


# Can foundational economy save regions in crisis?

Mikhail Martynovich  <sup>†</sup>, Teis Hansen<sup>\*\*\*\*\*</sup> and Karl-Johan Lundquist<sup>\*\*\*</sup>

\*Department of Human Geography, Lund University, Sölvegatan 10, 223 62 Lund, Sweden

\*\*CIRCLE, Lund University, Sölvegatan 16, 223 62 Lund, Sweden

\*\*\*Department of Food and Resource Economics (IFRO), University of Copenhagen, Rolighedsvej 23, DK-1958 Frederiksberg, Denmark

\*\*\*\*Department of Technology Management, SINTEF, P.O. Box 4760, NO-7465 Trondheim, Norway

<sup>†</sup>Correspondence to: [mikhail.martynovich@keg.lu.se](mailto:mikhail.martynovich@keg.lu.se)

## Abstract

We perform, to our best knowledge, the first systematic mapping of the foundational economy (FE) at the sub-national level by looking at the FE employment in Swedish regions between 2007 and 2016. We show that the FE itself not only suffered less than traded activities from employment decline during the Great Recession of 2007–2009 but was also a domain of substantial job creation in the post-crisis recovery. At the same time, regions with higher dependence on foundational employment were hit harder during the crisis in terms of overall labour market performance. We demonstrate that it is specific compositions of foundational and traded activities in the regional employment mix that relate differently to regional employment growth in times of crisis and recovery. Jointly, these findings allow us to contribute to the literatures on the FE and regional resilience.

**Keywords:** Foundational economy, employment, crisis, recovery, resilience

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## 1. Introduction

Traditionally, research on drivers of economic development and focus of policymakers has put forward innovation as the most important factor explaining regional inequalities (Pike et al., 2016). This has often translated into support for traded/exporting industries, particularly those with high R&D intensity (Hansen and Winther, 2014; Fothergill et al., 2019). A major challenge to such (competitive) approach is that these industries constitute a marginal share of all economic activity (Hansen, 2022), which raises questions about its suitability to address regional development challenges, particularly in less developed regions (Tomaney and Pike, 2020; Marques and Morgan, 2021).

In recent years, a number of alternative approaches, such as everyday economy (Reeves, 2018) and foundational economy (FE) (FEC, 2018), advocated for regional policy that directly aims at well-being of all citizens, rather than emphasising a narrow set of R&D-intensive industries. This means moving the focus to the ‘part of the economy that creates and distributes goods and services consumed by all (regardless of income and status) because they support everyday life’ (Bentham et al., 2013, 7). This includes material infrastructures (utilities and transportation) and providential services (health and education)

(FEC, 2018). It is proposed that such activities should be put forward in regional development efforts, as the interruption in their provision causes an immediate crisis for all households.

The foundational approach has specific implications at the regional scale since foundational activities are tied to physical infrastructure (material foundations) and human-to-human interaction (providential foundations) (Hansen, 2022). Yet, the literature has paid little attention to how FE geographies materialise in space (De Boeck et al., 2019). This calls for unravelling the spatial pattern of foundational services provision. We address this gap by systematically mapping employment in the FE<sup>1</sup> across Swedish regions between 2007 and 2016. In doing so, we test two conjectures proposed by advocates of the foundational approach.

First, it is proposed that its role is more pronounced in less developed regions that have suffered from the collapse of traded goods production (Tomaney and Pike, 2018). In such regions, the FE is expected to sustain a core of employment (Engelen et al., 2017). Growing regions, on the other hand, rely more on traded activities as a source of wealth generation, while still depending on foundational activities for maintaining daily functioning of their citizens. In that respect, ‘far from being socially and spatially exclusive, [the FE] has something to offer everyone everywhere, in the sense that [it] constitutes the infrastructure of everyday life’ (Heslop et al., 2019, 6). This calls for a comparative analysis of regional employment patterns in the FE and brings us to our first research question:

RQ1: How is employment in the FE distributed across various types of regions?

Second, the FE may exercise a stabilising function on regional economies in times of crisis (Engelen et al., 2017). On the production side, foundational activities are sheltered from inter-regional and international competition (Bentham et al., 2013; Moore and Collins, 2020) and often linked to public spending decisions which make them less sensitive to employment shocks in early phases of economic crises (Fratesi and Rodríguez-Pose, 2016). On the consumption side, the FE faces non-cyclical, income-inelastic demand (Bentham et al., 2013; Calafati et al., 2019). This makes it interesting to investigate the dynamic patterns of employment in the FE in times of crisis and recovery. We, thus, formulate the following research question:

RQ2: How does presence of foundational activities relate to regional employment growth in times of crisis and recovery in different regions?

To investigate the role of the FE as a regional stabiliser, we, first, summarise employment dynamics in the FE itself during and after the Great Recession of 2007–2009 and, second, investigate employment growth in crisis/recovery in regions with different size and composition of the FE.

Third, and moving beyond suggestions made in the FE literature, we also consider the role of integration between foundational and traded activities for regional employment by positing the final research question:

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1 The focus on employment is motivated by two considerations. First, the very legitimacy of the ‘foundational approach’ is often justified by its proponents by the large share that the FE constitutes in national employment (Engelen et al., 2017; FEC, 2018; Froud et al., 2020), thus, creating wealth through provision of jobs (Bentham et al., 2013). Second, given that the foundational activities are defined based on their intrinsic social value, characteristics of demand and collective provision through branches and networks (see Section 2), they are heterogeneous in terms of productivity and output (Froud et al., 2020). Thus, employment is a least common denominator that allows operationalising provision of foundational services across regions.

RQ3: How does integration between foundational and other economic activities relate to regional employment growth in times of crisis and recovery in different regions?

The contribution of our article is three-fold. First, to our best knowledge, this is the first article that systematically maps the FE at the sub-national level. Second, we show that the FE suffered less from employment decline during the 2007–2009 crisis, in line with suggestions of foundational approach proponents. Surprisingly though, it was also a domain of substantial job creation in the post-crisis recovery: almost half of all new jobs in Sweden between 2009 and 2016 were generated in the FE. Yet, we find that regions with higher dependence on foundational employment—often found at lower levels of regional hierarchy—were hit harder during the crisis in terms of overall labour market performance. Thus, while the FE itself may be more resilient to crisis, it is not enough to offset job destruction in traded industries in such regions. Finally, we demonstrate that specific compositions of foundational and traded activities relate differently to regional employment growth in times of crisis and recovery. Jointly, these findings allow us to contribute to the literatures on the FE and regional resilience.

## 2. Literature review

### 2.1. What's foundational in the economy?

Following Braudel's (1981, 23) recognition that 'there [are] not one but multiple economies', the term foundational economy (FE) was introduced by Bentham et al. (2013) to denote the part of the economy that supplies goods and services meeting essential citizen needs and providing the infrastructure of everyday life. The FE is, thus, fundamentally defined by the necessity of consumption (Hall and Schafran, 2017). Around the FE is an outer zone of the overlooked economy (OE) that produces culturally important goods and services (e.g. furniture and haircuts) where consumption is taken for granted but is occasional and can be postponed. Economic activities producing goods and services for aspirational private consumption constitute the traded economy (FEC, 2018).

Activities associated with the FE emerged as a response to social problems in towns and cities of urban industrial society with the aim of improving well-being of citizens. This required clean water, sanitation, social housing, public healthcare and transportation systems as well as income maintenance through social insurance (FEC, 2020). While initial efforts to improve citizens' well-being through provision of foundational activities were led by municipal authorities, 30 years after WW2 marked the rapid expansion of system of collective provision of foundational activities funded by national states (FEC, 2018). Nowadays, even as larger parts of the FE are being privatised, establishment and maintenance of collective provision systems often require public finances and regulation.

The FE comprises two parts. *Material FE* connects households to daily essentials and encompasses utilities (electricity, gas and water), transport and telecommunication infrastructure, food production and distribution, as well as private banking services. *Providential FE* includes a subset of activities providing welfare services (education, health and care) as well as systems of income maintenance.

While foundational thinking recognises heterogeneity of foundational activities, what brackets them together is that they have intrinsic social value, and are collectively provided through branches and networks (Froud et al., 2020). Apart from that, the FE

employs a large part of the workforce, which is a necessary (though, not sufficient<sup>2</sup>) condition for ensuring citizens' well-being through the provision of jobs (Bentham et al., 2013). Departing from this, the proponents of the FE argue for a radical shift in policy 'towards developing foundational economy instead of pursuing the chimera of competitiveness' (Engelen et al., 2017, 408). The general developmental issue then becomes not increasing efficiency but setting boundaries of sufficiency of resources dedicated to delivering goods and services that improve well-being of all citizens (FEC, 2020).

## 2.2. Geography of the FE

While foundational thinking is a general approach to development, several characteristics of the FE make the regional scale particularly relevant. For one, foundational goods and services are always provided locally even if organised elsewhere (Bentham et al., 2013; De Boeck et al., 2019). They are distributed through regional branches and networks (Barbera et al., 2016; Calafati et al., 2019) since their consumption is tied to physical infrastructures (material FE) and/or the need for human-to-human interaction (providential FE) (Hansen, 2022). Therefore, regional level is instrumental in understanding which foundational services are made accessible, and in which variety and quality.

While importance of local consumption is widely recognised by the FE proponents, foundational goods and services 'must be produced in the first place' (Hall and Schafran, 2017, 15), which legitimises the interest in spatial patterns of foundational provision. Surprisingly, research has paid little attention to how the FE materialises in space (De Boeck et al., 2019). However, propositions in the literature allow developing a set of working hypotheses with regards to spatial distribution of FE activities.

First, the spatial distribution of FE activities should follow that of population (Bentham et al., 2013). Second, the role of the FE should be more pronounced in less developed regions (Gough, 2020; Moore and Collins, 2020). Indeed, such regions suffer most from deindustrialisation and loss of employment opportunities in the traded economy sectors (Rodríguez-Pose, 2018). At the same time, foundational goods and services are consumed by everyone everywhere, meaning that they need to be produced everywhere as well. Thus, employment in the FE cannot go below a certain threshold, while employment in the traded economy can. This implies that the FE may be expected to constitute a larger share of employment in less developed regions (Engelen et al., 2017).

Overall, while the FE has important spatial implications, its geographical dimension has not been investigated empirically in a sufficient way. More work is needed to unravel the spatial universality and differentiation of providential and material services and their configurations in various kinds of regions.

## 2.3. FE—short-term stabiliser or long-term game changer?

Whereas competitive approach focused on technology-intensive industries has little to offer in 'left behind' regions, the FE constitutes a large share of the economy everywhere (Engelen et al., 2017). The FE is thereby a promising approach to embedded regional development (Earle et al., 2018; Heslop et al., 2019; Morgan, 2019). This might be particularly important during crises when 'the severest impacts are being felt in already

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2 The proponents of the FE also advocate for improving work conditions of foundational workers. This topic remains outside the scope of this article but is a fruitful direction for future research.

disadvantaged regions' (Tomaney et al., 2010, 773). A question is whether the FE can contribute to improving economic conditions in these regions during and after a crisis. We approach this question in two interlinked dimensions: stability and change.

The first refers to the role of the FE as a stabilising factor concerning the short-term ability of regions to resist employment shocks during crises due to its limited exposure to international and interregional competition (FEC, 2018, 23) and non-cyclical demand for foundational goods and services (Calafati et al., 2019). These characteristics allow relating the FE to the idea of 'sheltered regional economies' (Fratesi and Rodríguez-Pose, 2016) that emerge when regions depend mainly on non-export-oriented industries. It should be noted, however, that these are not identical: while the FE could be a (substantial) factor of making a regional economy sheltered, not all sheltered activities are necessarily foundational. The definition of the FE is based on its intrinsic social value, characteristics of demand and collective provision through branches and networks (Froud et al., 2020) rather than (non-)exposure to competition. Thus, its role for regions should be understood beyond its sheltered-ness. All comparisons with sheltered economies are, thus, confined to similarities regarding exposure to international/interregional competition.

Also, employment in the providential FE (e.g. health care, education and social services) is often related to public spending decisions which are less sensitive to economic shocks. Similarly, employment in the material FE is not likely to change dramatically during economic downturns because of the ways these services/products (e.g. water, sanitation, but also supermarkets) are organised and delivered. On the other hand, employment in the traded and overlooked economy is more sensitive to business cycle fluctuations (e.g. for export-oriented activities) or dynamics of disposable incomes (e.g. for personal services).

In this respect, the role of the FE may differ significantly from that of traded sectors (Calafati et al., 2019). Given that foundational activities constitute a large share of employment, the FE may exercise a stabilising function on regional economies in periods when the economy is contracting (Engelen et al., 2017). High levels of regional employment in sectors closed to competition imply that overall employment destruction is reduced relative to other regions as long as consumption levels do not collapse (Fratesi and Rodríguez-Pose, 2016). Thus, given the non-cyclical demand for foundational goods and services (Calafati et al., 2019), regions with higher share of foundational employment can possibly rely, at least in the beginning of a crisis, on a series of automatic stabilisers that soften the crisis' blow on regional employment (Ženka et al., 2019).

This short-term focus is mainly related to the question whether the FE is boosting a region's ability to mitigate the job destruction and/or return to pre-crisis employment level. This corresponds closely to what is labelled 'engineering resilience' (Simmie and Martin, 2010; Boschma, 2015; Fröhlich and Hassink, 2018), that is, the ability to 'bounce back to where we were' (Davoudi, 2012, 302). This can to some extent also be linked to 'ecological resilience' describing how much disturbance the system can take before it returns, not to the pre-crisis state, but to a new stable equilibrium.

A very different question is whether the FE can contribute to long-term qualitative change stimulating stronger regional recovery in the aftermath of a crisis. This aspect resonates with contemporary definitions of 'evolutionary resilience' that focus on the capacity of regions to sustain long-term development, that is, their ability to adapt and reconfigure their industrial, technological and institutional structures in an economic system that is restless and evolving (Boschma, 2015).

Here, a presumptive role of the FE as a short-term stabiliser of a regional economy may go into conflict with goals of long-term regional development. The literature suggests that the very factors that soften the initial blow of crisis on regional economies with higher share of sheltered sectors may not protect them from stronger/lengthier crises: while sheltered activities ‘may be a blessing in the short run, in the long run these areas [with high presence of sheltered activities] are bound to be ill-prepared to adapt to changes through processes of creative destruction’ (Fratesi and Rodríguez-Pose, 2016, 38). Protection from competitive pressures is, in this respect, a double-edged sword where short-term stability risks come at the cost of decreasing long-term regional adaptability. Furthermore, employment growth in the FE during recovery may also be limited as the demand for foundational services may rise slower than for traded goods and services or even stagnate after a certain point.

Understanding the role of the FE during crisis necessitates understanding how the integration and interdependency between foundational and traded activities directly and indirectly affect regional performance. There are multiple ways in which foundational and traded economy zones can influence each other (Engelen et al., 2017). On the one hand, foundational activities are extensive users of products and services offered by traded activities (Coenen and Morgan, 2020). On the other hand, delivery of high-quality foundational goods and services is central to sustaining competitiveness of traded activities: from ensuring sufficient supply of energy, water and other resources to delivering providential services required to keep high level of workforce supply (Berry, 2018). Thus, the focus should be not (only) on competitiveness/productivity of each economy zone, but (also) on its induced effects on the whole economy (Froud et al., 2020). Besides, collaborations between actors from the foundational and traded economy zones may be of significant importance for some types of innovation processes (Hansen and Winther, 2011). Jointly, this suggests the importance of also considering integration between foundational and other economy zones.

### 3. Data and definitions

To answer our research questions, we analyse employment in Sweden during 2007–2016. The data come from the Longitudinal Integration Database for Health Insurance and Labour Market Studies that is a linked employer–employee database. It connects employees to their primary employment firms for which location and industry affiliation are known. Thus, the data allow constructing a very accurate representation of regional industrial portfolios.

Classification of economic activities is based on NACE 2.0. Following FEC (2018), we allocate four-digit industries into foundational (material and providential), overlooked and traded zones of the economy.<sup>3</sup> The summary of industry codes allocation as well as detailed industry classification is presented in A6 in the Online [Supplementary Appendix](#).

Regions are defined as local labour markets (LLMs). These are integrated geographical units within which most interactions between workers seeking jobs and employers seeking labour occur. In practice, the boundaries of LLMs are defined by the statistics on commuting between municipalities in the way that maximises the self-containment of commuting flows (SCB, 2010). LLMs are further merged into six regional families—three metropolitan areas, large regional centres, smaller regional centres, and peripheral regions—based on population size and density, regional business dynamics, share of individuals with higher education as well as access to higher education institutions (NUTEK, 2004). This allows to

3 Based on <https://foundationaleconomy.com/activity-classification/>.

account for significant differences in labour market dynamics across regional hierarchy levels beyond the simple rural–urban dichotomy (Martynovich and Lundquist, 2016).

## 4. Employment in the FE in Sweden, 2007–2016

### 4.1. National employment in the FE

National employment in different zones of the economy is summarised in Table 1. During the crisis of 2007–2009, the traded economy zone was hit the hardest, losing more than 4% of employment, almost twice as much as the foundational and overlooked zones of the economy. Gentler employment decline in the FE indicates its lower sensitivity to crisis and pinpoints its potential to moderate the impact of crisis on the national economy.

After surpassing the bottom of the crisis in 2009, the Swedish economy moved into continuous period of employment growth. Somewhat surprisingly, the highest growth rate (15.2%) was in the providential FE which resulted in an increase of its employment share from 33.0% to 34.3%. This underlines its role not only as a short-term economic stabiliser but also a job creation domain. The material FE, while demonstrating comparatively good performance during crisis, never managed to return to its pre-crisis employment numbers. The differential performance of material and providential FE activities fits very well into the general trend towards servitisation of the economy.

The timing of crisis and recovery for different economy zones is interesting as well. The decline in employment came earliest to the providential FE. But it was also the first to recover, returning to pre-crisis employment already in 2010. It took one additional year for the OE. These two sectors contributed the most to the national employment recovery by 2011. Traded economy employment recovered by 2012.<sup>4</sup> As noted above, the material FE never fully recovered from the crisis.

Overall, national employment trends underline the important role of the FE. Not only did it provide employment to almost half of Swedish workers in 2007, but its share increased over time. In line with the literature, the FE demonstrated features of an economy stabiliser during crisis. Less expectedly, the providential FE contributed significantly to the recovery from crisis and subsequent growth. The employment in the material FE zone developed in line with expectations: a slower-than-average decline in crisis, but a sluggish recovery.

**Table 1.** National employment in different zones of the economy, 2007–2016

	Employment growth			Share in total employment			
	2007–2009	2009–2016	2007–2016	2007	2009	2012	2016
Material FE	–2.6%	2.3%	–0.3%	15.0%	15.1%	14.6%	14.0%
Providential FE	–2.3%	15.2%	12.5%	32.7%	33.0%	33.0%	34.3%
<b>FE total</b>	<b>–2.4%</b>	<b>11.2%</b>	<b>8.5%</b>	<b>47.7%</b>	<b>48.1%</b>	<b>47.6%</b>	<b>48.3%</b>
Overlooked economy	–2.4%	10.0%	7.4%	18.4%	18.6%	18.6%	18.4%
Traded economy	–4.4%	10.6%	5.7%	33.9%	33.4%	33.8%	33.3%
<b>Total economy</b>	<b>–3.1%</b>	<b>10.8%</b>	<b>7.3%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>Absolute numbers</b>	<b>–131,302</b>	<b>443,086</b>	<b>311,784</b>	<b>4,251,677</b>	<b>4,120,375</b>	<b>4,329,699</b>	<b>4,563,461</b>

4 See A1 in the Online Supplementary Appendix for more details.

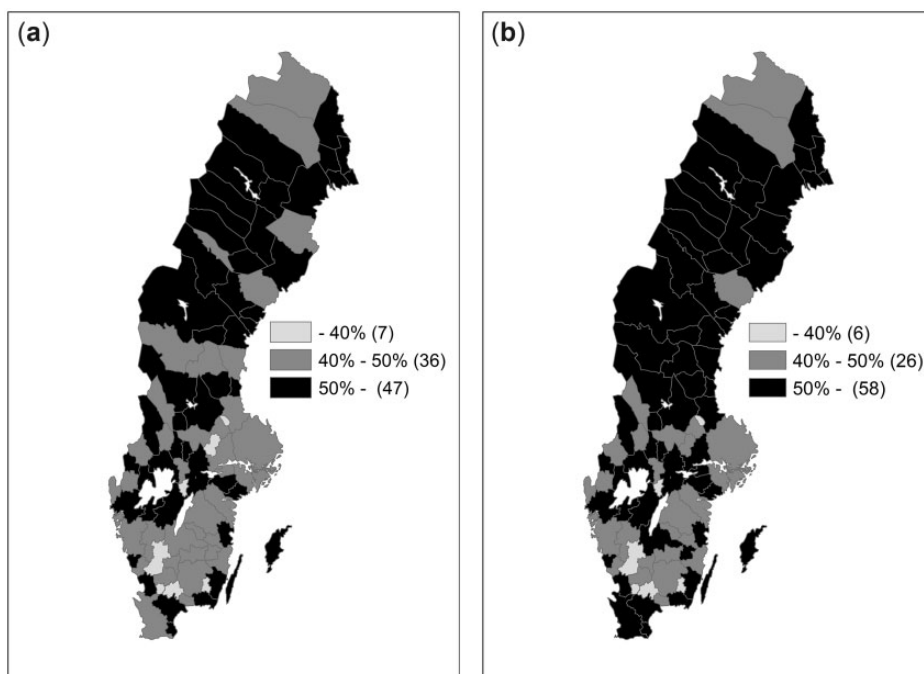
National trends may, however, disguise heterogeneous regional trajectories. In the following section, we perform the regional decomposition of employment trends in the FE.

#### 4.2. Regional employment in the FE

Between 2007 and 2016, the FE employment share increased in 70 out of 90 Swedish LLMs ([Figure 1](#)).<sup>5</sup> This indicates that the national expansion of this economy zone was a wide-spread phenomenon rather than being driven by a small number of regions.

The share of foundational employment in different types of regions demonstrated a clear hierarchical pattern ([Table 2](#)). It was considerably lower in metropolitan areas when compared with non-metropolitan regions. Moreover, the differences between the regions reinforced over time as FE share decreased in two largest metropolitan areas—Stockholm and Gothenburg—while it increased in most other regions, mainly because of the slower (and decreasing) employment growth in the traded economy zone in smaller regions. This pattern has characterised the Swedish regional system since the mid-1980s ([Henning et al., 2016](#)).<sup>6</sup> We, thus, find support to the claim that the FE is of greater importance in peripheral regions ([Moore and Collins, 2020](#)).

Our data confirm also that the spatial distribution of FE employment follows that of population as we observe an almost perfect correlation between the two. This relationship



**Figure 1.** FE shares in Swedish LLMs. (a) 2007. (b) 2016.

5 A similar trend is observed at the municipality level (see A2 in the Online [Supplementary Appendix](#)).

6 Out of 300 thousand new jobs generated in the Swedish competitive economy between 1985 and 2008, 80% ended up in the metropolitan regions. Two-thirds of the Swedish labour market regions did not benefit from this job creation at all.



**Table 2.** Regional employment in different zones of the economy, 2007–2016

	Employment growth			Share in total employment			
	2007–2009	2009–2016	2007–2016	2007	2009	2012	2016
<b>Stockholm</b>							
Material FE	–1.2%	8.8%	7.5%	14.4%	14.2%	13.7%	13.3%
Providential FE	–0.4%	18.9%	18.5%	29.6%	29.6%	29.9%	30.2%
<b>FE total</b>	<b>–0.6%</b>	<b>15.6%</b>	<b>14.9%</b>	<b>44.0%</b>	<b>43.8%</b>	<b>43.5%</b>	<b>43.5%</b>
Overlooked economy	0.8%	21.3%	22.3%	17.0%	17.1%	17.6%	17.9%
Traded economy	0.2%	14.8%	15.0%	39.0%	39.1%	38.9%	38.6%
<b>Total economy</b>	<b>–0.1%</b>	<b>16.3%</b>	<b>16.2%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>Absolute numbers</b>	<b>–867</b>	<b>186,725</b>	<b>185,858</b>	<b>1,147,626</b>	<b>1,146,759</b>	<b>1,236,402</b>	<b>1,333,484</b>
<b>Gothenburg</b>							
Material FE	–3.2%	2.6%	–0.7%	14.3%	14.3%	13.6%	12.7%
Providential FE	–1.1%	18.0%	16.7%	29.9%	30.4%	30.5%	31.2%
<b>FE total</b>	<b>–1.8%</b>	<b>13.1%</b>	<b>11.1%</b>	<b>44.2%</b>	<b>44.7%</b>	<b>44.1%</b>	<b>43.9%</b>
Overlooked economy	–2.8%	14.5%	11.3%	17.5%	17.5%	17.6%	17.4%
Traded economy	–4.2%	17.9%	13.0%	38.3%	37.8%	38.3%	38.7%
<b>Total economy</b>	<b>–2.9%</b>	<b>15.2%</b>	<b>11.8%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>Absolute numbers</b>	<b>–13,241</b>	<b>67,584</b>	<b>54,343</b>	<b>458,599</b>	<b>445,358</b>	<b>475,810</b>	<b>512,942</b>
<b>Malmö</b>							
Material FE	–4.0%	2.7%	–1.4%	17.0%	16.7%	16.1%	15.4%
Providential FE	–1.4%	19.5%	17.8%	32.2%	32.5%	32.7%	34.7%
<b>FE total</b>	<b>–2.3%</b>	<b>13.8%</b>	<b>11.1%</b>	<b>49.3%</b>	<b>49.2%</b>	<b>48.8%</b>	<b>50.1%</b>
Overlooked economy	–0.5%	8.3%	7.8%	17.5%	17.8%	17.5%	17.2%
Traded economy	–2.8%	10.5%	7.4%	33.3%	33.1%	33.7%	32.7%
<b>Total economy</b>	<b>–2.1%</b>	<b>11.7%</b>	<b>9.3%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>Absolute numbers</b>	<b>–9,248</b>	<b>49,472</b>	<b>40,224</b>	<b>431,290</b>	<b>422,042</b>	<b>442,788</b>	<b>471,514</b>
<b>Large regional centres</b>							
Material FE	–2.9%	0.7%	–2.2%	14.8%	15.1%	14.7%	14.0%
Providential FE	–2.8%	13.9%	10.6%	36.1%	36.7%	36.8%	38.5%
<b>FE total</b>	<b>–2.9%</b>	<b>10.0%</b>	<b>6.9%</b>	<b>50.9%</b>	<b>51.8%</b>	<b>51.5%</b>	<b>52.5%</b>
Overlooked economy	–4.2%	6.9%	2.3%	18.6%	18.7%	18.5%	18.4%
Traded economy	–7.5%	6.9%	–1.2%	30.5%	29.5%	30.0%	29.1%
<b>Total economy</b>	<b>–4.5%</b>	<b>8.5%</b>	<b>3.6%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>Absolute numbers</b>	<b>–65,073</b>	<b>116,469</b>	<b>51,396</b>	<b>1,433,818</b>	<b>1,368,745</b>	<b>1,422,630</b>	<b>1,485,214</b>
<b>Smaller regional centres</b>							
Material FE	–3.3%	–2.2%	–5.4%	14.6%	14.9%	14.5%	14.0%
Providential FE	–4.4%	9.4%	4.5%	32.4%	32.9%	32.8%	34.5%
<b>FE total</b>	<b>–4.1%</b>	<b>5.8%</b>	<b>1.4%</b>	<b>47.0%</b>	<b>47.8%</b>	<b>47.3%</b>	<b>48.6%</b>
Overlooked economy	–4.2%	0.3%	–3.9%	20.8%	21.2%	21.1%	20.4%
Traded economy	–9.2%	4.1%	–5.4%	32.2%	31.0%	31.7%	31.0%
<b>Total economy</b>	<b>–5.8%</b>	<b>4.1%</b>	<b>–1.9%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>Absolute numbers</b>	<b>–27,187</b>	<b>18,283</b>	<b>–8,904</b>	<b>471,721</b>	<b>444,534</b>	<b>454,070</b>	<b>462,817</b>
<b>Periphery</b>							
Material FE	–2.2%	–2.4%	–4.5%	16.6%	17.1%	17.0%	16.3%
Providential FE	–5.9%	8.1%	1.8%	34.3%	34.1%	33.6%	35.9%
<b>FE total</b>	<b>–4.7%</b>	<b>4.6%</b>	<b>–0.3%</b>	<b>50.9%</b>	<b>51.2%</b>	<b>50.5%</b>	<b>52.2%</b>
Overlooked economy	–3.6%	0.3%	–3.4%	21.1%	21.4%	21.1%	20.9%
Traded economy	–7.3%	0.3%	–7.0%	28.0%	27.4%	28.4%	26.8%
<b>Total economy</b>	<b>–5.2%</b>	<b>2.5%</b>	<b>–2.8%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>Absolute numbers</b>	<b>–15,475</b>	<b>7,111</b>	<b>–8,364</b>	<b>298,347</b>	<b>282,872</b>	<b>288,778</b>	<b>289,983</b>

holds throughout the period during which we observe dramatic redistribution of population and employment to the Swedish metropolitan areas.<sup>7</sup> This goes in line with the necessity of local provision of foundational goods and services (FEC, 2018).

Looking at periods of crisis, recovery and growth reveals an interesting sequence (Table 2 and Figure 2). Overall, metropolitan regions suffered less from employment decline during the crisis and demonstrated faster recovery. Employment growth in smaller regions could not compensate for employment loss during the crisis, resulting in a negative overall performance. Thus, we observe the increased divergence between different types of regions, which fits with redistribution of population towards metropolitan areas.

When it comes to the FE itself, it performed better during the crisis than regional economy overall in all regions except Stockholm and Malmö. There are, however, some differences: while in larger regions it was the providential FE that demonstrated smaller employment decline, the material FE was relatively unaffected in more peripheral areas. During recovery, however, the material FE kept losing its share in all regions resulting in the overall decline over time. The providential FE, on the other hand, demonstrated faster-than-average (in relative terms) recovery in all regions and ended up being one of the top economy zones in terms of overall performance over 2007–2016. This resulted in the increase of its employment share in all regions.

An interesting observation is that employment growth in providential FE accelerated after 2014 in all regions. We have two tentative explanations. Firstly, in 2014, there was a change in the national governing coalition from centre-right to centre-left. This could lead to the increased focus on welfare provision, which constitutes the providential FE. Secondly, 2015 marked a dramatic increase in the number of immigrants to Sweden which required the proportional increase in demand for welfare services that, in turn, resulted in the accelerated employment growth in the providential FE (Dessimirova et al., 2017).

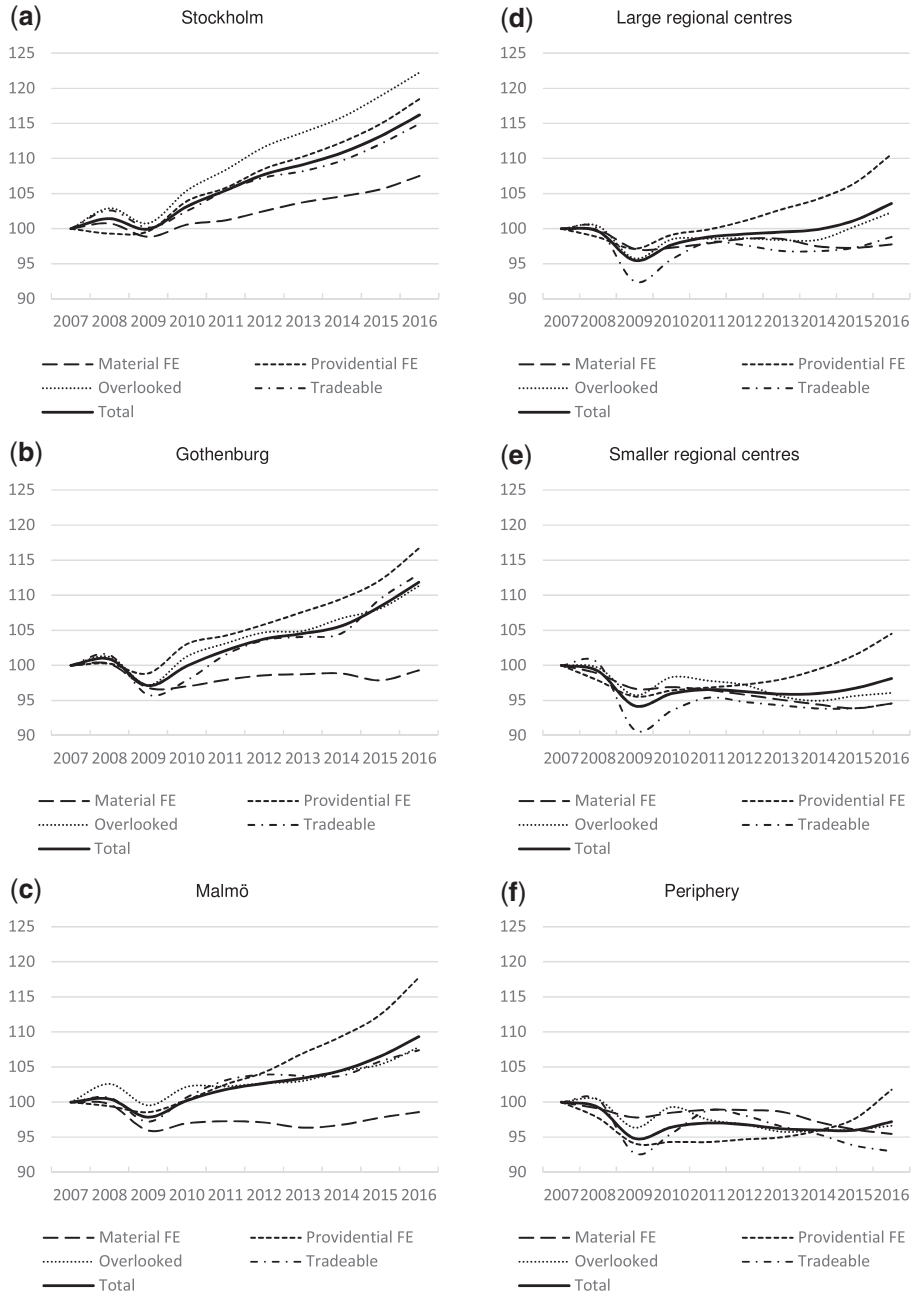
Despite some similarities, there were also dramatic differences between regions at different levels of regional hierarchy. In Stockholm, employment fell slightly in the crisis, but much less than in other regions. The FE was hit by the crisis earlier and stronger compared with other economy zones. In that respect, neither material nor providential FE played a stabilising role in Stockholm. During recovery both providential and material FE grew steadily, making Stockholm the only region in which employment in the material FE increased between 2007 and 2016.

In Gothenburg, the overall performance during the crisis was significantly worse but recovery and subsequent employment growth were at par with Stockholm. The internal dynamics between economy zones, however, played out quite differently. The providential FE zone demonstrated better performance during the crisis than any other sector in the economy and led the recovery after 2009. Material foundational activities were strongly affected during the crisis and did not recover by 2016.

Malmö was somewhat less hit by the crisis compared with Gothenburg but had a much weaker recovery. The internal dynamics between the economy zones resembled that of Gothenburg. The providential FE performed relatively well both in crisis and recovery, but particularly after 2012 when it leapt forward from other economy zones. Between 2012 and 2016, providential economy zone increased its share of employment by more than two percentage points (from 32.5% to 34.7%). The material FE constituted the largest

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7 See A3 and A4 in the Online [Supplementary Appendix](#) for more details.



**Figure 2.** Regional employment growth index (2007 = 100). (a) Stockholm. (b) Gothenburg. (c) Malmö. (d) Large regional centres. (e) Smaller regional centres. (f) Periphery.

share of Malmö employment in 2007 compared with all other regions but suffered from a strong decline during the crisis and never recovered to the pre-crisis level.

When comparing growth trajectories of other region types, a shared feature is the dramatic fall in the traded economy employment during the crisis (7.3–9.2%) that by far exceeded that in metropolitan regions (growth in Stockholm, and between 4.2% and 2.8% decline in Gothenburg and Malmö). This had a particularly negative impact in smaller regional centres and peripheral regions, as they never returned to pre-crisis employment levels. In large and smaller regional centres, employment decline in the traded economy was only partly offset by steady employment growth in the providential FE which was the only economy zone where employment returned to its pre-crisis level. The same is true for peripheral regions; however, the recovery in the providential FE was smaller in magnitude and much delayed.

In summary, small regional centres and peripheral regions never recovered from the crisis and the dependency on the FE was larger than before crisis. This has less to do with the size or development of the FE per se, but rather with the lack of growth in traded activities. This resembles the bigger picture of the long-term structural change processes starting in the beginning of the 1980s: decreasing shares of competitive industries and shrinking industrial diversity in smaller regions leading to ‘anorectic specialisation’, a condition characterised by decreasing growth, increasing specialisation and limited opportunities to diversify into competitive industries (Henning et al., 2016; Martynovich and Lundquist, 2016). For metropolitan regions, the opposite is true. Regional employment increases strongly during recovery; the FE contributed to this, while still losing its employment share. This was the outcome of an even stronger development in other economy zones.

All in all, the performance of the FE during crisis and recovery indicates that it could be a factor of regional resilience mitigating employment decline when the crisis hit and boosting regional recovery after the crisis. However, as indicated by the descriptive analysis, the outcome varied considerably between different regions. To test this further, we analyse how regional characteristics of the FE relate to regional employment growth.

## 5. FE and regional employment in times of crisis and recovery

### 5.1. Variables and estimation<sup>8</sup>

To investigate the relationship between the regional presence of the FE and overall labour market performance (operationalised as employment growth), we estimate ordinary least squares (OLS) models for the whole time period (2007–2016) as well as separately for crisis (2007–2009) and post-crisis recovery (2009–2016). Our principle explanatory variables measure two important regional dimensions of the FE.

The first one is the share of foundational activities (separately for material and providential FE) in regional employment. This allows us to relate the scale of foundational activities in a region to employment growth. Since the FE is less susceptible to employment decline during crisis, the degree of regional dependence on foundational employment may be correlated with the overall labour market performance.

An important reservation should be made here. The size of the foundational sector is not in itself the factor of job creation or destruction. Changes in the share of the FE in regional employment are shaped, among other things, by the strength of the rest of the

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<sup>8</sup> This section is a non-technical summary. For technical details, refer to A5 in the Online [Supplementary Appendix](#).

economy (e.g. export-oriented economic activities) and public spending decisions (e.g. healthcare budget changes). In that sense, the relative size of the FE sector should be seen as a measure of dependence of the regional economy on foundational activities.

Second, research has repeatedly underscored the importance of regional industry composition as a whole. Christopherson et al. (2010) showed that the US regions least affected by crisis had higher diversity in educational and health activities (i.e. the providential FE). More generally, there is an agreement that the cohesiveness of the regional industry mixes—operationalised as related variety—is a factor of regional resilience (Boschma, 2015). Therefore, we also measure FE diversity and integration with other regional activities.

In doing that, we make use of recent advances in research on skill relatedness and associated measures of related variety (Fitjar and Timmermans, 2017; Kuusk and Martynovich, 2021; Martynovich and Taalbi, 2022). For each pair of four-digit industries, we estimate the degree of relatedness, which we then use to calculate related variety within the FE, outside the FE zone, and between FE and non-FE economy zones in the regional industry mix.<sup>9</sup> The former two indicate the level of coherence within economy zones, while the latter is a measure of integration between foundational and non-foundational activities in a region.

As control variables, we include some general structural characteristics of LLMs. We account for the share of employment in manufacturing to control for the sensitivity of regional labour markets to macroeconomic conditions as ‘manufacturing [has] been viewed as being more cyclically sensitive than private service industries’ (Martin, 2012, 13). To capture the regional innovativeness and competitiveness, we define the employment share of high-tech manufacturing and knowledge-intensive services. Human capital endowment is proxied by the share of regional workforce with higher education. Finally, urbanisation externalities are captured by regional population density.

## 5.2. Regression results

We report the results of regression analysis separately for models not differentiating between regions (Table 3) and models accounting for heterogeneity of population growth patterns<sup>10</sup> (Table 4). Each table reports models for 2007–2016 as well as models for 2007–2009 (crisis) and 2009–2016 (recovery and growth).

With regards to the whole period (models 1–4 in Table 3), the results indicate that the share of the material FE does not have any significant relationship with regional employment growth while the share of the providential FE is negatively associated with it. Higher regional (total) related variety correlates with faster increase in employment, driven primarily by related variety *within the non-FE zone* and *across economy zones*. Model diagnostics indicate that the former association is somewhat stronger. At the same time, related variety within the FE is not correlated significantly with regional employment growth.

9 In other words, we identify clusters of industries that value and make use of the similar kind of skills and competencies within and between different economic zones.

10 To account for the fact that the spatial (re)distribution of foundational activities is related to the spatial patterns of population. We do so by adding a dummy variable distinguishing between depopulating regions and regions with increasing population.

**Table 3.** FE and employment growth, 2007–2016

Dependent variable— employment growth	2007–2016 (full period)				2007–2009 (crisis)				2009–2016 (recovery and growth)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Total RV (log)	0.0169** (0.0064)				0.0174 (0.0146)				0.0153** (0.0070)			
FE RV (log)		0.0082 (0.0124)				0.0404* (0.0208)				−0.0070 (0.0142)		
Non-FE RV (log)			0.0109** (0.0043)				0.0093 (0.0103)				0.0111** (0.0045)	
FE-non-FE RV (log)				0.0176** (0.0075)				0.0326* (0.0183)				0.0101 (0.0083)
Material FE share	0.0060 (0.0225)	−0.0092 (0.0270)	0.0132 (0.0228)	−0.0060 (0.0225)	0.0093 (0.0318)	−0.0390 (0.0341)	0.0148 (0.0374)	−0.0080 (0.0272)	−0.0002 (0.0284)	−0.0015 (0.0289)	0.0081 (0.0282)	−0.0101 (0.0278)
Providential FE share	−0.0642*** (0.0195)	−0.0790*** (0.0232)	−0.0584*** (0.0199)	−0.0719*** (0.0195)	−0.1176*** (0.0396)	−0.1749*** (0.0527)	−0.1128** (0.0434)	−0.1277*** (0.0379)	−0.0329** (0.0163)	−0.0341* (0.0193)	−0.0281* (0.0164)	−0.0383** (0.0159)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	90	90	90	90	90	90	90	90	90	90	90	90
AIC	−706.1544	−698.8192	−706.7979	−703.4259	−541.0373	−542.6356	−540.3347	−543.7728	−673.1811	−668.6995	−674.8357	−669.6165
BIC	−683.6561	−676.3209	−684.2996	−680.9277	−518.5390	−520.1373	−517.8364	−521.2745	−650.6828	−646.2012	−652.3374	−647.1182
<i>R</i> <sup>2</sup>	0.6820	0.6550	0.6843	0.6722	0.4390	0.4489	0.4346	0.4558	0.5515	0.5286	0.5597	0.5334

*Notes:* Constant is included in all models but not reported. The table reports coefficients with robust standard errors in parentheses. \*\*\*(\*\*,\*) indicate significance at 1% (5%, 10%) level. AIC – Akaike information criterion, BIC – Schwarz information criterion.

**Table 4.** Regional heterogeneity models, 2007–2016

Dependent variable— Employment growth	2007–2016 (full period)				2007–2009 (crisis)				2009–2016 (recovery and growth)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Total RV (log)	0.0161** (0.0068)				0.0131 (0.0158)				0.0149** (0.0070)			
Total RV (log)* Depop region	–0.0030 (0.0020)				0.0069 (0.0050)				–0.0057** (0.0026)			
FE RV (log)		0.0180 (0.0122)				0.0231 (0.0219)				0.0095 (0.0158)		
FE RV (log)* Depop region		–0.0104 (0.0064)				0.0206 (0.0154)				–0.0155* (0.0090)		
Non-FE RV (log)			0.0110** (0.0048)				0.0042 (0.0115)				0.0121** (0.0049)	
Non-FE RV (log)* Depop region			–0.0029 (0.0021)				0.0068 (0.0051)				–0.0059** (0.0027)	
FE-non-FE RV (log)				0.0226** (0.0091)				0.0227 (0.0215)				0.0177* (0.0105)
FE-non-FE RV (log)* Depop region				–0.0065* (0.0036)				0.0117 (0.0090)				–0.0104** (0.0051)
Material FE share	0.0238 (0.0188)	–0.0020 (0.0253)	0.0311 (0.0192)	0.0087 (0.0188)	0.0269 (0.0393)	–0.0062 (0.0399)	0.0236 (0.0429)	0.0159 (0.0366)	0.0138 (0.0245)	–0.0024 (0.0315)	0.0239 (0.0247)	0.0008 (0.0256)
Material FE share * Depop region	–0.0645** (0.0314)	–0.0535 (0.0370)	–0.0667** (0.0299)	–0.0587* (0.0336)	–0.0238 (0.0608)	–0.0384 (0.0650)	–0.0112 (0.0612)	–0.0322 (0.0609)	–0.0621* (0.0357)	–0.0487 (0.0413)	–0.0681** (0.0336)	–0.0548 (0.0391)
Providential FE share	–0.0848*** (0.0185)	–0.1111*** (0.0264)	–0.0770*** (0.0183)	–0.0977*** (0.0203)	–0.0917*** (0.0339)	–0.1250** (0.0487)	–0.0928** (0.0394)	–0.0990*** (0.0315)	–0.0697*** (0.0190)	–0.0818** (0.0322)	–0.0619*** (0.0174)	–0.0783*** (0.0229)
Providential FE share* Depop region	0.0494** (0.0191)	0.0630** (0.0257)	0.0445** (0.0179)	0.0589*** (0.0210)	–0.0559 (0.0508)	–0.0812 (0.0671)	–0.0486 (0.0475)	–0.0571 (0.0557)	0.0731*** (0.0242)	0.0835** (0.0346)	0.0670*** (0.0221)	0.0795*** (0.0285)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	90	90	90	90	720	720	720	720	720	720	720	720
R <sup>2</sup>	0.7357	0.7205	0.7350	0.7342	0.4527	0.4602	0.4470	0.4675	0.6572	0.6398	0.6593	0.6485

Notes: Constant is included in all models but not reported. The table reports coefficients with robust standard errors in parentheses. \*\*\*(\*\*,\*) indicate significance at 1% (5%, 10%) level. AIC – Akaike information criterion, BIC – Schwarz information criterion.

Overall, regions with higher share of foundational employment tend to demonstrate slower employment growth. Given that the FE expanded in all regions during this period, this observation reflects, as discussed earlier, the lack of job creation in traded sectors in many (predominantly, small and peripheral) regions that is not compensated by employment growth in the FE. This negative relationship is mitigated somewhat if foundational and non-foundational activities are well integrated in a region.<sup>11</sup>

Looking at the models that account for heterogeneity of regional population growth patterns additionally qualifies the results above (models 1–4 in Table 4). Most importantly, the negative association of providential activities share with regional employment growth is greatly mitigated in depopulating regions. This is consistent with the fact that the providential foundational employment is growing across all groups of regions but contributes particularly strong to job creation in smaller regional centres and peripheral regions, which suffer from depopulation and weak growth in traded and overlooked economy zones.

Examining the relationship between characteristics of the local FE and employment growth in times of crisis versus recovery and growth reveals the differential role of foundational activities (models 5–12 in Table 3).

In times of crisis, regions with large share of the providential FE tend to be disadvantaged, similarly to the whole period. However, regions with higher related variety *within the FE* suffer less from employment decline during crisis. This is also the case for regions where foundational and non-foundational activities are more integrated. That is, in times of crisis, regions having a large foundational sector experience faster employment decline, which however can be offset if the FE in a region is coherent within itself and more integrated with the rest of the regional economy.

A different relationship is observed during the recovery. Regions with higher related variety *in non-foundational activities* demonstrate faster regional employment growth. That is much in line with the literature on related variety (Content and Frenken, 2016). Also, the negative association between the providential FE share and employment growth is substantially lower in magnitude during this period. This may be related to high rates of job creation in the providential FE (see Section 4).

During crisis, accounting for the population growth patterns does not add any additional details (models 5–8 in Table 4). However, there are some differences between depopulating and growing regions when it comes to recovery (models 9–12 in Table 4). Here, regions with higher related variety within the non-FE still demonstrate faster employment growth, but this relationship is stronger in regions with growing population. Once again, this is consistent with the literature (Firgo and Mayerhofer, 2018; Kuusk and Martynovich, 2021). What is more interesting, however, the models without regional heterogeneity mask differential relationship between the share of the providential FE and employment growth in regions with growing population versus depopulating regions.

In the former, the association is negative. That is, during recovery such regions have slower employment growth if they are more dependent on the providential FE, despite the

11 Our research design is focused on the overall composition of the regional economies and does not allow to establish particular constellations of industries across the economy zones borders that result in job creation (or mitigation of employment decline). However, quick examination of relatedness matrices indicates, for example, that technical consultancy activities (NACE 2.0. code 7112; part of the tradeable economy zone) are closely related to many activities within the material FE (e.g. water and gas supply). Presence of such activities in a region can, thus, be hypothesised to generate synergy effects resulting in job creation. This claim, however, requires further investigation.



fact that such activities are expanding rather fast. This suggests that in successful regions, faster job creation demands strong dynamics outside the FE. More generally, in regions with growing population, the regional problem is probably less related to the presence and size of the FE but to general employment growth preconditions.

At the same time, in depopulating regions, the negative association between providential foundational employment share and regional employment growth disappears. This is consistent with the findings from the descriptive analysis that in regions at lower levels of regional hierarchy, the providential FE was the only one to return to pre-crisis employment levels meaning that it was the only sector to generate jobs. As discussed earlier this pattern must be understood against the broader background of the long-term trends of decreasing number of non-foundational jobs in these regions,

Overall, while there are many new jobs generated in the FE during observed period, the findings from regression analyses indicate that the FE economy is not enough to boost employment growth at the regional level. The latter is the function of the overall composition of regional labour markets, not only in terms of presence of certain sectors but also integration between them. Yet, there is some evidence that, in crisis times, the foundational sector may act as a stabilisation factor, particularly if it is coherent within and well-integrated with other regional activities. Importantly, but not surprisingly, the relationship between the presence of foundational activities and regional employment growth tends to be less negative in depopulating regions, particularly in recovery.

## 6. FE: economy stabiliser in times of crisis?

We set off to explore the employment in the FE in Sweden between 2007 and 2016. Following suggestions in the literature, we structured our discussion along two interrelated dimensions: geographical, in that we investigated hierarchies in spatial distribution of employment in foundational activities across various types of regions, and temporal, as we followed the FE employment during and after the Great Recession of 2007–2009. Additionally, we analysed how regional characteristics of the FE—its share, variety and integration with other economy zones—were related to regional employment growth. Our findings allow us to discuss the role of the FE as a stabiliser of regional economies in times of crisis, as suggested by proponents of the foundational approach to regional development (Engelen et al., 2017).

First, despite being largely disregarded in economic policies, the FE employs almost a half of workers nationally and more than that in most regional labour markets. In fact, its share in national employment increased over time as more than 170 thousand new jobs were created in the FE between 2007 and 2016, corresponding to 55% of total national job creation.

Second, the FE employment is unevenly distributed across regions. Its spatial distribution correlates almost perfectly with that of population, and spatial redistribution of population over time led to corresponding redistribution of the FE employment. Also, its share in regional employment tends to increase towards the lower levels of regional hierarchy, making small regions more dependent on the FE employment. In that respect, the FE's role as provider of jobs is more pronounced in 'left behind' regions (Heslop et al., 2019; Moore and Collins, 2020).

Third, in all regions but Stockholm and Malmö, the FE suffered from smaller employment decline in crisis than the rest of the economy, as predicted by the literature. This

stems partly from non-cyclical demand for foundational goods and services and partly from foundational activities being protected from international and interregional competition. To our surprise, however, the FE employment grew above regional average in most regions also after the trough of the crisis. This is primarily the case with the providential FE, that is, provision of welfare services to population. These activities grew much faster (both in absolute and relative terms) in metropolitan areas, possibly reflecting the redistribution of population from peripheral regions that took place throughout the period.

The observed employment dynamics in the FE may tempt us to conclude that regions with high share of foundational activities in their employment portfolios will be less affected by the crisis; that is, the FE plays the role of regional stabiliser. Is that so? Not really!

Our results are more in line with [Fratesi and Rodríguez-Pose \(2016\)](#) who demonstrated that European regions that had developed more sheltered economies over time tended to perform, on average, worse in terms of employment change during and after the Great Recession of 2007–2009 than more open economies. While the FE is not equivalent to sheltered economy, it is an important component of it. Thus, it is not surprising that Swedish regions with higher share of foundational employment had slower employment growth between 2007 and 2016, and particularly during the most severe crisis years (2007–2009). There are, however, several important qualifications to this result.

First, the relationship between FE share and employment growth differs between regions with growing population and depopulating regions, particularly during recovery. In depopulating regions, the negative relationship between the FE share and regional employment growth disappears after 2009. In such regions, foundational (specifically, providential) activities were the only ones to return to pre-crisis employment levels. Thus, these activities were the primary drivers of post-crisis job creation. More generally, we agree with [Ženka et al. \(2019\)](#) that similar industrial structures (in our case, in terms of the FE share) may produce different regional outcomes with respect to regional response to crises depending on the regional preconditions (in our case, with respect to population dynamics). More generally, however, differential regional outcomes with respect to employment growth seem to be associated with the variation in structures and dynamics in sectors not belonging to the FE.

Second, while the FE size had a negative association with employment growth, related variety within the FE as well as integration between foundational and non-foundational activities contribute to slower employment decline in the trough of the crisis. This resonates with [Christopherson et al. \(2010\)](#) who showed that the USA regions least affected by the economic crisis included those with high diversity in, among others, educational and health institutions. A positive role of integration between foundational and non-foundational economic zones in crisis times (as well as over the whole period between 2007 and 2016) underlines the importance of considering the regional economies as a whole rather than treating traded and foundational zones as independent entities.<sup>12</sup> Where ‘competitive’ emphasises the need for change, ‘foundational’ focuses on continuity and

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12 Proponents of ‘competitive paradigm’ of regional development are readily reading off policy lessons from success stories of dynamic regions: if only less dynamic cities and regions develop clusters, build regional innovation systems, pursue ‘smart specialization’, etc. then their economies will be revitalised ([Martin, 2015](#)). Supporters of ‘foundational view’ propose that we need to displace the idea of a ‘competitive region’ and focus instead on grounded cities and regions driven by their foundational economy ([Engelen et al., 2017](#)).

stability, and both are needed to make regions more resilient to economic shocks (Boschma, 2015).

The latter points allow us to contribute to the literature relating regional resilience to regional industry structures (see, among others, Fratesi and Rodríguez-Pose, 2016; Martin et al., 2016; Ženka et al., 2019). There is an agreement in this literature that industrial variety in a region spreads risks and can better accommodate economic shocks (Essletzbichler, 2007; Desrochers and Leppälä, 2011), particularly when local industries are skill-related, that is require similar skills, as this enhances regional labour matching (Neffke and Henning, 2013). Besides, related variety enhances the recombination potential of a region and provides local (related) resources on which new growth paths can build and develop, thus improving long-term regional resilience (Boschma, 2015).

In our case, overall related variety in a region correlated with faster employment growth between 2007 and 2016. There are, however, differences between the acute phase of the crisis and post-crisis recovery. During crisis, regions with higher coherence within the FE as well as stronger integration between foundational and other economic activities experienced smaller decline in employment. This relationship does not seem to differ between regions with growing population and depopulating regions. This finding fits rather nicely with the predictions of the FE literature on its role as an economy stabiliser. During recovery, we observe a more conventionally found relationship between related variety in traded sectors and regional employment growth (Firgo and Mayerhofer, 2018; Kuusk and Martynovich, 2021). In line with this literature, this relationship is stronger in regions with growing population. This has two important implications. First, it is not enough to focus on certain groups of industries in regional industry mixes as a factor of regional resilience. Regional economies should be analyzed *as a whole*. Second, it is important to investigate how the particular constellations of industries—in terms of size of various industry groups and integration between them—relate to regional resilience at various stages of a business cycle.

So where does this leave us with regards to the FE as a stabiliser of regional economies in times of crisis? On the one hand, being sheltered from international and interregional competition and facing non-cyclical demand, the FE retains more jobs (in relative terms) than other activities. Besides, related variety within the FE is associated with slower regional employment decline during the trough of the crisis. In this respect, our evidence points to the FE stabilising the economy and contributing positively to engineering/ecological regional resilience.

Contemporary definitions of resilience, however, tend to underline the capacity of regions to sustain long-term development, that is, their ability to adapt and reconfigure their industrial, technological and institutional structures (Boschma, 2015). While our analysis does not allow us to say much about the relationship between the FE and such evolutionary resilience, the long-term focus of this definition renders the capacity of the FE to contribute to regional resilience as very limited.

## 7. Concluding remarks

Our findings render the FE as a provider of substantial number of jobs in the Swedish economy. While the employment in the FE appeared to be more resilient to the Great Recession of 2007–2009, we could not verify that regions with higher share of the FE in

their employment mixes performed better overall. Nevertheless, the blow of the crisis was milder in regions where the FE was better integrated with other economic activities.

A central implication of this article is the need for taking a more context-sensitive approach that would prioritise foundational activities for job creation and stabilisation of regional labour markets in some places and in certain time periods. Beyond those places and times, the main policy ambition should be focused on providing equal, accessible and affordable welfare functions and/or daily services, and only on the margin on the presumptive ability of the FE to act as change agent for regional economic development.

More generally, our analysis suggests that we need to move beyond the foundational/traded dichotomy. Contrary to suggestions that foundational or traded industries should take centre stage in economic policy, we propose that the different roles played by foundational and traded activities during crisis and recovery necessitate a more balanced approach. Importantly, more attention should be paid to the integration between these parts of the economy. Indeed, a central finding of the article is the positive association between regional employment growth and integrations between regional foundational and non-foundational activities during the crisis. This points to the possibility for regional policymakers to make prioritisations based on the sets of foundational and traded industries that are already present in a region. Here, we build on the suggestion of [Neffke et al. \(2011\)](#) who study relatedness between manufacturing industries and argue that mapping the regional industry space allows for an informed analysis of potential new industries that would have a good ‘fit’ with the existing industries present in the region—as well as identifying existing industries that are central in the regional industry space and, thus, important to maintain. Our analysis demonstrates that it is crucially important to not base such prioritisations only on the traded part of the industry space. Rather, it would be advisable to give particular attention to the interconnections between foundational and traded activities in regional policymaking.

Also, while we focus on employment growth in this article, the argument for placing the FE in the sight of economic policy is not only related to job creation effects. Additional arguments relate to improving working conditions in the FE and enhancing quality and accessibility of foundational services that matter to all ([FEC, 2018](#)). Thus, it would be beneficial for future research to complement the focus on employment growth with other dependent variables measuring working conditions as well as access, quality and affordability of foundational services. Still, we argue that job creation is indeed a fundamental element allowing citizens to live decent lives, and the current article thereby provides a first detailed, longitudinal analysis of the role of the FE across different types of regions.

Focusing on the relationship between the FE and regional employment dynamics, we had only a limited opportunity to discuss the former as a driver of structural change and economic growth. This calls for further research focusing on integration of the FE and traded activities, and how this may vary between different types of regions over time. Such an agenda could shed more light on why, when and where the integration matters. What can be learned about mechanism at work in overperforming versus underperforming regions over time? This, avenue would allow for a broader understanding of economic impact of foundational activities. Such research direction would require different approaches combining quantitative and in-depth qualitative analyses in a systematic way, focusing on direct as well as induced effects on growth rates in employment, value added and productivity not only inside, but also (and, perhaps, more importantly) outside the FE. There are many questions to be addressed. When and under which circumstances is

stronger regional presence of foundational activities an enabler for building competitive advantage of cities and regions? On the other hand, can the FE under certain conditions lead to lock-in and displacements of other regional economic activities? Can 'left behind' regions benefit not only from the stabilising function of the FE, but also use it to escape their inferior growth paths? Alternatively, is the FE zone's role in this specific regional context rather to help regions to shrink with dignity? What is the role of the material FE in provision of infrastructure necessary for transition to a more sustainable economy? How does this vary between centre and periphery? Answering these questions would help to better understand the hypothesised role of the FE as a driver of regional resilience, beyond our approach.

Finally, we have so far concentrated our research to Sweden. It would be very interesting to expand this to comparative analysis with other countries regarding the role of different national embeddedness (e.g. comparing coordinated versus liberal market economies) and how setting boundaries, scale and funding architecture in different countries affect accessibility, affordability, performance and organisation of the FE in different types of regions.

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## Conflict of interest statement

No potential conflict of interest was reported by the authors.

## Supplementary material

[Supplementary data](#) for this paper are available at *Journal of Economic Geography* online.

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