (with significant fluctuations).

[44] In addition, two smaller and more specialised plants existed: Halberger Hütte and Stahlwerk Bous. These are not considered here, as they were not greatly affected by the steel crisis and their importance for the Saarland economy was very limited (Brücher, 1989).



Calculation of production of crude steel per employee is based on the total number of employees in the steel industry in Saarland, including employees employed in the further processing of steel (casting, rolling, forging, etc.).
Source: Statistisches Amt Saarland (Statistisches Handbuch für das Saarland and Statistisches Jahrbuch, multiple editions).

Figure 15: Development of employment in the steel industry, and production of crude steel per employee in Saarland



From 1991 onwards (after unification with East Germany) crude steel production in West Germany was estimated by assuming that it is about 87% of total German steel production. This percentage is based on historical data for East German steel production from 1980 until 1990.
Sources: Statistisches Amt Saarland (Statistisches Handbuch für das Saarland and Statistisches Jahrbuch, multiple editions), Statistisches Bundesamt (Statistisches Jahrbuch für die Bundesrepublik Deutschland, multiple editions), World Steel Association (www.worldsteel.org; Annual crude steel production archive).

Figure 16: Crude steel production in 1,000 tonnes in Saarland, and production of Saarland as a percentage of West-German production

Already before the 1970s Dillinger Hütte had specialised into market segments in which the conditions remained favourable (such as high quality steel used for heavy engineering, construction and pipes). For this reason it experienced fewer problems: employment and production remained at similar levels throughout (Schreiber and Zwick, 2012). The major problems occurred at the three other steel plants, which would merge into Saarstahl in 1978. Saarstahl went through a long sequence of restructuring operations, which spawned over almost 25 years. The problems at Saarstahl were only fully resolved in 2001. The restructuring operations had two primary aims. Firstly, to move from primarily bulk steel making towards more high-grade, speciality steel production. The decision was made to concentrate on high-quality long products (wire rods, bars, strips, etc.). Secondly, the aim was to modernise production facilities and

concentrate these at certain locations to improve efficiency. At the end of the restructuring process three of the four integrated plants were disbanded, with coke ovens and blast furnaces only located at Dillingen (though the facilities are jointly owned by Dillinger Hütte and Saarstahl), steel making at Dillingen and Völklingen, and casting and various types of further processing spread over the four locations. Table 11 lists the main events in the restructuring of the steel industry in South Saarland.

1971	Merger of Röchling'sche Eisen und Stahlwerke and ARBED Vereinigte Hüttenwerke to form Stahlwerke Röchling-Burbach (owned by ARBED (50%) and the Röchling-family (50%)).
1978	ARBED becomes the (near) full owner of Stahlwerke Röchling-Burbach (except for a remaining 2.1 %), and Neunkircher Eisenwerk becomes almost fully owned by Stahlwerke Röchling-Burbach (but remains a separate company). First restructuring at Stahlwerke Röchling-Burbach: • Closure of blast furnaces in Burbach (1978). • New steel-making facility in Völklingen, to replace steel works based on dated technologies in Völkling, Burbach and Neunkirchen, by 1982/3. • The production of finished rolled products is to be concentrated in several rolling mills /special product mills. • Reductions of employment and production capacity. • Start of financial support by Saarland and Federal government.
1981	Modified restructuring: further reductions of employment and capacity. Concentration of blast furnaces in Dillingen under joint venture (Roheisengesellschaft Saar (ROGESA)) between Dillinger Hütte and ARBED Saarstahl from 1981 (to be completed in 1985). Concentration of coke ovens in Dillingen using a similar construct between the two steel companies and Saarbergwerke, in Zentral Kokerei Saar (ZKS).
1982	Complete merger between Stahlwerke Röchling-Burbach and Neunkircher Eisenwerk to form ARBED Saarstahl. Closure of last of the blast furnaces in Neunkirchen. Of the original 22 rolling mills, only 8 are still in operation.
1982-1985	Further restructuring and rationalisation, with further losses of employment and reduction of production capacity. Several large-scale demonstrations and industrial actions by the labour unions (especially in 1982 and 1983) against further downsizing and proposals to reduce wages. Repeated financial support by Land and Federal government.
1984	Option agreement between Saarland, Federal government and ARBED: ARBED is obliged to transfer up to 76 % of the capital shares in ARBED Saarstahl to a third party to be named by the Federal and regional governments, in exchange for continued financial support.

1986	The option is pulled: 76% of the shares in ARBED Saarstahl are transferred to a trust, set up and managed by the government of Saarland. The company's name is changed to 'Saarstahl Völklingen' The management of Saarstahl Völklingen is transfered to Dillinger Hütte, and preparations start to combine Saarstahl Völklingen and Dillinger Hütte. Closure of blast furnaces in Völklingen.
1987	Establishment of the 'Stahlstiftung' (Steel Foundation) to cope with redundancies, in which redundant employees receive extra unemployment money (above the regular unemployment benefits), and are offered reemployment, training and work creation schemes, funded mostly through European, national and state funds, and private donations.
1988	Canalisation of the Saar-river is completed, and inland port at Dillingen is operational.
1989	Establishment of a Holding (Dillinger Hütte Saarstahl) that combines Saarstahl and Dillinger Hütte in 1989: Holding is 100% owner of Saarstahl, and about 95% of Dillinger Hütte (remaining 5% remains with small stockholders). Usinor-Sacilor – which succeeded SOLLAC as the majority owner of Dillinger Hütte – becomes 70% owner of the new Holding, Saarland has 27.5% of the shares; and ARBED 2.5%. Saarstahl Völklingen is renamed 'Saarstahl'.
1993	Saarstahl files for bankruptcy due to insolvency, and goes into receivership. Dillinger Hütte and majority owner Usinor-Sacilor do not want to cover the losses of Saarstahl any longer. Search for a solution in which the financial difficulties of Saarstahl would not affect the whole holding (and thus also Dillinger Hütte).
1994	Saarstahl is taken out of the Dillinger Hütte Saarstahl Holding; with Saarland taking over 100% of the stocks of Saarstahl.
1996	Stockholdings are reorganised, with the result that Usinor-Sacilor sees its share in the Dillinger Hütte Saarstahl Holding reduced to 48.75%. For decisions in the Holding at least 70% of the shares are required. So Usinor-Sacilor effectively loses control of the Holding, and thus over Dillinger Hütte.
1996-1999	Settlement of claims with creditors of Saarstahl, and various changes of ownership in Saarstahl: per 1999 48.1% of the stocks are owned by Saarstahl Treuhand, 26.8% by Saarland, and 25.1% by the Dillinger Hütte.
2001	Resolution with so called 'Hüttenlösung': establishment of a foundation 'Montan-Stiftung-Saar' and 'SHS Strukur-Holding-Saar', which together with interlocking shareholdings between Saarstahl and Dillinger Hütte / Dillinger Hütte Saarstahl Holding, now covers all of Saarstahl and most of Dillinger Hütte. This means that money earned in the steel industry in Saarland will for the most part remain in a foundation (with no dividend payments to external parties), and so can be used for the further development of the industry. Only a remaining 30.08% of the Dillinger Hütte Saarstahl Holding (only containing Dillinger Hütte) is still owned by ArcelorMittal (which has incorporated Usinor-Sacilor and ARBED), and there are still 4.72% small stockholders in Dillinger Hütte. Saarstahl goes out of receivership.
2001-date	Various new investments in production facilities at Dillinger Hütte and Saarstahl. The most important of which is a new forge ('Saarschmiede') to cast steel, which went into operation in 2010.

Sources: Brücher (1989); Hartz (1990); Marzen (1994); Penner (2011); Schreiber and Zwick (2012); www.saarstahl.de.

Table 11: Chronology of the restructuring of the steel industry in South Saarland from the late 1960s

At the end of these restructuring operations, two things stand out: South Saarland managed to retain a sizeable steel industry, which is (currently) stable, competitive and flourishing; and great efforts have been taken to limit the negative social and economic effects of the redundancies from the restructuring operations. The first has been the result of active support by the Federal government and Saarland government, as well as interventions by especially the Saarland government to influence the strategic direction of the restructuring operations and to gain more local control. Crucial for the second outcome, have been the relatively powerful labour unions in combination with a system of corporate governance system in which the interests of employees are strongly represented. I will discuss these two factors, and how they affected the decisions that were made during the steel crisis, in turn.

Strategic decision-making and the role of the state

The fact that the steel industry has managed to successfully restructure and upgrade to speciality steel production, was in no small part the result of active support and interventions by the Saarland government and Federal government. The financial resources of the steel companies in Saarland were inadequate to carry the vast losses and pay for the necessary investments, so from the beginning the government of Saarland, the federal government, as well as many banks, were involved in the restructuring of the steel industry. At the time of the crisis (especially from 1977 onwards), the companies, the shareholders, banks, the labour unions, the Saarland government, the Federal Employment Agency, and the federal government met frequently to negotiate about the restructuring operations, the redundancy policies, and the funding of these measures (Esser and Väth, 1986). Moreover, these parties agreed on the basic strategic direction on the longer run, to specialise in high-quality long products. There was effectively a policy of 'indirect nationalisation' by the Saarland and federal governments from 1977 until 1986 (Esser and Väth, 1986, p. 651 and p. 660): assuming most of the commercial risks and

trying to exert control, but without a transfer of ownership into the public sector. Up until 1993 about DM 4 billion of support money and guarantees were provided, mostly by the Federal government but also by the Saarland government (Penner, 2011).

With the change of government at the Federal level in 1982 from a coalition of SPD and FDP, to a coalition of CDU and FDP, there was a growing reluctance to continue the federal support for the steel industry in Saarland. Also the government of Saarland – a CDU and FDP coalition as well – began to express doubts about "pouring more money in a bottomless well" (Hartz, 1990, p. 70). However, the newly elected SPD-government of Saarland which came to power in 1985, was in favour of sustaining the support for the steel industry, even though it had to do this without the continued support from the federal government. It furthermore adopted a policy to push for local control of the steel industry: "decisions about the organisation and development of steel in Saarland, should be made in Saarland"[45] (Klimmt, 1998, p. 11). It was not until 1993 however, when Saarstahl went into receivership – after also the new French majority owner of both Saarstahl and Dillinger Hütte (Usinor-Sacilor) could no longer carry the losses – that this policy of local control could be fully implemented. The final step in a series of measures to reorganise the ownership of Saarstahl and Dillinger Hütte, came in 2001 when Saarstahl and the stockholdings in Dillinger were subsumed under a Holding ('Struktur-Holding-Saar), which in turn is owned by a foundation ('Montan-Stiftung Saar'), with the purpose to promote the steel industry in Saarland, and contribute to research and development, qualifications of its employees and environmental protection measures (Schreiber and Zwick, 2012). This means that money made in the Saarland steel industry for the most part remains in the industry[46]. This money can be used to secure the long-term future of the steel industry in Saarland, and promote auxiliary social and environmental objectives.

[45] "Entscheidungen über Struktur- und Entwicklungsmöglichkeiten der Stahlindustrie müssen an der Saar fallen."

[46] Only a limited part is paid out in dividends, through the remaining ownership of Arcelor-Mittal (which succeeded Usinor-Sacilor and ARBED) and some other small holdings.

Coping with redundancies and the role of the unions

From 1977 until the early 1980s most redundancies were dealt with through automatic staff turnover with a hiring stop, and through early retirement (for employees from 55 years) (Bosch, 1989; Otto and Wächter, 1989). In addition, also reduction in working time was implemented, with the lower wages partly (usually 60 to 65%) compensated by the Federal Employment Agency, though work reduction time payments ('Kurzarbeitergeld') (Otto and Wächter, 1989). Furthermore some workers left voluntarily with a settlement, or went into retraining programmes to qualify for a different job (Esser and Väth, 1986; Bosch, 1989; Otto, 2005). When in 1986 a further 3,500 empoyees were made redundant at Saarstahl, the so-called Steel Foundation ('Stahlstifftung') was established. This foundation was set up by Saarstahl, together with Dillinger Hütte, the labour unions, the Federal Employment Agency and the Saarland government (Hauch, 1987). Redundant employees terminate their employment at Saarstahl, and are instead registered as unemployed. They would receive unemployment benefits, but in addition would also receive payments as members of the Steel Foundation, so their income would be at 50% up to 90% of their previously earned wages (depending on the situation) (Bosch, 1989). Saarstahl promised to offer any vacancies that would become available in the future, to the members of the foundation first. For especially those younger than 50 the Foundation would also offer opportunities for reemployment, retraining, and employment in work creation schemes (e.g. in industrial archaeology and cleaning up of contaminated sites), through an Employment Enterprise ('Beschäftigungsgesellschaft'). In 1993, when Saarstahl went into receivership, the Steel Foundation was the most important instrument for coping with redundancies, especially for those close to early retirement and harder cases for whom the prospects of finding employment elsewhere were small (Otto and Wächter, 1996; Otto, 2005).

For the steel industry the most important unions are IG Metall and the 'Deutsche Gewerkschaftsbund' (DGB; a federation of unions). The organisation rate tends to be very high in the steel industry; often above 90%. Unions can exert influence in two ways: directly, through negotiations with the steel companies, the government of Saarland, the

federal government, the Federal Employment Agency, and banks; and more indirectly, through the works councils and other provisions within the corporate governance of steel firms. Also the legal provisions for employment protection in Germany (as discussed in section 5.3.3), contribute to the relatively powerful position of the labour unions. During the restructuring operations from 1977 until 2001, the labour unions have thus been able to negotiate relatively generous redundancy policies. On the whole, the labour unions accepted the need for the restructuring operations that were implemented, and in general exhibited a cooperative attitude.[47] They mostly pushed for the abatement of the social consequences of these operations. This consisted of demands to (Simon, 1985; Esser and Väth, 1986):

- Phase the reductions in the labour force, and avoid forced lay-offs.
- Deal with redundancies through early retirement, hiring stops, and termination of temporary contracts.
- Relatively high compensation for those made redundant.

To assert these demands, the labour unions organised frequent demonstrations and meetings. These demonstrations and actions intensified in 1982 and 1983 (including a local strike at one of the plants in Burbach), when continued support by the federal and Saarland governments was in question, and at the same time further redundancies were announced and reductions in wages were proposed (Simon, 1985; Hartz, 1990). These issues were not resolved until 1985, when the new SPD-government pledged further financial support.

The corporate governance of large steel companies in Germany, offers several opportunities for labour unions and other representatives of employee interests, to exert influence on policy:

- A strong role for works councils (legally secured in the Works Councils Act ('Betriebsverfassungsgesetz')), with provisions for works councils to be informed about, to be consulted on, and to co-determine aspects of company policy that affect

[47] Though it should be noted, that the process was certainly not free of conflicts, see e.g. Judith (1980) and Hartz (1990).

workers. Most of the members of the works councils are labour union representatives.

- Typical for corporations in the steel industry and coal mining in Germany, is the system of equivalent co-determination ('Paritätische Mitbestimmung'; regulated through the 'Montanmitbestimmungsgesetz'). The system of equivalent co-determination means that half of the Supervisory Board consists of representatives from employees, and the other half of representatives from shareholders; with both parties having to agree on an independent chair. In addition, one member of the Executive Board cannot be appointed against the wishes of the representatives for employees in the Supervisory Board: the labour director ('Arbeitsdirektor') who is responsible for personnel management.
- Through the process of collective bargaining between unions and employer's federations at the industry and regional levels (regulated by the Collective Bargaining Act ('Tarriffvertragsgesetz')), unions can also exert considerable influence.

Hence, shareholders and management have to work closely together with labour unions (and other representatives speaking for the interests of employees) in the operation of a corporation. Also through this – more indirect – way, labour unions could push for measures to mitigate the social consequences of restructuring. Moreover, labour unions and employees have a considerable say in the strategic direction of the companies and on concomitant investment decisions (e.g. the investment in the new forge ('Saarschmiede') has been mostly the result of pressure from unions and employees).

6.6. Evolution of policy and governance

Active government interventions by mainly the government of the Land, with a push to protect some of the interests of the wider community and to gain more local control, has thus been a key element in the retention of a sizeable and competitive steel industry. While powerful labour unions and the representation of employee interests in the strategic decision-making within steel companies, have importantly contributed to the mitigation of many of the negative social consequences from the restructuring

operations. These represent efforts to actively manage the decline of the steel industry in Saarland. These efforts have been complemented by policy and governance interventions to facilitate the growth and expansion of other parts of the economy on the longer run, as the significance of heavy industry continued to diminish.

Such policy and governance interventions were aimed to guide and influence the 'transformation process' within the economy in South Saarland towards a new economic base, and were spread out over many decades. The normal spending on economic development (quite narrowly defined as expenditure on the attraction of inward investment, entrepreneurship and business support, and urban regeneration) can be estimated at around 1% of Gross Value Added in Saarland since the early 1980s.[48] Although as discussed, the support of the steel industry (by both the Saarland government and the Federal government) has been very sizeable over the years, and also coal mining has been heavily subsidised by the federal government (see Miehe-Nordmeyer, 2000); both these expenditures are not included in this figure. In this section, I will discuss the policy and governance initiatives for economic renewal. I will however start by first outlining the government institutions which concern themselves with the economic development of South Saarland.

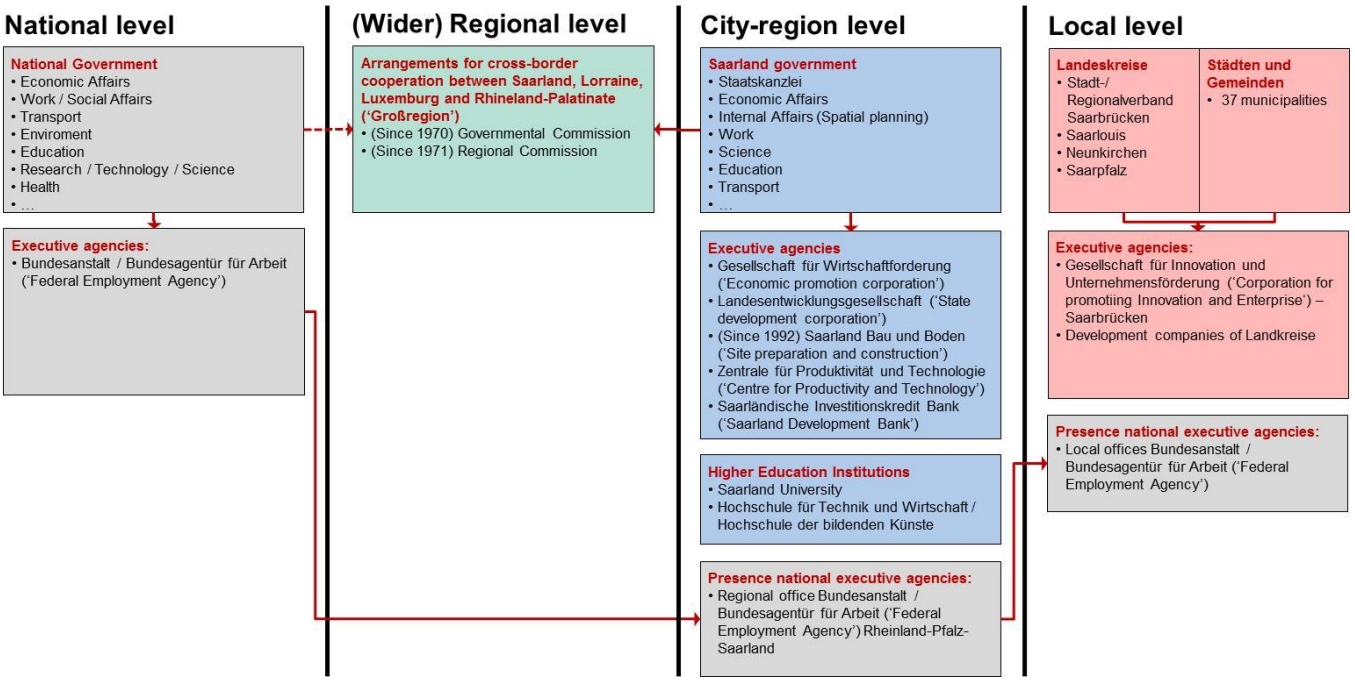
6.6.1. *Framework of government institutions*

For policy-making for and governance of the economic development of South Saarland, different government institutions are relevant, which operate at different levels of scale:

[48] Based on figures from the 'Bericht zur Landesentwicklung' of 1992 and 1997 (Minister für Umwelt Saarland (1992) and Minister für Umwelt, Energie, und Verkehr Saarland (1997)), and the Haushaltsplan of 2012 (budget of the government of Saarland on www,saarland.de)). More precise estimations would require much more information on spending by the Saarland government, the municipalities, and through the GRW and European Structural Funds. This would take more time and effort than is warranted for the purpose of this study.

- The government of the Land is the primary actor: Saarland has its own constitution, and has broad powers in economic development. Further on I will give a detailed account of the institutional framework at this level.
- At the national level, the federal government (Bund) provides the legal and financial framework for industrial and economic development policy, labour market policy, and spatial planning, as discussed in Chapter 5. The most important instrument for regional economic policy at the federal level (especially before the 1990s) is the Joint Task for the Improvement of the Regional Economic Structure ('Gemeinschaftsaufgabe für Verbesserung der Regionalen Wirtschaftstruktur' (GRW)). For the labour market, the most important institutions and programmes are provided at the federal level, with the Federal Employment Agency ('Bundesagentur für Arbeit', before 2004 'Bundesanstalt für Arbeit') as the main executive body. It has its head office in Nürnberg, and 10 regional offices, of which one is for Saarland and Rhineland-Pfalz.
- At the wider regional level, cross-border cooperation arrangements exists since 1970 between Saarland, Lorraine in France, Luxemburg, and parts of Rhineland-Palatinate (Trier and Westpfalz). These were the areas which (in a broad sense) made up the 'Montandreieck', discussed earlier. These arrangements facilitate cooperation on a voluntary basis on topics such as investment in transport infrastructure, spatial planning, education and training, cross-border commuting, place marketing, etc.
- At the local level, municipalities (Gemeinde) and districts (Landkreise) can play only a relatively minor role in economic development; they do have some powers in spatial planning, and in some cases can actively develop and support urban redevelopment projects.

Figure 17 shows the main government entities at different levels of scale with regard to the economic development of South Saarland.



Grey indicates entities (controlled) at the national level, turquoise at the (wider) regional level, blue on a city-region level, and red at a local level.

Figure 17: Government entities at different levels with regard to economic development in South Saarland

As mentioned above, the state government of Saarland is the primary actor with regard to economic development in South Saarland. It has an extensive institutional framework in place. The core institutions of the state of Saarland, are: the parliament ('Landtag'); the cabinet ('Landesregierung'), with a minister-president ('Ministerpräsident') and several ministers; the Ministries which support the cabinet, and the Constitutional Court ('Verfassungsgerichtshof'). The most important Ministers and Ministries for the economic development of Saarland are: the minister-president and Staatskanzlei (minister-president's office), Economic Affairs ('Wirtschaft'), Science ('Wissenschaft'), Education ('Bildung'), Work ('Arbeit'), Transport ('Verkehr'), Energy ('Energie'), Internal Affairs ('Inneres'), and Environment ('Umwelt') (these last two especially for spatial planning).[49] The parliament is chosen for a period of 5 years, and a majority of the parliament has to agree on a cabinet (formed from the parties represented in the parliament). The

[49] Some of these subject areas are normally combined and allocated to one Minister and Ministry; however this varies over the years depending on the ambitions of individual governments.

constitution of Saarland also accords formal roles to the Chamber of Commerce ('Industrie- und Handelskammer'), the Chamber of Trades ('Handwerkskammer'), and the Chamber of Labour ('Arbeitskammer')[50], in the representation of different interests (of businesses, professions, and employees, respectively). These institutions advise the government of Saarland, and work together to implement various programmes and projects.

There are also a number of entities at the state-level, which have a more specific role in the economic development of Saarland. These were often established in the late 1940s and 1950s (partly modelled after similar institutions in other Länder[51]), and are usually (at least partly) controlled and funded by the Land. In the early 1970s, the following entities were in place:

- 'Zentrale für Produktivität und Technologie Saarland' (ZPT) (recently renamed 'Saarland Innovation und Standort' (Saar.is)), which is responsible for business advice, internationalisation, technology transfer, skills development, labour market qualifications, etc. It is funded mostly by the Land but also by the three Chambers and various employers' associations; who are also represented in the presidium that oversees its activities.
- 'Gesellschaft für Wirtschaftförderung Saarland' (GW Saar), which was originally established to promote the export of Saarland products to the rest of West-Germany after reunification, but is now mainly responsible for attracting inward investment. It is owned by the Land.
- 'Landesentwicklungsgesellschaft Saarland' (LEG Saar), which is a development corporation, mainly responsible for the development and project management of public real estate projects, infrastructure projects and industrial sites. It is also owned by the Land.

[50] Saarland and the city-state of Bremen are the only Länder in Germany with a Chamber of Labour.
[51] This is especially true for the Landesentwicklungsgesellschaft, and the Investitionskreditbank, which exist in similar forms in almost all Länder.

- ‘Saarländische Investitionskredit Bank’ (SIKB), which is a development bank. It provides credits, guarantees, and equity participations, to firms that want to invest in Saarland. It is owned for 51.02% by the Land, and for 48.98% by various banks active in Saarland.
- The University of Saarland (‘Universität des Saarlandes‘), and the University of Applied Sciences of Saarland (‘Fachhochschule des Saarlandes‘, since 1991 the ‘Hochschule für Technik und Wirtschaft des Saarlandes‘ and ‘Hochschule der bildenden Künste Saar‘). These receive their funding primarily from the Land.

This institutional framework for economic development at the level of Saarland, is shown in

Figure 18.

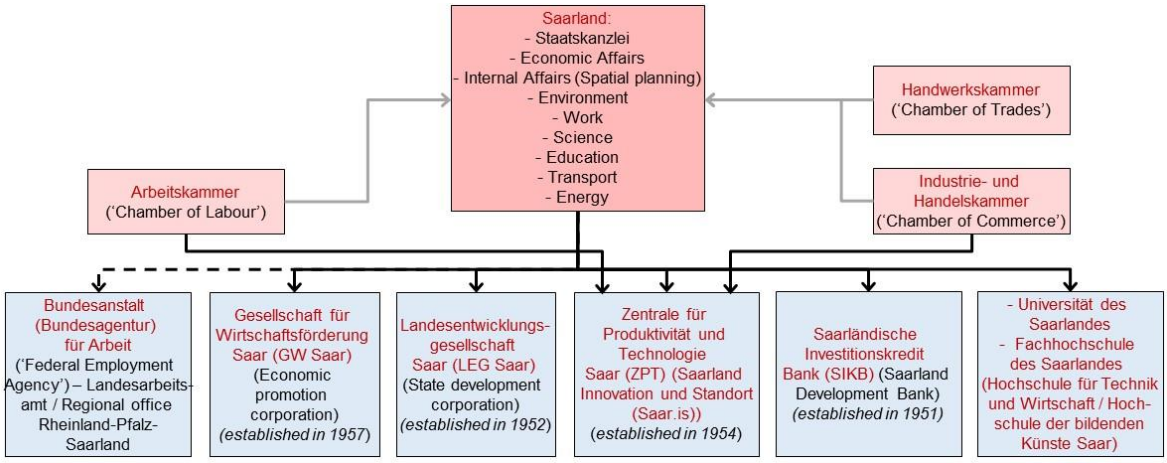


Figure 18: Institutional framework for economic development in Saarland in the early 1970s

6.6.2. *Evolution of policy programmes and initiatives*

Because the Land is the primary actor, changes in the government of Saarland will be the most significant factor in the evolution of policy programmes and initiatives in economic development. Before 1985 the government was made up by CDU-dominated coalitions, led by minister-presidents Franz-Josef Röder (1959-1979) and Werner Zeyer (1979-1985). In 1985 the SPD won the elections and enacted some important new focal points in

economic development policy, under minister-presidents Oskar Lafontaine (1985-1998) and Reinhard Klimmt (1998-1999). Since 1999 the government has again consisted of CDU and CDU-dominated coalitions, led by minister presidents Peter Müller (1999-2011) and Annegret Kramp-Karrenbauer (2011-date), which have more or less continued along the lines of the previous SPD-led governments but in new formats. In Table 12 the various governments in Saarland since 1970 are listed.

1970-1977	'Christlich Demokratische Union Deutschlands Saar' (CDU)	Franz-Josef Röder
1977-1985	'Christlich Demokratische Union Deutschlands Saar' (CDU), and 'Freie Demokratische Partei / Demokratische Partei Saar' (FDP / DPS)	Franz-Josef Röder (1977-1979) Werner Klummp (1979) Werner Zeyer (1979-1985)
1985-1999	'Sozialdemokratische Partei Deutschlands Saarland' (SPD)	Oskar Lafontaine (1985-1998) Reinhard Klimmt (1998-1999)
1999-2009	'Christlich Demokratische Union Deutschlands Saar' (CDU)	Peter Müller
2009-2012	'Christlich Demokratische Union Deutschlands Saar' (CDU), 'Freie Demokratische Partei / Demokratische Partei Saar' (FDP / DPS), and 'Bündnis 90 / Die Grünen Saarland'	Peter Müller (2009-2011) Annegret Kramp-Karrenbauer (2011-2012)
2012-date	'Christlich Demokratische Union Deutschlands Saar' (CDU), and 'Sozialdemokratische Partei Deutschlands Saarland' (SPD)	Annegret Kramp-Karrenbauer

Table 12: Governments in Saarland and their prime-ministers since 1970

We can distinguish between the following episodes:

- Episode 1 (until 1985): Inward investment and improving infrastructure connections.
- Episode 2 (1985-1999): New programmes in STI and business support.
- Episode 3 (1999-date): Cluster-based policies and new challenges.

An overview of the main focal points in each episode is given in Table 13.

	Special support steel industry during steel crisis	Active labour market policy for redundancies	Inward investment / business attraction	Science, Technology, Innovation (STI) policies	Entrepreneurship / business support	Training / skills policy	Upgrade of built environment / Urban regeneration	Highlights
Episode 1 (until 1985)	●	●	●		•	•	●	• Successive CDU- and CDU-FDP-coalition governments. • Strong emphasis on attracting inward investment ('Ansiedlung'); especially successful (on the longer run) in the automotive sector. • Large investments in upgrading the built environment, mainly new transport infrastructure (especially in the late 1960s / early 1970s), and in making new industrial sites available.
Episode 2 (1985-1999)	●	●	•	●	●	•	●	• Successive SPD-governments. • Continuing support for steel industry; policy towards local control. • Set up of programmes for science, technology and innovation, including attraction of new research institutes and centres to the University of Saarland (in IT / computer science, biotechnology, nanotechnology, etc.) • Programmes to support start-ups and entrepreneurship by SMEs. • Investment in (re)development of sites once occupied by heavy industry, by local governments and also by Saarland.
Episode 3 (1999-now)			•	●	●	•	●	• Successive CDU- and CDU-dominated coalition governments. • Continuation of policy for science, technology and innovation, but cluster-based. • Development of new industrial sites because of a lack of large locations. • New programmes for promotion of Saarland as tourist / leisure destination.

Table 13: Development of policy programmes and initiatives in South Saarland

Overall, the development of initiatives and policies in South Saarland has shifted from an emphasis on inward investment to an emphasis on Science, Technology, Innovation (STI) policies and entrepreneurship / start-up support. Sizeable investments in upgrading the

built environment have complemented this shift, but were more secondary. Training and skills have not been a special focal point for policy, but the vocational training system has been a consistent strength (as also discussed in the previous Chapter). Despite the changes in emphasis (and some of the rhetoric surrounding these[52]), the development of policy for South Saarland, has been characterised by much continuity and gradual change. Policy efforts were undertaken in a relatively coordinated manner, both between different policy domains and between different actors. Furthermore, financial support from both the federal government (within the framework of cooperative federalism in Germany) and European structural funds, has been substantial.

Episode 1 (until 1985): Inward investment and improving infrastructure connections

As mentioned earlier in section 6.3.2, the Saarland economy coped with a crisis in coal mining ('Kohlekrise') in the early and middle of 1960s. The policy response to diversify and strengthen the economic base was delayed, because of opposition from mainly the steel industry, and the Saarland government's lack of financial resources. However, after Saarland was seriously hit by the brief recession in the German economy of 1966 and 1967, and unemployment rose further, new policies in especially attracting inward investment and the building of new infrastructure were quickly implemented. These policies, together with some complementary measures in spatial planning and cross-border cooperation with especially Lorraine and Luxemburg, formed the core of economic development policy in Saarland until 1985.

The first step in the development of these policies, came when the Saarland government petitioned the federal government through a Memorandum in 1967, asking for support because of its current economic and financial difficulties and its lagging development

[52] For example, in the SPD-manifesto ahead of the elections in 1985: "The current policy of fearfulness and inaction must end. Saarland needs a comprehensive programme for economic renewal. It should be endorsed by all progressive forces and realised collectively." ("Mit der bisherigen Politik der Ängstlichkeit und Tatenlosigkeit muβ Schluβ sein. Das Saarland braucht ein umfassendes Programm der wirtschaftlichen Erneuerung. Es muβ von allen vorwärtsdenkenden Kräften getragen und gemeinsam verwirklicht werden.") (SPD Saar, 1985, p. 15).

since the reunification with West-Germany in 1957: “the great political success of the reunification with the Federal Republic of Germany, should not now be diminished in hindsight, because the necessary, supplementary measures remain unimplemented or are not enacted on time.”[53] (Regierung des Saarlandes, 1967, p. 6). This Memorandum requested additional funds from the Federal government to further intensify the support for inward investment to create additional employment to offset job loss in coal mining and iron and steel. Furthermore, it asked for a number of measures to improve infrastructure connections. In 1968 and 1969, a planning group (‘Planungsgruppe’) at the Prime minister’s office developed a programme (‘Strukturprogramm’) to further detail these policies, and develop these into a coordinated set of measures (Plannungsgruppe beim Ministerpräsidenten des Saarlandes, 1969). At the same time, the Joint Task for the Improvement of the Regional Economic Structure (‘Gemeinschaftsaufgabe Verbesserung der regionalen Wirtschaftsstruktur’ (GRW)) was created by the Federal Ministry of Economic Affairs in 1968, which is jointly funded by the federal government (50%) and the states (50%). The scheme works with Action Programmes for 5-year periods, and for Saarland the first Action Programme (‘Aktionsprogramm Saarland-Westpfalz, Teilbereich Saarland’) was based on the earlier work of the planning group (Minister für Wirtschaft, Verkehr, und Landwirtschaft Saarland, 1969).

Investment in infrastructure mainly entailed the extension of the motorway network in Saarland, and the incorporation of the region within the national and transnational motorway network. This included extending the motorway from Mannheim to Saarbrücken across the border into France, a motorway northwards connecting Saarland to Koblenz and Cologne, and a motorway along the Saar-river in the direction of Luxemburg and Brussels (Burtenshaw, 1972; Burtenshaw, 1976). At the same time also the railway connections were extended and upgraded, with e.g. an intercity rail connection from Paris to Frankfurt over Saarbrücken in 1970. Moreover, a regional

[53] “Der groβe politische Erfolg der Wiedervereinigung mit der Bundesrepublik sollte nicht nachträglich dadurch geschmälert werden, daβ die noch notwendigen ergänzenden Maβnahmen unterbleiben oder nicht rechtzeitig in Angriff genommen werden”.

airport opened near Saarbrücken in 1969 (Burtenshaw, 1972). Another major investment, for which construction started in the early 1970s (but not fully realised until the mid-1980s), was the canalisation of the Saar-river from Saarbrücken to its confluence with the Moselle, which would make the river suitable for inland navigation of bulk goods (Burtenshaw, 1976). The main beneficiary of this would be the iron and steel industry, as it enabled easier and cheaper transport of iron ore and coal to and from Saarland.

The attraction of inward investment comprised of investment grants of 15 to 20% in areas affected by the closure of the coal mines, through the programme of the GRW (Minister für Wirtschaft, Verkehr, und Landwirtschaft Saarland, 1969). These investment grants complemented a series of incentives (e.g. tax rebates, low-interest loans, and premiums) implemented under less comprehensive and more specific federal programmes for specific parts of Saarland, such as the Federal Development Town ('Bundesausbauort') programme of 1959 and the Coalfield Adaptation Law ('Steinkohle-Anpassungsgesetz') of 1968. The highest grants and tax rebates were available in the heavily affected eastern part of South Saarland around Neunkirchen and St Ingbert; but also in other centres in South Saarland, such as Saarbrücken, Völkingen, Saarlouis, Homburg and Lebach, investment grants and incentives were offered (Burtenshaw, 1972). GW Saar was made responsible for promoting Saarland as a favourable location to invest, and together with the SIKB it managed the day-to-day operations of this system of grants and incentives (Hahn, 2003). As noted, this policy drew in a lot of new investment into Saarland, especially from 1968 until 1973 (Burtenshaw, 1976; Giersch, 1989; Giersch, 2007; Warscheid et al., 2011). In addition to the investment grants and other incentives however, these firms were also attracted by the availability of a pool of well-qualified workers, who were used to industrial labour (e.g. shift work, physical strain, overtime, etc.), in a situation where there was full employment everywhere else in Germany (Giersch, 2007; Warscheid et al., 2011). Also the strategic location of Saarland in a more economically integrated Western Europe played a role, which was reinforced by the large investments in infrastructure (Giersch, 2007). Some of the new investments that were attracted by the prospect of low costs (as a result of the grants, incentives, and relatively

low wages (also from female employment)) – in e.g. textiles, electronics and household appliances – did not take root and disappeared after several years (Der Spiegel, 1977; Giersch, 1989). However, in especially automotive and investment goods, a more lasting match was found between the requirements of the establishments and the assets of the region. For these sectors, the ongoing support for inward investment also after 1973, continued to be important for investments to further expand existing facilities (Giersch, 1989; Giersch, 2007).

Attracting inward investment and expanding and upgrading transport infrastructure, were the two main focal points in the economic development policy in Saarland until the early 1980s. These policies were complemented by interventions in three other domains: spatial planning, vocational and further education, and cross-border cooperation.

In the spatial planning office of the Saarland government, the need for diversification within and expansion of the economic base of the Saarland economy was already perceived comparatively early (Jost and Moll, 2007). Already in 1964 it started to make an inventory of available sites for the settlement of new plants; the so-call 'atlas of industrial sites' ('Industrieflächenatlas') (Jost and Moll, 2007). 50 sites were identified, which built up to 17 'industrial focal points', the most important of which were all in South Saarland. These 50 sites, together with several other large sites which were identified in addition, were included in the Strukturprogramm of 1969, with estimations of the investments needed for preparation and reclamation. The focal points for industrial development were formalised in 1970 in the Spatial Planning Programme ('Raumordnungsprogramm') (Minister des Innern, 1970). The availability of these sites and the certainty that could be provided with regard to planning status, facilitated the efforts to attract inward investment significantly (Jost and Moll, 2007). Based on the positive experiences with the integral Strukturprogramm for Saarland of 1969, spatial planning became increasingly integrated with the coordinated planning for different policy domains (population, employment, economy, transport, environment, social policy, etc.) in the late 1970s and early 1980s. Thus there was a system of regional development programming

('Landesentwicklungsprogrammierung') from 1978 onwards (which was abolished in 1994). The basic policy to concentrate industrial activities within the industrial focal points, most of which were in South Saarland, remained the same throughout this period (Minister für Umwelt, Raumordnung und Bauwesen Saarland, 1979).

Vocational training was reformed in Germany as a whole, and so also in Saarland, in the late 1960s and early 1970s to increase the formation of more general skills, needed to cope with increasing uncertainties in the labour market (Plannungsgruppe beim Ministerpräsidenten des Saarlandes, 1969; Bosch, 2010). A stepwise programme was introduced with first basic training, and next increasingly more specialised training. The dual education system with training in both schools and apprenticeships continued to exist, although more support was made available for apprenticeships that were not tied to a specific company. Moreover, the institutes for vocational education, would start to offer courses and programmes aimed at the skills development and retraining of the existing workforce. Also the ZPT, Chamber of Trades, Chamber of Labour and Chamber of Commerce, labour unions, and the Federal Employment Agency expanded their provision of courses in further education over the years.

In 1970 a Governmental Commission was established between the governments of Germany and France to work on increased cross-border cooperation. A year later also Luxemburg joined this commission. Also in 1971, a Regional Commission was formed between Saarland, Lorraine, Luxemburg and Trier / West Palatinate (both part of Rhineland Palatinate), to give practical shape to cross-border cooperation between the regions. In 1980 a formal agreement was signed between Germany, France and Luxemburg which laid down the basic parameters for the collaboration between the border regions. As is clear from section 6.3.1, the industrialisation processes of Saarland, Lorraine and Luxemburg were closely linked. Initially the idea was that the crisis in heavy industry in the three regions should also be combatted together (Niedermeyer and Moll, 2007; Damm, 2012). At first the emphasis in cross-border cooperation was hence on improving transport infrastructure between the regions and to other economic centres in

Germany, France and Belgium, on common projects (such as 'Saar-Lor-Chemie' and a German-French Business Centre), and on coordination in spatial planning for economic development (Plannungsgruppe beim Ministerpräsidenten des Saarlandes, 1969). However, little progress was made in these areas (with the exception of improving infrastructure; though this has taken much longer than anticipated), because funding and practical organisation could not be resolved (Niedermeyer and Moll, 2007). Behind this however, is the fact that by the late 1970s economic cooperation in this way, was no longer a shared interest: the Luxemburg economy moved away from (heavy) industry altogether into banking and financial services, and also in Lorraine the economy was (centrally) guided away from (heavy) industry in favour of coastal locations in France, where prospects were seen as more favourable (Damm, 2012). From the late 1970s the main focal points of cross-border cooperation hence shifted to other domains: resolving impediments in cross-border commuting, collaboration in education and research, shared marketing and development of tourism, coordination in energy provision, etc. (Niedermeyer and Moll, 2007; Damm, 2012).

Episode 2 (1985-1999): New programmes in STI and business support

At the elections in 1985 the SPD under its leader Oskar Lafontaine, achieved a majority in the Landestag, after the CDU had dominated the political landscape in Saarland ever since reunification in 1957. The CDU-FDP-coalition governments under Werner Zeyer of the late 1970s and early 1980s had tried to give new policy impulses to facilitate structural change in Saarland (as laid down for example in the Guidelines for Economic Development Policy (Minister für Wirtschaft, Verkehr, und Landwirtschaft Saarland, 1976) and another Memorandum to the federal government in 1977 (Regierung des Saarlandes, 1977)), but were plagued by the poor state of the public finances in Saarland and the high costs of supporting the steel industry. Moreover, from 1983 Saarland received far less money through the GRW-arrangement, and the Saarland government decided to partly compensate for part of these cut-backs by instituting and paying for its own

programme[54], with a similar focus on business attraction and support for investment (Anderson, 1992).

Through various ways the new SPD-government managed to gradually free up resources for a new impetus in economic development policy, and reduce financial commitments to the steel industry and coal mining:

- Funds coming in from the European structural funds increased significantly in the mid-1980s, as the allocation from the funds became less piecemeal and more programme-based, and as Saarland could benefit from several special programmes such as RESIDER and RECHAR. This allowed the Saarland government and municipalities to invest in redevelopment projects and in programmes for technology transfer from universities and research institutes to businesses.
- The SPD-government managed to stop the drain on the finances of the Land from the ongoing support to Saarstahl, by lifting the option on a majority of the shares in Saarstahl and pushing for a merger with Dillinger Hütte (under the larger umbrella of Usinor-Sacilor). This process was helped considerably by the fact that the costs of further restructuring were much reduced as a result of the construct with the Stahlstiftung, followed by a brief upswing in global steel from 1988 until 1990 (after which in 1992 issues with Saarstahl continued, until a final resolution in 2001).
- By again petitioning the Federal government through a Memorandum in 1986 (Regierung des Saarlandes, 1986), and moreover taking the case (together with Bremen) of 'structural financial distress' ('Haushaltsnotlage') to the Federal Constitutional Court ('Bundesverfassungsgericht'). Saarland and Bremen eventually won this case in 1992. As a result Saarland was awarded more funding from the Federal government and more affluent Länder, and it managed to reduce its debts in the 1990s (the so-called 'Teilentschuldung' (partial debt relief)).
- In 1997 a compromise was reached on the future of coal mining in Germany between the Federal Government, the governments of Saarland and North Rhine-Westphalia,

[54] 'Landesprogramm zur Verbesserung der regionalen Beschäftigungslage und der Wirstschaftsstuktur'

the coal mining companies and the labour unions. As part of this compromise, the shares of the Saarland government (27%) and the federal government (63%) in Saarbergwerke AG were sold to Ruhrkohle AG to form one (privately owned) coal mining company for the whole of Germany. Furthermore, federal subsidies to coal mining would be reduced considerably by 2005, and so further mine closures and restructuring operations would be necessary. As a further job loss of about 12,000 was foreseen, Saarland would receive extra funding for a programme of economic development measures to compensate for this (laid down in another Memorandum in 1997 (Regierung des Saarlandes, 1997)). This extra funding would also counteract the reduction in funding for Saarland from the GRW from the mid-1990s as a result of the incorporation of the East-German Länder within this arrangement (Minister für Umwelt, Energie, und Verkehr Saarland, 1997)

Increasingly the main focal points of economic development policy shifted towards promoting technological development and innovation, and supporting entrepreneurship and start-ups. These policies were complemented by the development of technology centres and science parks, partly on sites previously used by the steel industry or coal mining, and by changes in further education.

The impulses to Science, Technology and Innovation (STI), and the encouragement of entrepreneurship and start-ups, consisted of:

- The establishment and attraction of many new research centres and institutes affiliated to the University of Saarland (to complement the one Fraunhofer Institute[55] already established in 1972)[56].

[55] Fraunhofer Institute in Nondestructive Testing ('Fraunhofer-Institut für Zerstörungsfreie Prüfverfahren')
[56] For example: the Leibniz Institute for New Materials ('Leibniz-Institut für Neue Materialien'; established in 1987), the Fraunhofer Institute for Biomedical Engineering ('Fraunhofer-Institut für Biomedizinische Technik'; started in 1987); the Max Planck Institute for Informatics ('Max-Planck-Institut für Informatik'; established in 1988), the German Research Centre for Artificial Intelligence ('Deutsche Forschungszentrum für Künstliche Intelligenz'; established in 1988, and incorporating the already existing Institute for Information Systems ('Institut für Wirtschaftsinformatik')), the International Conference and Research Centre for Computer Science in Schloss Dagstuhl (initiated in 1988; with now also the Leibniz Centre for

- Reforms in energy policy. Building on past efforts to develop new technologies for the use of coal in the production of energy by Saarbergwerke AG and with coal mining in terminal decline, the SPD-government started a programme to promote and incentivise technological development in energy efficiency (in especially district heating and energy saving), and renewable energy sources (Minister für Unwelt Saarland, 1987). One concrete measure was the establishment of an Energy Agency ('Energie-Agentur') in 1987 to develop and implement energy saving measures in firms and government organisations.
- Programmes for technology transfer. Through the Zentrale für Produktivität und Technologie Saarland (ZPT) the government of Saarland already offered advice and mediation on technological development since 1978. In 1985 this was accompanied by offices ('Kontaktstellen') for technology transfer to businesses, at both the University of Saarland and the University of Applied Sciences of Saarland (Minister für Umwelt Saarland, 1987), and a Research and Development program ('Forschungs- und Technologieprogramm') for small and medium-sized businesses, in which the Ministry of Economic Affairs would consult and cooperate directly with firms in the development of R&D projects, and provide further support when necessary (Minister für Umwelt Saarland, 1987; Minister für Umwelt Saarland, 1992; Minister für Umwelt, Energie, und Verkehr Saarland, 1997).
- Increased (financial) support for start-ups and SMEs. For guidance and coaching start-ups and SMEs could already turn to the Chamber of Commerce, the Handwerkskammer and the ZPT. Also grants, low-interest loans and guarantees were available for start-ups and firms through respectively Federal programmes, and the Saarländische Investitionskredit Bank (SIKB) with affiliate institutions. In 1985 the government of Saarland tried to further promote start-ups by introducing a premium of 20% of first equity capital (Minister für Umwelt, 1987), and in 1996 it started the 'GründungsInitiative Saar' (Start-up initiative Saar), to make the process of establishing a company easier and more streamlined (Minister für Umwelt, Energie,

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Informatics ('Leibniz Zentrum für Informatik')), and the Korea Institute of Science and Technology in Europe (founded in 1996).

und Verkehr Saarland, 1997). It also introduced a venture capital programme for recently established companies in 1984, which was further expanded in 1997 (Minister für Umwelt, 1987; Minister für Umwelt, Energie, und Verkehr Saarland, 1997).

The programme for physical redevelopment during this episode consisted on the on hand of the development of technology centres and science parks, to accompany the shift to STI-policies, and on the other hand of the redevelopment of former industrial sites for other economic activities in e.g. retail, leisure, manufacturing and business services. Especially in the early and mid-1980s these projects were often driven by municipalities rather than the Land. The city of Saarbrücken created the 'Gesellschaft für Innovation und Unternehmensförderung'[57] (GIU) in 1984, to redevelop a part of the district of Burbach with considerable financial support from European structural funds into the 'Saarbrücker Innovations- und Technologiezetrum' [58] (SITZ; in 2002 renamed 'IT Park Saarland'): a technology centre in which entrepreneurs and firms (mainly in IT) can locate together and receive advice and support (Warscheid et al., 2011). In addition, a 'Science Park' with start-up support and technological facilities was developed on the campus of the University of Saarland near Saarbrücken in the late 1990s (Minister für Umwelt, Energie, und Verkehr Saarland, 1997). Through the late 1980s and 1990s, other development companies similar to the GIU were set up in South Saarland (at Landeskreis-level), which established more, but smaller, start-up and technology centres (Warscheid et al., 2011).

From 1994 onwards GIU was furthermore responsible for the redevelopment of part of the site of the iron and steel plant in Saarbrücken Burbach into 'Saarterassen', again with support from the European structural funds. After decontamination (which required significant efforts), the site was developed into a mixed business park with a focus on services, new media, telecommunications, and craft ateliers (Warscheid et al., 2011; Dörrenbächer, 2013). Also sites previously used by the steel industry in Neunkirchen and

[57] Corporation for Promoting Innovation and Entrepreneurship.
[58] Saarbrücken Innovation and Technology Centre.

Völklingen were redeveloped (with considerable support through the Federal Urban Development Promotion Act programme, and European structural funds): in Neunkirchen the site in the town centre was developed into a retail and leisure centre from 1984 until the mid 1990s, and in Völklingen the old iron works complex was converted into a museum and art centre after closure in 1986 (and was named a UNESCO World Heritage site in 1994) (Warscheid et al., 2011; Dörrenbächer, 2013). In 1992 the government of Saarland established a development company for the Land as a whole, mainly for the development of industrial and commercial sites: 'Saarland Bau und Boden'[59] (SBB). The best known project the SBB undertook in the 1990s was the Ford Industrial Supplier Park in Saarlouis (opened in 1998) in which the first-tier suppliers were located on the same site as the car assembly plant of Ford in Saarlouis and production of the different parts is coordinated and synchronised (Schulz and Dörrenbächer, 2007).

Also in further education some new measures were introduced by the government of Saarland. By means of the 'Zukunftqualifikationsprogramm'[60] (1986), the 'Aktionsprogramm zur Förderung der beruflichen Weiterbildung'[61] (1991) and the 'Saarländisches Weiterbildungs- und Bildungsurlaubgesetz'[62] (1990), a system of provisions, subsidies and incentives came into being to facilitate and promote further education and attaining additional qualifications for existing employees and unemployed (Minister für Umwelt Saarland, 1987; Minister für Umwelt Saarland, 1992).

Episode 3 (1999-date): Cluster-based policies and new challenges

When the CDU regained power in Saarland in 1999, the new government led by Peter Müller did not alter the main focal points in economic development policy. However, it did change some important characteristics of especially the Science, Technology, Innovation policies. Also in entrepreneurship and business support, further education and

[59] Saarland Construction and Land.
[60] Future Qualifications Programme.
[61] Action Programme for the Promotion of Further Education.
[62] Saarland Law for Further Education and Training Leave.

skills, and the development of the built environment of Saarland, there were some new emphases.

In the 1980s and 1990s some new technological fields and sectors emerged in South Saarland, alongside the older strongholds in steel, energy and automotive, partly as a result of the policies enacted and partly because of more autonomous developments. In particular, strengths emerged in information technology (IT) and to a lesser extent in nanotechnology and biotechnology. Also new development opportunities arose in logistics (due to the implementation of the Schengen-agreement in 1995) and higher education. In the Innovation Strategy ('Innovationsstrategie') of 2001, with some revisions in 2004, the government of Saarland implemented a cluster-based approach to further develop these fields. Six spearheads for the Saarland economy were named which were to be developed as clusters: information technology, nano- and biotechnology, automotive, energy, logistics and knowledge (Ministerpräsident des Saarlandes, 2001; Ministerpräsident des Saarlandes, 2004). For IT, nano- and biotechnology and automotive, cluster-bodies were established in 2003 to bring different actors within these fields together and facilitate coordination. In the other 'clusters' responsibility for the development was kept more centralised within either the Ministry of Economic Affairs or ZPT. A temporary staff unit was established at the Prime-Minister's Office ('Staatskanzlei') from 2001 until 2004, to act as a change agent within the Saarland government, and coordinate about 80 project initiatives through which the strategy was implemented (Anne Otto, personal communication). This staff unit was directed by a Steering Committee, consisting of the Prime Minister, several other Ministers and August-Wilhelm Scheer, a professor in IT at the University of Saarland and successful entrepreneur (founder of IDS Scheer). After 2004, when the main initiatives within the Innovation Strategy were set up and progressing, the staff unit and Steering Committee were dissolved, and all responsibilities for the strategy were more structurally embedded within the Ministry of Economic Affairs. In 2007 the Innovation Strategy moved into the second phase. This was kicked off by the formulation of 100 projects by 11 working groups with more than 100 representatives from various segments of the Saarland

economy (Ministerpräsident des Saarlandes, 2008; Warscheid et al., 2011). Two more spearheads were added to the existing six: mechatronics and automation, and health care and medical technology.

The actual achievements within the various 'clusters' were varied. In IT and nano- and biotechnology the already strong knowledge base within South Saarland could be further strengthened with new research institutes.[63] While for mechatronics and automation, a new research centre was established in 2009.[64] In automotive, energy, and logistics, the knowledge base remains poorly developed however (Lerch, 2005); although new initiatives are being deployed to address this. IT continues to grow as an important segment within the South Saarland economy, while expansion in nano- and biotechnology, health care and medical technology, and mechatronics and automation, remains mainly aspirational (Lerch, 2005; Warscheid et al., 2011).

Under the banner of the Innovation Strategy (as 'acceleration factors'[65]), as well as alongside the strategy, several new initiatives were enacted in entrepreneurship and business support and skills development and further education. For start-ups the 'Saarland Offensive für Gründer' (Saarland Offensive for Start-ups) and 'Business Angels network' were launched in 2000, to succeed the 'GründungsInitiative Saar', with more emphasis on outreach, active encouragement, and coaching by existing entrepreneurs (Warschied et al, 2011). Also the financial instruments available for start-ups and SMEs at the SIKB and affiliate institutions, were streamlined (Saar Revue, 2001). In skills development and further education, different institutes in education and research were brought together as part of the 'knowledge-cluster', and new initiatives were introduced, e.g. to expand the provision of further education at the Universities, to develop courses

[63] Such as the Max Planck Institute for Software Systems ('Max Planck Institut für Softwaresysteme'; 2004), Intel Visual Computing Institute (2009), Material Engineering Center Saarland (2009), and the Helmholtz Institute for Pharmaceutical Research ('Helmholtz Institut für Pharmazeutische Forschung'; 2009).
[64] The Centre for Mechatronics and Automation technology ('Zentrum für Mechatronik und Automatisierungstechnik').
[65] 'Beschleunigungsfaktoren'

offered online, and improve certification for skills (Ministerpräsident Saarland, 2001; Ministerpräsident Saarland, 2008). The 'Lernzeil Produktivität' (Learning Objective Productivity) programme – which became operational in 1995 - made allowances of up to 70% of training costs available to support further education of employees in the face of technological change, especially in several growth branches such as call centres, automotive suppliers, and tourism (Arbeitskammer, 2005; Warschied et al., 2011).

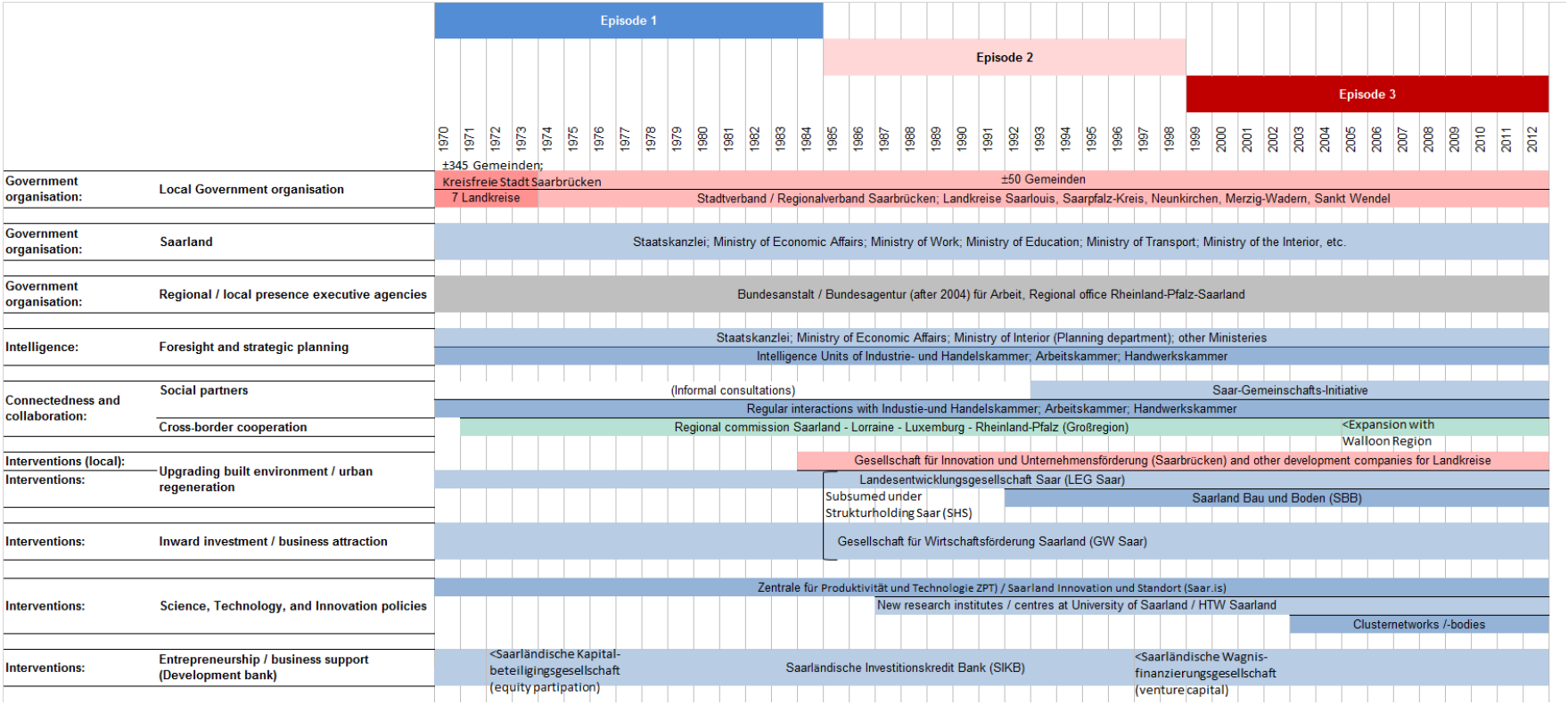
In upgrading the built environment, the focus turned on the one hand to the development of new commercial and industrial sites, and on the other hand to the further development of Saarland as a tourism and leisure destination. With the 'Masterplan für Gewerbe und Industrieflächen' (Masterplan for Commercial and Industrial Sites) formulated in 2007, the Saarland government wanted to tackle the shortage of large plots of land available for industrial and commercial development. In this Masterplan six new sites are identified for new development with co-funding by the European Regional Development Fund (GW Saar, 2007; Warscheid et al., 2011). The 'Tourism Masterplan for Saarland'[66] (2001) and 'Tourism Strategy Saarland 2015'[67] (2009), formulate a programme to upgrade Saarland as a tourism and leisure destination (Minister für Wirtschaft, 2001; Minister für Wirtschaft und Wissenschaft, 2009). Important parts of this programme are the improvement of hiking and bike routes, refurbishment of the convention centre in Saarbrücken, construction of a large event hall, facilitating new tourism accommodation, the creation of new attractions (as well as initiatives in marketing, information provision, services to tourists, etc.).

6.6.3. *Evolution of governance arrangements*

Over the years new governance arrangements have been set up, and other arrangements have been altered. With regard to economic development in South Saarland, governance arrangements seem to have generally stayed intact: arrangements do not seem to have

[66] 'Touristische Masterplan für das Saarland'
[67] 'Tourismusstrategie Saarland 2015'

been abolished and replaced with new ones. Over the course of time, some existing arrangements have been assigned new tasks (and sometimes lost other tasks); and new governance arrangements were established alongside existing arrangements. The development of governance arrangements from 1970 onwards, is shown in Figure 19.



Grey indicates entities (controlled) at the national level, turquoise at the (wider) regional level, blue on a city-region level, and red at a local level.

Figure 19: Development of governance arrangements in South Saarland

As outlined in section 3.3, governance arrangements may have three main functions with regard to adaptation and resilience:

- They can serve to connect different parties and interests.
- They can produce strategic intelligence, such as analysis, foresight and development of strategic options.
- They can be aimed at managing specific policy programmes.

For each of these functions, I will discuss how arrangements have developed.

Connectedness and collaboration

Connectedness was already strongly developed before South Saarland went through the changes in its economic structure, and this connectedness was maintained and expanded to further enable effective management of the adaptation process. Connectedness is evident at three levels. First, regular consultations and interaction between the government of Saarland and different parts of the local economy through the main representative organisations of Industrie- und Handelskammer (Chamber of Commerce), Arbeitskammer (Chamber of Labour) and Handwerkskammer (Chamber of Trades). Second, within their respective fields (industry, employees, and professions), these organisations in turn also connect different actors. Within industries and (large) firms there will furthermore be frequent discussion and interaction between employers, employees, and other stakeholders, through Works Councils, Supervisory Boards (with often (former) representatives from labour unions, civil society organisations, and governmental bodies), and wage bargaining arrangements. And third, besides these formal arrangements, there are also well-developed informal networks in Saarland. Because of its relatively small size and its specific culture, people from different institutions know each other well, and frequently meet at events and within associations to discuss issues on an informal basis. In addition, interlocking positions at different organisations and job changes from one organisation to another organisation, are not uncommon.

These existing arrangements have been further expanded with the establishment of the 'Saar-Gemeinschafts-Initiative' in 1993, which formalised the involvement of different parties and interests in the society of Saarland in coping with economic challenges (Lerch, 2007; Lerch and Simon, 2011). It played an important role in overseeing and negotiating the final reductions in coal mining in the 1990s and 2000s. Since then, its role has diminished. In addition, connectedness was sometimes expanded on an ad-hoc basis to deal with particular issues, as in the case of regular meetings between government institutions and social partners with regard to the restructuring of the steel industry in the late 1970s and 1980s, and the Steering Committee and staff unit to implement the Innovation Strategy from 2001 until 2004.

With the deepening and formalisation of cross-border cooperation (also facilitated by the European Union), connectedness now also stretches beyond the borders of the Land. This connectedness is no longer only limited to the Saarland government, but there are also arrangements in place in which local governments respecitively social partners meet with their counterparts from other regions, such as the EuRegio SaarLorLux+ (1995), Zukunft SaarMoselle Avernir (1997), the Interregional Council of Labour Unions[68] (1976), the Working Group of Chambers of Commerce and Trades[69] (1990), the Economic and Social Committee[70] (1997), etc. (Niedermeyer and Moll, 2007; Wille, 2011). This has expanded the range of options open to Saarland, in dealing with labour market shortages, coordinating infrastructure and planning decisions, and place-branding and tourism marketing.

The well-developed connectedness between the different actors has greatly facilitated the adaptation process. The policy programmes were on the whole underwritten by all political parties and all social partners, which importantly contributed to the continuity and coherence within the development of policy. Furthermore, the Chambers of

[68] 'Interregionaler Gewerkschaftsrat'
[69] 'Arbeitsgemeinschaft der Industrie- und Handelskammern'
[70] 'Wirtschafts- und Sozialausschuss der Großregion'

Commerce, Trades, and Labour, and the employers' associations and labour unions, organised cooperation and understanding among their support, and often took on additional tasks to complement government policy, in e.g. business support, training, and guidance and mediation in finding work. Only in the mid-1960s (from about 1963 until 1967) and again in the early 1980s (from about 1982 until 1985), there were periods of impasse. In the 1960s efforts to diversify the economy were deferred, partly because it would hurt the interests of steel companies, and in the early 1980s disagreements emerged about the management of the steel crisis. Characteristic for both these episodes was a lack of financial resources, and a divergence of interests with regard to what the priorities should be between CDU and SPD, and between industry and the labour unions (see Hahn, 2003). Crucial for breaking these spells were: a growing deterioration of the situation until the necessity for action became undeniable, and an increasing realisation that the issues could not be tackled without support from outside. Once this was the case, and – crucially – additional financial support by the federal government and in the 1980s also by the European Community, was provided, the conflicts and stalemates were resolved quickly.

Strategic intelligence and strategic planning

In the 1960s various academic studies about the need for diversification of the economy in South Saarland came out (e.g. Sievert and Streit, 1964; Müller, 1967; Isenberg, 1968); insights of which eventually found their way into the Saar-Memorandum of 1967 (Regierung des Saarlandes, 1967) and subsequent Strukturprogramm Saar (Plannungsgruppe beim Ministerpräsidenten des Saarlandes, 1969) (see Hahn, 2003). The shift to Science, Technology, Innovation policies from 1985 onwards was to an important extent a result of a federal policy shift towards more emphasis on science and technology in the early 1970s, which Saarland embraced somewhat belatedly. The intellectual basis of the Innovation Strategy of 2001 came partly from August-Wilhelm Scheer (a professor in IT at Saarland University and entrepreneur) and several of his students (Anne Otto, personal communication). The 'intelligence system' in which these ideas were discussed, assessed, detailed, and evaluated, has grown more elaborate and more sophisticated

over the years, as more expertise and experience with regard to economic development in Saarland in general and structural change in particular, has been built up.

Within the governance framework, the generation of strategic intelligence takes place at several places. First of all, at the Ministries of the Land, and at the entities which are mainly responsible for the execution of policies, such as the Strukturholding Saar and the Zentrale für Produktivität und Technologie (ZPT; now renamed Saar.is). But also the Industrie- und Handelskammer (Chamber of Commerce), Arbeitskammer (Chamber of Labour) and Handwerkskammer (Chamber of Crafts), have their own intelligence units, as one of their main tasks is to advise the government of Saarland. Furthermore, because of their involvement in policy-making and in strategic decisions at firms, also employers' associations and labour unions, develop their own intelligence. Until the mid-1990s there also was a lot of expertise at the University of Saarland about the economic development of the region (within Department of Economics and Department of Geography); however, this has largely disappeared because of cut-backs and restructuring operations at the University of Saarland in the 1990s (resulting in an increasing focus on natural sciences, engineering and medicine) and the retirement of specific experts (see Arbeitskammer des Saarlandes, 2011, Chapter 2). Since 1994 there is however an Institute for Cooperation between Science and Labour ('Kooperationsstelle Wissenschaft und Arbeitswelt'), co-funded by the University and the labour unions, which regularly investigates socio-economic themes in Saarland. There are still many studies undertaken on the development of Saarland outside of these policy circles (as the sources cited in this Chapter also testify). Typically, this 'intelligence system' thus incorporates multiple perspectives, with also academics and the representative bodies of employers, professions and employees, involved in producing of strategic intelligence. The variety of places where intelligence is present and is being produced, and the variety of perspectives, will contribute to more considered policy-making, as more alternatives are being proposed and discussed.

Managing interventions

With regard to arrangements aimed at managing interventions, already many arrangements existed in various domains before the 1970s (see Figure 18): the Zentrale für Produktivität und Technologie Saarland (ZPT) for business advice, internationalisation, skills development, and other services; the Gesellschaft für Wirtschaftsförderung (GW Saar) for export promotion; the Landesentwicklungsgesellschaft (LEG Saar) for developing and managing public real estate projects; and the Saarlandische Investitionskredit Bank (SIKB) for development finance. Moreover, the Land is the main source of funding of the University of Saarland and the University of Applied Science. Figure 20 shows how in particular the institutional framework for economic development at the state-level in Saarland, has changed and expanded since the early 1970s, as a result of the development of policy programmes and initiatives.

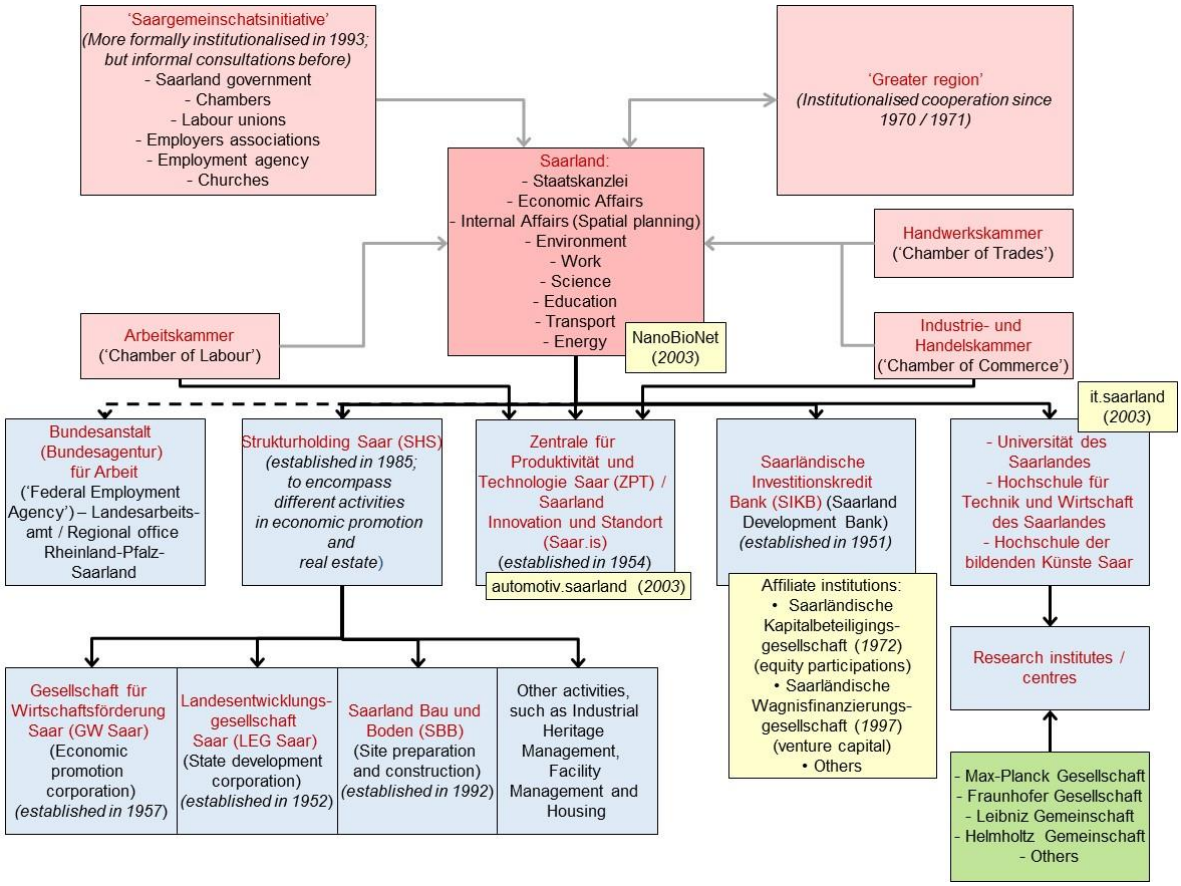


Figure 20: Current institutional framework for economic development in Saarland

The existing institutional framework has thus been very useful for the execution of the policy programmes enacted over the years to guide and support the adaptation process within the economy, and this framework has been expanded and adjusted whenever needed. Changes in the institutional framework to manage interventions, have been driven primarily by the development of policy within Saarland. The main patterns of institutional change that can be observed in the framework for managing interventions, are 'layering' / 'sedimentation' and – to a lesser extent – 'conversion'.

Layering or sedimentation involves adding new elements to the existing framework (see section 3.4). This can be seen in the following instances:[71]

[71] Layering could also be clearly observed in the arrangements for connectedness, discussed earlier. With the establishment of the Saar-Gemeinschafts-Initiative in 1993 a new, more formalised arrangement was

- GW Saar and LEG Saar were also subsumed under one holding ('Strukturholding Saar'), in order to better coordinate the attraction of inward investment and the planning and development of industrial sites and other projects. Saarland Bau und Boden (SBB) was then created in 1992 to implement such projects; thus adding a new entity to contribute to the upgrading of the build environment. Over the years, the Strukturholding Saar took on task in the management of industrial heritage and facility management.
- The Zentrale für Produktivität and Technologie (now Saar.is) expanded its range of options for further education and skills certification, got a central role in facilitating technology transfer from 1978 onwards, and after 2001 took on tasks for managing the clusterbody for automotive.
- Through the Saarländische Investions Kreditbank new affiliate institutions were created (in which also other banks active in Saarland participated), such as the 'Saarländische Kapitalbeteiligungsgesellschaft' in 1972 (aimed at equity participations), the 'Saarländische Wagnisfinanzierungsgesellschaft' in 1997 (aimed at venture capital), and the 'Bürgschaftsbank Saarland' already in 1959 in its first form (aimed at providing guarantees for credit).
- At the University of Saarland and the University of Applied Science, many new research institutes were attached since the mid-1980s, offices ('Kontaktstellen') for technology transfer were created in 1985, and a centre of excellence was set up in Information Technology in 2004 (which acts as the main cluster-body for the IT-cluster).
- At the local level the Gesellschaft für Innovation und Unternehmensförderung (GIU) was established in 1984 by the city of Saarbrücken to undertake the redevelopment of sites within the city. Over the course of the late 1980s and 1990s similar entities were created at Landeskreis-level in other parts of Saarland as well.

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created for interaction between the government of Saarland and the social partners. And since 1970 the institutional arrangements for cross-border cooperation within the 'Greater region' have expanded, not only through the Regional Commission and regular summits between the governments of the constituent parts of the 'Greater region', but also through arrangements between social partners and between local governments across the borders.

Coversion refers to a redeployment of old institutions to new purposes. This can be seen in the following instances:

- The tasks of GW Saar evolved from first just export promotion to mainly attracting inward investment in the late 1960s, and in addition growing and maintaining a network of international partners in the 1980s.
- LEG Saar converted its focus from public real estate projects to developing industrial sites and urban development projects.

6.7. Conclusions

Building on rapid expansion of coal mining and the iron and steel industry, South Saarland industrialised rapidly in the latter part of the 19th century. In this period also close links developed with Lorraine and Luxemburg. During this time a society emerged which was dominated by heavy industry in many respects: not only economically but also in terms of social relations and the built environment (settlement patterns, housing, infrastructure, etc.). In the first part of 20th century, economic development levelled off, as a result of the First and Second World Wars and the changing of hands of Saarland between Germany and France after both wars. As part of the reparations of Germany to France, Saarland was actually defined for the first time in 1919 as a separate territory (made up of parts which previously belonged to Prussia and Bavaria) on the basis of its heavy industry. The dependence on coal mining and iron and steel, together with this chequered history, led to economic problems in the 1960s, after Saarland had reunited with Germany in 1957/1959. Structural change in South Saarland thus already started with the decline in coal mining which began in the 1960s. However, the process of structural change was slow and relatively orderly, as many former employees within coal mining, and later the steel industry and other contracting sectors within manufacturing, found work within growing manufacturing industries (mainly automotive and machinery) and in services. Several new industries in South Saarland have emerged and grown over the years: information technology, logistics, health care, and insurance services.

The steel crisis hit parts of the steel industry in South Saarland (the plants which would eventually combine to form Saarstahl) very hard. But nevertheless a sizeable and now thriving steel industry has been retained. Moreover, mass unemployment and other negative social and economic effects, have by and large been avoided. This was the result of active government support and interventions, by the federal government but especially the Saarland government, which was closely involved in the strategic decision-making at Saarstahl during the restructuring operations and adopted a policy to attain more local control. In 2001 this was finally resulted in Saarstahl and (most of) Dillinger Hütte being subsumed under a foundation, with the primary objective to promote the long-term development of the steel industry and its place within the wider community. Also the legally secured representation of employee interests within the steel companies (through Works Councils and the Supervisory Board), and the powerful labour unions, have been important in preserving the steel industry for South Saarland and mitigating the social and economic impacts during the restructuring operations.

Policy responses with regard to structural change in the regional economy, already started in the mid 1960s, with the decline in coal mining. Initially there was a strong emphasis on attracting inward investment, especially from firms with their home base in other parts in Germany. This policy consisted on the one hand of the provision of investment grants and other incentives, and on the other hand of investments in transport infrastructure and the development of industrial sites. Especially in the late 1960s and early 1970s this policy was quite successful, and many firms invested in new plants in South Saarland. Over time especially investments in automotive and investment goods, developed into new mainstays for the manufacturing sector. After 1985 – when the SPD came to power - the Saarland government finally managed to free up resources for new impulses to economic development policy, and the focus shifted more towards Science, Technology, Innovation policies. New research institutes and centres were established and attracted at the University of Saarland, in particular in Information Technology, biotechnology and nanotechnology. These policies were complemented by

supporting start-ups and entrepreneurship, developing technology centres and science parks, and several new schemes in further education and skill formation. When the CDU regained control in 1999 it effectively continued the emphasis on STI, but made these policies cluster-based. In addition it launched some new initiatives to promote Saarland as a tourism- and leisure-destination and further expand the number of industrial and commercial sites.

The government of Saarland has clearly been the main actor, and possesses a broad range of powers and instruments in economic development. There has been much continuity and gradual development in the evolution of policy, and the programmes and initiatives in various domains have in general been well-coordinated. Governance arrangements for connectedness were already well developed and have expanded slightly through the 'formalisation' of previously informal arrangements to consult with social partners, and through new arrangements for cross-border cooperation. These tight connections have overall facilitated the adaptation process, as they supported a broad consensus on the need and direction of renewal efforts. In the mid-1960s and early 1980s, there were however brief episodes of impasse. At these times resources were tight and interests between important actors started to diverge. Additional financial support through federal government programmes and in the 1980s also European structural funds has been crucial to resolve these stalemates. Arrangements for strategic intelligence and planning are also well-developed, with intelligence units at various places within the Saarland government, at the three Chambers, and at other representative bodies. By design these arrangements incorporate a variety of perspectives (labour, firms, professions), and are sufficiently receptive for new insights. Governance arrangements have gradually expanded over the years, to implement new policies and take on new tasks. Hence 'layering' / 'sedimentation' and to a lesser extent 'conversion' seem to be the dominant patterns of institutional change.

Chapter 7. Structural Change, the Steel Crisis and the Evolution of Policy and Governance in Teesside (United Kingdom)

7.1. Introduction

In this Chapter I will consider the process of structural change, the steel crisis and crisis management, and the evolution of policy and governance in Teesside. The Chapter follows the exact same structure as the previous one. I will start by discussing some key characteristics of Teesside. The economic development of Teesside up until the 1970s, will be the topic of section 7.3. In section 7.4 I will then examine how the area was affected by deindustrialisation since the 1970s. Next I will look at the steel crisis and the way the crisis was managed. Section 7.6 will detail the evolution of policy and governance with regard to the economic development of Teesside. Finally in section 7.7, I will present some conclusions.

7.2. Key characteristics

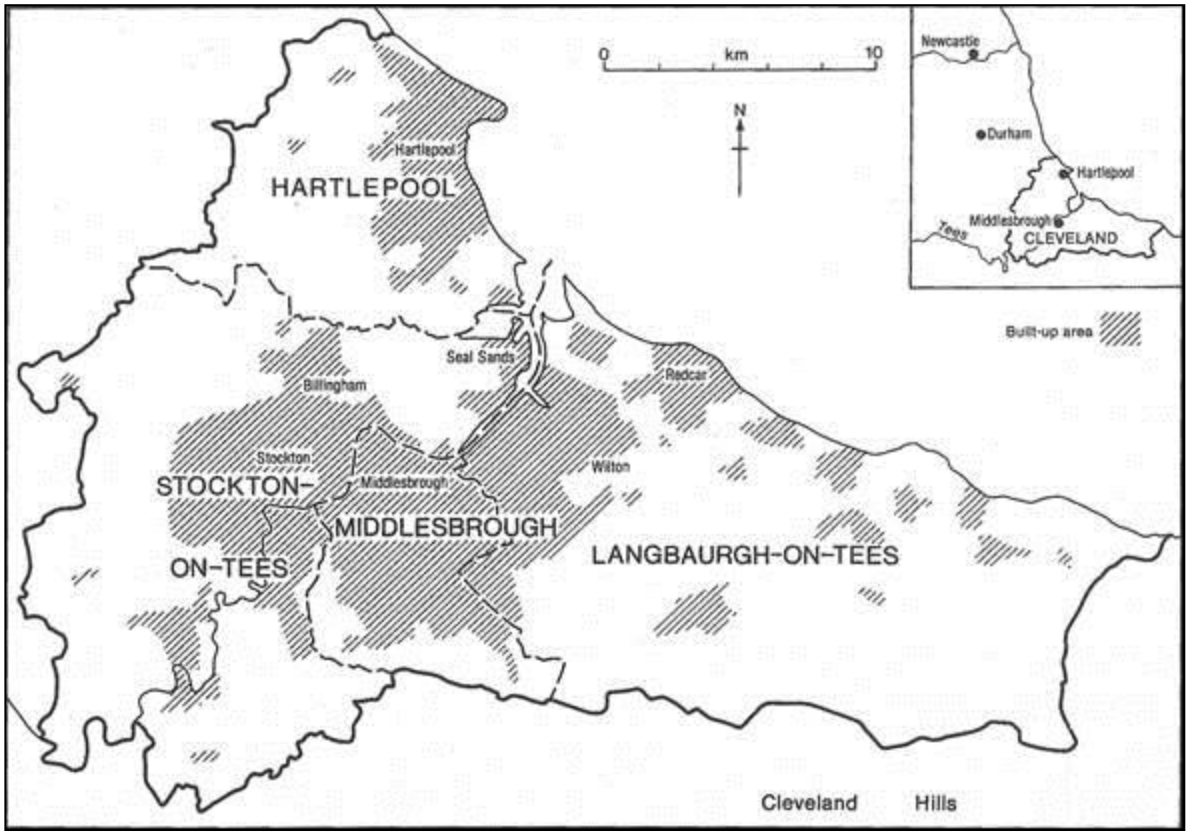
Teesside is a conurbation of several towns in the North-East of England, straddling between the historic counties of Durham and the North Riding of Yorkshire. The largest town is Middlesbrough. Teesside is at some distance from the main economic and population centres in the United Kingdom: London is at almost 400 km, and Leeds and Manchester (the main centres in the North of England) are at about 100 km and 160 km respectively. The most nearby centres are Newcastle-upon-Tyne at about 60 km, and York at about 80 km.

Source: http://www.ezilon.com/maps/images/europe/physical-map-of-UK.gif

Figure 21: The location of the Teesside area (with Middlesbrough as its largest town) within the United Kingdom

For the purposes of this research, the Teesside-area is taken be comprise of the towns of Middlesbrough (population currently about 138,000), Stockton-on-Tees (population

about 84,000), Billingham (population about 36,000), Redcar (population about 38,000), and Hartlepool (population about 92,000) and their surrounding areas.[72] This delineation of Teesside coincides with the administrative unit of the County of Cleveland (which existed from 1974 until 1996), and now consists of the boroughs of Middlesbrough, Stockton-on-Tees, Redcar and Cleveland, and Hartlepool (total population currently about 557,000).[73]



Source: Beynon et al. (1994), p. 1

Figure 22: The Teesside area

The landscape of the Teesside-area is made up of a large flat lowland stretching from Stockton to Redcar and Hartlepool, enclosing the river Tees. This lowland area is

[72] This follows e.g. Beynon et al. (1994).

[73] Darlington is hence not included in this delineation of Teesside (unlike the studies of e.g. House and Fullerton (1960) and North (1975), which did include it). Darlington was less a centre for heavy industry in the past than the other towns, and always had a more diversified economic structure. Since 1997 however, Darlington together with the Teesside-area is part of a wider economic area, generally referred to as 'Tees Valley'.

surrounded by a landscape of gentle relief which extends northwards and westwards further into County Durham. To the South and South East, this landscape changes into a hill range: the Cleveland Hills, of which the highest peak is 454 meters. Especially on the northern edge of the Cleveland Hills, and within the the Eske valley further South, significant deposits of iron ore were to be found, and numerous mines existed from 1850 until 1964 (North, 1975). To the north and west of Teesside is the Durham and Northumberland coal field, for a long time one of the principal locations for coal mining in the United Kingdom.

In terms of administrative organisation, several changes took place over the last decades. Until 1968 local government consisted of numerous districts: county boroughs, municipal boroughs, urban districts, and rural districts. With the exception of the county boroughs of Middlesbrough and West Hartlepool (which formed a single-tier local government), these districts were in turn subsumed under the counties of Durham and North Riding of Yorkshire (a two-tier local government system). In 1968 many of these districts in Teesside (with the exception of the eastern most areas around Guisborough, Saltburn, Skelton and Loftus) were merged into the Teesside County Borough and Hartlepool County Borough, which meant that most of the Teesside-area was then encompassed by a single-tier system. However in 1974, there was another local government reorganisation, in which a two-tier system was reintroduced: the area was administered by the County of Cleveland, with four boroughs: Middlesbrough, Stockton-on-Tees, Hartlepool and Langbaurgh-on-Tees. In 1996 the local government system in Teesside reverted back to a single-tier system, when the County of Cleveland was abolished and Middlesbrough, Stockton-on-Tees, Hartlepool, and Redcar and Cleveland (formerly Langbraugh-on-Tees) became unitary authorities. At the regional level, no official government layer exists. However, some government entities in planning and economic development operated at this level, and the region is also a unit used for statistical purposes (NUTS1). Teesside is part of the North-East of England region. Until 1996 the North-East of England and Cumbria were for some purposes taken together to constitute the Northern Region.

	1971	2011
Population size	568,834	557,227
Total area	583 km2	597 km2
Population density	976 p/km2	933 p/km2
Total employment	222.000	236,000

Population and total area in 1971 refer to Cleveland County, while working population for 1971 refers to Middlesbrough and Hartlepool County Boroughs. Data for 2011 refers to Middlesbrough, Stockton-on-Tees, Hartepool and Redcar and Cleveland unitary authorities.
Sources: Office of National Statistics (Census data 1971 and 2011).

Table 14: Key facts for Teesside

7.3. Economic development until the 1970s

7.3.1. *Economic development until the 1960s*

The industrialisation of Teesside started already in the 1820s, and during the 19th century the area developed into a major centre for iron production and subsequently also steel production. In the wake of this, also heavy engineering and shipbuilding developed as important industries. Furthermore, from the 1920s onward, the chemical industry emerged to rapidly become one of the mainstays of the local economy. The prevalence of heavy industry in Teesside over many years, has to a considerable extent shaped the social relations and built environment in the area.

The start of the industrialisation of the Teesside-area can be traced back to the Stockton and Darlington Railway, opened in 1825. The Stockton and Darlington Railway brought coal from the south-west part of the Durham coalfield to Stockton, where it could be distributed further. The export trade to London and other markets, was so successful however, that it was soon decided to extend the railway to Middlesbrough further downstream, where the Tees was deeper. The owners of the railway – a group of Quaker men from Darlington – bought the piece of land that would serve as the new terminus of the line (the 'Middlesbrough Estate'), and started to develop this into a new town. In

1850 the area would receive an important new impulse to its economic development: the Cleveland main seam of iron ore was discovered in the Cleveland Hills near Eston. After this, Middlesbrough, and Teesside more generally, were transformed. With a great supply of iron stone and coal in the vicinity, together with good provisions for transport because of the river and developing railway network, the location was ideally suited for the development of the iron industry. From the 1850s onwards Teesside developed into the most important area for iron production in the United Kingdom, and – by extension – the world at this time: by the 1870s it produced about 30% of pig iron in the UK, and about 14-15% of pig iron in the world (Yasumoto, 2011). The growth in iron-production in Teesside coincided with the growth of shipbuilding, heavy engineering, and railway industries in the North-East of England. Coal mining in Durham, iron stone mining in the Cleveland Hills, iron production - and from the 1880s onwards, steel production – in Teesside, shipbuilding and heavy engineering in Tyneside, Wearside and Teesside (especially Hartlepool), and railway engineering in Darlington and Newcastle, formed one large industrial complex, in which the different parts fed on the other parts to create distinct economies of localisation and a particular dynamism (see Milne, 2006; Tomaney, 2006).

With rapid economic growth came rapid increase of the population (mainly through in-migration from rural areas around Teesside but also Ireland). The expansion of Middlesbrough and Teesside were shaped by the interests of heavy industry. The iron and steel industries – and to a lesser extent heavy engineering and shipbuilding – not only dominated the development of the economy, but also of the landscape and the local society. Large plants and wharfs covered both sides of the river Tees from Stockton to the coast, low quality housing estates sprung up in the vicinity of the works, smoke and soot filled the air, and the river was heavily polluted by discharges and waste. Civic traditions and social institutions were mostly lacking in the community (Briggs, 1963; Hudson and Sadler, 1985); and industrial relations were characterised by a system in which large corporations provided for many of the needs of their workers (housing, job security, benefits, etc.) in return for a dependable and cooperative workforce. The population in

the area was dominated by (mostly male) manufacturing workers, while the middle class remained comparatively small; increasingly so when by the end of the 19th century the ironmasters and their descendants ceased to live in the town, and moved to the countryside (Briggs, 1963; Yasumoto, 2011). Hence, as Middlesbrough and the other towns in the vicinity developed, these mainly catered to the immediate necessities of the working class: cheap housing near the works, food, drink and clothing.

By the time of the First World War, the numerous iron and steel firms that existed in Teesside in the 19th century, had amalgamated to three principal firms: Bolckow Vaughan (founded in 1840), Dorman Long (founded in 1875), and South Durham Steel and Iron (founded in 1898). In addition, a relatively small producer – the Skinningrove Iron Company (founded in 1880) – ran a single iron and steel plant in Skinningrove on the coast south of Redcar. By then metal manufacturing on Teesside had already lost a part of its competitive edge. The industry had moved from wrought iron as the primary output, to steel; which meant that economies of scale became more important. The comparatively new plants constructed by the competition in continental Europe could take greater advantage of this. Moreover, iron ore deposits in the Cleveland Hills were gradually becoming depleted from the 1910s onwards. The interwar years were a particularly difficult period for the Teesside area(and more generally for the North-East). Domestic demand dropped and ground was lost to competitors in export markets. The iron and steel industry tried to respond by moving into the production of constructional steel and tubes, and diversifying into bridge building and heavy engineering. Dorman Long took over Bolckow Vaughan in 1929; but a merger between Dorman Long and South Durham did not take place in the early 1930s despite lengthy negotiations (Tolliday, 1986). Other industries, most notably shipbuilding in Hartlepool and along the Tees-river, declined considerably (North, 1975)

This period also saw the emergence of the chemical industry, which would quickly become a new staple industry in the Teesside-area. In 1918, the government devised a scheme to construct a plant for the production of synthetic ammonia (to be used for the

manufacture of explosives), in Billingham. With the end of the First World War, this scheme was subsequently taken over by Brunner Mond in 1920, which was to use synthetic ammonia for the production of fertilisers and dyestuffs. In 1926 Brunner Mond merged with three other chemical companies to form Imperial Chemical Industries (ICI). Billingham developed into one of the main production and research and development locations for the new firm (North, 1975; Beynon et al., 1986). With the expansion of the chemical complex, it drew in large amounts of labour from the Durham coalfield and industries in recession. With this, Billingham quickly transformed from a village into a company town (similar to Middlesbrough and surrounding towns in the 19th century), in which much of the housing and basic community services were provided for by ICI (Beynon et al., 1986).

The 1930s also saw the first involvement of central government in the regions characterised by heavy industry. Up to this point, the central government's policy had been not to involve itself in economic affairs; but unemployment levels reached 30 to 40% in many parts of the North-East, including parts of Teesside (North, 1975). In 1934 the central government therefore issued the Special Areas Act, in which land could be acquired and transferred to organisations willing to undertake redevelopment. With an amendment in 1937 also some (limited) financial support became available for new investment (Warren, 1973; North, 1975). Of the Teesside-area, only Hartlepool was included as a Special Area however. After the Second World War, this pattern of government involvement would be further extended. The post-war Labour-government tried to implement a programme of nationalising several key industries. Coal mining was nationalised in 1947. The iron and steel industry (with Dorman Long, South Durham, and Skinningrove Iron as the main companies on Teesside) followed in 1951; however this was quickly undone by the new Conservative government, coming into power later in 1951. Still investment in iron and steel became subject to approval by a new Iron and Steel Board, set up in 1953 (North, 1975). With the Distribution of Industry Acts of 1945 and 1950, a system was furthermore put in place to stimulate investment in manufacturing in certain areas (Development Areas; renamed from Special Areas) through active spatial

planning and grants, and discourage investment in other areas (mainly in the South of England). The whole of Teesside was included in the North-East Development Area. The Teesside Industrial Development Board was formed in 1945 to promote investment in the area and set up new industrial estates (alongside the North-East Industrial Development Association, which did the same for the whole of the North-East) (Cousins et al., 1974; North, 1975). These measures had the unintended effect however of reinforcing the dependency of the area on heavy industry, rather than countering it (also see Hall, 1986).

By the late 1950s, 40,000 people were employed in iron and steel in Teesside, while about 29,000 were employed in the chemical industry (of which about 25,000 at ICI) (House and Fullerton, 1960). In iron and steel, Teesside was still one of the leading production centres in the UK (after South Wales), with 4.4 million tonnes of steel being produced in 1957 (North, 1975). By this time, it had also become one of the most important sites for the production of chemicals in the world (Beynon et al., 1986; Greco, 2002). ICI had continued to develop and expand rapidly in Teesside during and following the Second World War, both at its existing complex in Billingham and at its new petrochemical complex at Wilton (which focussed on e.g. plastics, synthetic rubbers, paints, adhesives, and nylon).

7.3.2. *Economy by the early 1970s*

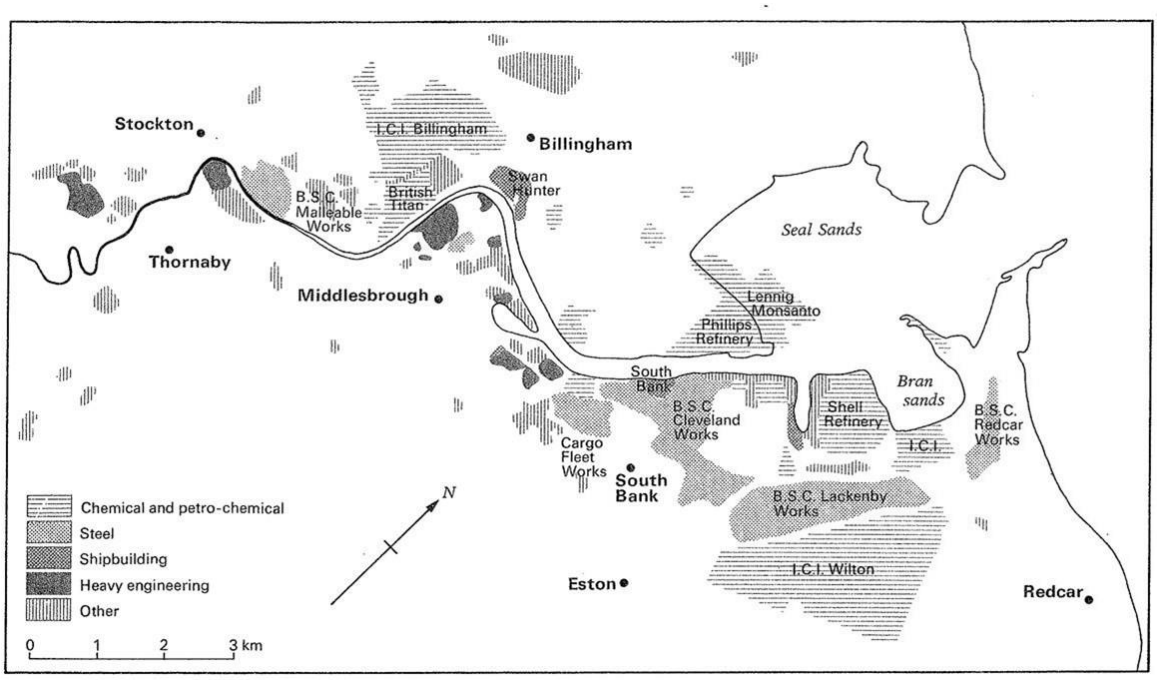
After the 1950s the post-war boom was over, which meant that the demand for iron and steel, heavy engineering and ships slowed down. Chemicals experienced high growth however, and it continued its rapid expansion on Teesside. Also the involvement of the central government within heavy industry and within the area, continued to grow.

The two main iron and steel firms on Teesside – Dorman Long and South Durham – invested extensively in replacement investments in the 1950s and early 1960s, and extended some of their milling capacity (Hudson and Sadler, 1985). However, complacency in the boom-period in the 1950s, controls on new investment by the Iron

and Steel Board, and uncertainty over renationalisation, meant that not enough was invested in the application of new technologies, like basic oxygen steel-making (BOS) (Blair, 1997). Hence, the competitiveness of iron and steelmaking on Teesside (and other parts of the United Kingdom) was diminished. In 1967, the Labour-government under Harold Wilson, which had assumed office in 1964, renationalised the fourteen largest steel companies in the United Kingdom (among which Dorman Long, South Durham, and Skinningrove Iron) to form the British Steel Corporation (BSC). The strategy of BSC became to concentrate investment in five 'heritage sites' on coastal locations, including Teesside. In the 1973 it was officially announced that a massive, new integrated works was to be constructed on Teesside which would push total capacity up to 12 million tonnes by the 1980s (Secretary of State for Trade and Industry, 1973). These facilities would replace much of the older plants in other locations (to the east of Middlesbrough, in the Ironmaster's District, and in Hartlepool). By the early 1970s about 30,000 people were employed in the iron and steel industry in the Teesside area, producing about 4 million tonnes of steel (Cleveland County Council, 1983; North, 1975).

Chemicals production flourished in the 1960s. Demand for ICI's products continued to be high, and the company was one of the technological leaders in the field. Teesside remained one of its most important production and R&D locations. This meant large investments in further expansion of capacity and modernisation, and the application of new product- and process-innovations in both Billingham and Wilton (North, 1975; Beynon et al., 1986; Greco, 2002). In the 1960s, also an area of marsh land on the north bank of Tees, at Seal Sands, was drained and prepared for the development of a third branch to the chemical complex at Teesside. A refinery was established in 1966 as a joint venture between ICI and Phillips Petroleum; and several other large chemical firms (mainly from the US) constructed branch plants on Seal Sands. Also Shell built a refinery on Teesside, opposite to Seal Sands on the south bank of the Tees. The discovery of North Sea oil and gas in the latter half of the 1960s gave a further boost to the developments at Seal Sands and chemicals production more generally. By the early 1970s, chemicals employed over 30,000 people (Robinson and Storey, 1981).

Meanwhile shipbuilding in Teesside suffered from a drop in demand after the initial post-war boom. Several shipyards closed in Hartlepool and along the river in the 1960s, while others were taken over by the Tyneside-based Swan Hunter group. The decline of shipbuilding, as well as the decline in demand for railway equipment, meant that also the engineering industry had to adjust. The large investments in chemical and iron and steel plant on Teesside, the emerging offshore industry, and the development of new power plants, offered some new opportunities. Many of the engineering firms became however part of larger consortia, also to be able to compete at the international level (North, 1975). The figure below shows the main locations of heavy industry on Teesside in 1970.



Source: Warren (1974), p. 28

Figure 23: Heavy industry in the Teesside area

In the early and mid-1960s, a broad consensus emerged about the further development of Teesside, which included the central government, the local authorities, regional bodies (the North-East Development Council and Northern Economic Planning Council) (all with representatives from both the Labour and Conservative Parties), major employers (in particular BSC and ICI), and the trade unions (Foord et al., 1985; Beynon et al., 1989;

Hudson, 1990; Beynon et al., 1994). They embraced a programme consisting of three main strands: the modernisation and rationalisation of existing heavy industry on Teesside, expansion of the area's infrastructure and provision of industrial land, and the attraction of new employment in light manufacturing and services (as it was foreseen that employment in heavy industry would go down somewhat). The main outlines of this programme will be further discussed in section 7.6.2. As a result of this programme, the investments by BSC and ICI in the Teesside-area were supported by generous grants from the central government; and were furthermore complemented by large amounts of public investment. For example, the land reclamation of Seal Sands (already referred to above), the new Tees Dock (constructed in the early 1960s), a nuclear power station close to Hartlepool (built in the late 1960s), and an airport (which was reconverted from an old RAF-base in 1964).

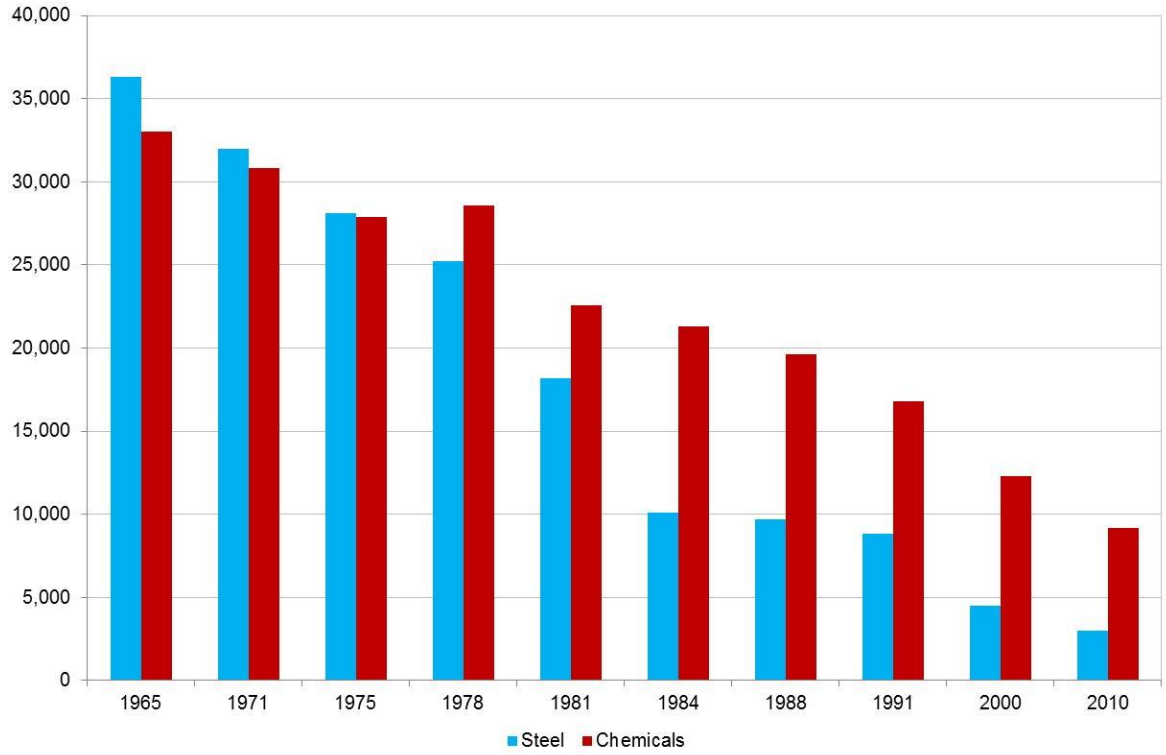
Hence in the early 1970s considerable optimism existed about the economic future of Teesside. And on the face of it Teesside appeared a very dynamic place, with a boom in new investment and construction in iron and steel, chemicals, new land reclamation, and infrastructure.[74] However, also in the 1960s several strategic parameters had shifted to the disadvantage of the area. Firstly, with the gradual dismantling of the industrial complex of the North-East (as a result of the decline of coal mining and ship building), the locational advantages of iron and steel and – to a lesser extent – chemicals on Teesside had become even less specific. Economic activity and industry on Teesside had become more and more footloose. Competitiveness in international markets became ever more important; even more so when the United Kingdom joined the European Economic Community in 1973. Secondly, more and more control of economic development in

[74] As may also be evidenced by the following excerpt from the Sunday Times in 1976, which also refers to the Sterling-crisis at the time: "'If only the speculators could see this.' So said Henri Simonet, Vice-President of the European Commission, when he visited Teesside ten days ago. More than a billion pounds is being invested there in steel and chemical plant, nuclear power and oil installations, and the area can fairly claim to be Europe's most dynamic industrial site. But, as Simonet said: 'Nobody in Europe knows about this.' … Even now, at a dark moment for the British economy, more than £1,200m is being invested in Teesside, in a series of projects of great boldness, advanced technology and crucial significance for our balance of trade." (quoted in Beynon et al., 1989, p. 271).

Teesside shifted from the local level to the national level and even international level. The large firms on Teesside in iron and steel, but also in engineering and shipbuilding, became part of even larger firms, with their headquarters outside the Teesside area. Much of the manufacturing on Teesside was characterised by branch plants of national or international firms. Furthermore, the central government had acquired a growing influence in heavy industries such as iron and steel (but also coal mining and shipbuilding), and had developed an increasing interest in the Teesside-area itself, as a strategically important location for national economic interests.

7.4. The process of structural change

In the 1970s Teesside was the site of much investment and much construction activity. However, employment levels in steel and chemicals were already dropping somewhat. The steel crisis from 1975 until the mid-1980s hit the area hard, and also other manufacturing industries experienced problems from the early 1980s onward. Figure 24 shows the development of employment in the steel industry and in chemicals. Losses in employment in the steel industry already started in the late 1960s, but accelerated rapidly during the steel crisis. From 1975 until 1984 almost 2/3 of employment in steel (more than 18,000 jobs) was lost. Since then, decline has been less rapid, but nevertheless quite consistent; and currently, the steel industry is not a major employer anymore in Teesside (though still a significant factor for especially the Redcar area). Job loss in the chemical industry proceeded more gradual. In 2010 it still directly sustained nearly 10,000 jobs (down from over 30,000 jobs in the late 1960s).

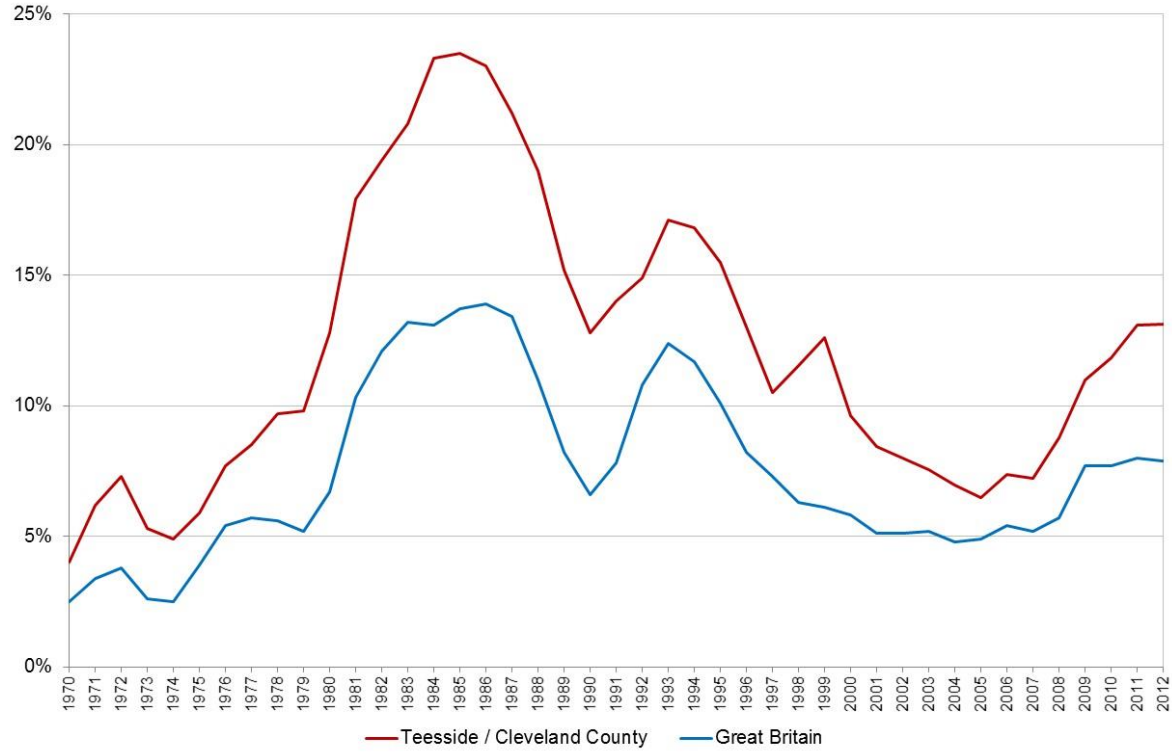


Sources: Office of National Statistics (Census data 1971); Beynon et al. (1994), p. 104; Robinson and Storey (1981), p. 166; Cleveland County Council (1995a), p. 29; Sadler (2001); House of Commons North-East Regional Committee (2010), p. 5; TERU and TBR (2000); NEPIC (2013).

Figure 24: Development of employment in major industries in Teesside

As can be seen in Figure 25, unemployment in the Teesside-area rose dramatically from the mid-1970s until the mid-1980s, reaching a peak of about 24% in 1985. By then Cleveland County was the county with the highest rates of unemployment on mainland Britain (only surpassed by parts of Northern Ireland) (Beynon et al., 1985; Foord et al., 1985). In some parts of Teesside – especially in Middlesbrough, Thornaby, and north of the river in Port Clarence – unemployment exceeded 40% (Foord et al., 1985). Between 1975 and 1985, total employment in the Teesside area contracted by about 60,000 jobs. This was primarily the result of the loss of employment in the two staple industries in Teesside, as well as in other manufacturing industries (such as engineering and shipbuilding). But also in construction there were large losses of employment, when the construction boom of the 1970s ended: about 12,000 jobs (more than half of the total) between the mid-1970s and mid-1980s. Multiplier effects through suppliers to the manufacturing industries and through loss of consumer spending, also affected parts of

the service sector. Total employment in the service sector remained about equal – at about 110,000 jobs – from the mid-1970s until the 1980s, before growing to about 170,000 jobs in 2008 (Foord et al., 1985; Beynon et al., 1994; NOMIS).

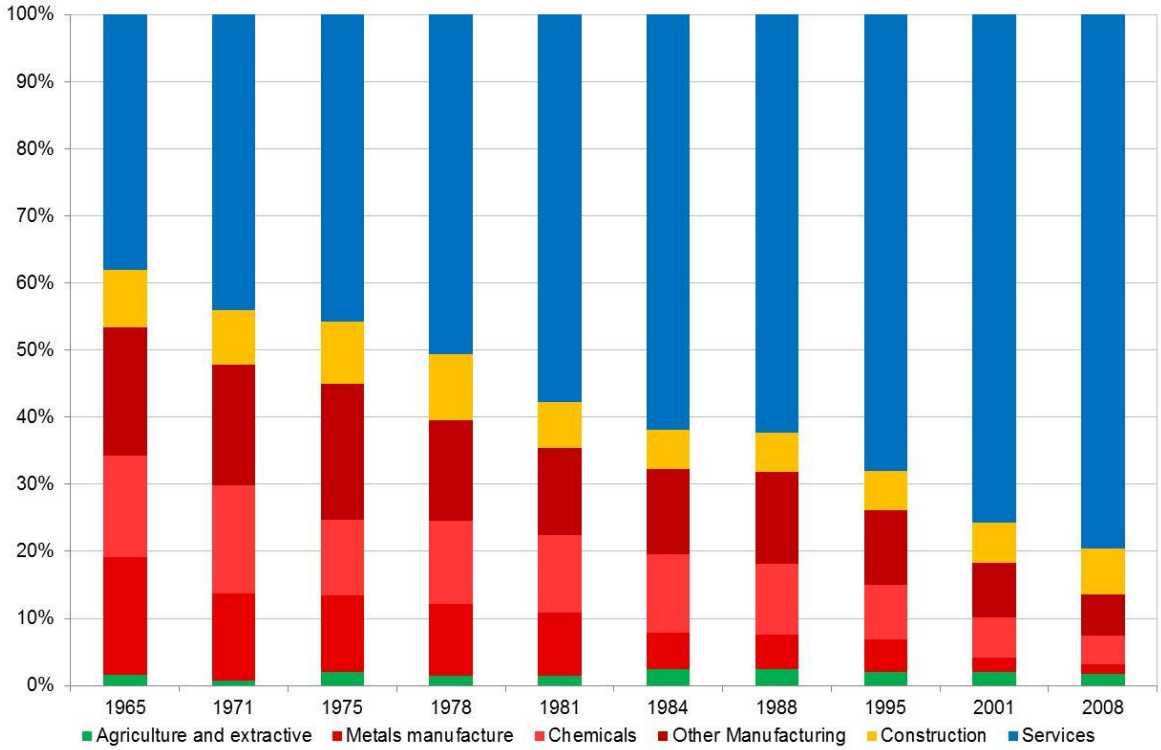


Change in definitions over time, not taken into account. Figures for Teesside from 2004 onwards, are calculated from unemployment figures for Middlesbrough, Stockton-on-Tees, Hartlepool, and Redcar and Cleveland.
Sources: Cleveland County Council (1995b), Office for National Statistics (Regional Trends), NOMIS (www.nomisweb.co.uk)

Figure 25: Unemployment rates in Teesside / Cleveland County and Great Britain

The rapid loss of employment in iron and steel, chemicals, other manufacturing industries, and construction is reflected in Figure 26, which depicts structural change in Teesside in terms of employment. The percentage of employment in manufacturing went from nearly 50% (about 105,000 jobs) in the early 1970s, to slightly more than 10% (about 25,000 jobs) in 2008. The service sector gained ground quite quickly in relative terms; even considering the fact that employment in the service sector did not grow from 1975 until 1984 (as noted). Structural change in the Teesside area was hence pronounced,

rapid, and disruptive; especially compared to structural change in South Saarland (discussed in section 6.4).



Figures for 1971 refer to Teesside and Hartlepool County Boroughs; 1975, 1978, 1981, 1984 and 1988 refer to Cleveland County; and 1995, 2001 and 2008 are calculated from figures for Middlesbrough, Stockton-on-Tees, Hartlepool and Redcar and Cleveland.
Sources: Office of National Statistics (Census data 1971); Beynon et al. (1994); NOMIS (http://www.nomisweb.co.uk).

Figure 26: Structural change in Teesside in terms of employment

Within the manufacturing sector, a rapid contraction of heavy industry (steel, chemicals, and engineering) took place, while in light manufacturing – contrary to expectations in the 1960s and early 1970s – there was no growth. The contraction of steel on Teesside since the early 1970s will be discussed in detail in the next section. In chemicals, large investments in the 1970s in Billingham, Wilton, and Seal Sands, had not led to any additional employment. Instead, efficiency gains as a result of these investments had led to a small decrease in employment (as can be seen in Figure 24). From about 1980 onwards, Teesside started to lose significance as a location for chemical industry; a development which accelerated in the 1990s and 2000s. From the early 1980s ICI shifted

its strategy from being a diversified chemical company, producing a full range of chemicals, to becoming a chemical company specialising in more high-margin commodity chemicals and pharmaceuticals (Greco, 2002; Phillips, 2011). This was in response to increasing overcapacities in the global production of heavy chemicals (such as petrochemicals), developed in the 1970s (Beynon et al., 1986; Greco, 2002). For ICI's integrated complex on Teesside this meant a series of sell-offs and closures over the 1980s, 1990s and 2000s (Greco, 2002; Chapman, 2005). Up to 2008, when ICI ceased to exist as a separate company, Teesside had thus become more and more peripheral within its operations. Moreover, ownership of different parts of the complex, has become increasingly dispersed among a multitude of companies, mostly from outside the United Kingdom. Currently, the chemical industry on Teesside thus consists mostly of branch plants of large international chemical firms, and managing the mutual dependencies between different parts of the complex has become a growing concern (Chapman, 2005).

In engineering there was some growth in employment in the first part of the 1970s (Robinson and Storey, 1981), as many of the larger companies were involved in the new investment in plants in the steel and the chemicals industries, and moreover, as the exploitation of North Sea oil and gas, provided new opportunities in offshore engineering (Sadler, 1986). However, by the early 1980s also engineering started to shed jobs (Storey, 1985), when the boom of investments in Teesside ended, and a fall in oil prices in the 1980s limited new investments in offshore engineering equipment (Sadler, 1986). Also in light manufacturing (such as the food industry and textiles) there were gains in employment in the late 1960s and early 1970s, but these were not sustained in the second part of the 1970s (Robinson and Storey, 1981; Storey, 1985). Since 1980, Teesside has had some moderate success in attracting new manufacturing, though only few large establishments came to Teesside and stayed.

There has been a clear shift from manufacturing to services in the Teesside economy. A part of this can be explained by the outsourcing of services such as cleaning, catering, maintenance and certain engineering services, by the large firms (ICI and BSC) in Teesside

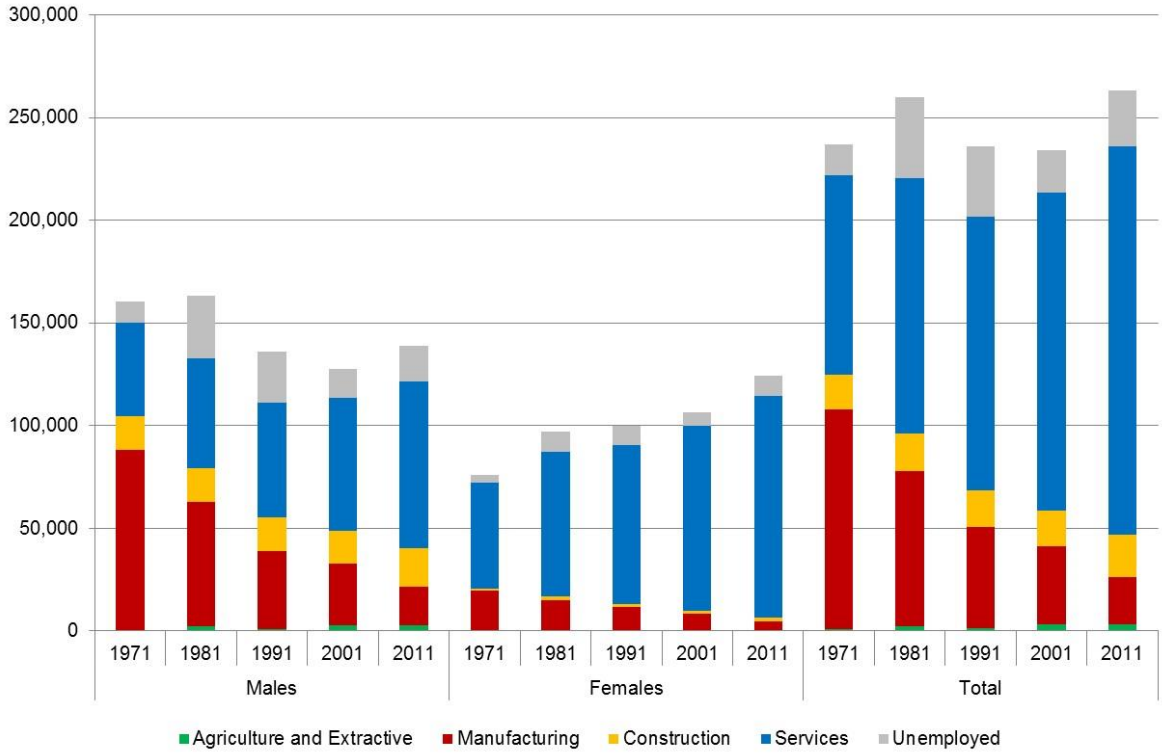
in the 1980s and 1990s (Greco, 2002). Furthermore, though many production activities in engineering have disappeared over the years, a core of expertise in civil and mechanical engineering has been retained. Several firms still operate in the area offering design and consultancy services in engineering around the world (Hudson, 2011b). Most growth in the service sector has however come from activities which do not rely on the old manufacturing base, such as retail, back-office and call-centre services, health care, and other public sector services (Beynon et al., 1994; Tees Valley Joint Strategy Unit, 2002). Especially health care is a major employer with over 15,000 jobs. Also Information Technology (IT) and Digital Media have emerged as potential growth sectors since the late 1990s on the back of the strong reputation of Teesside University in these domains.

These shifts in the structure of the Teesside economy and the high levels of unemployment experienced in the area over time, have coincided with several developments in the labour market (Beynon et al., 1985; Foord et al., 1985; Beynon et al., 1989; Beynon et al., 1994; Greco, 2002):

- As can be seen in Figure 27, with the rise of employment in the service sector, the economic activity rates of females have risen strongly. Male employment dropped substantially in the 1970s and 1980s, and only started to grow again from the 1990s.
- Especially in the 1980s, a considerable amount of people left Teesside, in search of opportunities elsewhere. Some moved to other parts of the United Kingdom. Others took on contract work in chemicals, engineering and construction in e.g. the Middle East.
- Growing 'flexibility' has been a major characteristic in the labour market. The tacit pact between employees and employers, of job security and relatively high wages in return for a cooperative attitude and harmony in industrial relations, has broken down for large parts of the workforce. Hence there has been a much higher incidence of temporary contracts and part-time work (especially among women), less demarcation of responsibilities and more 'multitasking', and a growing control of management on the way work is performed (together with a declining influence of

trade unions). At the time of mass unemployment in the 1980s, also the informal economy – in which jobs were performed off the books – was sizeable on Teesside.

- Insecurity, casual work, frequent changes from job to job, and from job to unemployment / inactivity, are common features for large segments of the labour market. Other segments though – especially in management and more high-skill professions – still enjoy job security and relatively high wages. This has led to a growing polarisation within the labour market.



1971 refers to Teesside and Hartlepool County Boroughs; 1981, 1991, 2001 refer to Cleveland County; 2011 refers to Middlesbrough, Stockton, Hartlepool, and Redcar and Cleveland unitary authorities.
Source: Office of National Statistics (Census data, 1971, 1981, 1991, 2001, 2011)

Figure 27: Structural change in Teesside: male and female employment and unemployment patterns

7.5. The steel crisis and crisis management

The process of deindustrialisation was very marked and particularly disruptive in the Teesside area. The crisis in the steel industry was an important part of this process, and

the way the crisis was managed demonstrates some crucial issues with regard to how deindustrialisation was coped with at the subnational level in the UK. After the creation of British Steel Corporation in 1967, the major decisions affecting iron and steel in the Teesside-area were no longer taken in the area itself and the activities based on Teesside became increasingly marginalised within BSC and the subsequent firms of which it was a part.[75] Moreover, the societal and economic disruption in the Teesside-area, as a consequence of the restructuring operations at BSC, was stark during the late 1970s and early 1980s. These outcomes were the result of a sequence of strategic decisions by the British Steel Corporation and the central government in the 1970s and early 1980s, and an inability to avoid and subsequently deal with large-scale redundancies.

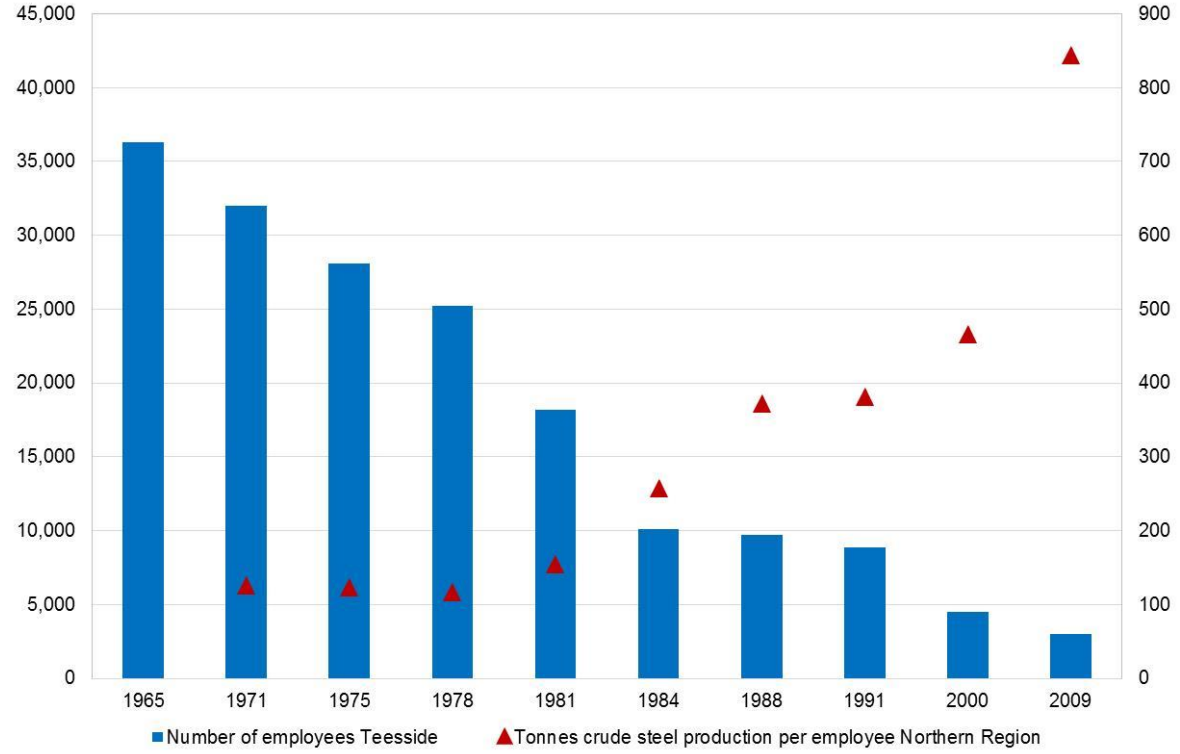
The steel crisis and the development of the steel industry since

After the nationalisation of the fourteen largest steel companies in the United Kingdom in 1967 (which included Dorman Long, South Durham, and Skiningrove Iron in the Teesside-area), and the formation of the British Steel Corporation, the new company started a programme to concentrate and rationalise the iron- and steelmaking operations. The steel industry in the UK still mostly relied on old-fashioned technologies (most plants had not yet implemented basic oxygen steel-making, continuous casting, or other innovations) and productivity was low (Richardson and Dudley, 1987; Blair, 1997). Teesside was designated in 1971 as one of the five coastal locations which were to become the main centres of production. Other locations for iron and steel production in the UK were scheduled to be closed or downsized considerably during the next decade. Moreover, Redcar-Lackenby in Teesside was selected as the site for a large, new integrated works (the 'South Teesside works') with a capacity of up to 12 million tonnes, to enable BSC to increase its total capacity from about 27 million tonnes in 1972 to about 36-38 million tonnes in the early 1980s (Secretary of State for Trade and Industry, 1973). The new integrated works would replace the existing iron and steel production plants in the area, notably the works in Cargo Fleet, Cleveland, Hartlepool and Skinningrove (see Figure 23).

[75] Corus (1999-2007), Tata Steel (2007-2011) and Sahaviriya Steel Industies (2011-2015).

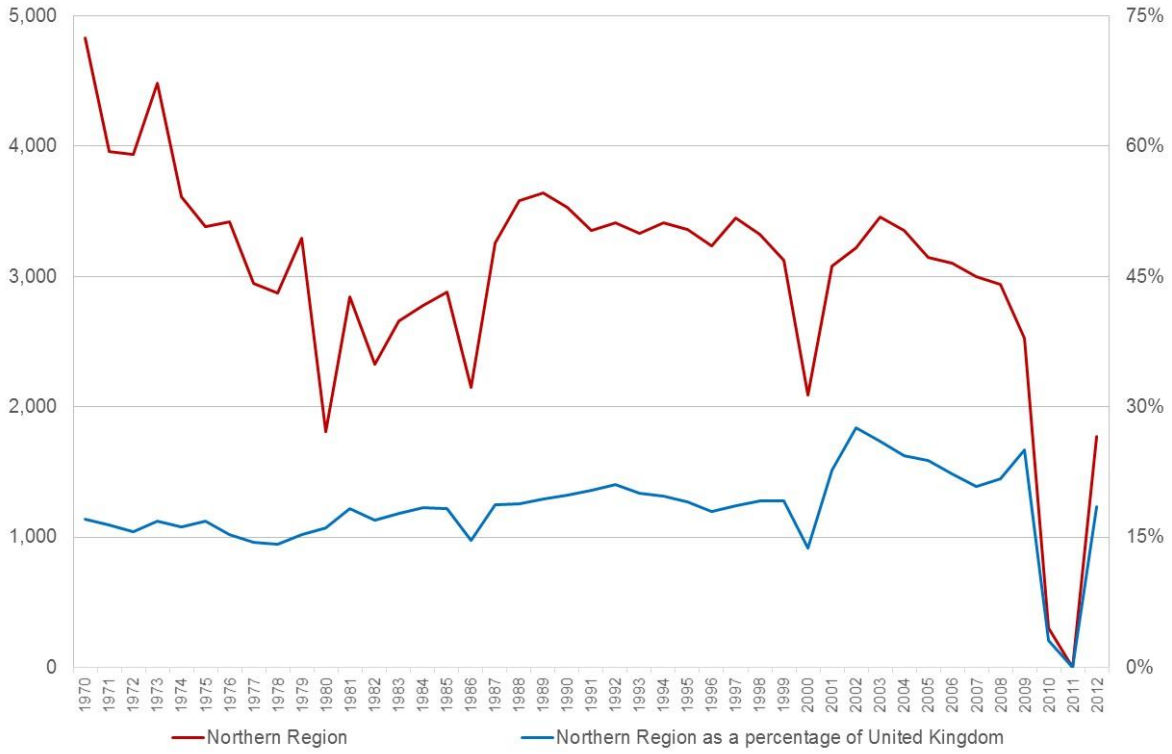
Some rolling mill capacity would however remain at Hartlepool, Stockton, Cleveland and Skinningrove. As a result of the steel crisis, the building of this new plant on Teesside was truncated, and the last phases of its construction were never realised (Hudson and Sadler, 1985). This has left the operations in Teesside in an economically and technologically disadvantaged position, which eventually resulted in further crises in the early 2000s, in 2010-2011 and in 2015.

Figure 28 shows the decline of employment in the steel industry from 1965 until 2009. Reductions were rather gradual in the late 1960s and 1970s, but from 1978 until 1984 there was a rapid decrease from over 25,000 to around 10,000 jobs (a loss of about 60% of employment). Since then, the industry has continued to shed jobs, and by 2009 still offered direct employment for about 3,000 people in Teesside. Figure 29 depicts the development of crude steel production for the Northern Region (which until 1974 also included steel production in Workington and until 1980 in Consett; both outside the Teesside-area). Production went from about 5 million tonnes at the start of the 1970s to under 3 million tonnes at the early 1980s, as a result of closures of many works (not only in Consett and Workington, but also within the Teesside-area). From the mid-1980s it stabilised at around 3 to 3.5 million tonnes. By this time production only took place in the Redcar-Lackenby facility in Teesside. However – as is also clear from Figure 29 - there were further crises in the early 2000s and in 2009-2011 (and in 2015), in which steel production was much lower, and even ceased.



Calculation of production of crude steel per employee is based on the total number of employees in the steel industry in the Northern Region, including employees employed in the further processing of steel (casting, rolling, forging, etc.). Before 1980 steel production also took place in other parts of the Northern Region (Consett until 1980, and Workington until 1974). After 1980, steel production and employment in iron and steel industry in the Northern Region, are almost exclusively concentrated in Teesside.
Sources: Office of National Statistics (Census 1971; and Report on the Census of Production, multiple editions), Beynon et al. (1994), p. 104; Robinson and Storey (1981), p. 166; Cleveland County Council (1995a), p. 29; Sadler (2001); House of Commons North-East Regional Committee (2010), p. 5; Iron and Steel Statistics Bureau (Annual Statistics for the United Kingdom, multiple editions).

Figure 28: Development of employment in the steel industry in Teesside, and production of crude steel per employee in the Northern Region



Sources: Office for National Statistics (Annual Abstract of Statistics, multiple editions); Iron and Steel Statistics Bureau (Annual Statistics for the United Kingdom, multiple editions).

Figure 29: Crude steel production in 1,000 tonnes in Northern Region, and production of Northern Region as a percentage of production in the United Kingdom

Table 15 lists the main events with regard to the restructuring of iron- and steelmaking in the United Kingdom and in Teesside since the late 1960s.

1967	Formation of British Steel Corporation, including the Teesside-based companies Dorman Long, South Durham Steel and Iron, and Skinningrove Iron. Total employment at the new company is about 254,000.
1969-1984	Rationalisation and restructuring of iron- and steel production on Teesside. Including the closure of coke ovens, blast furnaces, steel making facilities and some rolling mills at Hartlepool, Stockton, Cargo Fleet, Cleveland and Skinningrove. Only secondary steel mills remaining at Hartlepool (pipes), Stockton (pipes), Cleveland (beams), Lackenby (coil plate) and Skinningrove (sections). Construction of Basic Oxygen Steel (BOS) steelmaking facility at Lackenby with a capacity of 2.2 million tonnes per year in 1972, to replace outdated open hearth and Bessemer steel-making plants elsewhere.

1971	'Development Plan' by British Steel Corporation. A large scale investment programme to push up production to about 40 million tonnes per year by 1980. Production is to be concentrated at five 'heritage sites' on coastal locations: Llanwern and Port Talbot in South Wales, Ravenscraig in Scotland, and Scunthorpe and Teesside in England. Planned closure over 10 years of works at other locations in the United Kingdom (including Consett and Workington in the Northern region). Teesside selected as the location for a new integrated iron and steel works, at Redcar / Lackenby site, with planned capacity of more than 12 million tonnes.
1973	White Paper 'British Steel Corporation: Ten Year Development Strategy' (Secretary of State for Trade and Industry, 1973). Department of Trade and Industry effectively supports BSC's investment programme (as outlined in the Development Plan). However, expansion of capacity by 1980 is limited to about 33-35 million tonnes instead of the 40 million tonnes proposed by BSC.
1973-1979	Realisation of first two phases of new South Teesside works. Construction of iron ore and coking coal onloading facilities (completed in 1973), a blast furnace and ancillary facilities (for coke and sinter production) at Redcar , and expansion of BOS steel-making at Lackenby site to 4.65 million tonnes annual capacity.
1974-1975	Newly installed Labour-government asks Lord Beswick (Minister of State for Industry) to review the necessity of the plant closures under the Development Plan. This leads to a delay in the implementation of the restructuring operations, and a phasing over a longer time period of plant closures.
1975	BSC Industry is established with a responsibility to create new alternative employment for those made redundant in the steel industry, e.g. by leasing land or buildings owned by the company to firms outside the steel industry, and providing support / securing finance for business proposals. Total employment at BSC still at around 230,000, but would drop to 186,000 in 1979.
1977	Much lower than expected demand for steel in 1975 and 1976, resulting overcapacity and losses, and poor prospects, lead BSC to abandon the ten-year investment plan, and settle for a lower overall capacity of 30 million tonnes per year by 1982.
1978	White Paper 'British Steel Corporation: The Road to Viability' (Secretary of State for Industry, 1978). Department of Industry endorses revised course by BSC. Projects that are already nearing completion should be completed, but projects for further expansion should be deferred. Closures of inland plants should be accelerated.
1979	Only first two phases of the construction of the new integrated plant at Redcar-Lackenby are completed; the subsequent phases III. IV and V are postponed for the time being. Hence plans for a new plate mill at Lackenby, two additional blast furnaces at Redcar, and additional steel making and milling capacity at Lackenby, are not realised. Capacity of plant is about 3.6 million tonnes per year (instead of the planned 12 to 13 million tonnes), and primary output of plant are semi-finished steel slabs (as remaining rolling mill capacity is insufficient to convert these steel slabs into finished products). Newly installed Conservative government puts extra pressure on BSC to restore profitability, in order to limit its liability to additional financial support, and to anticipate on future privatisation. This leads to reductions in overall production from 22 million tonnes to about 15 million tonnes per year; and hence the course of the company becomes one of contraction. Reduction of employment of 52,000 announced for 1980.

1980	General strike at British Steel Corporation from January until March, over plans for massive reductions in the workforce and a pay freeze for workers. Government reduces pressure on BSC and makes extra financial support available. Workers receive a pay rise, but decline in employment nevertheless accelerates: whereas from 1975 until 1979 about 44,000 jobs were lost, 1979 until 1984 would see a job loss of about 115,000 (down to about 71,000 in 1984).
1981-1986	Sale of some parts of British Steel Corporation not directly involved in steelmaking and -processing. Several joint-ventures in speciality steels with private sector steel companies involving BSC assets.
1988	Privatisation of British Steel Corporation, renamed to British Steel. Total employment at time of privatisation about 52,000.
1999	Merger of British Steel with Dutch steel firm Hoogovens to create Corus.
2000-2001	Restructuring of South Teesside works, leading to a reduction of employment of about 2,000 jobs. Closure of Lackenby coil plate mill, which makes plant even more dependent on semi-finished steel as output.
2003	Corus decides that semi-finished steel from South Teesside works is surplus to its internal demand, and hence should find an outlet on the global market. The works are renamed Teesside Cast Products (TCP). Corus enters into a ten-year agreement (2004-2014) with Duferco SA (Switzerland), Marcegaglia (Italy), IMSA (Mexico) and Dongkuk (South Korea) to take off 78% of TCP's output (with the remainder continued to be used within Corus).
2007	Corus is taken over by Indian conglomerate Tata, and is integrated into Tata Steel.
2009	The consortium of four companies reneges on the off-take agreement, as a result of the poor situation on the global steel market.
2010	Tata Steel decides to mothball Teesside Cast Products in February of the year. Remaining mills at Skinningrove, Hartlepool, and Cleveland continue to be operated by Tata.
2011	Thai firm Sahaviriya Steel Industries (SSI) buys Teesside Cast Products of Tata Steel, as it lacks primary iron- and steelmaking capacity at its operations in Thailand.
2012	After refurbishing the plant, SSI restarts iron- and steelmaking at Teesside Cast Products in April of the year.
2015	Iron and steelmaking facilities again mothballed per September of 2015. About 1,700 workers redundant, and SSI UK has been put into liquidation.

Sources: Heal (1974), Hudson and Sadler (1985); Richardson and Dudley (1987), Young (1987), Dudley and Richardson (1990), Blair (1997); Dawley et al. (2008); Hudson and Swanton (2012); www.ssi-steel.co.uk.

Table 15: Chronology of the restructuring of the steel industry in Teesside from the late 1960s

The remaining iron and steel works – the South Teesside works, now Teesside Cast Products – are not very competitive. Iron and steel-making capacity at the works exceeds rolling mill capacity; so a large part of the output of the plant is semi-finished steel (British Steel General Steels, 1990; Hudson and Swanton, 2012). The margins for semi-finished

steel are much lower than for finished steel products, and the demand for semi-finished steel is more volatile. This is the root cause of further restructuring operations in the early 2000s and mothballing of the plant in 2010-2011 and in 2015. Its current prospects for reopening look bleak.[76] Furthermore, as is clear from the reduction of employment in steel in Teesside in the 1970s and early 1980s, the social impacts of the restructuring operations over the years, have been enormous. Behind these two outcomes, are a number of factors: the shifting policies of the central government in the UK with regard to the British Steel Corporation, and the inability to manage and cope with redundancies.

Strategic decision-making and the role of the state

The fact that the British Steel Corporation was a state-owned company, has had important effects on some of the decisions taken before, during, and after the steel crisis. With the large-scale investment programme formulated in the 'Development Plan' of 1971, the British Steel Corporation wanted to improve its competitive position by taking "one great leap forward" (Richardson and Dudley, 1987). At this critical juncture, it was decided to increase capacity very substantially. These expansion plans fitted in with the plans of successive governments in the 1970s to regenerate British manufacturing industry, and so – at least officially – considerable optimism existed about the demand for steel. Moreover, the government was tempted not to get involved too directly and leave most responsibility to the British Steel Corporation; while BSC was enticed to take more risks than a privately owned company would do, by the certainty that additional financial support from the government would be available when the company would get into trouble (Richardson and Dudley, 1987). These circumstances hence contributed to the decision to embark on the ambitious expansion programme in the early 1970s, which – despite being curtailed in 1977 – would greatly exacerbate the problems of the late 1970s

[76] Teesside Cast Products' place within the networks of global steel production was already very vulnerable under SSI: "as such, raw materials from the other side of the world (coking coal and iron ore from, for example, Australia, Brazil, Colombia and parts of Africa) will be transported to a high-wage location in the global 'North', transformed into a low value-added product, which will then be exported to a low-wage location in the global 'South' where it will be converted into higher-value-added finished products." (Hudson and Swanton, 2012, p. 11).

and early 1980s. Moreover, when a new Labour-government was installed in 1974, the restructuring and rationalisation operations which would also be a part of the 'Development Plan', were postponed and phased over a larger time period by the Beswick review in 1974 and 1975. This further hampered the British Steel Corporation in its efforts to improve its competitiveness.

After the steel crisis started in 1974, and the British Steel Corporation reported losses from 1976 onwards (only in 1986 the company started to be profitable again), the central government did provide extensive financial relief. Between 1967 and 1979, BSC received an estimated £7.6 billion of support; and in the early 1980s a further £4.5 billion was written off in loans and capital (Mény and Wright, 1987; Dudley and Richardson, 1990). However, when a Conservative government came to power in 1979, it immediately adopted an aggressive attitude towards BSC's financial position. It wanted to gain more control on public expenditure, and ready the firm for privatisation in the years to come. The government announced that it would not finance any more losses after March 1980 (which was BSC's own target to break even again). This prompted the British Steel Corporation, to accelerate its downsizing programme and further reduce production. Even though the financial constraints on BSC were relaxed during 1980, as it was clear the company would otherwise collapse, and a large part of the debts and capital were actually written off in 1981 and 1982, BSC continued to shed employment rapidly in the early 1980s. Between 1979 and 1984 more than 115,000 jobs were lost at the British Steel Corporation, and about 15,000 in Teesside (a loss of about 60% in both cases). Central government policies hence contributed importantly to the rapid shedding of employment in steel in the early 1980s, which would have severe disruptive effects on the local level, including on Teesside.

Coping with redundancies and the role of the unions

Some of the loss of employment in the steel industry could be coped with, through early retirement and hiring stops, however many workers were made redundant and had to look for new employment elsewhere. These workers would receive a generous

redundancy payment (often partly funded through support provided by the European Coal and Steel Community), but the prospects for finding a new job in Teesside – as well as other affected areas – were often bleak. By the early 1980s, at least 10% of all unemployed in Teesside were former steel workers (Cleveland County Council, 1983). The Manpower Services Commission (MSC) offered advice and guidance to redundant workers. It furthermore provided support for retraining and further education when needed. The MSC and Cleveland County Council developed various schemes to create and retain employment (further discussed in section 7.6.2), however only a limited number of unemployed could benefit from these schemes (Hudson and Sadler, 1984; Foord et al., 1985; Young, 1987). The British Steel Corporation founded BSC Industry in 1975 – later renamed UK Steel Enterprise – to help create new alternative employment in the affected areas, by redeveloping land and buildings into sites for new economic activities, and by providing support and finance for business proposals by redundant workers (Young, 1987). The number of redundancies from the steel industry clearly peaked in the late 1970s and the early 1980s in Teesside and other areas in the UK (as a result of decisions and processes at the central government and headquarters of BSC). This then also coincided with a loss of employment in other manufacturing industries. As a result, unemployment rates rose quickly at the local level, and became intractable. The interventions by the MSC and local authorities – which were in addition confronted by cutbacks in the early 1980s – did not have much effect (Foord et al., 1985; Young, 1987).

The Iron and Steel Trades Confederation (ISTC) – since 2004 Community Union – has been the dominant union in the iron and steel industry; however workers were also organised through a number of other unions. Both at the national level and the local level, the ISTC and the other trade unions were unable to play a significant role in mitigating the social impacts of the restructuring operations. At the national level, the trade unions were not able to influence policy at BSC or at the central government after the Beswick-review of 1974-75 (by e.g. pressing for the phasing and managing of the reductions in the labour

force, or for an alternative programme of divestments and investments[77]). At least on paper, the corporate governance structure of British Steel Corporation offered several possibilities for the representation of employee interests. The Steel Industries Consultative Committee: a committee with representatives from the various unions to discuss all matters with senior management except wages. And the installation of 'worker directors' who represented employee interests in divisional and later also central board meetings, from 1968 until the early 1980s (Richardson and Dudley, 1987; Dudley and Richardson, 1990)[78]. Despite these possibilities for involvement, the labour unions were largely bypassed (Dudley and Richardson, 1990). On the one hand, this was because the unions – and especially the main union ISTC – were generally quite accommodative and did not contest the necessity of the restructuring and rationalisation operations. Preservation of employment was not made into an issue; and even the general strike of 1980 was principally a dispute over pay (Morgan, 1982; Dudley and Richardson, 1990). On the other hand, unions could not exercise much influence because the relations between and within the trade unions were characterised by much rivalry (Morgan, 1982). ISTC was clearly the largest union, but other, smaller unions were often the main representatives of various separate trades and crafts. Also within the unions, rivalry existed between the various branches at different locations. With these fragmented interests it was difficult to organise a national campaign to prevent redundancies.

Also at the local level, the ISTC and other unions did not participate in campaigns to oppose closures and restructuring operations at particular locations, as this could put other locations at risk and would thus fuel internal conflict (Morgan, 1982; Hudson and Sadler, 1986). Central control within the ISTC was very tight and little solidarity existed between different locations in the UK (Richardson and Dudley, 1987; Dudley and

[77] The Iron and Steel Trades Confederation (ISTC) did publish an alternative strategy in 1980 – 'New Deal for Steel' – with some proposals to this effect; but this had no discernible impact on BSC's policies (Richardson and Dudley, 1986).

[78] In 1977 the BSC furthermore proposed the Steel Contract: a restructuring of relations at plant, division and central levels, which would encourage greater participation and involvement of employees. The unions however felt they were being co-opted into essentially a programme of contraction and closures, and stalled the negotiations on the Steel Contract (Dudley and Richardson, 1990; Upham, 1997).

Richardson, 1990; Sadler and Thompson, 2001). Furthermore, once closures and restructuring operations went ahead, the trade unions did not have a significant role in discussions and measures on how to cope with redundancies. Initiatives at the local level were generally coordinated through a coordinating committee, with representatives from local governments, MSC and other government agencies, and BSC Industry, but with little union involvement (Young, 1987). In the later crises in 2000-2001 and 2009-2011 task forces were established (the Corus Task Group and the Corus Response Group respectively) which would investigate and help implement investment programmes to facilitate economic development in the Teesside-area (John Bridge, personal communication; House of Commons North-East Regional Committee, 2010; see also Pike, 2002). Unlike earlier restructuring operations in the 1970s and 1980s, the trade unions did manage to play an active role in these task forces, and were instrumental in persuading SSI to buy Teesside Cast Products (Evening Gazette, 2010). The responses to the most recent mothballing of the plant are still on-going.

7.6. Evolution of policy and governance

After 1967 strategic decision-making with regard the iron and steel industry in Teesside has disappeared from the area. This has left it subject to decisions made elsewhere. The decision of BSC in 1977 (with support of the central government), to move from a strategy of expansion to one of contraction, has been particularly fateful for steel-making in Teesside. The modernisation and expansion plans for the Redcar-Lackenby plant were not fully implemented, as a result of which the plant is economically vulnerable, as has been witnessed by recurrent crises in 2000-2003, 2010-2011 and 2015. Moreover, the shift in central government policies vis-à-vis the British Steel Corporation after 1979, led to further drastic and rapid downsizing, also in Teesside. The loss of employment in the iron and steel industry in the late 1970s and early 1980s, contributed significantly to the mass unemployment in the Teesside-area in the 1980s. The trade unions could do little to push for the amelioration of the social impacts of the downsizing and restructuring operations, both at the local and at the national levels.

The rapid and disruptive changes in the Teesside-economy, were accompanied by a series of policy and governance initiatives by actors at various scales, to regenerate the economy in Teesside and combat (mass) unemployment. Normal spending on economic development (narrowly defined as expenditure on the attraction of inward investment, entrepreneurship and business support, and urban regeneration) can be approximated at around 0.5 to 1% of Gross Value Added in Teesside since the early 1980s; though at times expenditure has exceeded 1.5 or even 2% (in particular when Teesside was a main beneficiary of Regional Development Grants in the late 1970s, and during the operating period of the Teesside Development Corporation from 1987 until 1998).[79] In this section, I will discuss the main developments in policy and in governance, after first briefly introducing the main outlines of the institutional framework provided by various government entities.

7.6.1. *Framework of government institutions*

Government policy making and policy implementation with regard to the economic development of Teesside, happens at different levels of scales:

- Most powers and resources are concentrated at the national level. Various central government departments administer aspects of economic development: Trade and Industry (now Business and Innovation), Environment (with Transport and Housing), Employment / Work, Education, etc. Other central government departments such as the Prime Minister's Office, the Deputy Prime Minister's Office, Treasury and Local Government have a more supervisory and coordinating role. Over the years, many

[79] Based on figures from the Statement of Accounts and Statistical Information 1992/1993 (Cleveland County Council, 1993)), Tees Valley City-Region: A Business Case for Delivery (Tees Valley Joint Strategy Unit, 2006), and current spending by the Local Enterprise Partnership (www.teesvalleyunlimited.org.uk). Figures for spending on Regional Development Grants are from Foord et al. (1985, p. 32) and figures for spending by the Teesside Development Corporation are from Robinson et al. (1999, p. 158). More precise estimations would require much more information on spending from many different government bodies and organisations active in Teesside over the years, and on support from the European Structural Funds. This would be difficult to come by and would take much more time and effort than the purpose of this study permits.

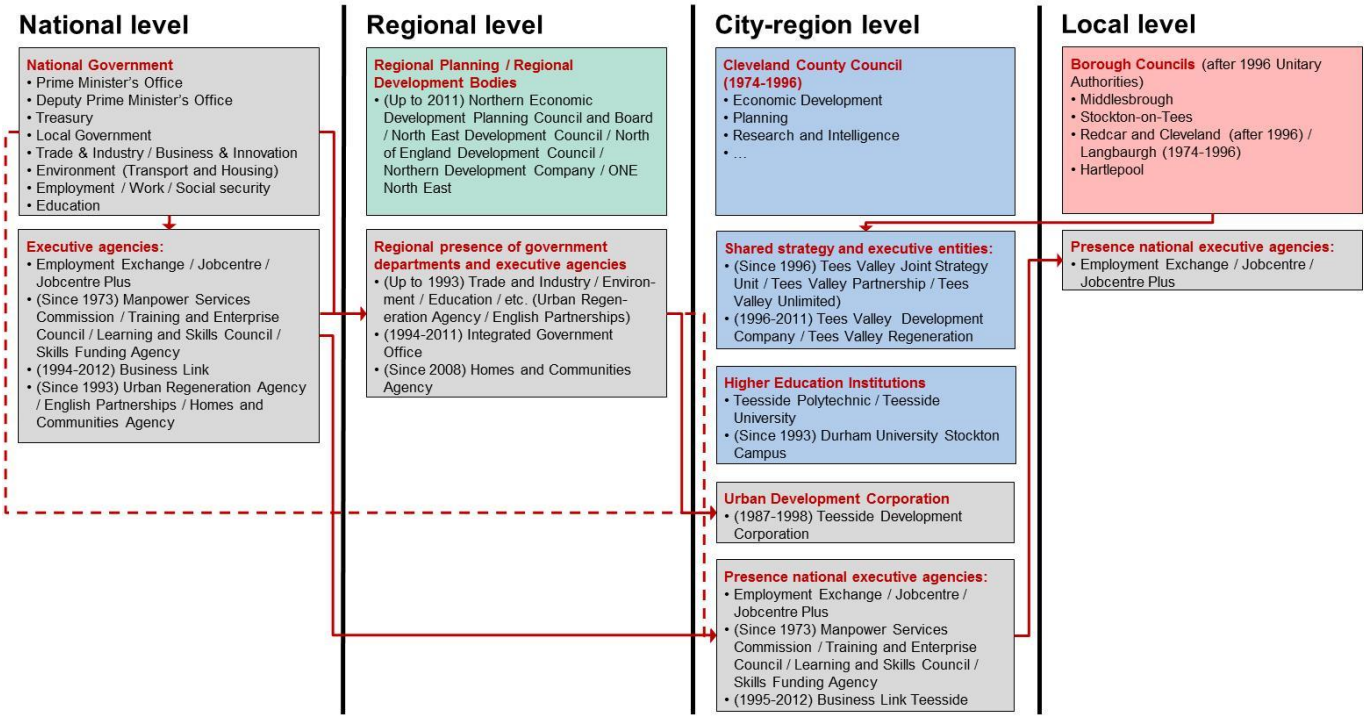
executive agencies have been created (and sometimes disbanded again) to execute specific tasks, such as managing and developing real estate, labour market intermediation, training and skills development, and business support. These executive agencies are primarily administered by the central government, but often have offices at subnational levels. Also the British Steel Corporation was as a state-owned enterprise until its privatisation in 1988, controlled by and accountable to the central government.

- At the local level, frequent changes have taken place over the years. Since 1996, Middlesbrough, Stockton, Redcar and Cleveland, and Hartlepool Borough Councils are unitary authorities, which means they do not have to share or submit powers to a county council. Between 1974 and 1996 however, Cleveland County Council covered the Teesside-area, and there was a two tier system of local government, with Cleveland County, and the four boroughs of Middlesbrough, Stockton, Langbaurgh and Hartlepool. Also from 1968 until 1974 there was a one-tier system, with Teesside County Borough (covering Middlesbrough, Stockton, and a substantial part of present-day Redcar and Cleveland) and Hartlepool County Borough as local authorities.
- At the level of the city-region of Teesside, Cleveland County Council had some limited resources to promote economic development, and had powers in spatial planning: it was responsible for structure planning, while the four boroughs were responsible for development planning. Cleveland County Council also acted as the Local Education Authority, responsible for delivering primary, secondary and further education (after 1996, this function transferred to the Borough Councils). After the abolishment of Cleveland County Council in 1996, the four local authorities in the Teesside-area, together with Darlington Borough Council (collectively called 'Tees Valley'), decided to coordinate strategic planning, and economic development and intelligence. They also established a joint development company for the area (Tees Valley Development Company). From 1987 until 1998, the Teesside Development Corporation - as an urban development corporation – had a mandate for the whole Teesside-area. Urban development corporations were established by, and accountable to, the central government, and had broad planning powers (overruling many of the planning

powers of local authorities) to develop sites that were previously occupied by industry. Also Teesside University (before 1992, Teesside Polytechnic) primarily operates at the level of the city-region. The Port Authority (now PD Ports; but before privatisation in 1992, Tees and Hartlepool Port Authority), manages harbour activities along the river Tees and in Hartlepool, and is also the owner, developer and landlord of some tracts of land (most notably Seal Sands).

- At the regional level, several bodies have existed over the years for the economic promotion of the North-East and the Northern Region (between 1974 and 1999; which encompassed a somewhat broader area than the North-East): the North-East Development Council / North of England Development Council (1961-1986; renamed in 1974), the Northern Development Company (1986-1999), and ONE North-East (1999-2011). The coalition government of Conservatives and Liberal Democrats, which came to power in 2010, abolished the entities for economic development at the regional level. From 1965 until 1979 a Northern Economic Planning Council (together with a Planning Board) existed, to coordinate economic planning for the Northern Region (without formal planning powers however). ONE North-East had similar coordinating responsibilities as a Regional Development Agency. From 1994 until 2011 a Government Office for the North-East existed, in which the regional representations of the various central government departments (Trade and Industry, Environment, Employment, Education, etc.) were integrated.

Figure 30 shows the main government entities at different levels with regard to the economic development of Teesside.



Grey indicates entities (controlled) at the national level, turquoise at the regional level, blue on a city-region level, and red at a local level.

Figure 30: Government entities at different levels with regard to economic development in Teesside

7.6.2. *Evolution of policy programmes and initiatives*

As the national government is the primary actor, changes in the central government will be the most important driver in the changes in economic development policies. The most important 'breaking points' occurred in 1979, when a new Conservative-led government with Margaret Thatcher was installed, and in 1997 when New Labour won the elections and got to power. These breaking points are based on some marked shifts in policy, the effects of which were usually felt in the Teesside-area with a slight delay of 2 or 3 years. Around these points however also within the area some important political and institutional changes took place. From 1979 onwards, and especially after 1981 – when Labour gained control of Cleveland County Council – local authorities and other local actors, started to enact their own economic development policies (where previously their activity was limited to just spatial planning). Around 1996-1998 several institutional

changes took place in the area, which changed the 'playing field' somewhat. Cleveland County was abolished in 1996, and with this the Boroughs of Middlesbrough, Stockton, Hartlepool and Redcar and Cleveland became unitary authorities. These local authorities – together with Darlington – continued to work together on issues of strategic planning and economic development. Furthermore, the 10-year operating period of the Teesside Development Corporation ended in 1997, and the corporation was wound up in 1998.

We can hence distinguish the following episodes in the evolution of policy programmes and initiatives:

- Episode 1 (until 1979): Modernisation of heavy industry and (failed) diversification.
- Episode 2 (1979-1997): Divergence of local and national policies, and property-led regeneration.
- Episode 3 (1997-date): More integrated economic development policies.

Table 16 presents an overview of the main focal points in each episode.

	Special support steel industry during steel crisis	Active labour market policy for redundancies	Inward investment / business attraction	Science, Technology, Innovation (STI) policies	Entrepreneurship / business support	Training / skills policy	Upgrade of built environment / Urban regeneration	Highlights
Episode 1 (until 1979)	●	•	●			•	●	• Modernisation of heavy industry in Teesside, assisted by national government through e.g. Regional Policy investment grants., and financial support for British Steel. • Planning for projected growth, with investment in transport infrastructure, and efforts to diversity economy in Teesside towards more light manufacturing and services (not successful). • Initial consensus between national government, local governments, and large companies (BSC and ICI), increasingly tenuous by the late 1970s.

	Special support steel industry during steel crisis	Active labour market policy for redundancies	Inward investment / business attraction	Science, Technology, Innovation (STI) policies	Entrepreneurship / business support	Training / skills policy	Upgrade of built environment / Urban regeneration	Highlights
Episode 2 (1979-1997)		•	●		●	•	●	• Divergence between local and central government policies. • Local initiatives to deal with crisis: mainly in active labour market initiatives (work creation and (re)training), and enterprise / business support. • Central government imposed 'property-led regeneration' through the Teesside Development Corporation and urban policy. • Teesside Polytechnic becomes Teesside University in 1992; Durham University establishes campus in Stockton, and first initiatives to facilitate technology transfer.
Episode 3 (1997-date)			•	●	●	●	•	• Better coordination between sub-regional / local, regional and national initiatives through Tees Valley Partnership and Tees Valley Vision. • Also focus on Science, Technology, Innovation, through Centres of Excellence and technology transfer / innovation programmes in process industry, digital media, and renewable energy. • Increased attention for development of skills of the labour force.

Table 16: Development of policy programmes and initiatives in Teesside

Overall there has been little continuity in the evolution of policy in economic development, and until about 2000 a *coordinated* attempt to transform the area in response to deindustrialisation, has been absent. There was a shift from a broad consensus to modernise heavy industry in Teesside and diversify the economic base through inward investment until the late 1970s, to a period in the 1980s and 1990s in which policies were incoherent and fragmented. The main focal point of central government policy was on property-led regeneration during this period, while local actors focused (with few resources) on coping with mass unemployment and supporting entrepreneurship and local businesses. In this time, there was little coordination between

initiatives and interventions. After the New Labour government came to power in 1997, several changes in policy and governance took place; the effect of which was that policies were better integrated and synchronised. At this point, also developing the available knowledge base in the area and supporting innovation (i.e. Science, Technology and Innovation policies), became important focal points in some designated sectors: the process industry (building on chemicals and engineering), renewable energy and digital media.

Episode 1 (until 1979): Modernisation of heavy industry and (failed) diversification

As discussed in section 7.3.2, there was a broad consensus between the central government, local authorities, regional entities, major firms, and trade unions in the 1960s about the necessity to modernise Teesside's economy. Teesside was designated as part of the 'growth zone' in the North-East (together with Tyne and Wear, and parts of Durham County), which should be the main focus of investment and efforts to promote economic growth in the region (and offset the decline in other parts of the North-East, as a result of the closure of coal mines). From the early 1960s onwards a comprehensive programme for the development of Teesside was drafted and subsequently further refined, which basically guided the initiatives and actions of the main actors (central, local and regional government bodies, British Steel Corporation and ICI, and the trade unions) until the late 1970s. There existed a broad agreement between the main employers in Teesside and other actors (including the trade unions), in which it was presumed that what was best for the large firms was best for Teesside. Institutionally this consensus was supported by the fact that many councillors at the local authorities in Teesside were employees of BSC or ICI. Moreover, entities such as the Teesside Industrial Development Board (which existed from 1945 until 1969) and its successor Teesside Regional Organisation for Industrial Development (until 1974), also brought together representatives from the local authorities, employer organisations, trade unions, and other actors (Beynon et al., 1989). The main elements of the programme were already formulated in a 1963 White Paper on the development of North-East England (Secretary of State for Industry, Trade and Regional Development, 1963). In the 1966 report by the

Northern Economic Planning Council 'Challenge of the Changing North' (Northern Economic Planning Council, 1966), and especially the 'Teesside Survey and Plan' of 1969 (Wilson and Womersley, 1969) and the 'Teesside Structure Plan' (Cleveland County Council, 1977 / 1983), the specifics of the programme were further worked out.

This programme aimed to 'upgrade' the whole of the area: "Teesside, born in the Industrial Revolution, offers to the second half of the twentieth century both a tremendous challenge and an almost unique opportunity. The challenge lies in the legacy of nineteenth century obsolescence; the opportunity is to make it one of most productive, efficient and beautiful regions in Britain; a region in which future generations will be able to work in clean and health conditions, live in dignity and content and enjoy their leisure in invigorating surroundings." (Wilson and Womersley, 1969, p. 3). Hence the programme also encompassed objectives to improve the environment, housing and amenities in the area, and to stimulate research and technological innovation. However, in the end the expansion and modernisation of capital-intensive heavy industry took priority over other goals.[80] Reservations from local authorities and local action groups about for instance the negative environmental effects of the development of Seal Sands, were brushed aside by the central government, the large industrial firms, and trade unions (Hudson, 1986; Beynon et al., 1989). Plans for a university in Teesside (to the east of Middlesbrough) to stimulate the development of the knowledge base in the area, also did not receive backing from the central government (Wilson and Womersley, 1969; Cleveland County Council, 1977 / 1983).[81] Hence in practice the main elements of the programme in terms of economic development were: the modernisation and rationalisation of existing heavy industry on Teesside, the expansion of the area's transport infrastructure and provision of industrial land, and the attraction of new employment in light manufacturing and services. These three elements will be further discussed below.

[80] For a personalised account about the interests of heavy industry taking priority above other interests during this period, see Medhurst (2011).
[81] Although the already existing Constantine Technical College became Teesside Polytechnic in 1969.

In the 1970s, large-scale investments took place in the steel industry and chemical industry on Teesside to expand, modernise and rationalise their operations (already discussed in sections 7.3.2 and 7.5). These investments were to a considerable extent facilitated by incentives offered by the central government. Under Regional Policy, there was a generous system of grants, tax allowances, grace periods, and loans for investment in buildings, plant and machinery, which came with the status of Development Area (for most of Teesside) and Special Development Area (for Hartlepool) (North-East Development Council, 1971; Warren, 1973). The grants varied somewhat over time, but were generally about 25 to 35% of the investment sum. In the second half of the 1970s, the Regional Development Grants to support investments in Cleveland County, regularly exceeded 25% of the total amount of grants for the whole of the United Kingdom (Foord et al., 1985, p. 32). Moreover, as a publicly owned corporation, the British Steel Corporation had its £3 billion investment programme (with the new plant in Redcar / Lackenby) financially underwritten by the central government.

The second major element of the 'modernisation' programme for Teesside, was to provide industrial land and invest in new road and port infrastructure. To enable the expansion of the chemical industry and oil refineries, the reclamation of Seal Sands was to be continued, and provisions were made for the further development of Billingham and Wilton. For the new integrated steel plant, land was made available near Redcar (despite concerns about the environmental and visual impact). For the attraction of light manufacturing, several new industrial estates were established throughout Teesside (Cleveland County Council, 1977 / 1983). The main north-south and east-west highway connections connecting Teesside to the rest of the North-East were improved, and within the Teesside-area a new primary road system was put in place to take the increase in the volume of car traffic into account (Cleveland County Council, 1977 / 1983). Also port activities expanded with the opening of a container terminal at Tees Dock in 1967, the iron ore terminal at Redcar in 1973, and new berths for the oil refineries and chemical plants at Seal Sands.

The third element was the attraction of new employment in light manufacturing and services. It was foreseen in Teesside Survey and Plan that employment in steel, chemicals and heavy engineering would drop slightly in the 25-year period from 1966 until 1991 (Wilson and Womersley, 1969). Hence if the ambitions for Teesside as a 'growth zone', compensating for employment loss in other parts of the North-East, were to be realised, additional employment needed to be generated. The Teesside Survey and Plan and after this the Teesside Structure Plan, proposed to accomplish this though the attraction of light, labour-intensive manufacturing (such as light engineering, electronics, textiles, food and drink, etc.), and to a lesser extent, of services and public sector activities. New investments were to be attracted through the elaborate system of investment incentives by the central government already discussed. Between 1967 and 1976, the central government also paid out Employment Premiums for each worker employed in manufacturing in the Development Areas. In addition, local governments catered for new industrial estates and office developments, as well as undertaking promotional activities for the attraction of new investments (supported by the North-East Development Council / North of England Development Council). Though the rate of attraction of light manufacturing was reasonably good in the 1970s (compared to many other areas), it was (by far) insufficient to compensate for loss of employment in heavy industry (Cleveland County Council, 1979; Cleveland County Council, 1977 / 1983). Also in the service and public sectors, employment growth was less than expected (as discussed in section 7.4). Part of this was because in 1979 the Conservative government cancelled an earlier decision of 1976 to relocate the Property Services Agency (with 3,000 jobs) to Middlesbrough (Hudson, 1990).

Episode 2 (1979-1997): Divergence of local and national policies, and property-led regeneration

By the late 1970s it was clear that the objectives to increase the amount of employment in the Teesside-area, while also diversifying the economy and increase the quality of

employment, were not going to be met. Job loss in especially steel, heavy engineering, shipbuilding and to a lesser extent chemicals, took place at a much faster rate than anticipated, and attraction of new employment proceeded only moderately. Unemployment was rising quickly. Doubts were being raised about the benefits for the area of continuing to cater to the needs of heavy industry: "The structure plans aim to diversity the County's economic base by attracting light manufacturing and service jobs, whilst at the same time they encourage the growth of capital-intensive industry by zoning 2,000 acres of land for further growth. Are these two things incompatible, or can they both realistically be pursued side by side?" (Cleveland County Council, 1979). The broad consensus on the modernisation and upgrading of the economy on Teesside, thus fell apart. Moreover, in May 1979 a new Conservative government took over at the national level, which led to a number of very different focal points in local and regional economic development policy. The period from 1979 until 1997 – and especially the period from 1979 until 1990 - is characterised by a striking divergence of policy-making, between on the one hand policies to cope with mass unemployment and further economic development by local authorities and other actors at the local level, and on the other hand the central government trying to impose its own agenda. I will discuss the evolution of policy-making at both these levels, in turn.

At the local level, the local authorities started to undertake their own economic development policies to complement the attempts to attract inward investment through incentives. These were mostly aimed at supporting more indigenous development through entrepreneurship and growing local businesses (Hudson, 1986). From 1979 onwards Cleveland County Council launched several measures in this domain. Some of these measures were aimed to provide financial assistance to small firms (Gallant, 1982).[82] Other measures focussed on providing counselling and information service (Robinson, 1979; Hickie, 1985).[83] These schemes complemented similar measures available through the central government (partly funded through the European Regional

[82] Such as the Small Business Grant and the Flexible Assistance Scheme.
[83] Such as the creation of Enterprise Agencies and the publication of business directories.

Development Fund) (Greene et al., 2004).[84] From the late 1980s onwards, the first initiatives started to emerge in Teesside and in the North-East region more broadly, to stimulate more technology transfer from higher education institutions and research centres, to firms in the area (Cleveland County, Council, 1990; Hassink, 1992). In 1992 Teesside Polytechnic was granted university-status; it subsequently expanded its programmes in part-time education and in ensuring widening participation, as well as its ties and collaborations with local businesses (Brennan, 2009).

However, these efforts could by no means stem mass unemployment in Teesside, as a result of the restructuring and closures in the steel industry and other heavy industries. Hence many policies enacted by the local authorities and the Manpower Services Commission in the 1980s were directed at combatting and alleviating unemployment, often partly funded through the European Social Fund. MSC operated several make-work and training programmes over the years to help long-term unemployed and school-leavers (re)gain work experience and skills.[85] Cleveland County Council tried to stimulate the formation of workers' co-operatives and community enterprises, through loans, grants, training, and advice (Gallant, 1982). Cleveland County Council furthermore operated several schemes to subsidise hiring unemployed people (Hickie, 1985).[86] In addition, several new training centres were established, to help (potential) workers acquire skills especially in working with computers and information technology (Gallant, 1982; Hickie, 1985). Most of these initiatives were very small-scale, in relation to the size of the unemployment problem in Teesside, and hence they could in many ways be seen as attempts to just "manage unemployment" (Foord et al., 1985, p. 48).

[84] Such as the Business Improvement Scheme (1984-1989), the Business Development Initiative and the Regional Enterprise Grant (from 1988) by the Department for Trade and Industry; and the Enterprise Allowance Scheme by the Manpower Service Commission (which operated from 1982 until 1991), in which unemployed people could retain unemployment benefits while working to establish a new business.
[85] Such as the Special Temporary Employment Programme, the Community Programme, the Community Industry Scheme, the Youth Training Programme, the Training Opportunities Scheme, and the Job Training Scheme.
[86] Such as the Recruitment Premium Scheme and the Cleveland Assistance Scheme for Employment.

From 1979 onwards, the central government imposed drastic cuts on the expenditures by local authorities. Moreover, through the Local Government, Planning and Land Act of 1980 and the Local Government Finance Act of 1988, central government increased its control on their policies, finances and tax rates. Hence, the resources and powers of local authorities to shape their own economic development policies were further reduced. Moreover, some large-scale changes took place in Regional Policy. In 1982, the whole of Cleveland County was made into a Special Development Area, which meant a more favourable regime of grants and other incentives. But already in 1984 these grants were revised and the conditions were made more stringent. The Regional Development Grant – which before 1984 was paid out automatically when certain conditions were met, and irrespective of any employment created – became more targeted on the creation of employment, and on projects that would not have happened without support (Wren, 1988). This meant that many of the investments by the large firms on Teesside (in particular ICI and BSC) would no longer receive assistance. In 1988, the Regional Development Grant was abolished. From then on only Regional Selective Assistance was available: a scheme which provides grants for investments on a discretionary basis (Wren, 2005).[87]. Nevertheless, the attraction of inward investment continued to be one of the focal points of economic development policy in Teesside and the North-East (Hassink, 1992). Local authorities, and from 1987 also the Teesside Development Corporation, would promote the area within the UK; while the North of England Development Council, and its successor from 1986 onwards, the Northern Development Company, would do the same internationally. There was only some limited success in attracting large establishments however. In 1994 Samsung opened a plant for microwaves and computer monitors, north of Billingham; but closed the plant again in 2004 never creating the 3,000 jobs initially foreseen (Gow, 2004).

As noted in Chapter 5 (section 5.4.3), the main emphasis in central government policy with regard to subnational economic development in the United Kingdom, shifted to

[87] Decision-making on applications for larger projects, also shifted from the Regional Office of the Department of Trade and Industry, to the main office in London (Wren, 1988).

urban policy. Urban policy was effectively economic development policy, as 'property-led regeneration' was adopted as the leading idea: physical regeneration would stimulate new economic activities, which would then result in wider social benefits (Robinson and Shaw, 1994). From the late 1970s onwards a plethora of initiatives and instruments were instituted.[88] By far the most important intervention in Teesside within the framework of urban policy was the establishment of the Teesside Development Corporation, which operated from 1987 until 1998. The Teesside Development Corporation was a second-generation Urban Development Corporation (UDC) established under the Local Government, Planning and Land Act of 1980. UDCs were vehicles to carry out a development programme for a designated area; that is "to bring land and buildings into effective use, encourage the development of existing and new industry and commerce, create an attractive environment and ensure that housing and social facilities are available to encourage people to live and work in the area" (Local Government, Planning and Land Act, 1980; quoted in Robinson, 1993, p. 4). Exemplifying the philosophy of 'property-led regeneration' the task for UDCs was to 'lever in' private sector investment in urban development projects, which would then lead to the creation of new employment and other benefits for the community.

The Teesside Development Corporation stayed very close to this remit and philosophy throughout (Robinson et al., 1999). It operated in a very singular, opportunistic, brash and

[88] Under the *Inner Urban Areas Act of 1978*, local authorities could receive funding for urban renewal projects through various grants. Furthermore, Middlesbrough was made a programme authority, which meant that it could designate certain areas as *Industrial Improvement Areas* in which subsidies and loans were available to assist new private investment (Robinson, 1979; Hickie, 1985). In 1981 respectively 1983, *Enterprise Zones* with relaxed planning restrictions and tax exemptions were established in parts of Hartlepool and Middlesbrough (Foord et al., 1985). In 1984, the *Cleveland Initiative* was launched: a programme of investments for the reclamation and development of formerly industrial sites on both sides of the Tees-river. Under the *Inner Cities Initiative*, a task force was set up for central Middlesbrough in 1986 to support in targeting the money available for the area through the many different programmes at the local and central levels (Action for Cities, 1988). *City Challenge* was initiated in 1991: it allowed local authorities to bid for funds for projects with economic, social and environmental objectives in disadvantaged urban areas (Robinson and Shaw, 1994; Rundle, 2005). They were required to follow a partnership approach with business involvement and community support. In 1994, City Challenge and many other urban policy programmes were combined into the *Single Regeneration Budget* (1994-2001). Several projects in the Teesside area received support through City Challenge and the Single Regeneration Budget.

secretive manner, with the relationships with the local authorities and community organisations in Teesside deteriorating quickly over time (Coulson, 1989; Robinson et al., 1993; Robinson et al., 1999). It did manage to implement a significant programme of developments across Teesside. This included some projects which corresponded with the priorities outlined in successive strategies such as Cleveland Initiative (1984), the Cleveland Structure Plan (1988), and the Cleveland Economic Strategy (1990), to further develop the port, to develop more opportunities for tourism, and to develop the service industry. With the support of the Teesside Development Corporation, the facilities of Teesport were expanded, and new road infrastructure was put in place, while a new Tees Offshore Base was created at the site of a former shipyard (Smith's Dock). In Hartlepool part of the docks were converted into a marina, with further visitor attractions. South of the river from Stockton, the former location of the Head Wrightson heavy engineering works, was transformed into a large mixed office and housing development ('Teesdale')[89], which also included a new college of Durham University (Queen's Campus Stockton). Other schemes (such as Teesside Park, Preston Farm, and Riverside Park) mainly consisted of out-of-town retail and industrial estates, with very little transformative impact (Robinson et al., 1999). While at still other sites, such as Middlesbrough Dock / Middlehaven and South Bank very little development took place. Hence for the amount of money it was able to spend (over £400 million in 10 years), the impact it had on creating new economic development prospects for the Teesside-area, was disappointing. Moreover, because of its style of operating it undermined the capacities of local actors to develop partnerships and networks which would have been important for continuing regeneration (Robinson et al., 1999).

Episode 3 (1997-date): More integrated economic development policies

In 1997 Labour won the national elections, and took control of the central government. This again meant a shift in priorities for local and regional economic development in the United Kingdom. At around the same time some considerable institutional changes took

[89] For this scheme, it was also necessary to build a barrage in the Tees-river further downstream, to stop ebb and flow, and prevent salt (and polluted) water from flowing upstream.

place in the Teesside-area and in the North-East region. After Cleveland County was abolished in 1996, the new unitary authorities of Middlesbrough, Stockton, Hartlepool and Redcar and Cleveland – together with Darlington – continued to collaborate on issues of economic development. They formed the Tees Valley Joint Strategy Unit to undertake strategic planning and generate economic intelligence, and the Tees Valley Development Company, to promote inward investment and tourism in the area. Furthermore, the Teesside Development Corporation came to the end of its 10-year term, and it was wound up in 1998. The new Labour government devolved more economic and political powers to Scotland, Wales, and Northern Ireland; and also intended to delegate some of these powers to the regions in England. In 1999 it established Regional Development Agencies, with a broad mandate and a substantial budget combining contributions from different central governments departments and from European funds, to further the economic development of the English regions (Perry, 2007). Concomitantly it also created Regional Assemblies, with representatives from local authorities, and business and civil society stakeholders. These were intended to act as precursors of a new regional tier of government, the plans for which – after a failed referendum in the North-East about more devolved powers in 2004 – were abandoned. The Regional Development Agency for North-East England – ONE North-East – provided some important new stimuli to the economic development policies in the Teesside-area. On the one hand, it shifted policy towards more of an emphasis on Science, Technology and Innovation, especially after 2002. On the other hand, it further delegated some of its budget and responsibilities to subregional partnerships within the North-East. Especially the partnership for Tees Valley / Teesside took this as an opportunity to formulate a comprehensive programme for its economic development, which would subsequently provide guidance for various other initiatives and programmes after 2000. At the same time, as a third development, the central government, put increased emphasis on vocational training and the development of skills. These three developments after 1997 will be further discussed below.

In 2002 ONE North-East initiated a £200 million long term investment plan under the label Strategy for Success. As part of this programme, a Science and Industry Council was

established to oversee the investments, together with a venture finance agency NStar to provide access to finance, proof of concept investment, and commercialisation assistance (Hudson, 2011b). At the centre of the investment programme were five Centres of Excellence in areas in which the region had particular research strengths and which offered opportunities for commercial success (identified in a report by Arhur D. Little). Two of these Centres of Excellence were based in the Teesside-area: the Centre for Process Innovation (CPI) for process industries (which was to be based in the former ICI R&D-facilities at the Wilton Centre); and Codeworks, focused on innovation in digital media in Middlesbrough (and also Sunderland) (ONE North-East, 2012). The Centre for Process Innovation has been particularly successful as a research centre, and expanded quickly over the years since its establishment in 2004. It was initially focused on bringing research at the regional universities (especially Newcastle, Teesside and Durham) together with industry primarily based in Teesside. But now it has gradually expanded the technological domains within it is active, to also include biotechnology, nanotechnology, photonics, and printable electronics; and with this also its geographical reach in terms of university and industry partners is much larger (Goddard et al., 2012). CPI has thus evolved into a national research centre, which was confirmed in 2011, when it was designated as one of the central government's new network of centres of excellence: the Catapult Centres. Nevertheless, CPI is still an important asset for the Teesside-area and is at the centre of much new innovative activity in the remaining heavy industrial base, now renamed as 'process industry cluster' (mainly consisting of chemical industry, but recombined with expertise in engineering and steel-making). Codeworks has been less successful, and was remade into a business network organisation in 2004 (ONE North-East, 2012). However, ONE North-East has continued to support Digital City in Middlesbrough, which combines a knowledge base in digital media at Teesside University, with a support organisation and incubator for start-ups and businesses in Middlesbrough.

When it became clear that ONE North-East would delegate part of its responsibilities and budget for a programme in Tees Valley, the Tees Valley Partnership was formed in 1999, comprising of the five local authorities, the Chamber of Commerce, the Learning and Skills

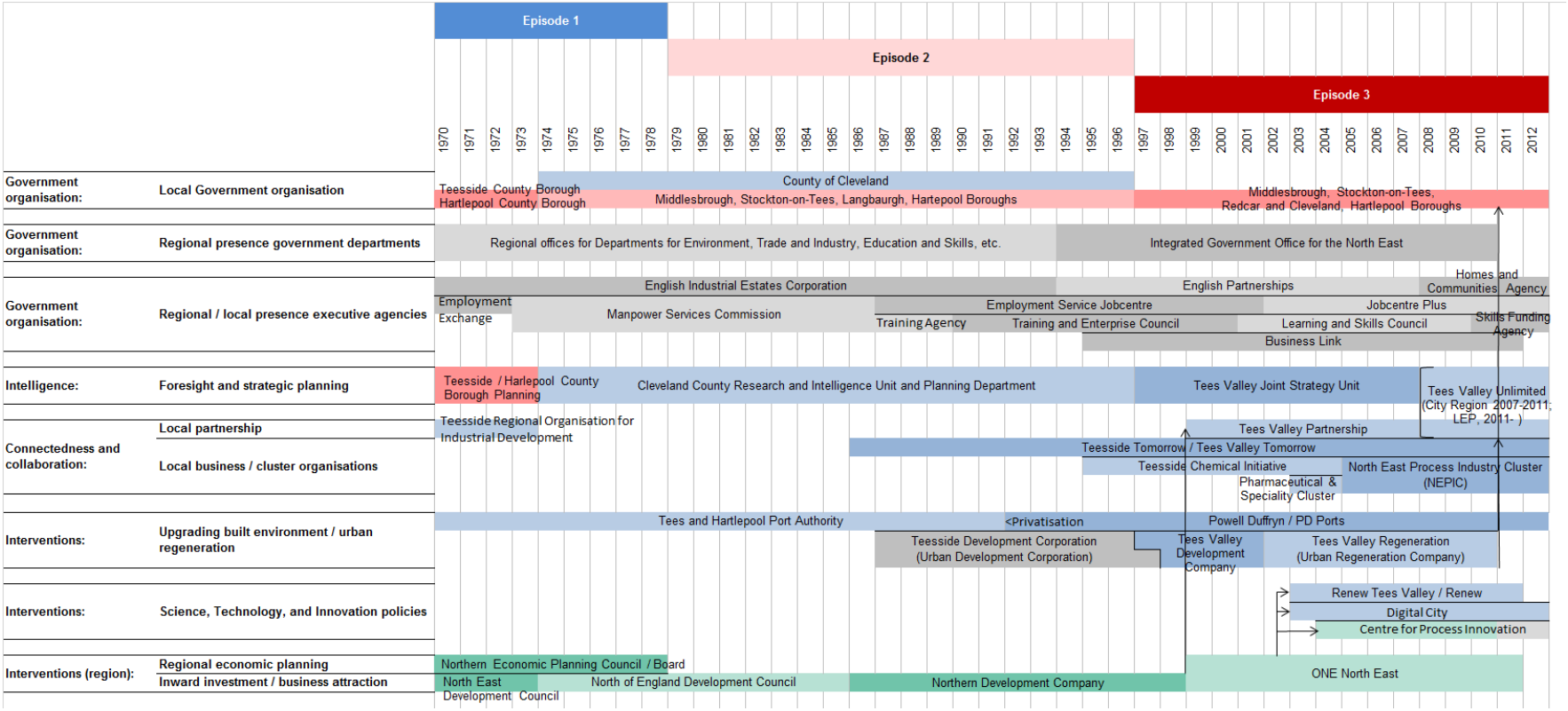
Council and Tees Valley Tomorrow (a local business organisation). The Tees Valley Joint Strategy Unit acted as its secretariat. This Partnership guided the production of the Tees Valley Vision, and subsequently after 2002 when the vision and associated investment programme were finalised, the Partnership was reformed and expanded into a body which would supervise its implementation. The Tees Valley Vision is an attempt to coordinate initiatives and actions in multiple domains and by various actors: it is built around three main themes: "creating sustainable jobs, creating attractive places, and creating confident communities" (Tees Valley Joint Strategy Unit, 2002). With regard to the future development of the economy, it emphasises the value of existing assets and activities: "we must recognise that our economy is a manufacturing one based on world class chemicals clusters, a port - the second largest in terms of volume in the UK, an infrastructure able to support further economic growth – and an engineering and growing service economy which is largely dependent on the manufacturing base" (Tees Valley Joint Strategy Unit, 2002, p. 7). The further development of the chemicals / process industries cluster, and associated opportunities in renewable energy, environmental technologies, biotechnology, engineering and logistics, are hence a central element of the vision; in addition to more generic policies aimed at business and enterprise support, upgrading the built environment, and enhancing people's skills base and aspirations. Within this vision, the remaining steel industry is no longer regarded as a dependable and important asset, but rather as one of multiple elements within the 'process industry'. The comprehensive programme of the Tees Valley Vision, with some clear priorities, has served as a guide for policies from 2002 onwards, albeit with various changes in the broader institutional and funding arrangements (to be discussed in the next section). Despite these frequent changes, the basic strategy and priorities have been similar throughout (see e.g. Tees Valley Joint Strategy Unit (2006) and Tees Valley Unlimited (2011)).

The New Labour government developed a number of new initiatives in vocational training and development of skills after 1998. The 'New Deal' – which ran from 1998 until 2010 – was a workfare programme that tried to tackle youth unemployment and long-term

unemployment, by creating new employment and training opportunities (Martin and Swank, 2012). In 2001, the Learning and Skills Council was established, to succeed the Training and Enterprise Councils, to coordinate and fund further education after the age of 16. It meant that resources and powers became again more centralised (similar to the period before the Training and Enterprise Councils, when the Manpower Services Commission operated). The Blair administration also developed several initiatives to improve the quality of vocational training provision, and support and incentivise young people in continuing their education (Chapman et al., 2007). Common to all these initiatives was to more closely involve employers (and to a lesser extent also trade unions) in vocational training and in the development of skills at the lower end of the labour market. However, on a purely voluntary basis. On the whole, the increased efforts have not led to more expenditures by, and a greater participation by, employers in vocational education and skill development (Martin and Swank, 2012). Hence, these new initiatives have done little to reverse the low skill equilibria that seem to persist in many sectors and many regions, including Teesside.

7.6.3. *Evolution of governance arrangements*

As is clear from the preceding section, there have been many initiatives and programmes enacted over the years, and frequent changes and shifts.in policy. This is also reflected in the arrangements with regard to the governance of economic development in Teesside. Many institutions have been established and abolished again, or changed their set-up (and name). The development of the most important governance arrangements since 1970 can be seen in Figure 31.



Grey indicates entities (controlled) at the national level, turquoise at the regional level, blue on a city-region level, and red at a local level.

Figure 31: Development of governance arrangements in Teesside

As discussed in section 3.3, such governance arrangements can perform different functions with respect to adaptation and resilience:

- They can serve to connect different parties and interests.
- They can produce strategic intelligence, such as analysis, foresight and development of strategic options.
- They can be aimed at managing specific policy programmes.

For each of these functions, I will analyse how arrangements have evolved in Teesside.

Connectedness and collaboration

When the consensus on the modernisation and upgrading of the economy in Teesside fell apart in the late 1970s, arrangements to coordinate initiatives in economic development across the various governments, executive agencies, and social partners, - and thus guide the transformation process - were lacking. Especially in the 1980s and 1990s this has resulted in many different initiatives by different actors, but without much coordination and often without much receptivity for local circumstances and needs. Two factors are important in this respect. Firstly, government departments and executive agencies retain most powers and resources, and perform many of the tasks with respect to economic development on a subnational level. These departments and agencies are primarily accountable to the central government, and hence there are strong forces working on these organisations to operate within their own 'silo' and remit, and apply a standardised approach without much sensibility for local circumstances. This makes the coordination of actions and pooling of resources at a subnational level, inherently problematical.[90] Secondly, different functions and different policy initiatives in subnational economic development operate at different spatial levels (North-East region, Teesside / Tees Valley city-region, localities, and even the whole of Northern England (as in the case of the

[90] This also makes direct relations with the national level quite important, both to lobby and to keep track of what is happening; both within the civil service (White Hall) and within the political arena (Westminster). Members of Parliament have a role to play in this regard (especially when their party is in government), as they represent a constituency within the area, but have access to political decision-making at the national level.

Northern Way-initiative[91])); especially in the 2000s this created a "messy morass of competing spatial imaginaries" (Pike and Tomaney, 2009, p. 26). Hence the institutional landscape with regard to subnational (economic) governance in England, has been described as a "confusing patchwork" (Robinson and Shaw, 2001, p. 474), and "a pattern of bewildering complexity" (Pike and Tomaney, 2009, p. 24). Given these circumstances and shifting parameters, it has been difficult for actors within the Teesside-area to arrive at a coherent set of policies with long-term commitments.

A new institutional infrastructure to bring the various actors within the area together (local authorities, central government departments, executive agencies, businesses, trade unions, etc.) was only slow to take shape. First, at the regional level, local authorities, central government departments, and the regional sections of the Confederation of British Industry and the Trades Union Congress, came together in 1986 to enhance the resources and mandate of the regional development body, to enable the region to compete more effectively for the attraction of inward investment (especially with Scotland and Wales) (Anderson, 1992; Hassink, 1992). As a consequence, the existing North of England Development Council was replaced by the Northern Development Company. Second, at the subregional level new business networks emerged in Teesside in the 1980s and 1990s, such as Teesside Tomorrow (later Tees Valley Tomorrow) and the Teesside Chemical Initiative, as ICI and BSC became less important in the area's economy, and outsourced or sold off parts of their operations. Third, also the boards of Teesside University, Teesside Development Corporation, Tees Valley Development Company, and later Tees Valley Regeneration, facilitated connections between representatives from various actors, mainly local governments and businesses. But it was only in 2000, with the Tees Valley Partnership, that an entity was formed which could connect many different actors and act as a platform to work out a more integral programme for the economic development of the Teesside-area.

[91] The Northern Way Initiative was a collaboration between the RDAs for North East England, North-West England and Yorkshire, initiated by the Deputy Prime Minister John Prescott in 2004. It was intended to develop and implement strategic initiatives for the economic development of the whole of the North of England. A central element was a focus on City-Regions.

The Tees Valley Partnership was set up between the five local authorities, the Chamber of Commerce, the Learning and Skills Council and Tees Valley Tomorrow, to manage the delegated funds from ONE North-East for the Tees Valley sub-region: it first oversaw the formulation of the Tees Valley Vison, and from 2002 it coordinated its implementation. The Tees Valley Joint Strategy Unit served as the secretariat for the Partnership. In 2007, the Tees Valley Partnership was transformed into a more formal arrangement – Tees Valley Unlimited – with an overall leadership board, supporting boards for specific themes, and consultation forums (Tees Valley Joint Strategy Unit, 2006). Tees Valley Unlimited was put in place in anticipation of additional money from other sources than ONE North-East for the economic development of Tees Valley, as a result of the Northern Way-initiative and a multi-area agreement (which was indeed concluded in 2008). From 2010 onwards, Tees Valley Unlimited operates as a Local Enterprise Partnership for the Tees Valley area, under the new localised economic development agenda of the Conservative–Liberal Democrat coalition government. Moreover, with the dismantling of ONE North-East in 2012, it can maintain direct relations with the central government (even though this has also meant reduced funding). Despite these changes in the arrangements of the Tees Valley Partnership and Tees Valley Unlimited, connectedness has actually become more formalised and has been reinforced over the years, which has also led to more consistency and a better coordination in policy initiatives. It should also be noted however, that with regard to involvement of actors from the private sector, these arrangements have strongly prioritised representation from businesses, and trade unions and civil society organisations have hardly been involved.

Strategic intelligence and strategic planning

From 1974 onwards, there has been an entity in place which provides strategic intelligence and planning for the city region: first Cleveland County Council Research and

Intelligence unit (together with the Economic Development and Planning units)[92], and subsequently – after the abolition of Cleveland County in 1996 – the Tees Valley Joint Strategy Unit, which was then fully integrated with Tees Valley Unlimited in 2010. Also at the regional level, entities to generate strategic intelligence and facilitate economic planning have regularly existed, with the Northern Economic Planning Council and Board (1964-1979) and ONE North-East (1999-2012). In addition, also at the regional universities (Durham, Newcastle, Teesside, and Northumbria), a lot of expertise have been build up on the economic development and economic issues of the North-East region in general and the Teesside area in particular (much of which has been used and cited in this chapter). Both at the city-regional level and regional level, many strategy and vision documents have been produced over time.[93] The Teesside Survey and Plan (1969), the Teesside Structure Plan (1977/1983), guided the consensus of the 1970s, and the Tees Valley Strategic Vision (2003) has been the principal document outlining the current more integrated strategy and priorities. But the recurrent production of strategy and vision documents (compared to South Saarland), also seems to reflect a need to substantiate requests for additional resources and initiatives on the part of the central government (where most resources and powers are reserved).

Important weaknesses of the framework for strategic intelligence and planning, appear to be that it does not incorporate multiple perspectives, and that expertise has been quite concentrated (whereas in South Saarland it is more dispersed among different actors). Until about 2000 the main unit for strategic intelligence and planning, primarily served the local authorities (Cleveland County Council and the Borough Councils). So the

[92] Other county councils (especially in the metropolitan areas) in the UK developed similar economic intelligence, as within the planning regime they were responsible for strategic planning and had to formulate and implement structure plans.

[93] For the city-region: 'Teesside Survey and Plan' (1969), 'Teesside Structure Plan' (1977 / 1983), 'Cleveland Structure Plan' (1988), 'Cleveland Economic Strategy' (1990), 'Tees Valley Strategic Vision' (2003), 'Tees Valley City-Region: A Business Case for Delivery' (2006), and 'Tees Valley Strategic Economic Plan' (2014). For the region: 'Challenge of the Changing North' (1966), 'An Outline Strategy of Development to 1981' (1969), 'Strategic Plan for the Northern Region' (1977), 'Unlocking our Potential' (1999), 'Realising our Potential' (2002) and 'Leading the Way' (2006), and various programmes for support from the European Structural Funds.

intelligence and planning documents it produced mainly served their needs. After 2000 the Tees Valley Joint Strategy Unit serves to support the Tees Valley Partnership and subsequently Tees Valley Unlimited. These arrangements complement the local public sector perspective, with a business perspective on the development of the area, as representatives from businesses have a leading role in these organisations (as well as in the boards of other important institutions for economic development in the area (also see Robinson and Shaw, 2001)). Trade unions or community groups however do not normally have a place within these arrangements (as before). This also means that they have developed little expertise and viewpoints with regard to the economic development of the area. Academic studies by academics of the universities in the region (e.g. Foord et al., 1985; Beynon et al., 1994; Robinson et al., 1999; Chapman, 2005) have been quite critical of the approaches behind some the policies enacted in Teesside, though their critique has been primarily directed at the central government. However, also actors within Teesside seem to have often been introspective in outlook, with little interest in alternative approaches, or a more fundamental reflection on the strategic direction of economic development policies (as is documented in Gray, 2001 and Chapman, 2011).

Managing interventions

As is clearly visible in Figure 31, there is a lack of consistency in operational governance arrangements over time, which reflects the lack of continuity in the evolution of policy discussed in section 7.6.2. This history of "instability" and "perpetual restructuring" in the institutional arrangements for subnational economic development in the UK, has also been noted elsewhere (Gray, 2001, p. 142; Elcock, 2014; p. 330; Mulgan, 2010, p. 18; Pike et al., 2015, p. 17). Many of these changes have been driven by forces *external* to the area, usually as a result of shifts in central government policy, especially after changes in power from Labour to Conservative or vice versa. These changes may be directly implemented by central government, or be a more indirect result of new central government programmes and funding regimes. 'Churning' (see section 3.4) is the best way to describe this dominant pattern: a recurrent restructuring, refitting, dismantling

and creation of arrangements, mainly driven by forces from outside of these arrangements:

- There have been frequent changes in local government organisation: in 1974 and 1996 major reorganisations took place (and in Teesside there was another reorganisation in 1968).
- Central government executive agencies, which perform tasks related to economic development on Teesside, have been regularly subjected to reorganisations, and thus their institutional evolution exhibits a pattern of churning. The national agencies for labour market mediation, training and skills, and real-estate management and development, have all been reorganised several times over the years. Sometimes organisations have been created and again dismantled, as in the case of Business Link (which was put in place to support businesses).
- The regional presence of central government departments has also undergone some changes. First in 1994 the offices for the region (mainly located in Newcastle) of various departments (Trade and Industry, Environment, Employment, Transport, Education, etc.) were integrated into one government office; but subsequently in 2011 this office was closed (and consequently currently there is no longer any regional presence).
- At the regional level, churning has regularly affected the entities for attracting businesses and investment (mainly from overseas), and for regional economic planning. In 1986 a major overhaul took place, when the local authorities in the region decided to replace the North of England Development Council by the Northern Development Company, and also involved the Confederation of British Industry (employers' organisation), and Trades Union Congress (trade unions) (Anderson, 1992; Hassink, 1992). In 1999 there was another restructuring, when the Labour government decided to establish Regional Development Agencies in every region in England, and the operations of the Northern Development Company were subsequently subsumed by the newly established ONE North-East. After a little more than a decade, ONE North-East was however dismantled in 2012 by the Conservative – Liberal-Democrat-coalition government. In regional planning, the Northern

Economic Planning Council and Board (established in 1964), was abolished by the incoming Conservative government in 1979. Strategy-making for economic development at a regional level, was revived again with the establishment of ONE North-East (whose primary mandate was to work out, regularly review, and support the realisation of a Regional Economic Strategy).

- Multiple changes have taken place in the arrangements for urban and industrial development and attracting of inward investment, again reflecting a pattern of churning. First from 1987 until 1998 the Teesside Development Corporation, was the main agent to perform these tasks. In 1997, directly after Cleveland County Council was abolished and as the operating period Teesside Development Corporation came to the end of its fixed term, the local authorities set up the Tees Valley Development Company as a vehicle to attract inward investment. The Tees Valley Development Company was then subsumed into Tees Valley Regeneration in 2002. Tees Valley Regeneration was set up as an Urban Regeneration Company, which, with support of central government money, was made responsible for several regeneration projects in the area[94] (in a similar fashion as the Teesside Development Corporation, but this time in close cooperation with the local authorities). Tees Valley Regeneration was dismantled in 2010, and its functions were transferred to the local authorities (urban development) and Tees Valley Unlimited (promotion of inward investment). The Tees and Hartlepool Port Authority (which owns large parts of the industrial land along the river Tees, e.g. Seal Sands), has remained intact over the years, but was converted from a trust port to a private company in 1992, and changed owners several times since.

The local government reorganisations, the restructuring of executive agencies, or the creation of entities with specific tasks in local and regional development by Acts of Parliament (such as the Teesside Development Corporation and ONE North-East), are mainly the result of direct interventions by the central government. The conversion of the

[94] Tees Valley Regeneration was also part of the government support programme after renewed restructuring operations at the Corus-plant in the years before (John Bridge, personal communication).

Tees Valley Development Company into Tees Valley Regeneration, and of the Tees Valley Partnership into Tees Valley Unlimited were also driven by changes in central government policies, but more indirectly through shifts in broader programmes and available funding. Several changes were more driven by policy-making *internal* to the area however, such as the creation of the Tees Valley Development Company (and the Joint Strategy Unit) after the abolition of Cleveland County Council in 1996, and at the regional level, the overhaul of the regional development body to create the Northern Development Company in 1986. Moreover, the establishment of several centres of excellence and innovation hubs in Teesside in the early 2000s (Centre for Process Industries, Digital City, and Renew Tees Valley / Renew), with the support of ONE North-East, may also be said to be the result of decisions within the area and region.

7.7. Conclusions

The Teesside-area industrialised rapidly in the latter half of the 19th century and first half of the 20th century on the back of the iron and steel industry, heavy engineering, shipbuilding and later also chemicals. These industries not only shaped the make-up of the economy of the area, but also the skills and mentality of its population, its (lack of) civic institutions, and its physical appearance. From the 1930s onwards the involvement of the central government within some of the heavy industries (especially in steel and shipbuilding) and within the area increased, reinforcing the overall pattern of dependency. The process of deindustrialisation has been very disruptive and pronounced. Arguably, the area never really recovered.

The steel crisis was an important part of this process of rapid structural change in the area. The contraction and rapid downsizing of British Steel Corporation (despite it being a state-owned company), have been badly felt in Teesside. As a result of the loss of demand and overcapacity, the construction of a modern and large integrated works to replace existing plants, was curtailed. This has left the area with a plant that proved not to be very competitive, and suffered from repeated crises in the early 2000s, 2010-2011, and

2015. Especially in the early 1980s there were mass lay-offs as central government pressure grew on BSC to restore viability. Relatively powerless and passive trade unions could do little to prevent and mitigate these negative social impacts in Teesside and elsewhere. Combined with redundancies from other industries, this led to intractable mass unemployment at the local level.

With regard to the evolution of policy in economic development, a consensus existed between the most important actors until the end of the 1970s, to upgrade and modernise the economy in Teesside. Both the private sector and public sector invested heavily in the area, and until the mid-1970s a great optimism about the future prevailed. Part of the programme was also to attract new employment in light manufacturing and services, as it was foreseen that employment in heavy industry would decrease somewhat. However, by the end of the 1970s it turned out that employment in heavy industry decreased much more and much quicker than expected, and that it had proven impossible to attract much alternative employment. In the 1980s, policies between the central government and local government started to diverge, with central government imposing 'property-led regeneration' as its favoured solution to the problems in old industrial towns (mainly through the Teesside Development Corporation), while local actors (with limited means) tried to cope with mass unemployment through make-work and training schemes, and attempted to assist local businesses and promote start-ups. It is only around 2000 that a more integral policy was established, with more coordinated actions in several policy domains. Most significantly, this led to initiatives to enhance the knowledge base and support innovativeness through the Centre of Process Innovation, and to a lesser extent through Digital City (together with supplementary programmes). This has led to the branching out of some new economic activities from some of the existing strengths in chemicals and engineering, such as renewable energy, low carbon technology, recycling, and offshore technology.

The evolution of policy has thus been disjointed, especially during the 1980s and 1990s. This is also reflected in the evolution of governance arrangements, which is characterised

by a lack of consistency and fragmentation. The fact that the central state retains many powers and resources in most areas, and frequently changes its priorities with regard to territorial policies and other policy domains (economic policy, labour market, education, etc.), is an important factor behind this. Frequent changes have taken place over time both in government organisation at the local and regional level, as in the executive agencies managing particular activities and interventions; 'churning' seems the dominant pattern in the evolution of governance arrangements. As such, there do not seem to have been any episodes of institutional / political 'lock-ins' (taken as stand-offs as a result of powerful interests inhibiting renewal) (see Grabher, 1993). Rather, connectedness between actors and control of resources within the Teesside-area were at a very low level for a long time, which made that the area was at the mercy of decisions and forces elsewhere. During the modernisation process in the 1960s and 1970 this was relatively unproblematic, but in the 1980s and 1990s this meant a period of relative chaos. Only after 2000, actors within the Teesside-area have been able to a certain extent to take matters in their own hand again and start working on a more coordinated and focused transformation process. Although the increased connectedness since 2000 is still somewhat limited, as trade unions and community groups are hardly involved. The provision of strategic intelligence and planning has been quite concentrated within the area, and arrangements do not promote exchange between multiple perspectives.

Chapter 8. COMPARING POLICY AND GOVERNANCE IN ADAPTATION AND RESILIENCE IN SOUTH SAARLAND AND TEESSIDE

8.1. Introduction

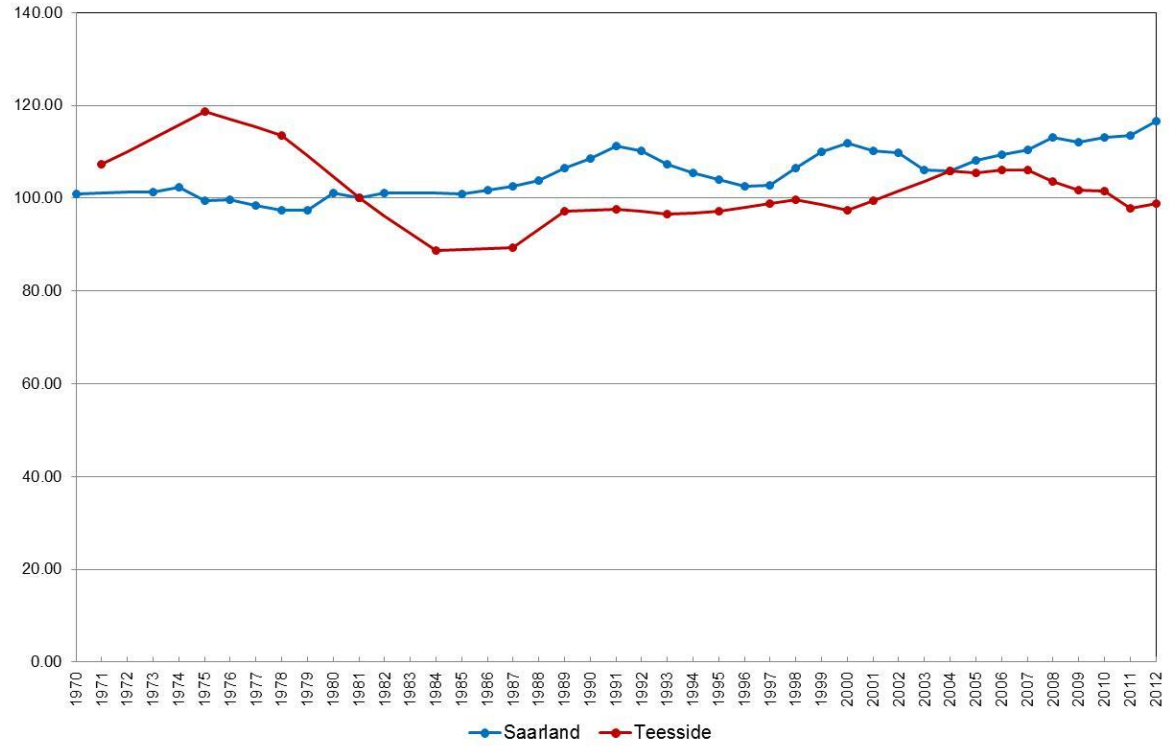
In the previous two Chapters I have discussed in detail how policy initiatives and governance arrangements have developed to cope with the steel crisis and structural change in South Saarland and Teesside. In Chapter 5 I outlined the wider institutional environment and development of policies at the national levels of Germany and the United Kingdom, and at the European level. In this Chapter I will compare the evolution of policy and governance in the two areas, and analyse the role these played in adaptation and resilience. Furthermore, I will scrutinise the impact of differences in the institutional environment, and thus closely examine the multi-scalar context in which both areas are embedded. The analysis in this Chapter explicitly applies the analytical framework discussed in Chapter 3 (which was the basis for the comparative framework outlined in Chapter 4), and thus I will employ the concepts reviewed there.

I will first examine how South Saarland and Teesside have performed in terms of adaptation and resilience, by looking at their performance on key indicators, and with regard to the opportunities and challenges they currently face. I will then also discuss the development of both regions in three functional domains: industries / clusters, labour market / skills, and the built environment. Next I will compare and analyse the evolution and role of policy and governance. And lastly, I will discuss the importance of differences in the institutional environment, and assess how the processes of adaptation and resilience were facilitated or hindered by structures and processes at higher scales.

8.2. Adaptation and resilience in South Saarland and Teesside

Overall, South Saarland has adapted more successfully than Teesside, and has thus shown more resilience in the face of disruptive structural change. This is evident from the development on a number of key economic indicators: total employment, the unemployment rate, and the development of GVA / head compared to the national average. Furthermore, the principal challenge facing Teesside is still to develop new drivers for the regional economy, whereas in South Saarland a new economic base has developed and the area now faces a number of new challenges. Lastly, if we look at the developments that have taken place in the domains of industries / clusters, labour market / skills, and built-environment, South Saarland seems to have been much more successful in overcoming lock-ins and creating new positive mechanisms of path dependence. I will discuss these three points in turn.

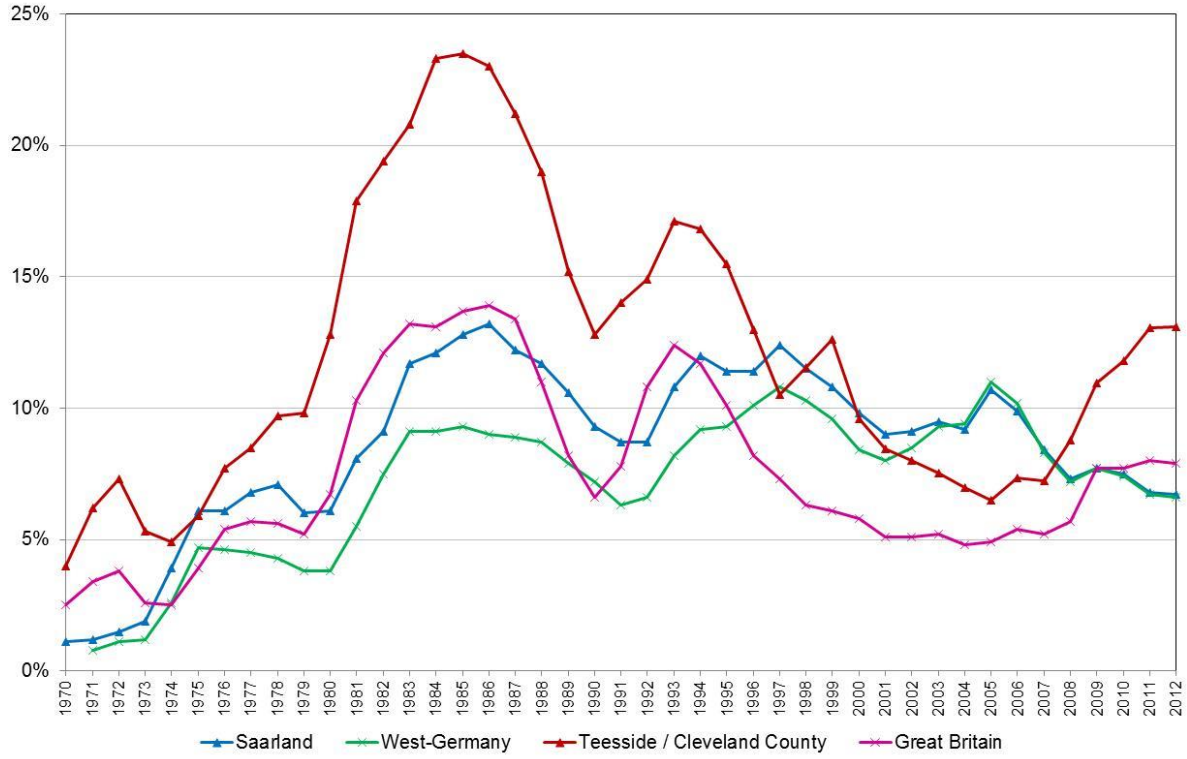
In Figure 32 the development of total employment in both areas can be seen. Employment in Saarland shows a moderate growth over the years (with some occasional ups and downs). Employment in Teesside on the other hand fell very significantly in the late 1970s and early 1980s, and recovery to the level of 1981 did not take place until around 2000.



Calculated from figures on total employment by employees (full-time and part-time).
Sources: Statistisches Amt Saarland (Statistisches Handbuch für das Saarland / Statistisches Jahrbuch); Office of National Statistics (Census 1971; Region in Figures; Annual Population Survey); Beynon et al. (1994); Cleveland County Council (1995a).

Figure 32: Index of development of total employment in Saarland and Teesside (1981=100)

The poorer and more versatile performance in employment in Teesside is also reflected in the development of the unemployment rates, shown in Figure 33. Unemployment in Saarland peaked far less high than unemployment in Teesside in the 1980s and 1990s, and in general unemployment shows a less cyclical pattern. This is evidence that the social consequences of structural change have been less far-reaching in Saarland than in Teesside. Moreover, the unemployment rate in Saarland has converged with the average rate in West-Germany, whereas the rate in Teesside is still – and has consistently been – above the rate in Great Britain.

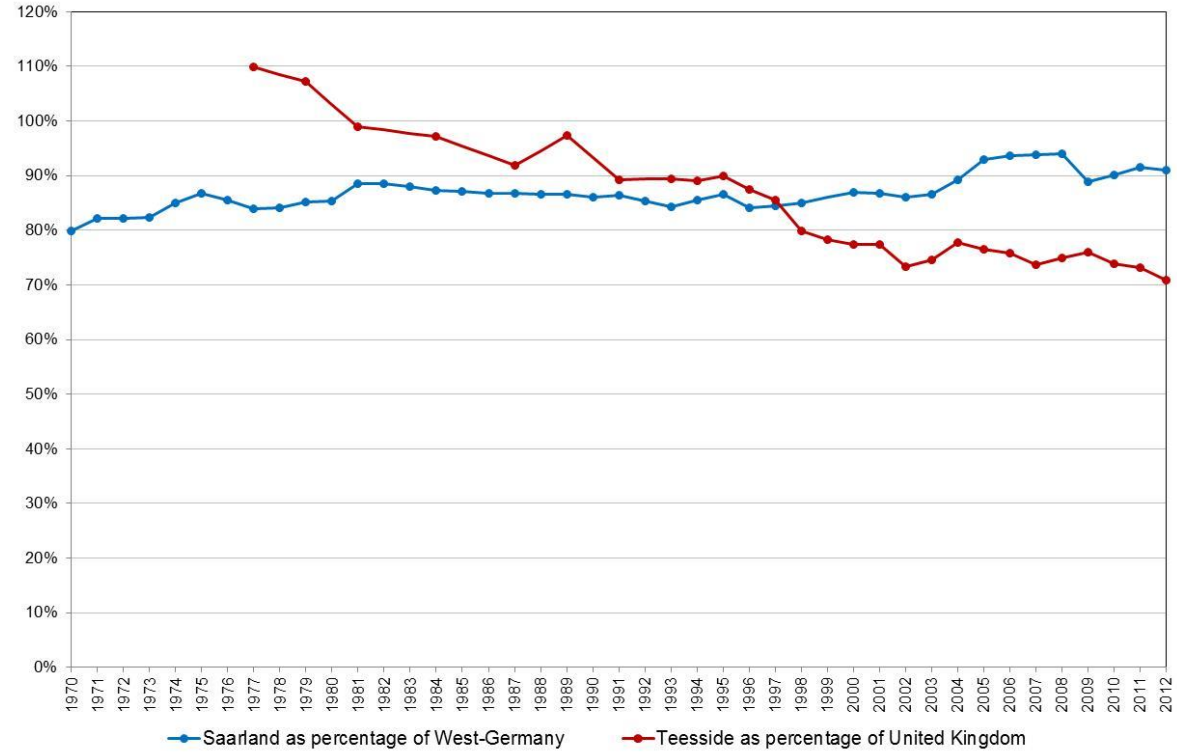


Changes in definitions over time are not taken into account. Figures for Teesside from 2004 onwards, are calculated from unemployment figures for Middlesbrough, Stockton-on-Tees, Hartlepool, and Redcar and Cleveland.

Sources: Statistisches Amt Saarland (Statistisches Handbuch für das Saarland / Statistisches Jahrbuch); Statistisches Bundesamt (Statistisches Jahrbuch; www.destatis.de); Cleveland County Council (1995b), Office for National Statistics (Regional Trends), NOMIS (www.nomisweb.co.uk)

Figure 33: Development of unemployment rates in Saarland, West-Germany, Teesside / Cleveland County, and Great Britain

Figure 34 shows a similar pattern of convergence, with the GVA / head in Saarland slowly catching up with the average in West-Germany over time, and making some significant gains in especially the 1970s and first half of the 2000s. GVA/head in Teesside was still relatively high in the 1970s, but has since consistently lost ground compared to the national average. In particular in the second half of the 1990s its relative position deteriorated quite rapidly, but in the 2000s the situation seems to have stabilised somewhat (excluding the effect of the financial and economic crisis after 2008). It should be noted however that in both South Saarland and Teesside, population has been declining in both absolute terms and relative terms. Hence the figures for GVA/head relative to national GDP/head are partly driven by this effect; the effect is however similar for both regions.



Changes in calculation methods over time are not taken into account. For Teesside, GVA/head up until 1995 refers to Cleveland County; and after 1995 it is calculated from data for Stockton and Hartlepool, and South Teesside NUTS3-regions.
Sources: Statistisches Bundesamt (Statistisches Jahrbuch für die Bundesrepublik Deutschland; Regionaldatenbank Deutschland; www.destatis.de), Statistisches Landesamt Saarland (Statistisches Handbuch für das Saarland / Statistisches Jahrbuch Saarland); Office for National Statistics (Abstract of Regional Statistics; Regional Trends; Region in Figures: North-East; NOMIS; Reference Table Regional GVA NUTS3 1997-2013; ww.ons.gov.uk).

Figure 34: Development of GVA / head relative to national GDP / head

Another indication that South Saarland has performed better than Teesside, is given by the type of challenges the areas face at the moment. The main policy ambition in Teesside is still to develop new drivers for the area's economy, as discussed in section 7.6.2. Currently, efforts are concentrated on developing the 'process industry'-cluster and possible offshoots in for example renewable energy, recycling, biotechnology, materials, and pharmaceuticals. Furthermore, also digital media / IT is seen to offer some opportunities, and is supported through incubators, counselling, and financial assistance. In South Saarland there are still policies in place to further enhance the strengths of the area's economy (as discussed), but it has meanwhile developed some robust economic

drivers (a manufacturing core around automotive, steel, and machinery; and the IT-sector). Some new challenges have emerged however, which are now seen as the main priorities for the area's further development: the poor state of the public finances of the Saarland government, and the ageing and decline of the area's population. As a result of the large expenditures to restructure and preserve the steel industry, the relatively high unemployment in the 1980s and 1990s, and the somewhat weaker tax base over the years, the government of Saarland has accumulated large debts (Kurtz, 2014). Currently the level of debt is at around 46% of regional GVA, and about 20% of the state's budget is now spent on interest payments. Hence to an extent the success in economic adaptation, has taken its toll on the long term health and sustainability of the public finances in Saarland. The state of the public finances has been made particular acute by a new clause in the German constitution (adopted in 2009) which prohibits new additional debts from 2020 (except in extraordinary circumstances). Hence the government of Saarland is currently implementing a comprehensive austerity programme to halt deficit spending and reduce the public debt (Kirch, 2014).[95] Also demographic changes are unfavourable in Saarland: since 1970 it has lost over 11% of its population: from over 1.1 million people to less than 1 million currently (the population in just South Saarland went from 925,000 in 1970 to less than about 800,000 now). This decline is expected to continue at an accelerated pace, with about 900,000 people projected to be living in Saarland by 2030 (and about 740,000 in just South Saarland) (Bertelsmann Stiftung (www.wegweiser-kommune.de)). This population decline will coincide with a further ageing of the population (IW Consult, 2009; Warscheid et al., 2011). To prevent these demographic changes from negatively affecting the economic prospects of Saarland, policies have recently focussed on further increasing labour market participation by especially women, improving educational performance, and attracting and retaining people, especially those who are more highly skilled (Warscheid et al., 2011).

[95] If Saarland does not conform to this clause, there is a possibility it may lose part of its autonomy (or even its independence, but only if the population of Saarland would consent to a merger with one of the other Länder) (Kirch, 2014).

In section 2.3.3, I argued that various, interrelated mechanisms of path dependency can exist in old industrial regions in three functional domains: industries / clusters, labour market / skills, and the built environment. Table 17 lists the most important developments in these three functional domains for the two cases. From this table we may conclude that South Saarland has been successful in 'path-creation' in automotive and in IT over the years, as a result of policies implemented there in the late 1960s, 1970s and 1980s (Trippl and Otto, 2009). In Teesside such efforts at 'path creation' in new manufacturing industries and more high-end services have by and large failed, with most growth in employment taking place in low-end services and the (semi-)public sector (especially health care). Recent policies have focussed on 'path branching' from the existing strengths in chemicals and engineering; the long-term effects of which are not visible yet. Moreover, in Teesside lock-ins in the labour market and in the built environment seem to persist. Whereas in South Saarland these mechanisms have by and large been overcome, and there is some evidence of the emergence of some positive mechanisms in these domains.

	South Saarland	**Teesside**
Development of industries / clusters	• The steel industry has meanwhile found a niche in speciality steel products and is stable, healthy, and competitive, but weakly linked to the knowledge infrastructure (Trippl and Otto, 2009; Isoplan, 2012). • Coal mining has completely disappeared; but the decline has been protracted and carefully managed, through support and policies from mainly the Federal government (Dörrenbächer, 2007). • South Saarland has been very successful in creation and development of a new path in automotive through the attraction of inward investment in the late 1960s / early 1970s; based on the availability of skilled and disciplined workers (redundant in coal mining), and related technologies within the machinery and steel processing sectors (Hamm and Wienert, 1990; Schulz and Dörrenbächer, 2007; Strobel, 2011). Although the cluster consists mostly of 'co-located branch plants'. Employment at local SME firms continues to be	• With the recent mothballing of the main works, the prospects for the steel industry look very bleak. Its competitiveness and stability was already at issue before this however (Hudson and Swanton, 2012). The links within the local and regional supply chain for the steel industry in Teesside, have become more flexible over time (Sadler, 2004). • The existing chemical and engineering industries have developed into the 'process industry cluster', which has further branched out in related industries such as renewable energy, pharmaceuticals, biotechnology, biofuels, renewable materials, etc. (NEPIC, 2013) After the demise of ICI in the 1990s, cluster institutions have developed; but the cluster consists mostly of 'branch plants'.(Chapman, 2005). The operations of large multinational corporations continue to be a dominant aspect of the economy in Teesside (Tees Valley Unlimited, 2013). • The creation and development of new economic

	South Saarland	Teesside
	less than in other parts of Germany (Otto and Schanne, 2006). • South Saarland has also managed to create and develop new strengths in IT / software development (now about 7,000 jobs), and to a lesser extent in nano- and biotechnology, mainly through pro-active STI-policies started in the 1980s (Roscher, 2007; Trippl and Otto, 2009). Other parts of the service sector which provide relatively much employment are health care and insurance services (Warscheid et al., 2011).	drivers has been limited. Teesside has had little overall success in attracting and embedding new kinds of manufacturing. In the service-sector, the main employment growth has taken place in retail / hospitality, logistics and low-end business services (call centres, back office processing, etc.) since 1980s (Tees Valley Unlimited, 2013; NOMIS Business Register and Employment Survey 2013). More recently, there has been the emergence of a digital media / IT cluster (as a result of strong competence in that field of Teesside University), though employment is still comparatively small (around 1,000 to 1,500 jobs) (NOMIS Business Register and Employment Survey 2013). • Teesside relies relatively heavily on public sector and semi-public sector employment, in particular in health care. Over 26% of employment is in the public sector, compared to 21% nationally (Tees Valley Unlimited, 2013).
Development of labour market and skills	• The percentage of employed people with low qualifications (no further education after secondary education) has been dropping in Saarland, and is about the same as in other parts of West-Germany. The percentage of employed people with a higher education degree in Saarland has risen to about 10% (from about 5% in 1990), but is still less than in the rest of West-Germany, where it is currently about 13% on average, and was about 6% in 1990. Saarland seems to be losing ground in this respect (Statistics from Bundesagentur für Arbeit Nürnberg 2014). • There has been an outmigration of more ambitious and highly educated young people to other parts of Germany since the 1980s (Miehe-Nordmeyer, 2000; Kurtz, 2014). • There exists a relatively large pool of skilled labourers in the manufacturing core of automotive, steel, and machinery (with related skills), and a 'parallel' (to an important extent, unrelated) labour market has developed over the years for university graduates and researchers, through the success in attracting research institutes, expanding higher education and developing IT- and high technology sectors (Trippl and Otto, 2009; Otto et al., 2014). • Despite efforts to facilitate and promote entrepreneurship, levels of enterprise (in terms of new company formation) remain below the	• The percentage of people with no qualifications has dropped rapidly in Teesside, and is now only slightly higher than in other parts of Great Britain (whereas it used to be much higher). The percentage of people with qualifications at NVQ4-level or higher (degree-level equivalent or higher) has increased from around 10% in 1990 to about 28% currently, but is still lower than the rest of Great Britain, where it is at about 35%. The gap has remained about the same (as the percentage for Great Britain in 1990 was about 15%). (Statistics from ONS Census 1991 and NOMIS Annual Population Survey 2014). • Teesside lost some of its skill-base in the 1980s and 1990s through outmigration of skilled workers (Hudson, 2000), and there is still outmigration of 'higher achievers' (Chapman et al., 2007). • There remains a comparatively large pool of workless and low-skilled people in Teesside, with few prospects; and the relatively poor quality of the job offer in Teesside goes hand in hand with a relatively low skill level on average and low aspirations (Chapman at al., 2007; Tees Valley Unlimited, 2010). • There are comparatively few opportunities for employment in Teesside in higher grade skill occupations, and at the same time some skill gaps exist in particular sectors (mostly in engineering and offshore) (Chapman et al.,

	South Saarland	Teesside
	national average, though there has been improvement over the years (IW Consult, 2009).	2007; Tees Valley Unlimited, 2013). • Despite efforts to facilitate and promote entrepreneurship, levels of enterprise (in terms of new company formation) remain below the national average, though there has been improvement over the years (Tees Valley Unlimited, 2013).
Development of built-environment and amenities	• There have been large investments in this domain over the years, both through site remediation and urban regeneration projects, and through new investments because of new economic dynamism (Dörrenbächer, 2013). • Derelict, old industrial sites are hardly a problem, and instead there is a shortage of larger plots of land for industrial and commercial use (see section 6.5.2). • The attractiveness of Saarland has improved notably, also because environmental pollution and degradation have been significantly diminished (Warscheid at al., 2011). Since 2000 there have been significant investments to improve Saarland as a tourism and leisure destination (see section 6.5.2).	• There have been large investments in key locations on Teesside in the 1980s and 1990s by especially the Teesside Development Corporation as part of 'property-led regeneration', and subsequently Tees Valley Regeneration has continued to work on the development of several flagship projects in the area. There have been many projects in neighbourhood renewal and community regeneration (GHK, 2000; Rundle, 2005; McGuinness et al., 2012). • Derelict, old industrial sites are still an issue, and there is ample land available for industrial and commercial use (Tees Valley Unlimited, 2010). Moreover, the housing stock in Teesside is relatively dated and there is a lack of variety, as there is a high proportion of pre-war, terraced housing (Tees Valley Unlimited, 2010). • Despite notable improvements in the reduction of environmental pollution and degradation, and in the availability of amenities, Teesside is still considered unattractive and has a poor reputation (see e.g. The Economist, 2013; The Guardian, 2014). Teesside can cater well for the leisure needs of its own population, but is hardly perceived as a destination for tourism outside of the area (Tees Valley Unlimited, 2010).

Table 17: Development of South Saarland and Teesside within three functional domains

8.3. Evolution and role of policy and governance

South Saarland has thus on the whole successfully adapted to the deindustrialisation and steel crisis of the 1970s and 1980s, whereas Teesside is still struggling with the effects. Several factors may have played a role. The location of Saarland in the heart of Western-Europe may be considered more favourable, as it can benefit easier from integration in supply chains and access to consumer markets. From a European perspective, the

location of Teesside is more peripheral. The somewhat different make-up of the economy in South Saarland as compared to Teesside (with besides steel, a stronger reliance on coal mining and machinery, instead of chemicals and heavy engineering) may have made a difference. It meant that the process of structural change started somewhat earlier in Saarland, with a crisis in coal mining (when heavy industry in Teesside was still booming), and hence there seemed to have been a greater sense of urgency earlier on for policy responses. Moreover, the reintegration of Saarland back into the Federal Republic of Germany in the late 1950s, offered scope for additional economic support programmes from the Federal government in the 1960s. However on the other hand, it could just as well be argued that the coastal location and port of Teesside offers many opportunities, which perhaps have not been fully exploited. Similarly, the considerable investments in Teesside in the 1970s by both the private sector and the public sector, which underpinned the boom, could have perhaps also been directed differently.

In this section and the next section, I will argue that the greater transformative resilience of South Saarland can for a large part be explained by the institutional framework – both within South Saarland and in the wider context offered by Germany – and by the policies implemented over time. The institutional framework in Teesside and the UK, and the policies adopted there, were less suited for a coordinated and comprehensive adaptation process, and hence it has exhibited far less transformative resilience to cope with disruptive economic change. In this section I will first briefly review and compare the evolution of policy and governance in South Saarland and Teesside (already extensively discussed in the previous Chapters), and next I will discuss what role these policies and governance arrangements played, in particular by examining how they contributed to overcoming mechanisms of lock-in, and creating positive mechanisms instead.

8.3.1. *The evolution of policy initiatives*

Table 18 below reiterates the highlights and focal points in the evolution of policy in South Saarland and in Teesside. As noted at the start of sections 6.6 and 7.6, the

expenditure on economic development policies (narrowly defined as attraction of inward investment, entrepreneurship and business support and urban regeneration) can on average be estimated to have been somewhat higher in South Saarland than in Teesside (around 1% of regional GVA versus between 0.5% and 1%). However at times spending in Teesside has been much greater (1.5% to or even above 2% of regional GVA); especially when Teesside was a major recipient of Regional Development Grants (in the late 1970s), and during the operating period of the Teesside Development Corporation (1987-1998). Also the state support for the steel industry, has been far more generous in Saarland (also given the fact that Teesside was one of many works within the BSC).[96]

South Saarland	Special support steel industry during steel crisis	Active labour market policy for redundancies	Inward investment / business attraction	Science, Technology, Innovation (STI) policies	Entrepreneurship / business support	Training / skills policy	Upgrade of built environment / Urban regeneration	**Teesside**	Special support steel industry during steel crisis	Active labour market policy for redundancies	Inward investment / business attraction	Science, Technology, Innovation (STI) policies	Entrepreneurship / business support	Training / skills policy	Upgrade of built environment / Urban regeneration
Episode 1 (until 1985) - Strong emphasis on attracting inward investment. - Large investment in transport infrastructure and new industrial sites.	●	●	●		•	•	●	**Episode 1 (until 1979)** - Modernisation and rationalisation of heavy industry in Teesside. - Encouragement of diversification through attraction of inward investment in light manufacturing and services.	●	•	●			•	●

[96] It should also be noted that coal mining in South Saarland has been very heavily subsidised by the Federal government for about 50 years (from the early 1960s until the last coal mine closed in 2012), and hence its managed decline has also come at a high price. Although the rationale for these subsidies was not only to prevent negative economic and social impacts in the coal mining regions (chiefly the Ruhr Area and Saarland), but also to contribute to energy security.

South Saarland	Special support steel industry during steel crisis	Active labour market policy for redundancies	Inward investment / business attraction	Science, Technology, Innovation (STI) policies	Entrepreneurship / business support	Training / skills policy	Upgrade of built environment / Urban regeneration	Teesside	Special support steel industry during steel crisis	Active labour market policy for redundancies	Inward investment / business attraction	Science, Technology, Innovation (STI) policies	Entrepreneurship / business support	Training / skills policy	Upgrade of built environment / Urban regeneration
Episode 2 (1985-1999) - Continuing support for steel industry; policy towards local control. - Set up of programmes in STI, and enterprise / business support. - Redevelopment of sites occupied by heavy industry.	●	●	•	●	●	•	●	**Episode 2 (1979-1997)** - City-region / local initiatives to cope with structural problems in economy. - Urban policy and property-led regeneration through Teesside Development Corporation.		•	●		●	•	●
Episode 3 (1999-date) - STI-policies become cluster-based. - Development of new industrial sites, and promotion of Saarland as leisure / tourism destination.			•	●	●	•	●	**Episode 3 (1997-date)** - More coordinated and integrated approach, based on Tees Valley Partnership and Tees Valley Vision. - Also STI-policies for process industry, digital media and renewable energy.			•	●	●	●	•

Table 18: Comparing the evolution of policy programmes and initiatives in South Saarland and Teesside

We can distinguish five key moments with regard to the strategic direction of economic development policies. At these moments, important choices were made about the main policies; although these choices were strongly conditioned by the respective institutional frameworks, as I will further discuss below and in section 8.4.

1. In the restructuring of steel industry, there was a focus on speciality steel in South Saarland (1978-1993), while in Teesside there was a focus on economies of scale and

expansion of bulk steel making (from 1973 until 1977) and then rapid downsizing to achieve efficiency (1977-1986).

2. In South Saarland, there was a controlled process of job reduction, and a proactive mitigation of negative social consequences. In Teesside by contrast, there was a rapid and uncontrolled downsizing especially in the early 1980s, contributing to intractable mass unemployment in the area.
3. During the late 1960s and 1970s there was an emphasis on attracting inward investment in especially manufacturing in both areas, through various incentives and through the provision of industrial sites. However, in Teesside this was combined with large-scale investments in heavy industry, which may have made the area less attractive for other types of inward investment.
4. By the mid-1980s, there was a move in South Saarland to an emphasis on STI-policies and entrepreneurship / business support. In Teesside, the main focal points were urban policy ('property-led regeneration') complemented by attracting inward investment, and to a lesser extent support for entrepreneurship and local businesses.
5. From the late 1990s the two regions started to differ in the main issues they face: the focus in South Saarland shifts to further enhancing and embedding the existing economic strengths, improving its attractiveness as a place to live and visit, and increase the availability of sites for further industrial and commercial development. Whereas in Teesside efforts are still aimed at developing drivers for new economic prosperity: now the emphasis has shifted more to STI-based policies applied to the remnants of the heavy industrial base (the process industry and renewables) and strengths of Teesside University (digital media) .

The first, second and fourth moments can be said to have been 'critical junctures', which were crucial for subsequent developments in the two areas. The strategic direction chosen for the respective steel industries – in both cases strongly influenced by the government (though in Saarland this was mainly the government of the state, while in Teesside this was the central government) – and the way redundancies were coped with, determined the assets available in both areas. In South Saarland a significant and

competitive steel industry was retained in the end (though at a high price) which now still acts as an economic driver and generates beneficial effects for other parts of the manufacturing core. Moreover, the specific skills of workers could also mostly be retained, not only in the remaining steel industry but also in growing manufacturing industries such as automotive and mechanical engineering. In Teesside on the other hand, the remaining works have been commercially (and technologically) vulnerable: there have been further crises in the early 2000s, 2010-2011 and 2015, and steel has continued to lose in importance for the regional economy. Moreover, as a result of the rapid job reductions in the steel industry and simultaneous employment loss in other manufacturing industries, the skills of many workers were rendered far less valuable (as any new forms of employment utilised a different set of skills). Since the 1980s, there has been a strong focus on STI-policies in South Saarland. As a consequence, the knowledge base in the area has expanded considerably (mainly in IT, and to a lesser extent also other technologies, such as nano- and bio-technology). In Teesside, the main emphasis during the 1980s and 1990s was urban policy, reflecting a philosophy of property-led regeneration, complemented by attracting inward investment. A shift towards STI-policies, only took place in the early 2000s.

In general, the evolution of policy in South Saarland has shown much continuity and gradual development. By contrast, the evolution of policy has been rather more 'messy'. Especially in the 1980s and 1990s, there were many initiatives in Teesside by various actors, but there was little integration between these. The main reason for this difference is the fact that many of the strategic decisions with regard to the management of the steel crisis and the focal points in economic development policy, were taken in London by BSC respectively the central government, whereas in South Saarland they were mainly taken within the area. The policies in South Saarland have been more sensitive to local circumstances and local impacts. In Teesside – and the United Kingdom in general – such sensitivity has been much less. Moreover until about 2000 the actors at different territorial levels and in different policy domains hardly coordinated their initiatives in

Teesside. In South Saarland, the greater level of local control resulted in a much better coordination between policies.

'Cognitive lock-ins' do not seem to have played an important role in policy-making in Saarland; rather the consistency in the evolution of policies seems to have been a result of the debate and exchange of viewpoints between various actors in the Land, before important decisions were taken. This tendency to attain support from different actors, meant there were no large shifts in policy when the government in Saarland changed from a CDU-dominated coalition to SPD in 1985 and then back again in 2000. The only incidence of a type of 'cognitive lock-in' may have been the continued support of the steel industry by the Saarland government after 1984 (when the Federal government cancelled further support). To some extent this may be regarded as a form of 'escalating commitment': further investment to justify cumulative prior investments. However, in the end the Saarland government did manage to resolve the crisis at Saarstahl, as discussed; but at a considerable expense, which has added to the poor state of the public finances of the Land.

In the development of policy-making in Teesside, central level actors have been leading. The main decision-makers in the central government had less appreciation for particular, local circumstances and were on the whole less aware of the geographical impacts of their measures. Moreover, characteristic for policy-making in economic development (and other domains) in the UK, are recurrent changes in ideological points of reference. The most important breaks in this respect were in the late 1970s and early 1980s (especially the first few years of the Thatcher-government), and to a lesser extent also in the latter half of the 1990s (with New Labour coming to power) (as discussed in section 5.4.3). This has led to some forms of 'myopia' at the central government, in which only certain pieces of information and certain policy options have been considered, but other information and alternatives have been ignored (sometimes willingly). In this respect, 'cognitive lock-ins' do seem to have played a role in the development of policy in Teesside, though mostly in the world views of central level actors, rather than regional

actors[97]. On the one hand, this explains why the development of policy in Teesside exhibits some important *shifts*, such as the change of policy of the central government vis-à-vis the British Steel Corporation after 1979, the abolishment of regional policy in the 1980s, the policy of regional devolution after 1997, and the turn towards localism after 2010. But on the other hand, in the periods in-between such shifts, central government policy has at times been very *rigid*, which then may have led to a disconnect between the wishes of local actors and the policies enacted. This seems the have been especially true for the policies inspired by the philosophy of 'property-led regeneration', which shaped subnational economic development policy (especially in the old industrial areas in the UK) in the 1980s and first half of the 1990s (Robinson et al., 1993; Robinson and Shaw, 1994). Hence the messy pattern in the evolution of policies in Teesside, is explained by both such shifts and such rigidities.

8.3.2. *The evolution of governance arrangements*

A striking feature of the institutional framework for economic development in Teesside is the strong role of the central government and central government agencies. In South Saarland however the government of the Land is the main actor, and the institutional framework is mainly concentrated at this spatial level. Hence the adaptation process in Teesside was – at least until about 2000 - mainly determined by decisions elsewhere, whereas in South Saarland there has been much more local control. This highlights the multi-scalar nature of adaptation and resilience, and will be further discussed in section 8.4. We have seen above, that this has been a major factor behind the lack of integration and consistency in policy in Teesside. However, also the level of connectedness and collaboration between actors within the two areas and the arrangements of strategic planning and intelligence, have played an important role in this. Connectedness within South Saarland has always been well-developed and these connections have actually expanded and become more formalised in the last few decades. Within the Teesside-area

[97] Although cognitive lock-in may also have existed at this level (see Gray, 2001; Chapman, 2011), but this has had far less impact on the policies that have been implemented in Teesside.

by contrast, connectedness within the public sector, and between the public sector and private sector, was slow to arise, and only since about 2000 suitable arrangements are in place (although these still do not extent to unions and community organisations).

The multi-actor policy network in South Saarland, is also reflected in its 'intelligence system', in which multiple perspectives are developed and discussed. Strategic planning and intelligence in Teesside on the other hand, was until about 2000 mainly concentrated at one unit, which mainly served the local authorities, and thus had a limited role in facilitating an exchange of perspectives and coordinating actions between various actors. Since 2000, there is more interaction between local authorities, central government bodies, and the business community in the area. The strong continuity of policy in South Saarland and the relatively irregular development of policy in Teesside, are reflected in the principal patterns within the evolution of the institutions to manage interventions. Table 19 gives an overview of the evolution of governance arrangements in both areas.

	South Saarland	**Teesside**
Connectedness and collaboration	Well-developed connectedness between actors from the start. Arrangements have expanded somewhat and become more formalised over time. Connectedness includes unions and community organisations.	Poorly developed connectedness between actors from the start. Connectedness took a long time develop, with some recombination already in the mid-1980s, but only since about 2000 arrangements in place which connect local authorities, local business, and central government agencies. Still unions and community organisations are barely involved.
Strategic intelligence and strategic planning	Intelligence spread over various actors. 'Intelligence system' facilitates development of multiple perspectives, and is relatively open to outside influences.	Intelligence is quite concentrated. At first, mainly local authority perspective was favoured, since about 2000 also complemented by a business perspective. Other perspectives are not accommodated in formal arrangements.

	South Saarland	Teesside
Managing interventions	Dominant patterns in the evolution of the entities for the implementation of policies, are layering and conversion. Institutional changes are principally driven by policy-making internal to the area.	Dominant pattern in the evolution of the entities for the implementation of policies, is churning. Institutional changes are mostly driven by policy-making external to the area (especially at the central level).

Table 19: Comparing the evolution of governance arrangements in South Saarland and Teesside

Patterns of path dependency seem very clear in the evolution of governance arrangements in South Saarland. Within the state of Saarland a strong framework was in place to perform the strategic functions with regard to regional economic development: deliberation, diagnosis, and decision-making on policies. This framework is based on both formal and informal connections, and no large-scale changes have taken place over the years. It has become somewhat more formalised (e.g. with the institution of the 'Saargemeinschaftinitiative'), and some new arrangements have been added in the context of cross-border cooperation within the 'Greater Region'. This framework has been susceptible to some form of 'political lock-in' in two episodes (from about 1963 until 1967 and from about 1982 until 1985). But these episodes of lock-in emerged mostly because of disagreements between actors in combination with a lack of financial resources; rather than the postponement of renewal to protect certain vested interests (as originally suggested by Grabher (1993)). Overall, the framework has allowed for a consistent, gradual, and coordinated development of policy initiatives in a variety of domains, which in turn is also reflected by the dominant patterns in the evolution of the operational arrangements. These clearly built on already existing structures: 'layering' / 'sedimentation' and to a lesser extent 'conversion'. In Teesside by contrast, the evolution of governance arrangements show very little path dependent development. Government arrangements that connect local governments, other local actors, and central government agencies, were long absent in the area, and emerged rather slowly.[98] It is only since the establishment of the Tees Valley Partnership in 2000, that suitable

[98] Although there were some arrangements that connected different actors in the wider North East region.

arrangements may be said to exist, mainly driven by the actions of local authorities and local businesses. 'Political lock-ins' could not arise in this situation. But rather, it seems that the 'institutional thinness' (with regard to arrangements at the strategic level) has negatively affected the development of policy, as it importantly contributed to the far less integrated and inconsistent development of policies for the area. This fragmentation and inconsistency is also seen in the development of operational governance arrangements, of local governance organisation and of central government executive agencies active in the area. The dominant pattern can be termed 'churning'. The development of these arrangements is thus also not characterised by path dependence: instead of building on existing arrangements, arrangements are restructured, refitted, dismantled and (re)created, mainly as a result of policy changes outside of the area (also see Pike, 2015).

8.3.3. *The role of policy and governance in adaptation and resilience*

The policy initiatives implemented can have a direct impact on overcoming the mechanisms of lock-in, and possibly creating new mechanisms of positive path dependence. The impact of governance arrangements is more indirect, as they contribute to the discussion, appraisal, coordination, and decision-making with regard to policies, and subsequently support their implementation. Overall, the policies and governance arrangements in South Saarland seem to have contributed to preventing and breaking through various interrelated mechanisms of lock-in in the regional economy, and created some mechanisms for positive path dependency. In Teesside governance arrangements and policies, for the most part do not seem to have addressed such mechanisms of negative path dependency effectively, and lock-ins in some functional domains seem to have persisted (although the efforts enacted since 2000 show some promise of tackling these mechanisms; but the effects are not visible yet in key economic indicators).

In South Saarland, the steel industry has been retained as an economic driver as a result of considerable efforts by the state government (and to a lesser extent, the federal government). Policy has also been instrumental in creating several new economic drivers.

The policies in the attraction of inward investment in especially the late 1960s and early 1970s, have facilitated the rise of the automotive-industry as one of the new mainstays in the economy. The steel industry, automotive, and machinery (which has continued to develop), now form the heart of a strong core in (meanwhile advanced) manufacturing in South Saarland. Science, Technology and Innovation-policies in the 1980s have contributed to the development of new economic drivers in Information Technology and to a lesser extent in nano- and biotechnology. These developments have been complemented by more 'autonomous' growth patterns in some service industries and the public sector (also witnessed in Teesside). The policies to support the steel industry - as well as coal mining - and to manage the downsizing operations in these industries, led to the retention of many of the existing skills in the area, which could subsequently be utilised in growing segments in manufacturing. Furthermore, the education system and the system of further training (to attain further work-related qualifications and skills), has adapted well to the changes over the years (IW Consult, 2009). The combination of new economic drivers, the continued utilisation of skills already present, and policies to ensure good education and training, have led to a labour market with sizeable segments in which a 'high-skill equilibrium' is maintained; i.e. positive feedback-effects between the demand for high skills and the supply of high skills (see Table 17). Furthermore, in the built environment the Land and Gemeinde have initiated targeted and continuous investments in the remediation of old industrial sites and in urban regeneration. These investments, together with the investments by businesses and citizens as a result of the renewed economic dynamism, have enabled South Saarland to become a moderately attractive place. This attractiveness (and the distinctive way of life in Saarland) will in turn be important in retaining and attracting highly skilled people (especially as the population is ageing and declining), and will hence be important for the further development of the economic base and the labour market.

In Teesside, the net result of the decisions taken during the period of restructuring in the 1970s and 1980s, has been that the steel industry is no longer a very prominent element in the area's economy. Efforts to attract inward investment over the years have had

limited success in manufacturing: they seem to have stimulated some continuing investment in the chemical industry, but have not resulted in the attraction of lasting, new strengths in other types of manufacturing (despite some success in food and textiles in the late 1960s and early 1970s). The main economic effect of the 'property-led regeneration' policies of the 1980s and 1990s seems to have been to facilitate employment growth in retail, hospitality and low-end business services (such as call centres and back office processing). Moreover, the growth of employment in the public sector and relatively low employment growth in the private sector, has led to the public sector being the most important source of employment (especially in health care). Although also the chemical industry and engineering have lost importance in terms of employment, from their knowledge and technological base several new 'branches' have emerged or begun to emerge, in pharmaceuticals, materials, renewable energy and recycling. More recent STI-policy efforts have attempted to stimulate these processes of 'path branching'. Overall, policy efforts have not been able to stimulate the development of strong, new economic drivers to compensate for the loss of significance of steel and other heavy industry. This lack of strong drivers has coincided with an overall 'low skill equilibrium' in the area[99], with the availability of low skills in the labour market and comparatively little private sector investment in training, being matched and reinforced by a general supply in low skill jobs. Despite the fact that the education system seems to be functioning well in Teesside (Chapman et al, 2007), and the public sector has invested substantially in the upgrading of skills through various initiatives in further training[100], such efforts have not been matched by similar investments by the private sector in the development of skills and the creation of opportunities for more highly skilled people (GHK, 2000; Chapman et al., 2007; Tees Valley Unlimited, 2014). Low aspirations are thus being confirmed by a relatively poor quality of the jobs on offer. With deindustrialisation, Teesside seems to have lost an important part of its previous skill-base. As a result of a quick reduction of manufacturing employment – partly as a result of central government policies with regard to steel but also shipbuilding and heavy engineering – much of the

[99] With the exception perhaps of a relatively small segment of the labour market in advanced engineering.
[100] Although in a somewhat incoherent and fragmented way (.

existing skills-base was devalorised. Workers that found new employment in the area often had to learn and utilise very different types of skills; while others migrated to other parts of the country or abroad, or saw their skills erode as a result of worklessness. A major focal point in policy has been to combat deprivation and to improve the attractiveness of the area. Although such efforts have been valuable and have led to important improvements on a localised scale (in especially Stockton and Hartlepool), they seem also to have been a way of combatting the symptoms of a problem rather than the underlying causes. The continuing overall lack of attractiveness and lack of variety in the housing stock in the area (as a result of a lack of investment which is not induced by the public sector), will make it more difficult to retain and attract more highly skilled people for possible new growth sectors.

8.4. Conditioning by differences in institutional environment

The evolution and role of policies and governance in South Saarland and Teesside have been conditioned by the respective institutional environments in which both areas are embedded. In section 3.5 I discussed two dimensions that will be especially relevant in this regard: the type of government structure and the type of economic organisation. I will discuss the importance of both dimensions in turn.

The importance of differences in the government structure, is quite clear from the comparison between South Saarland and Teesside: the federal structure in Germany made that in Saarland there was much more local control with regard policies and governance arrangements, whereas in the unitary and centralised government structure of the UK, the most important decisions were taken outside of the Teesside-area. From the late 1990s however, some decentralisation has taken place in economic development policy in the UK. Regional Development Agencies were set up in 1999, and this also led to some further devolution of resources to the subregional level. These developments were further reinforced by other central government programmes with a territorial focus, mainly on city-regions. In 2010, the new coalition government of Conservatives and

Liberal Democrats however abolished the Regional Development Agencies, and replaced these with Local Enterprise Partnerships. It also instituted several new programmes for economic development, some with a territorial focus and others focussed on specific industries; but the allocation of funds from these programmes is decided on the basis of criteria formulated at the central level. Hence despite a trend towards somewhat more decentralisation in the UK, the central government retains most powers and resources, and only hands these down under its own terms (see also Perry, 2007). Moreover, the volatility of national policy continues, and thus also the lack of consistency of policies at the subnational level.

The multi-level governance framework with respect to economic development in Saarland has facilitated its adaptation process. Within the area a multitude of actors have been included (as already discussed above), while at the same time it has supported the attraction of resources from beyond the Land: through Federal arrangements (such as the 'Gemeinschaftsaufgabe für Verbesserung der Regionalen Wirtschaftstruktur', support for the steel industry, and the partial debt relief in the 1990s), and through European programmes (such as the structural funds). By contrast, the multi-level governance framework has not been supportive of the adaptation process of Teesside. Relations between local authorities, the main executive agencies of the central government, and entities at the regional level, have varied over time, and coordination of initiatives from these various actors within the area has been poor (especially before 2000). Moreover, as mentioned, resources and powers from the central government have only become available under stringent terms if at all, and it has been hard to get longer term commitments. The support through European programmes has been mediated by actors at the regional scale and/or national scale, and hence the area has not had full say in the attraction and spending of European funds. Hence besides the greater local control, also the stability in the relations between the federal level and the Länder, and the availability of well-specified procedures, have positively contributed to the adaptation process in Saarland. Conversely, the absence of such stability and indeed of any constitution that

would regulate the relations between the subnational level and the central level in the UK (and in particular England), have negatively affected adaptation in Teesside.

This study thus also constitutes some evidence for economic benefits derived from decentralisation in economic development policy. Although with important qualifications (which may explain why an 'economic dividend' from decentralisation, is not picked up in large-N studies, such as Pike et al., (2012) and Ezcurra and Rodríquez-Pose (2013)). First, the effect of a transfer of powers and resources to subnational governments, will have to coincide with strong commitments and stability with regard to the arrangements for decentralisation (as just noted above). Second, the effect of decentralised powers and resources will likely be especially important in regions which need to undergo a comprehensive transformation, and hence need to coordinate initiatives in multiple domains for a long period of time.[101] It is possible that for regions that face smaller challenges (and in which there is thus less of a need for coordination between various types of policies), some of the positive effects of decentralisation are cancelled out by the increased competition between regions for investments and skilled workers. Third, the type of economic organisation may also be an important factor in whether decentralisation provides additional policy levers for subnational governments, or not. This point will be further detailed below.

To an important extent the adaptation processes in South Saarland and Teesside have followed the patterns the Varieties of Capitalism model would predict. The differences in government structure and public policy responses in Germany respectively the United Kingdom have significantly reinforced these patterns however (following e.g. Wood, 2001). The Varieties of Capitalism model hypothesises that the type of market-based coordination privileged in Liberal Market Economies will benefit sectors as financial services, other high-end business services, the creative industries , biotechnology, etc., and will induce most segments in manufacturing to focus primarily on cost-competition.

[101] Though this point will now be relevant for most regions, when it is accepted that 'adaptive resilience' in the face of global processes and changes has gained in importance.

With the shift in the 1980s from a type of economic organisation with some cooperative features to a full-fledged Liberal Market Economy, the adaptation process on the national level in the UK has been very disruptive, like the model would lead to expect. The already weak competitive position of heavy industry and manufacturing in the UK, was further eroded by the fact that the institutional environment quickly became even less conducive to these sectors. The institutional environment (rid of corporatist arrangements and many regulations for the financial sector) instead facilitated the rise of other economic activities. This has had very significant geographical effects, with strong growth in London and the South East, and relative decline in other parts of the county, most significantly the North of England, Wales, and later also the West-Midlands. Teesside has been one of the main 'victims' of these changes, as the institutional infrastructure with regard to corporate finance, vocational training, industrial relations, and inter-firm relations worked against the long term viability of its core industries. The centralised government structure in the UK inhibited local action to reverse or even slow down this process. The Coordinated Market Economy in Germany on the other hand, provided an environment which facilitated a relatively smooth and managed process of deindustrialisation, in which manufacturing could by and large continue to be a significant economic driver. The institutional framework has favoured the ongoing modernisation of large segments of the manufacturing industry, and a focus on quality and high-value products. Large geographical shifts in patterns of economic growth have been avoided. These developments have been reinforced by the fact that the federal government structure allowed the strategic governance arrangements at the national level (between business association, labour unions, and the federal government), to be mirrored at the regional level. This 'nested' set of arrangements enabled the careful management of the adaptation process in South Saarland, in which the institutional complementarities between industrial relations, vocational education, inter-firm relations, and corporate finance were preserved and updated.

The Variety of Capitalism model may thus be further refined to also incorporate more sensitivity to geographical impacts, differences in government structure, and multi-scalar

relations. The basic model may go some way in explaining processes and forms of uneven development in the context of deindustrialisation. However, as discussed above, differences in government structure and in public policy, are at least as important. It is indeed the intersection between broad types of economic organisation, and different structures of government, which produces 'regional variegations', as this study testifies. Geographical patterns in economic development may become even more polarised in strongly centralised, unitary systems; while more federalised and decentralised systems would allow for a greater range of institutional frameworks at the subnational level. Taking differences in government structure into account, would thus be a practical step towards a more 'variegated' and 'regional varieties' perspective, as suggested by Peck and Theodore (2007), Crouch et al. (2009), and Schröder and Voelzkow (2014). [102]

8.5. Conclusions

South Saarland has by and large successfully adapted to cope with the disruptive effects of the steel crisis and deindustrialisation. Teesside has been far less successful. At the level of industries and clusters, South Saarland has managed to grow new economic drivers in automotive and IT, while retaining existing strengths in steel and machinery. Teesside on the other hand, has not been very successful in attracting and growing new economic drivers for its economy. The chemical industry and engineering sector have morphed into the 'process industry', from which some new branches have started to emerge in more recent years. The significance of the steel industry has continued to shrink, while other segments of heavy industry, such as heavy engineering and shipbuilding, have completely disappeared. In the labour market and built environment, South Saarland has managed to prevent and break through mechanisms of negative path dependence. Lock-ins in these fields seem to persist in Teesside however. The greater dynamism in the regional economy in Saarland, was helped along by a notable

[102] Following Peck and Theodore (2007), it is better to speak of a 'regional variegation of capitalism' rather than 'regional variety of capitalism', to reflect the fact that the institutional framework in Saarland is nested in a larger framework, and hence is not a variety that is separate from other varieties.

consistency in the evolution of policies, and a gradual, path dependent evolution of governance arrangements. The persistent lock-ins in Teesside on the other hand, are at least partly explained by the inconsistent development of policies, and the instability in the development of governance arrangements. This highlights that lock-ins in the functional domain (industries / clusters, labour market and built environment) are certainly not necessarily related with lock-ins in the political and cognitive domain (as suggested by Grabher (1993) and other authors stressing institutional rigidities); but functional lock-ins may instead emerge and persist because of *a lack of continuity and force* in the institutional and cognitive domains (at the regional level). This would also seem to qualify notions of 'adaptive' and 'flexible' forms of governance: though some level of flexibility is indeed important (especially in the strategic functions of governance), a stable framework (within which such change can take place) is also crucial.

The greater success in adaptation in South Saarland compared to Teesside, can be attributed to a substantial degree to the different policy responses and different institutional frameworks (both within the two regions and in the wider environment in which they are embedded). The comparison of South Saarland and Teesside suggests that the following factors have been especially important in this regard, and hence appear to be determining elements for transformative economic resilience:

- Policies that actively slow down and mitigate the disruptive effects of immediate shocks, through support measures and phasing of redundancies. So there is time to redeploy assets and preserve these.
- Policies that build on existing assets in the region, and develop these in a path dependent manner. Such policies seem to do better than policies that focus on developing a new economic base without much connection to existing strengths (e.g. in service sectors and by attracting new types of manufacturing from elsewhere).[103]

[103] This conclusion differs from Cowell (2015), who, in her study of 8 metropolitan regions in the Midwest of the US, instead comes to the conclusion that developing new economic activities in e.g. high tech, finance and services and letting manufacturing "die a natural death" ('Bowing Out'), has produced better long-term results, than an ongoing commitment to manufacturing ('Betting on the Basics'). A reason may be that these metropolitan regions are significantly bigger than South Saarland and Teesside, and thus have a

Such path dependence in the evolution of industries and clusters, can then enable and reinforce the positive path dependent development of the regional labour market and built environment. Strong breaks in the evolution of the economic base, can lead to the persistence of lock-ins in the labour market and in the built environment, which will be hard to overcome, and will hold back economic development.

- A certain degree of 'institutional thickness' within the region especially with regard to governance arrangements for connectedness and collaboration, and strategic intelligence and planning. In order to manage the adaptation process, there need to be robust arrangements for parties to come together, develop and exchange perspectives on the basis of good intelligence, coordinate initiatives, resolve conflicts, and make strategic decisions. These governance arrangements need to have a certain amount of flexibility to incorporate new actors and prevent capture by vested interests.
- Local control over powers and resources in multiple policy domains (industrial and innovation policy, labour market policy, and urban development and planning), which should lead to coordinated policies that are based on knowledge of local circumstances, and hence can be better directed at opportunities and obstacles particular for an area.
- Additional support from outside the area for a long period of time, as local resources will not normally be sufficient to cover the huge investments needed for a comprehensive transformation.
- Stability in the relations between different territorial (as well as sectoral) levels of government. Arrangements in the territorial government structure and in government organisation need not to be subject to too many sudden changes, but rather evolve gradually. Between levels of government, there should be fixed, transparent, and stable procedures, especially with regard to resource allocation from the central level to the subnational level.

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better chance at attracting and growing such new economic activities. Also Hamm and Wienert (1990) and Miehe-Nordmeyer (2000) recommend 'embracing the new, rather than holding on to the past' on the basis of their comparative studies.

- A type of economic organisation which relies to an extent on strategic coordination, rather than only market-based coordination. Arrangements for strategic coordination (in industrial relations, education and training, corporate finance, urban regeneration, etc.) make it easier to deliberately steer the adaptation process, and allow for more targeted government interventions in areas where support is needed. Relying on only market-based coordination will lead to a much less coordinated adaptation process, in which it will be much more difficult to direct government interventions and achieve specific effects.

Chapter 9. CONCLUSIONS

9.1. Introduction

This thesis aims to contribute to the burgeoning strand of Evolutionary Perspectives in Economic Geography, conceptually, methodologically, and empirically, by further developing an approach which would also adequately integrate Political Economy concerns (an 'Evolutionary Geographical Political Economy' approach). The ambition is to address the perceived gap within Evolutionary Perspectives to adequately conceptualise and understand aspects of policy and institutions in the economic evolution of regions (MacKinnon et al., 2009; Pike et al., 2009; Coe, 2011; Martin and Sunley, 2015b; Pike et al., 2015). This then would also more explicitly foreground especially notions of collective agency, multi-scalarity and power: how do actors come together to shape the evolution of a region, and how in turn is this conditioned by the wider institutional environment? Evolutionary Perspectives encompass several distinct but partly overlapping theoretical frameworks: Generalised Darwinism, Complexity Theory, and Path Dependency Theory. In Chapter 2, I concluded that that Path Dependency Theory offers the best prospects for a further conceptualisation of the evolution and role of policy and governance. However, also the incorporation of policy and governance within the framework of Path Dependency Theory is not immediately straightforward, and additional conceptual work has been needed.

In taking up the overall objective of this thesis, I have focussed on the issue of how regions cope with economic change. How do regions adapt to economic changes, and what makes a region resilient? More in particular, what is the role of policy and governance in adaptation and resilience of regions? These questions seem particularly pertinent in connection to old industrial regions in Europe and North America, and in the way these regions have dealt with the disruptive structural changes - in the form of deindustrialisation – in the 1970s and 1980s. Indeed in an earlier period this was a central

concern in the literature on local and regional development.[104] Recently, the issues of adaptation and especially resilience in regions have however again started to feature prominently in the light of the financial crisis of 2008 and subsequent economic downturn.[105] Hence in this thesis, I have revisited the question of long-term adaptation and resilience in old industrial regions, with a view to apply some of the new theoretical insights, and add to the further conceptual, empirical and methodological development of an Evolutionary Geographical Political Economy approach. Policy and governance have played a prominent role in the responses in old industrial regions to deindustrialisation, and so they offer an ideal subject in the context of my overarching objective. Furthermore, the performance of old industrial regions has been varied, among other things depending on the policies and governance arrangements enacted, and the wider institutional environment in which they are located (Hamm and Wienert, 1990; Beatty et al., 2007; Feyrer et al. 2007; Birch et al., 2010; Power et al., 2010; Hobor, 2013; Cowell, 2015).

In the Introduction the following research questions were formulated:

With regard to adaptation and resilience in regional economies faced with disruptive structural change:

- *How can the evolution and role of policy and governance be understood conceptually within Evolutionary Perspectives in Economic Geography?*
- *How have policies and governance evolved, and what role did they play in South Saarland (Germany) and Teesside (United Kingdom)?*
- *How did differences in the wider institutional environment matter in this regard?*

[104] E.g. Checkland (1976); Cooke (1986, 1989); Hudson (1989); Hamm and Wienert (1990); Grabher (1993); Beynon et al. (1994); Miehe-Nordmeyer (2000).
[105] E.g. Cambridge Journal of Regions, Economy and Society, Vol. 3, No. 1 (March 2010); Davies (2011); Fingleton et al. (2012); Martin (2012); Weir et al. (2012); Raumforschung und Raumordnung, Vol. 72, No. 2 (April 2014); Bristow and Healy (2014a); Boschma (2015); Cambridge Journal of Regions, Economy and Society, Vol. 8, No. 2 (July 2015); Martin and Sunley (2015a).

In order to answer these questions I have first reviewed the literature on adaptation and resilience in regional economies, and assessed whether and how the three strands within Evolutionary Perspectives can conceptualise aspects of policy and governance in adaptation and resilience. This then led me to more systematically develop an analytical framework that encompasses three distinct but related levels of analysis: the evolution of policy and governance, the role of policy and governance in adaptation and resilience, and the conditioning influences by differences in the institutional environment. The basis of the analytical framework is formed by Path Dependency Theory, but I have combined this with concepts and insights from several other strands of literature (other approaches within Economic Geography, Historical Institutionalism, State Theory, and Varieties of Capitalism). The empirical part of this research consisted of a comparative case study of South Saarland in Germany, and Teesside in the United Kingdom. These two city-regions are comparable in size, economic make-up, and their peripheral location within their respective countries. Furthermore, they were both hit hard by the global steel crisis from 1974 until about 1987, which was a particularly salient and disruptive episode within the larger process of deindustrialisation. However, both areas operated in the markedly different institutional environments offered by (West-)Germany and the United Kingdom respectively.

In this final Chapter I will present the main conclusions with respect to the main empirical findings (section 9.2), theory and concepts (section 9.3), and methodology (section 9.4). Furthermore, I will discuss some reflections on the study (section 9.5), suggestions for further research (section 9.6), and implications for policy and governance (section 9.7).

9.2. Main empirical findings

On the whole South Saarland has been more successful than Teesside in adapting to the steel crisis and deindustrialisation. The study presents compelling evidence that this has to a considerable extent been a result of (1) different priorities and consistency in the policies implemented, (2) the more robust governance arrangements present in South

Saarland compared to Teesside, and (3) the federal government structure and more cooperative form of capitalism in Germany, which appears to have been more conducive for long-term resilience than the centralist structure and more liberal model in the United Kingdom.

The policies in South Saarland have focussed on spreading out the effects of the immediate shock of the steel crisis over a larger period of time. This was achieved through elaborate support measures for the restructuring of the regional steel industry, and active labour market policies for redundancies. Furthermore, the close involvement of the labour unions and other employee representatives (together with legislation for the protection of employment), ensured that the restructuring process was carefully managed, with an eye on the long-term viability of the industry. In Teesside by contrast, the steel industry followed a path of rapid downsizing (after a phase of expansion in the first part of the 1970s), without much consideration for the effects on the local labour market. Combined with similar processes in other segments of heavy industry in Teesside, this meant that the disruption in the area was much greater and proved intractable. This has also meant that important assets for further economic development could be preserved in South Saarland: most notably, a strong core in the steel industry and other manufacturing sectors (such as machinery), and a skills-base in the local labour market. In Teesside, much of the existing industry disappeared or continued to struggle, and much of the skills-base was devalorised.

These conclusions imply to some extent a reassessment of findings from some other comparative studies (Hamm and Wienert, 1990; Miehe-Nordmeyer, 2000; Cowell, 2015), which depicted the active support for the old industrial base, and the slowing down of the restructuring process, as attempts to hang on to the old, while failing to embrace the new. However, when seen over a longer time period and seen from the perspective of path dependency, these policies have facilitated a more smooth transformation process and have led to the preservation of important assets, which proved crucial for the renewal process. Policy initiatives for renewal could latch on to some of the legacies of

the past. The lack of continuity in the industrial base in Teesside by contrast, may have coincided with an embracement of new economic opportunities (at least in official policy), but also led to a loss of its assets (in technologies, knowledge, skills), and with this the possibilities to effectively compete for these opportunities were much diminished. The development of industries and clusters in South Saarland has thus followed a path dependent pattern: a strong manufacturing core was preserved, and added to by the successful attraction and growth of automotive, partly through a policy of providing incentives and by highlighting and developing existing assets (in skills base, transport infrastructure, and industrial sites). At the same time segments of the service sector gradually grew in importance. Active innovation policies from the 1980s onwards contributed to the rise of, in particular, the IT-sector. In Teesside on the other hand, the primary policy responses of 'property-led regeneration' and attraction of inward investment from abroad, facilitated new employment in retail, hospitality, logistics, health care, and other relatively low-value services. These sectors did not really build on existing economic strengths, and their contribution to a new economic dynamism is limited. Hence within the economic base there has been a notable interruption in the development path. These developments have also meant that mechanisms of lock-in in the labour market (which can on the whole be characterised as a 'low-skill equilibrium') and in the built environment (characterised by unattractive housing and brown field sites in need of remediation), persist in Teesside, despite substantial policy efforts in enhancing education and training, and in urban regeneration. In South Saarland, such lock-ins seem to have been partly prevented or otherwise overcome. The stronger economic base in South Saarland made it easier for the interventions in education and (vocational) training, and in urban regeneration to be effective on the long run.

The more coordinated and consistent evolution of policies, and the greater sensitivity to local opportunities and issues, can be partially explained by the evolution of governance arrangements. Governance arrangements for actors to come together, discuss priorities, coordinate their initiatives, and take decisions, were already much better developed in South Saarland than in Teesside (or the North East region in England). Arrangements for

connectedness and collaboration only gradually emerged in Teesside; and hence the institutional basis for a more coordinated and integrated approach to cope with deindustrialisation was long inadequate. Arrangements for strategic intelligence and planning in Teesside have been in place since the early 1970s, and have in themselves functioned well. However, they mainly catered to the needs of local authorities, and only later also for local business. These arrangements are more sophisticated in Saarland, as they stimulate the development of, and exchange between, different perspectives, and an attitude that is more outward-looking. Hence this confirms the importance of connectedness, collaboration, and communication between actors, for economic resilience, also noted in the accounts of Margaret Cowell (2013, 2015), Rüdiger Wink (2013), and Gillian Bristow and Adrian Healy (2014a, 2014b, 2015).

A significant contribution of this study is the development of a more multi-scalar perspective on regional adaptation and resilience, with explicit attention to the importance of factors in the wider institutional environment (at the national and transnational levels) in which both regions are embedded. The importance of such a perspective has been signalled by several authors (Birch et al., 2010; Pike et al., 2010; MacKinnon and Derickson, 2012; Bristow and Healy, 2014a, 2014b; Martin and Sunley, 2015a), but it has remained underdeveloped so far. The research has specifically examined two dimensions in this regard: the type of government structure and the type of economic organisation. We can conclude that more local control, with subnational governments being able to dispose over powers and resources in multiple policy domains, will positively contribute to regional resilience. In the context of debates on an alleged 'economic dividend' from decentralisation, we can say that there seem to be significant benefits from decentralisation when a region needs to undergo a comprehensive and long-term adaptation process (that requires coordination between policy efforts in a range of domains). However, in addition such local control needs to exist within a relatively *stable* framework of relations between territorial levels of government; not affected by frequent restructuring operations, and with clear and transparent procedures for in particular the allocation of resources from the central level (and European level) to

subnational levels. Locally sourced resources will normally not be sufficient for the investments needed to manage a comprehensive transformation. Hence dependable support from outside the region is crucial.

The way the economy is organised, may reinforce such patterns of control, or lack of control, in the face of disruptive changes in the regional economy. In economies that rely primarily on market-based coordination, there will be fewer 'levers' available for policy interventions and integrated action between different actors *across* various domains (in education and training, in investments in the knowledge- and technology-base, in the labour market, in finance, in the development of real estate, etc.), whereas coordination between various actors will be easier in economies with established arrangements for strategic coordination (see Hall and Soskice, 2001; Hancké, 2009). Hence it is the intersection of differences in government structure and of differences in economic organisation that will matter for regional resilience. For Teesside the context of the UK meant both a relative absence of local control over powers and resources and of stability in the government structure, as well as a relative absence of arrangements for strategic coordination (and thus an overall reliance on market-based coordination). This clearly worked against its development during and after deindustrialisation, and favoured development in other parts of the UK instead (notably London and the South-East). Conversely, the context of Germany offered both the availability of substantial powers and resources at the subnational level (with constitutional guarantees and procedures), and a set of nested arrangements for strategic coordination at the federal and regional levels. Saarland was able to benefit from this, and seems to have been able to catch up with other parts of West-Germany. In other words, the federal government structure of West-Germany has allowed South Saarland to retain and nurture its own 'regional variegation of capitalism' (see Crouch et al., 2009; Schröder and Voelzkow, 2014; Ebner, 2015), build around a strong manufacturing core and developing strengths in IT and nano- / biotechnology (and so largely consistent with the institutional framework at the national level). The centralised system in the United Kingdom on the other hand, has given Teesside fewer opportunities to retain its regional distinctiveness (with manufacturing as

a primary driver), and instead Teesside has increasingly become 'only' a peripheral element relying on comparatively low-value activities, in the larger spatial economy of the United Kingdom.

9.3. Conceptual and theoretical contributions

As noted in the introduction to this Chapter, the primary objective of the thesis is to contribute to the further advancement of Evolutionary Perspectives within Economic Geography, and combine Evolutionary Perspectives with a Geographical Political Economy approach. I have attempted to do so in two ways. First, by further developing the conceptual apparatus. I have reviewed the three stands within Evolutionary Perspective on their capacity to conceptualise aspects of policy and governance within regional economic adaptation and resilience. Based on this I subsequently extended and refined especially the Path Dependency Theory framework (within Evolutionary Perspectives) along the three levels of analysis: the role of policy and governance in adaptation and resilience, the evolution of policy and governance, and the conditioning influences of the wider institutional environment. Second, beyond this purely conceptual work (to address the first research question), the empirical findings of the project, also inform the development of an Evolutionary Geographical Political Economy approach within these three levels of analysis.

I have started by defining adaptation as referring to a *process*, and resilience to an *underlying capacity*. As underlying capacities are not in themselves observable, any conclusions about resilience have to be inferred from an examination of actual adaptation processes, and the factors that are seen to contribute or inhibit adaptation. The literature on regional economic resilience should acknowledge this more explicitly than it has so far. One important implication is, that the comparison of cases (both through quantitative (large N) and through qualitative (small N) methods) should be central in the study of resilience: through the systematic comparison between adaptation processes (preferably to similar shocks) in different regions and/or in different times, we can learn about the

underlying factors that determine successful or less successful adaptation (and thus resilience). In this study, we are particularly interested in long-term 'transformative' adaptation and resilience, which sees adaptation and resilience as dynamic processes of, respectively capacities for, transformation and renewal. This means that we employ notions of adaptation and resilience, which can explicitly encompass how regions cope with slow-burn processes such as structural change and deindustrialisation[106] (see Pendall et al. 2010; Boschma, 2015; Cowell, 2015), and can accommodate a role for collective agency through policies and institutional arrangements between actors (see Bristow and Healy, 2014a; 2014b).

Within the three main theoretical frameworks within Evolutionary Perspectives, Path Dependency Theory offers the best prospects for developing a more holistic perspective on evolutionary processes in regional economic development, which can also adequately accommodate aspects of policy and governance. Because of its inherent methodological individualism (taking micro-processes at the firm-level as a starting point), Generalised Darwinism is not suited for developing a holistic approach, which also takes macro-entities such as the state and societal structures into account. Complexity Theory would be compatible with such an approach, and has offered some insights into the importance of connectedness, collaboration, and anticipation in coping with shocks. However, the theoretical framework provides little guidance in theorising the *evolution* of policies and institutions over time (mostly emphasising 'leadership' or 'networks', which leads to a relatively static conceptualisation in this respect). The Path Dependency framework does provide scope to explicitly theorise continuity and change in the development of policy and governance, and moreover it is also suggestive about the role of policy and governance. The Path Dependency framework needs to be further expanded and detailed however, to connect to Political Economy concerns (with the role of the state, macro-institutional structures, collective agency and power). Building on recent conceptual

[106] However, the extent of slow-burn processes may become especially manifest during a recession (a cyclical perturbation) or a one-off event (such as the Oil crisis); so the analytical distinction between slow-burn processes and system shocks may not be so clear-cut in practice.

developments with regard to Path Dependency in Economic Geography, and utilising insights from various other literatures (in particular Historical Institutionalism, State Theory and Varieties of Capitalism), I have tried to advance theory in Evolutionary Perspectives within the three levels of analysis.

With regard to the role of policy and governance in adaptation and resilience, I have first of all build on recent developments in the literature on path dependence in Economic Geography, that have started to disentangle the notions of *regional* path dependency and *regional* lock-in. Gernot Grabher already made a distinction in his 1993-paper between different domains in which lock-ins could exist: functional, political and cognitive. More recently, Henning et al. (2013) have urged to focus on the specific self-reinforcing mechanisms in different domains and at different levels that would produce path dependence and / or lock-in: "because a regional economy contains individuals, networks (groups, firms), institutions and technologies, the region can in fact be seen as a *bundle* of several potential sources of path dependence on different levels" (pp. 1354; emphasis added). I have taken these suggestions forward, by clearly distinguishing between mechanisms of path dependence and lock-in in different domains and at various levels within the regional economy: in industries and clusters, in the labour market, in the built environment, *and* in policy and governance. From this perspective, the role of policy and governance in adaptation and resilience is quite distinct: to break through mechanisms of lock-in and create mechanisms of positive path dependence within the regional economy (the functional domain). Subsequently I have distinguished between different types of policies, and especially different types of governance arrangements. Instead of 'lumping' all sorts of institutions together (as often seems to happen), we need to distinguish between institutions with very different functions: there are governance arrangements which play a strategic role (in connectedness and collaboration between actors, and in

strategic intelligence and planning), and arrangements that play rather a more operational role (in the execution and delivery of specific policies).[107]

With regard to the evolution of policy and governance, I have based myself on a conception of path dependence as an on-going process (rather than a steady state), put forward by Ron Martin (2010), who in turn builds on developments in the literature in Political Science. Concerning the development of institutions in particular, such a process-based conception has been further refined by the notions of path plasticity and path contingency, which explicitly highlight the interplay between structures and agency: actors may deliberately use structures and legacies from the past in creative ways to renew and innovate from within (Strambach, 2010; Strambach and Halkier, 2013; Johnson, 2001; Hudson 2005). The literature on Historical Institutionalism offers some ideas to then better understand incremental change in the evolution of governance arrangements (Crouch, 2005; Streeck and Thelen, 2005; Boyer, 2006; Mahoney and Thelen, 2010). I have suggested to carefully separate patterns from mechanisms however. Patterns are the manifestation*s* of changes in governance arrangements (such as layering / sedimentation, conversion, recombination or churn). Mechanisms connect such patterns to the ways in which actors can bring about changes in the institutional arrangements. They can be the result of decrees and deliberate design by actors (such as the central government, or regional governments). They can be the result of consent between actors, which will result in a recombination (this will be especially relevant for strategic arrangements for connectedness and collaboration). Or they can be result from bottom-up processes like reinterpretation and subversion. By elaborating the analysis of incremental institutional change in this way, we can better incorporate actors and processes at different levels of scale (national, regional, subregional). The evolution of policy may also show path dependent patterns; especially in the development of ideas and ideologies, which may be characterised by myopia's or escalating commitments. But

[107] These distinctions would also allow us to be more specific when we talk about 'institutional thickness or thinness' in a region (Amin and Thrift, 1995).

as policy is by definition an expression of agency, path dependency will be less applicable as a concept.

The empirical findings in this study serve as an important qualification of the notion of 'institutional rigidities' being a cause of stagnation, in earlier literature on economic adaptation (Olson, 1982; Elbaum and Lazonick, 1986; Grabher, 1993; Setterfield, 1993). This research evaluates the stability and firmness of at least some institutions rather more positively. A strong overall framework of especially strategic governance arrangements, seems crucial to support and guide transformative and adaptive economic resilience. Such a framework does need to leave some space for ongoing amendments, but on the basis of existing arrangements; through recombination, layering / sedimentation, and conversion. A weak framework and a lack of continuity in its development, will result in a lack of effectiveness and thus a failure to address lock-ins in the regional economy (as is evidenced by the development of Teesside). Thus the importance of adaptive and flexible forms of governance in adaptation and resilience (as suggested by Safford (2009) and Bristow and Healy (2014b)), needs to be refined somewhat.

In addition to a more thorough theorisation of the role and evolution of policy and governance, the research has also attempted to extend the Path Dependency framework by considering processes and structures in the wider institutional environment in which a region operates. This implies that governance arrangement and policy within the region (territorial aspects of regional development), are placed within a wider set of relations that extend beyond the region (relational aspects of regional development). This foregrounds on the one hand the 'constructedness' of entities and structures at the subnational level, but at the same time such constructedness is strongly conditioned by past legacies and by the way powers are distributed between actors at different levels of scale. Especially the government structure and the type of economic organisation will be crucial dimensions. With respect to government structure, we can distinguish between unitary government structures and federal government structures. However, this needs

to be qualified somewhat, as many unitary states have devolved some powers and resources to subnational governments especially in economic development policy, and relations between governments and actors at different spatial levels have become more complicated (which is captured in the term 'multi-level governance' (e.g. Bache and Flinders, 2004; Piattoni, 2009)). Following the literature on Varieties of Capitalism, we can make a basic distinction between two ideal types of economic organisation: Cooperative Market Economies and Liberal Market Economies (Hall and Soskice, 2001; Hancké, 2009). Also this distinction needs to be considerably qualified, as within these national varieties, considerable regional differences can exist; i.e. regional variegations (Peck and Theodore, 2007; Crouch et al., 2009; Schröder and Voelzkow, 2014).

The empirical results of this research have shed some new light on debates on decentralisation of economic development policy on the one hand, and on Varieties of Capitalism at the regional level on the other hand. An 'economic dividend' from decentralisation has so far proved to be elusive in more quantitative studies (Pike et al., 2012; Ezcurra and Rodríquez-Pose, 2013), but this study contains some qualitative evidence for benefits derived from decentralisation. In the context of regions coping with structural change, such benefits may consist in the better coordination between various policies, and the more customised, place-based approach. However, several conditions seem important for such benefits to materialise: stability in intergovernmental relations, intraregional coordination taking priority over interregional coordination, and a type of economic organisation that would allow for policy interventions. On this last point, the research has contributed to a better understanding of the interaction between different government structures and different forms of economic organisation, which may in particular inform the fledgling debate on Regional Varieties of Capitalism (Crouch et al., 2009; Schröder and Voelzkow, 2014; Ebner, 2015). A federal government structure would in principle leave more scope for the development and persistence of a particular institutional framework to support a distinct regional variegation of capitalism (following Sternberg et al., 2009). Although South Saarland does not seem to constitute a 'productive incoherence' (in the terminology of Crouch et al. (2009) and Schröder and

Voelzkow (2014)), and does not deviate from the national model, it nevertheless has its own set of institutions (in industrial relations, vocational training, science and technology, etc.) that are nested within a similar set of institutions at the federal level. The regional variegation in Teesside however, seems to have much less independence from the national configuration: Teesside has on the whole not been able retain (or rebuild) an institutional framework (in industrial relations, the development of skills, corporate finance, and technological development and innovation) which would be more supportive to high-value manufacturing, and has instead mostly become a peripheral part of the strongly centralised, liberal market model of the United Kingdom. However, also in the United Kingdom, deviations from the national model ('productive incoherences') may exist - such as the Motor Sport Valley in the South of England (Henry and Pinch, 2001) – but strong international links (for the attraction of skills and for the development of technology) seem to be crucial for this.

9.4. Methodological contributions

This project represents a further step in developing a more holistic approach, which fruitfully combines Evolutionary Perspectives with relevant concepts and practices from a Geographical Political Economy approach (building on earlier work by MacKinnon et al. (2009), Hassink et al. (2014), Martin and Sunley (2015b), and Pike et al. (2015)). This study is one of the first attempts to move beyond merely conceptual discussions, and operationalise such a holistic approach in order to undertake original, empirical research using a methodology that combines several methods and techniques (comparative case study, archival research, collection of statistics, interviews). With regard to methodology, I believe this research offers valuable lessons with regard to four issues: the importance of a focus on mechanisms, the strategic selection of cases, the development of a 'deep contextualisation', and the practicalities of this type of evolutionary research.

First, in this research mechanisms which connect particular outcomes to causes and conditions, have taken centre stage. The ontology and epistemology behind this is

provided by Critical Realism (Sayer, 1982; Pratt, 1995; Sayer, 2010; O'Mahoney and Vincent, 2014; Næss, 2015). Critical Realism maintains a stratified ontology, in which entities, actors, structures, processes, and events can exist on various levels (micro, meso, and macro). Hence mechanisms can be pertinent within and between various levels, which makes it particularly suitable for a multi-scalar approach. Furthermore, the existence and operation of particular mechanisms is always conditioned by the wider set of circumstances: in some contexts, some mechanisms will not exist, or instead their workings will be reinforced, moderated, or altered. This fits well with the 'deep contextualisation', also developed in this project. Moreover, Critical Realism reserves an important role for human agency, and explicitly incorporates and problematises the way people interpret the world and construct meanings. Overall, through a Critical Realist ontology and epistemology it is possible to find common ground between both Evolutionary Perspectives based on Path Dependency Theory (and also Complexity Theory), and Geographical Political Economy. In fact, by focussing on particular mechanisms in regional development in different domains – and the way these mechanisms are in turn conditioned by events, processes, and structures in a wider context – new possibilities open up to combine insights from different strands of literature (as indeed the analytical and comparative frameworks developed in Chapter 3 and Chapter 4 may testify).

Second, following on from the previous point, the choice for city-regions that are medium-sized and peripheral allows for a better focus on the mechanisms of adaptation in the two areas. Larger city-regions and / or areas at locations nearer to other economic centres, will be affected by multiple developments which will lead to a less clear picture. This highlights that for the study of a particular set of mechanisms, a focus on in some ways special (salience of the operation of these mechanisms), but in most other ways more ordinary and smaller cities and regions, may yield more valuable insights, than a focus on Global Cities or the 'usual' points of reference in regional economic development (Baden-Württemberg, the Third Italy, Silicon Valley, the Ruhr Area, Catalonia, etc.) (following Robinson (2002)). In these more prominent and larger cities

and regions, the same mechanisms will often exist, but will be more 'contaminated' (from the researcher's point of view) by the many other events and processes that are also taking place. Moreover, by also selecting two extreme contexts (concerning government structure and economic organisation), in which these two typical and similar city-regions had to operate, a fuller spectrum of relevant mechanisms in the context of adaptation, opens up.

Third, I have placed these city-regions expressly in their geographical and historic contexts. The ambition was to move beyond a focus on just 'policy', and a subsequent representation of this as 'leadership' (as in e.g. Bailey et al. (2010) and Cowell (2015)). In my opinion this leads to a depiction that is too voluntaristic. The structures and context in which actors operated – at the regional level, but also at the national and even transnational levels - should actually take centre stage (without becoming deterministic), as it is this context that strongly shapes (but not determines) decisions, events, and outcomes. A more holistic Evolutionary Approach, will benefit most from studying the relations between events, decisions, mechanisms, processes and structures in different domains and at different levels in a comparative and systematic way.

Fourth, the practicalities of such a 'deep contextualisation' (Martin and Sunley, 2015b, pp. 717-718), encompassing three levels of analysis (the role of policy and governance in adaptation and resilience, the evolution of policy and governance arrangements, the wider institutional and policy context), are indeed daunting. To reconstruct and trace processes at and between these levels, I had to use multiple sources of information (both primary and secondary) and employ overlapping research techniques (archival research, collection and analysis of statistics, and interviews). Each of these techniques (let alone the combination), requires a commitment of time and effort, and involves a degree of conscientiousness and determination. Doing comparative research in different contexts compounds these difficulties. It requires the fine-tuning of analytical categories (so they are relevant and similarly applicable in both contexts) and the collection of matching information for each of these categories, while the researcher needs be acquainted with

different cultural and institutional settings (and in this case it even required proficiency in two languages). But for theoretically informed empirical work, which can then again feed into the further development of theory, there really is no alternative to hard work (to paraphrase Andrew Sayer (1987, p. 395)).

9.5. Reflections on the study

With the consolidation of the main empirical, conceptual and methodological contributions of this study, also its limitations and some of its 'hidden' assumptions come to the fore. One obvious limitation has been that it has been impossible to establish with certainty that the more successful adaptation and greater transformative resilience in South Saarland was a result of differences in policy and governance. It seems plausible that policy and governance have played a significant role, based on the evidence presented. But nevertheless a number of other factors may also have been important. The somewhat more favourable location of Saarland in the heart of Western Europe (but on the other hand, it could also be argued that Teesside has not fully exploited its coastal location). The reintegration of Saarland into West-Germany in the late 1950s, and the earlier start of the process of structural change in South Saarland (with the crisis in coal mining in the 1960s), which resulted in a programme for the renewal of the industrial base of the area already in the late 1960s and early 1970s (whereas the modernisation programme in Teesside in the same period was still very much geared towards its booming heavy industry). Differences in the make-up of the heavy industrial base between the two regions, with the combination of coal mining and steel leaving a different (and perhaps less immobilising) imprint on the working culture and landscape, than the combination of steel and chemicals. In a comparative study of two cases, which could moreover only be selected from a small number of available cases (mid-sized city-regions with a history in steel), it is impossible to isolate the influence of one variable.[108]

[108] In theory, a large-N statistical study would be more suitable for that. However, the number of old industrial regions in the world that went through a process of disruptive structural change, is limited.

But such an approach does lend itself for attempting to trace the mechanisms through which policy and governance could have had an effect on adaptation and resilience. And this is what I have tried to do.

With regard to hidden assumptions, some reflections on positionality seem in order (without claiming that *all* hidden assumptions can then be made explicit (Rose, 1997)). This positionality is in the first place temporal: the assessment of the adaptation process in South Saarland and Teesside strongly depends on the moment at which I have undertaken such an assessment. Earlier studies which featured Saarland (Hamm and Wienert, 1990; Miehe-Nordmeyer, 2000) arrived at a less positive assessment as this study, as much of the catching-up in Saarland took place after 2000. And also an earlier study of Teesside (Beynon et al., 1994) presented its development in an (even) more negative light, as also Teesside managed to recover (to a certain extent) after the late 1990s. Both areas keep evolving on the back of their past legacies. Thus it could be entirely possible that the bad state of the public finances of Saarland (an inheritance from especially the 1980s) will negatively influence its development in the coming years. Or that renewables and biotechnology take off in Teesside, and lead to a renewed growth in the area.

This positionality also concerns the relationship between the academic world and the 'real' world. Although I have engaged in a close dialogue with practitioners through a number of interviews (following Clark (1998)), it should be noted that on the whole I have treated the worlds of academia and policy-making as separate spheres, and have so far not problematised their mutual relations. Such a hidden assumption foregrounds traditional methodological concerns such as rigour and validity within a Critical Realist approach, but to the neglect of its emancipatory and 'activist' potential (Sayer, 2007). Hence I want to point to two issues in this regard in connection to this project (which can possibly be addressed in future research). First, by suggesting that success or failure in

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Furthermore, differences in policy and governance would be difficult to capture in quantitative indicators. And also (comparable) data for other possible influences will be hard to obtain.

adaptation and resilience is a matter of performance on a number of indicators, I have stripped these categories of much of their political meanings. Such success or failure should in the end be a matter of political debate, preferably within the communities affected; and their values and their definitions of success or failure should be leading (also MacKinnon and Derickson, 2013; Bristow and Healy, 2014a). Although, it should also be observed that such a more 'relativist' conception, would make a systematic comparison between different regions much more difficult (if not impossible). Second, I have not taken much account of the influence of academic discourses on policy in my study. But academic research on for example the effects of traditional regional policy, on urban regeneration, and on clusters and territorial innovation systems, fed into the policy process in both areas, and may have been a factor in the evolution of policies. I have however made the simplifying assumption that changing focal points in policy were mostly driven by deliberate policy choices (except for those instances where myopia or escalating commitment seemed to play a role). Attempting to trace the (subtle) influence of (academic) discourses on this as well would have increased the scope of the project beyond what was feasible (but would not be impossible to do, see e.g. Schmidt (2008, 2010)).

9.6. Future research

I see at least four different directions for future research on the back of this study. First, using the analytic and comparative framework developed and specified in Chapter 2 and Chapter 3, a logical step would be to also undertake case studies of similar city-regions as South Saarland and Teesside, but which are located in countries characterised by a federal government structure and a Liberal Market Economy (such as the United States), or a unitary government structure and a Cooperative Market Economy (such as France or Japan). This could yield additional insights into the impact of different institutional environments and multi-scalar processes on the possibilities for regional adaptation and resilience. Furthermore, it would allow us to get a better idea of the interactions between

the two dimensions of government structure and economic organisation, and thus of the range of regional variegations and varieties.

Second, in the interactions between economic development and the evolution of policies and governance I have mainly focussed on the policies that have been implemented and the effectiveness of governance arrangements with regard to coordinating and managing their *delivery*. As noted above, success was operationalised by looking at certain key indicators, and by looking at current challenges and issues with regard to the economic development of the respective regions. In future research it would be interesting to more closely assess processes and arrangements for policy *formation* with regard to democracy, open debate, alternative discourses, and creating legitimacy. In particular, it is possible that more democratic and inclusive processes and arrangements, could also induce more alternative development models, which would have to be assessed according to their own set of criteria, perhaps more associated with sustainable development, equity, empowerment, etc. (see Pike et al., 2007). This will make a comparison between cases even harder, and will stretch the concepts of adaptation and resilience even further (perhaps too far). But at the same time, it would be exciting to explore and expand the range of options in the ways places and regions can adapt and show resilience.

Third, this study has focussed on aspects of policy and governance. However, the expanded Path Dependency perspective on regional development, with a focus on mechanisms of path dependence and lock-in in different domains and at different levels, offers prospects to expand the more holistic Evolutionary approach advanced in this study even further. Future research could focus on other elements in especially the functional domain: the interdependencies between the path dependent evolution of industries and clusters, of the regional labour market, and of the built environment in a region. It would then also be possible to extend Evolutionary Perspectives in various directions, and explore how it could connect with work on for example labour market

dynamics (e.g. Otto et al., 2014), urban morphology, and the cultural analysis of landscapes (e.g. Zukin, 1993).

Fourth, it will be worthwhile to see how the findings of this research may support adaptation processes and resilience vis-à-vis a wider set of challenges. From a broad point of view, many regions in the world face a challenge to adapt and to be resilient, and more particularly many regions have an ambition to undergo a comprehensive transformation process towards a more sustainable economic development model. This study may offer some important lessons with regard to this, especially on the governance of such transformations and the limits and possibilities offered by larger institutional frameworks in which regions are embedded. It would be very valuable to work this out, specifically by connecting with the literature on sustainability transitions (e.g. Geels, 2004; Grin et al., 2010; Truffer and Coenen, 2012).

9.7. Implications for policy and governance

This study evidences the enduring relevance of government policy and the way governance arrangements are constituted, in fostering economic prosperity. With regard to policies, this study points to several ways in which adaptation and resilience are facilitated in the face of disruptive structural changes.

- The first priority in the case of disruptive change should be to the preserve important assets: the strategic technologies, knowledge, skills, and functions. This will make the process of adaptation much easier than 'starting from scratch', i.e. attempting to develop a new economic base without much connection to what exists already (Boschma, 2009). As witnessed by the development of Teesside, a clear break in the evolution of the economic base, can lead to tenacious lock-ins in the labour market (a 'low skill equilibrium') and in the built environment (a persistent lack of attractiveness), which have also negatively affected its economic development. In South Saarland by contrast, there has been a great degree of path dependence in the evolution of industries and clusters, which in turn is reflected in more gradual and

positive development of its labour market and built environment. One important way South Saarland managed this was by enacting policies that slow down and ameliorate the disruptive effects of the immediate shock (through financial assistance and active labour market policies), so there was time for firms and other actors to adjust and redeploy assets.

- Policies focussed on long-run economic renewal, should be aimed to break through any 'lock-ins' (in the economic base, labour market, and built environment), and instead facilitate the emergence of forms of positive path dependence on the back of the specific assets within the region [109] (also Hildreth and Bailey, 2014). From the South Saarland case, it is clear that active STI-policies, targeted attraction of inward investment, and support measures for entrepreneurship, will yield the best results (provided an underlying asset base (still) exists to which these policies can latch on to). Moreover, the recent literature within Evolutionary Perspectives, suggests that specific opportunities for 'creating new paths' may occur by recombining (related) technologies and assets (Neffke et al., 2011). Governments can play an important role in this process, through targeted investments in facilities, infrastructures and research institutes, and by facilitating the attraction of key players (Dawley, 2014; Fisher, 2015). The case of Teesside illustrates by contrast that urban regeneration should not be the *sole* focal point of economic development policy, as the potential for generating new drivers for economic development will be limited this way. Rather urban regeneration policies (as well as policies in training and skills) will be most effective when they are complementary to industrial and innovation policies.[110]

With regard to the institutions for governance, they will work on two levels: on the one hand they may play a supportive role concerning the policy responses formulated above in the face of a specific disruption, and on the other hand they may also underpin the

[109] Consistent with Smart Specialisation, the guiding concept for European Union Cohesion Policy (McCann and Ortega-Argilés, 2015).
[110] Though it should be noted that urban regeneration and training and skills policies may also be objects for social policy.

development of a more on-going and proactive adaptability, leading to a better overall ability of a region to deal with economic change in general (which seems crucial to secure prosperity on the long run (see Evans and Karecha, 2014; Boschma, 2015; Hu and Hassink, 2015)). However, as this project has made clear, it is both the arrangements within a region *as well as* the wider institutional environment which will determine whether these functions can indeed be effectively fulfilled or not. Concerning the wider institutional environment, the study points to the importance of three elements in particular:

- Local control over powers and resources in the policy domains affecting economic development (industrial and innovation policy, labour market policy, and urban development / planning). This enables governments at the regional level to coordinate policies in different domains, and to enact policies suitable for local circumstances.
- Stability in the relations between different levels of government. Between the central and subnational governments there should be set, clear, and stable procedures (preferably codified within a constitution), especially with regard to the allocation of resources and the distribution of competences.
- Extra (financial) support made available from outside the area for a long period of time to be able to adapt in the face of far-reaching structural change. Resources sourced locally will normally not be sufficient to pay for the expenses required for a comprehensive transformation across multiple domains.

With regard to governance arrangements inside the region in question, the following points can be observed on the basis of the findings from this project:

- Strategic governance arrangements need to exhibit some degree of flexibility (following Safford (2009) and Bristow and Healy (2014b)), but should in the first place be robust. This means that there should be inclusive arrangements that connect and support the collaboration between the main actors within the region and beyond the region, but these arrangements should be able to incorporate additional actors when needed, and should not prioritise vested interests. This then will facilitate coordination between initiatives, and the mobilisation of resources from within and

outside the region during the transformation process. The arrangements for strategic intelligence and planning should preferably incorporate the development of, and exchange between, multiple perspectives, so the process of collective sense-making does not become susceptible to complacency and remains outward-looking (Weick and Sutcliffe, 2007). The development of operational governance arrangements needs to follow on from the policies to be implemented (see above), but consistency and stability are important for their effectiveness.

- For the development of a more on-going and proactive adaptability, a region also needs to develop particular operational arrangements to manage, develop and coordinate the 'strategic couplings' between economic activities and regional assets (in e.g. technologies, supply chains, skills, etc.) (also MacKinnon, 2012).[111] Especially more capital intensive industries (which includes most manufacturing), firms need an environment in which crucial inputs are secure and in which they can confidently invest to further develop their competitiveness. Arm's length and market-based relations will not provide this security, and hence more deliberate coordination needs to take place through arrangements between firms in these industries, and other actors in the region (in the labour market, in the supply chain, in the development of knowledge and technologies, etc.). Such arrangements seem to have been an important component of the success of South Saarland, and especially of its relatively large manufacturing core. As noted, it appears to have nurtured a distinct 'regional variegation of capitalism' this way, nested within Germany's wider institutional environment). In Teesside such arrangements have been largely absent (especially in the development of skills and in technology development / innovation), which appears to have (very) negatively affected its manufacturing base.

[111] A connection can also be made to the notion of 'niche construction', suggested by Ron Martin and Peter Sunley (2015b, pp. 717-718).

APPENDIX: LIST OF INTERVIEWEES

South Saarland

Experts		
Prof. dr. Rüdiger Wink	Professor in Economics HTWK Leipzig	15 January 2014
Prof. dr. Hans-Peter Dörrenbächer	Professor in Human Geography Saarland University	29 January 2014
Dr. Anne Otto	Researcher at Institut für Arbeitsmarkt- und Berufsforschung Rheinland-Pfalz-Saarland	12 March 2014
Joachim Penner	Former economic editor Saarbrücker Zeitung	19 March 2014
Dr. Luitpold Rampeltshammer	Head Kooperationsstelle Wissenschaft und Arbeitswelt (KoWA) at Saarland University	21 March 2014
Policy makers		
Raphaela Adam	Policy officer export promotion Saarland Innovation und Standort (Saar.is)	17 February 2014
Dr. Hanspeter Georgi	Former minister of Economic Affairs and Science in Saarland (1999-2007); Former chief executive Chamber of Commerce (IHK) Saarland	24 February 2014
Dr. Lothar Kuntz	Head unit Economic Development, Labour Market, and International Cooperation of City Saarbrücken	25 February 2014
Dr. Pascal Strobel	Policy officer automotive cluster (automotive.saarland) Saarland Innovation und Standort (Saar.is)	26 February 2014
Otto Werner Schade	Former director regional office Bundesagentur für Arbeit Rheinland-Pfalz-Saarland	25 March 2014
Prof. dr. Peter Moll	Former chief of planning and former head of interregional cooperation within the government of Saarland	26 March 2014
Thomas Schuck	Chief executive Strukturholding Saar; Chief executive Saarbrücken Airport	10 April 2014
Dr. Anselm Römer and Markus Körbel	Head respectively policy officer in unit Economic Policy at Ministry of Economic Affairs, Labour, Energy, and Transport Saarland	14 April 2014
Reinhard Klimmt	Former prime-minister of Saarland (1998-1999); Former leader of the SPD faction in the Landestag of Saarland (1985-1998)	14 April 2014
Hans-Joachim Hoffmann	Former minister of Economic Affairs Saarland (1985-1991); Former Lord-Mayor of Saarbrücken (1991-2004)	14 April 2004
Business representatives		
Carsten Peter	Teamleader Transport and Communication at Chamber of Commerce (IHK) Saarland	5 February 2014

Oliver Groll	Head International Relations at Chamber of Commerce (IHK) Saarland	18 February 2014
Dr. Heino Klingen and Gerd Litzenburger	Deputy chief executive respectively policy officer Regional Economic Policy at Chamber of Commerce (IHK) Saarland	27 March 2014
Labour union officials and community representatives		
Wolfgang Lerch	Former economist Chamber of Labour (Arbeitskammer) Saarland	5 March 2014
Robert Hiry	Representative IG Metall Völklingen	15 April 2014
Franz-Joseph Simon	Policy officer unit Economic Affairs at Chamber of Labour (Arbeitskammer) Saarland	24 April 2014

Teesside

Experts		
Prof. dr. Alan Townsend	Professor in department of Geography Durham University; Chair of North East Research and Information Network (NERIN)	10 January 2013 16 May 2013 21 May 2015
Prof. dr. Fred Robinson	Professorial Fellow at St Chad's College Durham University; Visiting Professor at Northumbria University and at Teesside University	7 June 2013
Prof. dr. Ray Hudson	Professor in department of Geography Durham University	28 August 2013
Dr. Stephen James	Senior lecturer Economics Teesside University	19 September 2013
Policy makers		
John Rundle	Former director Europe at Government office for the North-East	20 February 2013
David Walsh	Former leader of Redcar and Cleveland Borough Council; Former leader of Cleveland County Council	26 February 2013
John Lowther	Former director Tees Valley Joint Strategy Unit	4 March 2013 19 June 2015
Peter Ellis	Former assistant director Regeneration at Redcar and Cleveland Borough Council; Former chief executive Renew Tees Valley; Former policy officer Planning department Cleveland County Council	26 March 2013
Dr. John Bridge	Former chair of ONE North-East; Former chief executive of Northern Development Company (1988-1999)	17 May 2013 17 June 2015
Steven Catchpole and Linda Edworthy	Managing director respectively director of Strategy and Investment at Tees Valley Unlimited	24 May 2013

Sir Ian Wrigglesworth	Peer in House Lords; Former Member of Parliament for Stockton South (1981-1987 and for Thornaby (1974-1981)	26 June 2013
Dr. John R. Foster	Former chair of South Tees Hospitals NHS Trust (1997–2004); Former chief executive Middlesbrough Borough Council (1974-1996)	2 July 2013
John R. Walker	Former chief executive English Partnerships; Former chief financial officer Teesside Development Corporation	5 July 2013
Joe Docherty	Former chief executive Tees Valley Regeneration	8 July 2013
Graham Henderson and Laura Woods	Vice-Chancellor / chief executive respectively director of Academic Enterprise at Teesside University	23 July 2013
Business representatives		
Neil Etherington	Director Group Development Able UK; Former chief executive Tees Valley Development Company	11 April 2013
Dr. Stan Higgins	Chief executive North East Process Industry Cluster (NEPIC)	25 June 2013
Julian Philips	Former information officer ICI	3 July 2013
Sandy Anderson	Chair of Tees Valley Unlimited; Former executive at ICI Billingham; Former member of the board Teesside Development Corporation	7 August 2013
Labour union officials and community representatives		
Neil Foster	Policy and Campaigns Officer, Northern Trades Union Congress (TUC)	9 May 2013
Margaret Wotherspoon	Campaign manager Community Union	20 June 2013
Graeme Oram	Chief executive Five Lamps	3 December 2013
Dinah Lane and Carl Ditchburn	Chief executive Middlesbrough Voluntary Development Agency (MVDA) respectively chief executive Community Campus	20 June 2014

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