

Chapter 5

Innovation, Regions and Employment Resilience in Sweden



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5.1 Introduction

The concept of regional resilience draws currently a lot of attention in the context of the ability of territories to recover from economic crisis. Currently, one sees theoretical and empirical researches on resilience reaching no consensus on a privileged line of inquiry. In its original form, resilience carries its macroeconomic meaning whereby national economies recover from recessions and other economic shocks (see Bristow 2010; Cellini and Torrìsi 2014; Christopherson et al. 2010; Fingleton et al. 2012, 2015; Hassink 2010; Hill et al. 2008; Martin 2012; Martin and Sunley 2015; Ormerod 2008, 2010; Simmie and Martin 2010). Resilience is calling attention to those moments of after-shock whereby markets respond to external disturbances through their return to equilibrium. In economic geography, Martin and Sunley (2015) and Martin (2012) have argued that one may better understand economic recession by gainfully complementing it with specificities of regional cyclical sensitivities. In using resilience, regional economics should be able to address shock by showing time lag in their reaction to disturbing causes, which took place earlier. In line with evolutionary economics, regional resilience captures the ability of regions to reconfigure their socio-economic structure over time (Christopherson et al. 2010; Simmie and Martin 2010; Cooke et al. 2011).

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Considering the effects of regional adaptation to socio-economic reconfiguration leaves a lot of space for reflection. Many researchers (Martin 2010; Boschma 2015) argue that long-term adaptive capacities of regions are an open research agenda. In line with their argument, we propose a historically based assessment of resilience based on six selected Swedish regions. We temper our conceptual theorizing by showing some basic empirical insights on regional behaviour aiming at furthering the reflection on regions' resilience and adaptations to change. First, we conceptualize regional resilience as regions' abilities to adapt to continuous changes over time through regional labour characteristics (regional net employment, accessibility defined as commuting surplus/deficit and labour dynamics private/public). In this sense, we ground directly the ability of regions to reconfigure their socio-economic settings into aspects of labour economics. Second, we propose to use this framework as a basis for some preliminary empirics based on six most innovative Swedish regions. Those six regions show a spread distribution of innovation from "highly innovative" to "followers in innovation" (Table 3.2). In taking up the question of how labour affects the ability of regions to reconfigure themselves, we question the relevance of economic shocks to anchor the analysis of regional resilience. We think that regional labour market captures the most relevant aspects of regional resilience behaviour. Labour market aspects of resilience has received little attention in the literature so far (Diodato and Weterings 2014; Fingleton et al. 2012) mainly because labour economics has been at the periphery of some of the most recent dimensions of regional economics, namely the dynamics of industries, networks and institutions. In addition, we make a point in this study to consider the development of regions overtime as a focal point to capture our concept of regional resilience. For that matter, the study covers a period of 10 years between 2004 and 2014. This period displays regional labour market characteristics showing dependency on pre-existing industrial and other regional institutions but also localized changes. The timeframe provides a mean to assess the relative importance of disturbance—and if such disturbances are identifiable as economic shock. Our view of disturbance is in line with Ormerod's (2010) long term historical findings (between 1871 and 2007) showing that most recessions in western economies last for 1 year. Consequently, descriptive regional characteristics of the labour market aim at defining more relevant aspects of regional resilience than currently in use.

This chapter is organized as follows: In Sect. 2, we discuss the theoretical treatment of resilience in the literature. We propose a time sensitive approach of regional resilience in which labour market defines key aspects of socio-economic condition of resilience. In Sect. 3, we present basic characteristics of the Swedish innovative regions according to NUTS3 and our selection of six of them. In Sect. 4, we are gathering some preliminary empirics on those six Swedish regions to show how regional resilience can be defined through labour market's performance, dynamics and accessibility. In Sect. 5, we conclude on policy implications and suggestions for further studies.

5.2 Toward Evolutionary Based Notions of Regional Resilience

Resilience has been of great use by economists and diverse social scientists to talk about recovery from economic shock and responsiveness of individuals and organization to sudden changes. The definition of resilience refers to the ability of a system or entity to recover its original form or regain its position after disturbance or disruption. In the regional economic literature (Foster 2007; Hill et al. 2008), the focus has been on socio-economic system recovering from disruption or shock. Despite the relative meaning of economic shock, there is a majority of the literature observing diverse degrees of regional absorption. Economic geographers have covered issues of resilience in regional case study (Treado 2010), comparative analysis of regions (Swanstrom et al. 2009; Simmie and Martin 2010; Wolfe 2010; Hill et al. 2012) and system approaches (Diodato and Weterings 2014; Fingleton et al. 2012; Martin 2012). There are different reformulations of the resilience concept notably its ecological version (Reggiani et al. 2002; Swanstrom et al. 2009; Zolli and Healy 2012). It is a reformulation of the neoclassic concept of equilibrium whereby a region is reaching a new equilibrium state after facing external shock. Many scholars (Christopherson et al. 2010; Clark et al. 2010; Pike et al. 2010; Simmes and Martin 2010; Cooke et al. 2011; Boschma 2015) have preferred an evolutionary approach. It distinguishes itself with the view that resilience is a long-term capacity of a region to adapt and reconfigure its industrial, technological and institutional structures given the ever-changing condition of the economy. The understanding of change is more in line with change in business cycles (rather than external shock). By contrast, Martin (2012) is proposing to understand resilience as a structural re-organisation of the industrial makeup of a region. For him, it is an adaptive process of anticipation and reaction to minimize the impact of shock that could have a destabilizing effect on the regional economy. Even if the theoretical elements of “adaptation” have been introduced, Martin is dealing with resistance to shock. He made that point explicit in distinguishing 4 dimensions of regional resilience: (i) regional resistance to disturbances and disruptions, (ii) speed and extend of recovery, (iii) a structural re-orientation of the region output, jobs and incomes and, (iv) the extent to which the region has renewed its economy to resume its growing path. His focus is on regional “adaptive resilience” as “the capacity of a regional economy to reconfigure, that is to adapt, its structure (firms, industries, technologies and institutions) to maintain an acceptable growth, employment and wealth”. Such adaptability will depend on (i) the rate of entrepreneurship and new firm formation in the region (Andersson and Koster 2011), (ii) the innovativeness of existing firms and their ability and willingness to shift into new sectors and product lines, (iii) access to finance for investment, (iv) the diversity of the region’s economic structure, and (v) the availability of labour of the right skills, and similar factors (Martin 2012: 10-1).

A more straightforward evolutionary interpretation of regional resilience is given by Simmie and Martin (2010) which consider the regional economic system to be resilient if it is considered an ongoing process rather than a recovery to some

equilibrium state. Here is clearly emphasized the historical development of resilience over time to changing condition. It seems that resilience is closer to the traditional definition of regional innovation whereby regions cope with structural change by their ability to create new growth paths and challenge stagnations and decline by emphasizing other economic sectors (Saviotti 1996).

Other recent approach of regional resilience embraces an evolutionary perspective adding related varieties of regions to define the content of resilience. Boschma (Boschma and Lambooy 1999; Boschma 2015) defines resilience as a regional capacity with a long-term adaptability whereby history defined as a regional path dependency affects economic renewal but also helps overcome negative lock-ins. Boschma's treatment of regional resilience recognizes the role of history not necessarily as a negative constraining aspect of regional renewal. He proposes his version of adaptive resilience as a matrix of related industrial variety, which needs to be activated to secure regional resilience. For that matter, Boschma considers regional resilience to integrate three elements of renewal. Those are:

1. Techno-industrial variety—it deals with the problem of single-industry-regions in comparison with multi-industries regions and their ability to recombine themselves to generate new growth avenues (Neffke et al. 2011a, b; Essletzbichler 2015; Boschma et al. 2013; Neffke et al. 2014).
2. Knowledge networks whereby people in regions combine different sources of knowledge to create new knowledge. Regional proximity plays an essential role in human capital for establishing networks ties and decreasing costs and risks (Boschma and Frenken 2010; Balland 2012a, b). In this view, knowledge networks are one component of regional resilience.
3. Institutions are closely related to techno-industrial variety and networks. Particularly, institutions should help to adapt to change. It is reflected in the birth of new institutions for regional development. Boschma underlines the fact that institutions have been more carefully reconsidered lately due to their complementarity with other forms of growing industrial factors (Amable 2000; Hollingsworth 2000; Hall and Soskice 2001; Grillitsch 2014). Institutions are also considered source of adaptation and recombination with existing institutions (Ebbinghaus 2009; Strambach 2010; Strambach and Klement 2012; special issue on *Zeitschrift für Wirtschaftsgeographie* 2013).

In such overreaching research programs on regional resilience, there are spaces for investigating human resources further. In the coming section, we will pick up three issues sensitive to regional resilience:

1. Regional resilience may display the ability of region to absorb economic shock but not only. For that matter, it is important to distinguish between regional resistance/recovery to external shock and regional ability to adapt to business cycles and develop new growth paths.
2. The second point is the role of historical and regional development. Generally, the role of history has been a problem of regional adaptability due to negative path dependencies inherited from the past. In other words, discrepancies exist

between traditional industrial path and adaptation to new industrial conditions. In this view, the focal point is the adjustment to new conditions (Magnusson and Ottosson 2009; Henning et al. 2013). In fact, this view is partly based on long term industrial change taking place during the 1980s (Markusen 1985; Doussard and Schrock 2015). In contrast, the 2007–2009 crisis has been dealt as a short-term contraction in the economy (Ormerod 2010; Graddy-Reed and Feldman 2015). The outcome of the evolutionary view on short term cyclical crisis in a regional context, is to take skills, resources, technologies and institutions as dynamic means of adaptation to new economic conditions (Andersson and Koster 2011).

3. The third point is related to the two previous ones: regional resilience is the result of a new set up in economic answer to shock, i.e. labour adaptation and institutional renewal. These dimensions were scarcely approached 10–20 years ago. Regional studies have investigated key variables in this area, namely the role of labour force and employment (Fingleton et al. 2012). One needs a complex and multi-layered definition of regional resilience, looking at meso-processes such as the role of the labour market in regional development. Labour markets do not simply play the role of an adjustment variable during economic shock (in this view, labour market is understood exclusively as a decline in private employment and public cutbacks).¹ There is room for addressing regional resilience in relation either to regional employment dynamics or dependence on the public-sector employment (Bristow 2010; Hassink 2010; Pike et al. 2010; Davies 2011), or to people's ability to answer trade-off between their living and working conditions. As such, a more dynamic approach of labour market embraces not only economic shock but also life-style choices (Graddy-Reed and Feldman 2015).

In the following Table 5.1, we synthesize three different perspectives in regional economics dealing with resilience.

The territorially embedded resilience was originally studied by the theorists of RIS (regional innovation system) (Asheim and Isaksen 1996, 2001; Cooke et al. 1997; Meeus et al. 1999: 9; Wiig 1996). One of the key concerns for regional innovation system is to consider political issues of regional development. Notably governments are concerned with the harmonization of regional disparities (rather than economic shock per se, sees European Commission, COM 2014). From that point of view, the regional level of analysis started to be considered as a complement of national innovation policies. Underlying the regional innovation system lays a concern for overcoming economic troubles but also to manage restructuration and to launch innovation policies. For that matter, some researchers (Karlsson and Olsson 2000; Andersson and Karlsson 2004) considered RIS to complement the concept of functional regions, since they share mechanisms of renewal. For example, RIS and

¹Across, the 1980s and 1990s, economists have been amongst the first to criticize the idea that labour flexibility was meant to reflect unemployment in times of regional restructuring.

Table 5.1 Three areas of resilience in regional economics

Type of resilience	Definition of resilience	Economic level of analysis	Resources
RIS and functional regions	The ability of a territory to avoid lock-in situations (Asheim and Isaksen 2002; Andersson and Karlsson 2004)	Innovation as breaking path dependency and changing technological trajectory	Finding locally relevant knowledge institutions Geographical (commuting patterns), social (networks) and cultural proximity
Adaptive resilience–shock theory	The ability of a system to undergo anticipatory or reactionary reorganization to minimize impact of destabilizing shock. (Martin 2012; Boschma 2015)	Regional structure (firms, industries, technology, institutions) to maintain an acceptable growth (output, employment)	Schumpeterian creative destruction: disturbance, disruption, recession of firms, industries, technologies and institutions Opportunity of development of new sectors and adaptive capability of the regional economy depends on region pre-existing economy (path dependency, Martin 2010, Andersson and Koster 2011)
Labour market resilience	The ability of the labour markets to weather economic downturns with limited social costs. (Diodato and Weterings 2014; OECD 2012a, b, c)	Worker welfare–the ability to find a job after unemployment	The ability to find job after unemployment depends on inter-sectoral and interregional labour mobility Tax benefit systems on labour cost Coordination of wage bargaining institutions

Sources: Asheim and Isaksen 2002; Andersson and Karlsson 2004; Martin 2010, 2012; Boschma 2015; Diodato and Weterings 2014; OECD 2012a, b, c

functional regions' approaches share concerns regarding high intensity of economic interaction (Johansson 1998), the accessibility of municipalities to relevant economic networks and the networks of infrastructure (Johansson 1992, 1993). We want to emphasize the idea that regional "system" or "function" contain already key principles of resilience. For example, Almeida and Kogut (1999) show that labour market plays an adaptive role to change in maintaining flows of knowledge within regional labour networks. Not only it suggests that labour markets are not only key to foster regional change but able to generate their own answers to change. For example, regional economists have shown that commuting patterns can be regarded as an appropriate method to assess regional borders and interaction. A region displays resilience when a territory shows the capacity of its labour market to take advantage of learning processes though interaction within industrial clusters and benefiting from institutional support. In this chapter, the first dimension of regional resilience we explore is labour accessibility. Labour accessibility is defined as commuting pattern showing an organizational continuity between actors and flows of goods and services.

The other approaches of adaptive resilience are clearly related to a treatment of economic shocks (Fingleton et al. 2012; Martin 2012). The theoretical treatment of the question is essential concerned with the evolution of the long-run regional disparities. The concern seeks to know to what extend the negative effect of shocks

affecting national growth (recessions, financial crises, political upheavals) can be observed at the regional level. In this perspective, the notion of resilience is an attempt to capture the reaction of regional economies (the meso-level) to major recessionary shocks (the macro-level). To a certain extent, it interrogates the possibilities of regions to react from a downturn and its ability to transform it into a rapid growth. This issue focuses on the regions' ability to create significant growth higher than its pre-shock rate. Traditionally, regional output growth uses similar indicators than national growth, i.e. production output, firm formation, new sector formation, employment rate, new sectoral productivity and science and technology innovation as well as indicators of institutional reforms (Caballero and Hammour 1994; Gali and Hammour 1993; Andersson and Koster 2011). In this chapter, we focus on regional growth and labour market characteristics. More specifically, we survey descriptive data on labour market efficiency defined as the share of public employment in total regional employment to assess the region's ability to grow.

The third aspect in the literature is the labour market resilience. The basic assumption is to consider a coupling between the recovery of firms in a region and access to the labour market. As reviewed before, one of the reasons for focusing on labour effect is its ability to adapt (through commuting pattern) to new situations. In this view, regional resilience defines the ability of a region to absorb in its job market the work force after an economic downturn (it may go from regional regeneration to reallocation of the workforce to other regions). It is not exaggerated to say that regional resilience is considering elements of regional revival (reviewed in Table 5.1, third section on labour market resilience). McCann and Ortega-Argilés (2013) have synthesized the regional resilience by considering embeddedness, skill-relatedness and connectivity. Embeddedness refers to the mix of activities in each region through buyer supplier relationships. A region with more diversity mix can resist and react better to external shock and/or business cycle than a region without a diversified sector portfolio. Skilled-relatedness is related to the answers of the labour market to cycle fluctuations. It addresses the laid-off employee in relation to labor market absorption, i.e. if a sector close to his/her original employment (inter-sectoral labour mobility) is available or if a worker can commute to another region (interregional labour mobility.) In this chapter, the descriptive data permits to focus essentially on the regional condition of optimal labour supply defined as a rate of social benefit on total employment. A region is likely to be more resilience to downturns if its workforce is larger than its social beneficiaries.

In the next section, we are going to focus on six innovative regions in Sweden. The reason for selecting six regions (on 21 Swedish regions) is to select the three main agglomerations of the country and three other less innovative regions (defined respectively as "leading innovative" and "innovative follower" regions in Table 5.3).

5.3 Innovative Swedish Regions—NUTS 3

In the chapter, the overall definition of innovative region is a mix between evolutionary theories of technological change and the dynamics of regional system (Iammarino 2004: 5). It assumes that innovative regions combine three main functional dimensions: (i) absorption of new knowledge, technology and innovation for the adaptation to local needs; (ii) diffusion of innovations throughout all constituent parts of the regional social fabric to strengthen the existing knowledge base, and (iii) generation of new knowledge, technology and innovation. The classification NUTS 3 for the regions is a statistical nomenclature of territorial units allowing European comparisons. The level three or, NUTS 3, is a standard level in Swedish national statistics. It defines knowledge, technology and innovation in terms of the distribution of intramural R&D in its 21 Swedish counties (Table 5.2).

Table 5.2 Distribution of intramural R&D expenditures amongst the 21 Swedish counties, in millions of SEK

County—NUTS 3 level	All sectors	Share, %	Business enterprise sector	Higher education sector	Government sector
Stockholm County	45,026	36.1	33,030	10,265	1731
Västra Götaland County	25,144	20.2	18,814	5740	590
Skåne County	17,562	14.1	11,719	5292	551
Östergötland County	8884	7.1	6557	1720	607
Uppsala County	7413	5.9	2111	5160	140
Västerbotten County	3300	2.7	554	2509	237
Kronoberg County	2076	1.7	1808	248	20
Västmanland County	1866	1.6	1700	132	34
Örebro County	1660	1.3	1263	323	74
Dalarna County	1579	1.3	1405	111	64
Norrbottn County	1436	1.1	504	856	76
Jönköping County	1409	1.1	1189	193	27
Södermanland County	1305	1.0	1222	68	14
Gävleborg County	1207	1.2	1048	119	40
Västernorrland County	826	0.8	595	200	31
Värmland County	761	0.6	426	311	24
Halland County	646	0.5	497	111	38
Blekinge County	526	0.4	353	142	31
Kalmar County	476	0.4	295	168	13
Jämtland County	181	0.0	21	142	18
Gotland County	28	0.0	6	21	1
Not regionally distributed	1326	0.8	818		228

Source: SCB, Statistics Sweden, 2013

Table 5.3 Distribution of intramural R&D expenditures amongst the 21 Swedish counties, in 4 categories, 1- Driving Innovation, 2- Following Innovation, 3- Little Innovation, 4- No Innovation

Distribution of intramural R&D	14–37%	2–8%	1–2%	Less than 1%
21 Regions	Stockholm, Västra Götaland, Skåne	Östergötland, Uppsala, Västerbotten	Kronoberg, Västermanland, Örebro, Dalarna, Norrbotten, Jönköping, Södermanland, Gävleborg	Västernorrland, Värmland, Halland, Blekinge, Kalmar, Jämtland, Gotland

Source: Authors. One distinguishes leading innovative regions (14–37%) and following innovative regions (2–8%)

Notice, the percentage budget distribution of R&D funding over the regions is extremely skewed in favour of Stockholm. We decide, for the sake of comparison further to classify the regions into four categories to select the six most innovative ones (Table 5.3):

This chapter focuses on the two first categories of innovative regions (driving and following innovative regions). The selection of the six Swedish regions represents the most active industrial regions of the country. It is a well-known fact in regional studies that Sweden’ innovative regions are concentrated around its three main metropolitan areas: Stockholm, Gothenburg, and Malmö. The capital region of Stockholm hosts many key learning institutions and concentrates most of capital and a large part of the industrial activities of the country. It concentrates 36.1% of the intra-mural R&D of the country. Gothenburg, located in Västra Götaland, hosts also important learning institution and a substantial share of industrial activities. It concentrates 20.2% of the intramural R&D. The Skåne region, whose main city is Malmö, the third largest city in Sweden, is hosting one of the most important universities of the country, Lund, with international research facilities in physics and bio-technology. Its intra-mural R&D activities represent 14.1%. Despite the average size of Malmö, the region is economically integrated within the Oresund region in the Baltic underlying intensified interactions with a major economic hub of Copenhagen, the capital of Denmark.

The other three regions we have selected along this list are Östergötland county, comprising the city of Linköping, which host an important university, and belongs to the most industrially active regions in the geographical crescent defined by Skåne country in the south, going through Västra Götaland and ending in Stockholm county. This country represents 7.1% share of the intramural R&D. Uppsala country is also known for its university of the same name and its closeness to Stockholm industrial areas. Its share of 5.9% of the intra-mural R&D makes it a regional player in innovation. Västerbotten county, the last in our list, is a very different player in this list. It has a substantively less importance in intramural R&D share than the other top regions in Sweden (2.7% which is half of Uppsala output). It has an important university in the city of Umeå. The region is characterized by its remoteness in the northern part of the country to other major economic

hubs. The contrast between the two types of regions (driving and following innovative regions) will presumably help us to identify if there are clearly different pattern of employment resiliences between them.

As Martin (2012: 12) notes, the long-term adaptive capacity of regions is still ‘largely un-researched’. The chapter looks at the decade 2004–2014 to learn how two types of innovative regions recess and grow from the job market point of view.

5.4 Some Exploratory Empirics: Labour Market’s Accessibility, Dynamics and Performance

Let us start with an overview of the six regions in regard of total regional employment during the 10 years period (Figs. 5.1 and 5.2). First, let us notice that employment trend is continuously going upward in all six regions considered during the period.

Over the decade, both Stockholm and Uppsala regions have an employment growth of 21 and 18% respectively. We may consider, hypothetically, the existence of a correlation between those two regions (those are adjacent to each other’s—Figs. 5.1 (Stockholm) and 5.2 (Uppsala) may explain their positive resilience to change. The other regions employment has grown less substantially, 13% for Skåne and 9% for the last 3: Västra Götaland, Östergötland and Västerbotten.

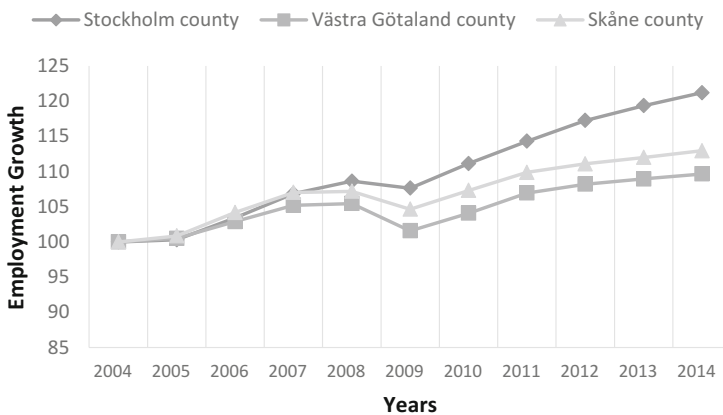


Fig. 5.1 Employment growth of the three leading innovation regions, yearly 2004–2014, indexed to 2004 = 100. Source: SCB, Statistics Sweden, 2015

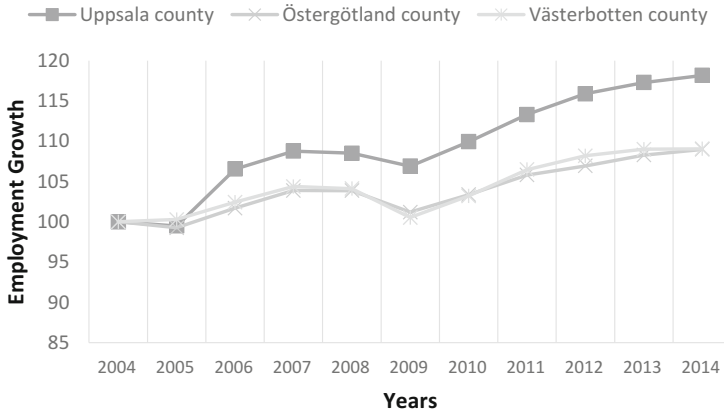


Fig. 5.2 Employment growth of the three following innovative regions, yearly 2004–2014, indexed to 2004 = 100. Source: SCB, Statistics Sweden, 2015

5.4.1 *Employment Cycle or Shock?*

All regions have experienced an inflection in employment rate in 2009. A shock is defined (Martin 2012: 15) by a longer time to recover (than production output) inflicted by a major decline in regional employment which consequences are profound for the region. For example, a shock in employment would take longer than industrial production to grow again. All statistical indication in the last 10 years in regional employment growth in Sweden stresses an inflection in economic cycle i.e. a modulation of investment in labour force which is followed by an immediate recovery (Ormerod 2010). In other words, we should talk of labour market sensitivity to economic cycle. Diodato and Weterings (2014: 20) talked of adaptive resilience when “a region offers laid-off workers to find a new job quickly, even if this means that they have to commute to other regions.” Sweden labour adjustment is dependent on the global open economy notably with extensive foreign trade and its integration of international financial market.² It means that employment in Sweden follows the expansion and contraction of Swedish exports goods on the international market.

²The contraction in finance and credit on global market are acted by economic and government actors. Those adapting movements are common since Sweden’s dependence on the international market fluctuation has increased over time. For example, Swedish export represents 44.56% of GDP in 2014. Market funding, not in the form of deposits, accounts for around 60% of banks’ total balance sheets. Finance is acquired on international markets.

5.4.2 *Work Accessibility*

Swedish regional resilience shows some ability to cope with changes³ thanks to interregional labour mobility in its main agglomerations (Stockholm-Uppsala; Göteborg and its surrounding region, Malmö/Lund and Copenhagen). Diodato and Weterings (2014) have suggested that one measure of adjustment from the labour force in a sector in recession is to seek job in related skills sets. Job seekers become mobile to reach sectors offering them work.

One alternative view to the labour market as a “shock absorber” is the regional networks function. For example, Karlsson and Olsson (2000) considered commuting patterns as a common source for empirically identifying functional regions. The labour market is of special importance since the links between employers and employees create a regional economic system (Johansson 1992). As such, a regional economic system is formed by interactive elements, and commuting is one of them. Those ways of working show economic relationship between regions but also organizational coupling between industrial life (working place) and individual choices (living place). Commuting patterns can display regional resilience as they organize continuity between actors and flows of goods and services. Let us observe how the six selected Swedish innovative regions define their job market accessibility through commuting.

Regionally, we find a commuting surplus if the incoming commuting flow is greater than the outgoing. If the outgoing and incoming commuting flows are equal, we reach a commuting equilibrium. Conversely, one finds a commuting deficit, if the outgoing commuting is greater than incoming. Two regions distinguish themselves as commuting surplus regions. Stockholm region and Västra Götaland (Gothenburg) have a large labour market (Fig. 5.3).

Stockholm region is showing an intensifying commuting surplus over the decade, with no sign of weakness. The raise in 2007, suggests that Stockholm offers commuters from other regions the labour adjustment they need in situations of economic slowdown. The following year 2008, shows no slowdown with a peak of commuter’s surplus at 15%. Västra Götaland region is showing a variation of 4% in its pattern of surplus commuting. It represents around 400 people. The variation shows some regional adjustments of the labour market to changes in production and services.

The other four regions of our panel of innovative regions are all showing a decade of commuting deficit (Fig. 5.4). Not all regions show the same resilience to market change. The Fig. 5.4 is showing regional deficit by indicating negative values below the 100 indices.

One of the ways to explain regional resilience, i.e. the ability of a region to cope with change in labour market structure is to give an appreciation of regions’ share of

³In contrast with the strict ability of regions to overcome shock by resuming pre-recession growth. The difference of interpretation is relative to the consideration of the length of historical cycle of regional growth.

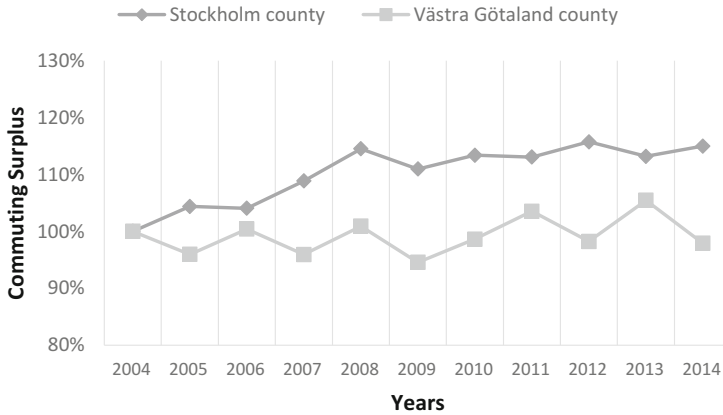


Fig. 5.3 Commuting surplus of 2 leading innovative regions, yearly 2004–2014, indexed to 2004 = 100. Source: SCB, Statistics Sweden, 2015

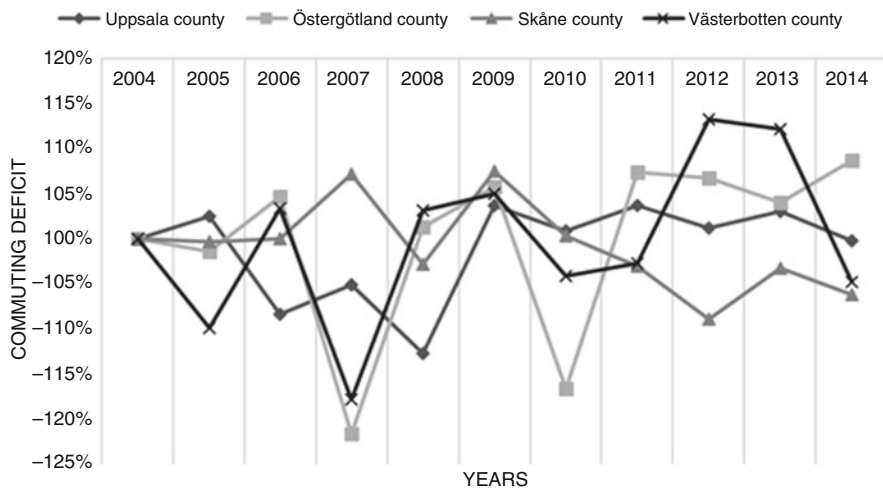


Fig. 5.4 Commuting deficit of 4 Swedish innovative regions, yearly 2004–2014, indexed to 2004 = 100. Source: SCB, Statistics Sweden, 2015. For three following innovative regions (Uppsala, Östergötland, Västerbotten) and one leading innovative region (Skåne)

gainful employment on social benefit (or “ungainful employment”). Social benefit is defined largely by including students, retired persons (whom total income is their pension), sickness beneficiaries and unemployment support. A labour market is resilient if it can afford to maintain optimal labour market conditions (low sickness, low health care cost, and low unemployment) in relation to social benefit. Regions will show labour resilience if their share of social benefit in comparison to employment is close to one (100% in the Fig. 5.5). If the rate is higher than 100, we have

employment growth. Conversely, if the rate is below 100, there is no labour growth and a mechanical raise of social benefit.⁴

The role of labour market resilience provides behavioural information on regional resilience. When a region is faced with negative change in international market conditions, it results in regional unemployment. The regional resilience of the labour market is showing the ability of a region to create employment growth and maintain social benefit cost levelled. In a rigid labour market, unemployment will not be replaced by workers' mobility. It is shown by a mechanic increase of social benefit costs. Reliance of mechanical replacement of unemployment by social benefits limits the labour market to engage in productive changes. In the ideal case of "perfect" labour resilience, the region provides its workforce with related skills and inter-regional mobility. Let us observe the behaviour of the six first innovative Swedish regions on this aspect (Fig. 5.5):

Let us start with Stockholm region. Its results show a paradigmatic case of regional labour resilience. During the decade 2004–2014, its share of gainful employment follows a stable development. During the crisis of 2009, characterized by unemployment, Stockholm is the only innovative region registering an increase in employment (+ 31,000). In the same time, it registered a diminishing number of claimants for social benefit (– 4600). This region is showing, over the decade, a unique ability to absorb and regenerate employment. In 2009, Stockholm's region

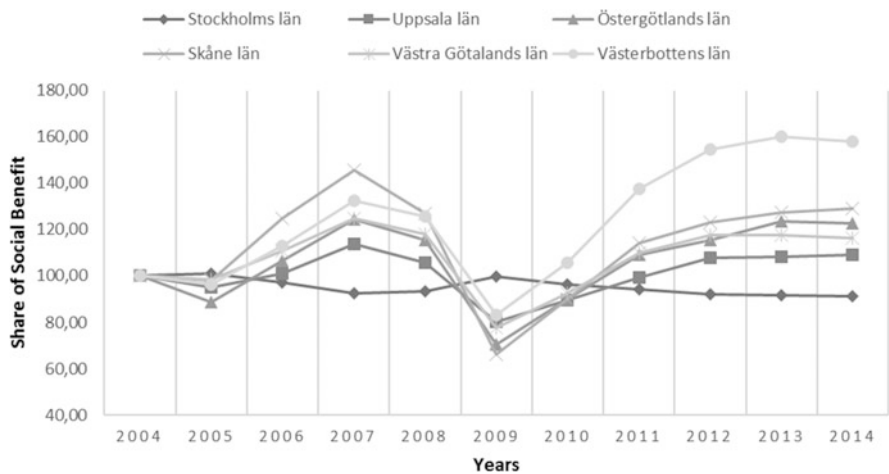


Fig. 5.5 Regional share of social benefit in the working population of 6 Swedish innovative regions, yearly 2004–2014, indexed 2004: 100. Source: SCB, Statistics Sweden, 2015

⁴We say “mechanical” rise of social benefit to reflect Swedish labour law (act 1997: 238). In Sweden, the welfare rules stipulate that people becoming unemployed have a right to claim 60 weeks of social benefit (1 year and 3 months) based on average salaries of your previous employment(s).

absorbed the surplus of available work in adjacent regions (and possibly the country).

The five other innovative regions—Västergötland (Gothenburg), Skåne (Malmö-Lund), Uppsala region, Östergötland region (Linköping) and Västerbotten (Umeå) behaved similarly to each other during that decade. All have demonstrated a straightforward labour growth in 2007. In the case of Västergötland and Västerbotten, both regions had positive balance created by a straight labour growth accompanied with a diminishing social cost. In 2007, only Skåne had a strong labour growth with the same level of social benefit as the previous year.

All those five regions experienced a downturn of employment in 2009. In the Fig. 5.5, we can see the ratio of gainful employ turning negative (see the social benefit indicated below 100). All those regions—except Stockholm region—have registered a substantial employment drop. In the same time, they have mechanically distributed proportional social benefits. Let us notice that, in 2009, Skåne region is a paradigmatic case of labour rigidity. It faces unemployment (− 13,000) which brings mechanically a increased number of social benefit claims (+ 28,000). The 2009 labour shock is related to market function reflected in the temporary deficit of domestic or international demand. Those figures are not related to industrial regeneration. Therefore, competitive supply allows the recovery to take place for the following years to come.

5.4.3 *Labour Market Efficiency*

The section defines a complementary dimension of regional resilience by considering the region's ability to accommodate change toward continuous growth. In regional economics, a region is resilient when it absorbs employment crisis and permit further growth, i.e. when it maintains an efficient labour market. An efficient labour market is defined by an active control of public expenditure to allocate opportunity costs to market orientated process (Demmke and Moilanen 2012). In addition, efficient labour market creates the conditions of regional resilience when resources are allocated to respond effectively to the changing needs in society, i.e. the ability to reallocate skills in adjacent sectors or regions (Behrenz et al. 2013). Accordingly, a regional labour market is efficient if the share of public employment is lower than private employment to drive growth. Conversely, a labour market is stagnant if the share of public employment is growing continuously in proportion of private employment. The role of labour market dynamism in regional resilience is showing the ability of region to absorb employment crisis by generating conditions for labour market rebound. The regional dynamism of the labour market is showing the ability of a region to engage in policies of labour adjustment through access opportunities (either in related industrial sectors or through inter-regional mobility). Let us consider some descriptive empirics on the behaviour of the six first innovative Swedish regions (Fig. 5.6):

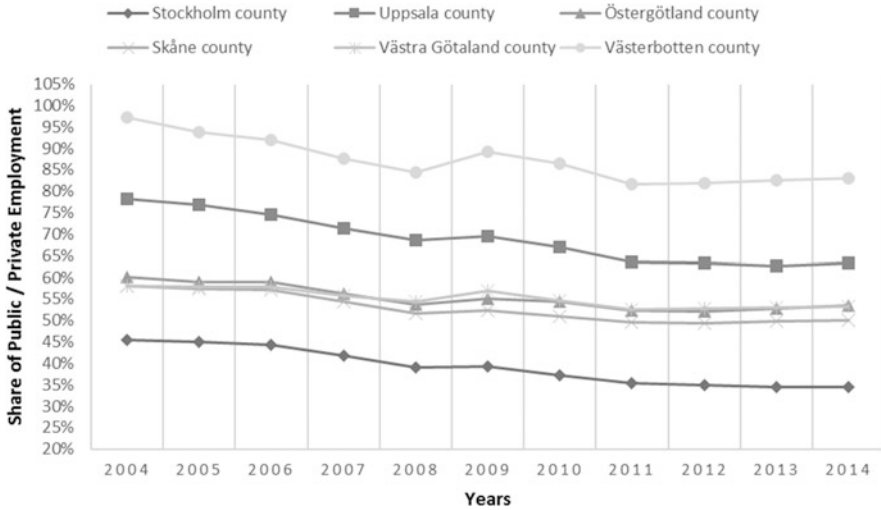


Fig. 5.6 Public/private employment growth rate in the six selected Swedish regions 2004–2014. Those data excludes employment from other non-private or public organizations. Source: SCB, Statistics Sweden, 2015

In 2004, the share of public sector in the private sector employment is of 46% in Stockholm region. The most innovative region of Sweden is also the region in which the control of public employment is the most rigorous. During the decade, the region reaches a peak of efficiency with the lower rate of 34% in 2014. Since 2004, the administrations⁵ employ roughly the same number of employees from 272,155 in 2004 to 272,554 in 2014. The employment dynamics reflects the surplus of the private sector employment. This sector created 598,047 employments in 2004 to 793,070 ten years later.

The other five innovative regions do not follow such a positive pattern. Three of them, Västra Götaland (Göteborg), Östergötland (Linköping) and Skåne (Malmö/Lund) have similar employment behaviour. Their public-sector employment represents 60% of the total employment in 2004. During the decade, all of them have work to control this ratio moving toward a balanced 50/50 (53% for Västra Götaland and Östergötland). The detail indicates that Skåne worked in controlling its public-sector employment. For example, the region had, from the year 2008 to 2011, the same number of public employees than 2004. The region has registered a general increase of 10,000 public sectors employees over the decade. The private sector has

⁵In our data, the administration includes central government, central government quasi-corporations, primary local government, county councils, other public institutions, central government corporations and organizations, local government corporations and organizations. The private institutions are joint-stock corporations not controlled by the government sector. Other corporations not controlled by the government sector. Our data do not consider “other organizations”. We have noticed the number of “other organizations” in all regions is significantly stable.

succeeded in creating a positive dynamic in raising employment by 62,000 during the decade.

Västra Götaland and Östergötland have also a similar public/private number of employees' rate around 60% in 2004. Both regions are controlling this rate by diminishing it by 1% a year reaching a balanced average of 50% (and 53 respectively). Both counties have grown their public sector by 2% and 4% respectively. Their private sector has grown by 15% and 14% respectively.

In 2004, Uppsala and Västerbotten counties show a highest rate of public employment in innovative regions, scoring around 78% and 97% respectively. Both have shown willingness to control an over-administered social fabric by reducing it slowly during a decade to 63 and 83% respectively. Both public and private sectors in Uppsala county have grown by 5% showing no employment dynamism. The Västerbotten region is showing the political prominence of subsidies related to its remote geographical positioning (localized in the north of Sweden and remote from the three major agglomeration economies of the country—Stockholm, Gothenburg, and Malmö). Over the decade 2004–2014, its private sector dynamism is growing but at a relatively low rate (16%). This region is highly dependent on public funding. Although the region is dependent on it, it controls its spending allowing a 2% growth over the whole decade. Västerbotten is a paradigmatic case of a lack of labour market dynamism. The challenge of this region is to create profit since the number of employees in the public and private sector is almost identical.

5.5 Conclusion

This chapter is conceptualizing the notion of regional resilience without emphasizing recessionary shocks and other long-term disruption. “Shock theories” are based on data set from the 1970s and 1980s onward reporting industrial downturn of that period. Our descriptive empirics are based on the last 10 years which reports common fluctuations in business cycles. From 2004 to 2014, regions display heterogeneous dynamics in regard of their employment market. Those differences affect our way of theorizing regional resilience. In this chapter, “resilience” is adaptive as far as we consider region's ability to adapt to socio-economic trends. This chapter confirms the basic knowledge in Swedish regional economics, that innovation is skewed centrally toward the Stockholm region. The chapter's selection of six innovative regions adopts a voluntarily loose definition (leader, follower) of economic indicators for innovation. This choice allows us to question the idea of regional resilience by shifting our attention away from measures for improving innovative competitiveness. Our suggestion is to consider, in line with policy consideration, resilience from the point of view of the structure of its human resources, i.e. labour dynamics and employment. Our selections of labour descriptive empirics focus on region resilience defined by three main indicators: (1) its accessibility as commuting in and out of the region; (2) employment resilience defined as the share of employment to social benefit and (3) employment market

efficiency defined as the share of public employment in total employment. As eluded before, the study shows that Stockholm regions are a major employment hub, with positive employment resilience and an effective employment market. Västra Götaland attracts regional commuters and has employment resilience sensitive to employment downturns. However, the region is dynamic showing recovery and growth thanks to positive labour market efficiency. Skåne endorses some problematic characteristics. Despite a negative commuting pattern, the regions benefit from providing some of its work force to Denmark's capital, Copenhagen. What matter the most is Skåne's rigid employment market. It shows an abnormally large use of social benefit in time of employment downturn. This greater reliance on social benefit reflects limitations in the ability to access the labour market through sector or regional mobility. Despite this aspect, the region has a high potential for labour development. The other three regions—Östergöteland, Uppsala and Västerbotten are interesting contrasting cases for three reasons:

1. Their development over the last decade shows a similar resilience pattern defined by labour growth and an ability to absorb employment downturn.
2. Those regions stand out by the limitation of their labour market's adaptability. Their employment depends upon larger metropolitan centres. They possess the ability to take advantage of their complementarity with more powerful adjacent regions, but are less resilient compared to the leading innovative regions when employment downturn hits them. Further, they do not have the capacity to generate their own capacity for employment.
3. Those regions have a labour market more sensitive to their regional idiosyncrasies (Bristow 2010). This questions the extent to which those regions can pilot their employment downturn, exploit their labour mobility and develop sustainable growth from their level alone.

5.6 Discussion

The chapter proposed an evolutionary view of regional resilience based on three levels of labour behaviour (accessibility, social benefit and labour market efficiency) which opened a whole set of new research challenges. In the following, we briefly discuss a few of them. Our concept of regional resilience is geared toward policy implication by focusing on labour dynamics. The first conclusion we draw is that all Swedish regions are resilient in terms of employment over a decade. The over-dramatizing story of "disrupting shock from the market" does not hold since innovative regions are able to absorb changes in the market over a year period. Innovative regions seem to benefit from dynamic economic conditions. The contrast between less endowed regions in terms of innovation shows that less innovative regions are struggling to create conditions for growth. It is clearly due to a lack of employment mobility, an important reliance of social subsidies and, too little sustainable entrepreneurship (a large share of public employment over private.). Let us specify below few points needing further discussion.

First, this preliminary study confirms that innovative regions (Stockholm & Västra Götaland) are resilient based upon the labour indicators of high labour accessibility, high employment recovery combined with low social benefit and a significant surplus of employment in the private sector. One expects innovative regions with diverse industrial make-up (such as a variety of skill-related industries) to overrun “bumps” of economic downturn but also to create suitable growth conditions.

Second, the contrast with less innovative regions questions the condition for resilience. Not all the other regions outside Stockholm and Västra Götaland have a positive commuting pattern. It suggests that those regions are less equipped to deal easily with economic change (downturn or growth) given reduced sectors diversity. Here, less innovative regions (in our Table 5.2-2 the category 2 of “innovation followers”) have less human resources to growth. Although we notice that all those regions have worked on diminishing their social benefit over a decade, research policy may investigate complementary policy to support employment growth. For example, more radical taxation exemption scheme to create condition for creating or attracting new firms is one way to boost employment.

The third and last contribution is related to the abilities of those regions to grow. The contrast between the innovative and less innovative regions in the sample is telling. The question of regional growth asks the more fundamental question of the ability of regions to drive growth, i.e. to create a positive surplus of successful businesses and industries. Stockholm region is the only one who scores high on employment growth, showing all positive indicators of regional resilience. It has a low share of public sector employment in its total employment (34% now) as a resulting tendency to reduce that rate in the last 10 years. Other innovative regions, such as Västra Götaland, Östergötland and Skåne have a high level of public employment moving toward a healthier balance ratio 50/50 between public and private sectors (60% in 2004 going toward 50% 10 years later). Further research should seek to know if this balance toward the private employment is a necessary ground of a dynamic labour diversity (European Commission, COM 2014). The study shows that contrast between regions relative to their level of innovation is essential to their ability to absorb downturn successfully and positively (economic rebound). Most regions in Sweden, and the few categorized as “innovating followers” such as Uppsala and Västerbotten have a very high public employment rate. They are also showing similar reduction of public employment in their total employment in the last 10 years. However “lower innovative regions” have clearly different initial conditions than innovative ones.

This study brings several policy implications. In this perspective, the results suggest a need to shift focus from the resilience-to-industrial chock to the flexibility of human resources in economic cycles. The resilience of Swedish regions challenges our ability to conceive better labour accessibility and diversity in regions with lower innovative endowment. In regional economics, it is often argued that the agglomeration allows creative solutions such as knowledge spillovers, industrial combination and institutional overlap (Boschma 2005). From a labour perspective, regional accessibility and diversity is likely to emerge from young industries in

economically attractive regions (Capello et al. 2011). The review of a decade of regions' growth in Sweden questions the theory of the "recurrent crisis of capitalism", through recovery and reconversion from industrial shock (Martin 2012) as well as recession from the 2009 crisis (Martin et al. 2015). Concerning Sweden, the alarming stance of the "endemic crisis of capitalism" is a theme of the past. Regional resilience is a meso-level phenomenon demanding a specific attention at the junction between regional labour markets and human capital management. Regional policies should work on regional attractiveness according to the following points:

1. Innovative regions are competing nationally and internationally on continuous flows of economic factors and financial capital. Less innovative regions clearly do not. In Sweden, few regions can afford to be worldwide players.
2. The resilience of labour shows that regions controlling their social expenditure can increase marginally their productivity, or employment growth. Both combinatory policies and political risk will decide if it is possible to bring less innovative regions into intra-regional and worldwide competitiveness. This chapter shows that in Sweden, less innovative regions rely more on subsidized social benefits and a larger public sector.
3. In western countries, where infrastructure exists, the issue of creating diversified and specialized new activities demand policy maker to challenge their planning bend in favour of the market tested betterment. New industries are hardly created by policy driven initiatives.
4. The abilities of regions to generate new businesses or alternatively to simplify the establishment of new businesses would create the condition for regional regeneration. Flexible tax law, labour policies and international trade facilitate unrelated diversification, i.e. the ability of the work force to move seamlessly into new fields creating regional condition for growth.

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