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Regional resilience to displacement: Evidence from Panel and Quantile regressions

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Abstract
This paper contributes to knowledge about regional resilience to displacement and examines the extent to which the characteristics of the i) regional closures, ii) individuals in a region, iii) regional industry, iv) regional economy and v) regional attractiveness influence the re-employment of displaced employees. The results indicate that regions where the average size of establishment closures is large or the regional displacement rate is high exhibit increased resilience in terms of re-employing displaced employees in the same region. Unrelated and related industrial variety are positively related to resilience to displacement in regions with low re-employment capacities, whereas there is some evidence that regional attractiveness is positively related to resilience in regions with a good ability to re-employ displaced employees.

Keywords: Displacements, regional resilience, exit. Labor mobility, regional development, regional attractiveness

JEL-codes: J6, R1

1. Introduction

Job displacement, defined as the involuntary loss of a job due to economic downturns or structural changes, affects millions of workers each year. According to the OECD (2013), 2-7 per cent of workers are displaced every year, and there is quite substantial variation in the ability to re-employ displaced workers across countries. In the Swedish case, the OECD (2013) reports that approximately 90 per cent of displaced workers in Sweden are re-employed within one year, which is the highest re-employment rate observed among the 15 countries included in this study. Our knowledge of the individual consequences of displacement in terms of, for example, unemployment duration and earning losses, is quite comprehensive (see, for instance, OECD, 2013 and Carrington and Fallick, 2015). In the regional context, both displacement rates and re-employment capacity have been observed to vary substantially across regions (Nyström and Viklund Ros, 2014). However, knowledge of differences in the regional patterns of displacement and why some regions are better at managing economic shocks remains limited and has received increasing attention in the economic geography literature (Diodato and Weterings, 2014), not the least in the aftermath of the most current economic crisis (Boschma 2015). This interest has resulted in several recent papers on regional resilience.

However, in recent publications on regional resilience, several researchers have noted a lack of theoretical and empirical knowledge. For instance, in a recent study, Diodato and Weterings (2014 p. 723) state, "To date theoretical and empirical insights in the determinants of regional resilience are still limited". Holm and **Ø**stergaard (2015) note that there are now several studies on the factors that influence the growth of industries in specific regions. However, econometric evidence of which industry structures and employment characteristics influence regional resilience remains scarce (Holm and Østergaard**,** 2015). Additionally, Simmie and Martin (2010) and Martin (2012) note that the existing research on regional resilience tends to be conceptual or empirically descriptive. Among the empirical papers that apply more systematic approaches to analysing regional resilience in several regions, the papers by Diodado and Weterings (2014) and Martin (2012) are of note. For instance, Diodato and Weterings (2014) find that some regions have inherently higher resilience to economic shocks, such as decreases in demand or sector-specific shocks. Although systematic empirical evidence focusing on regional resilience to displacement remains limited in this field of study, some recent papers include Andersson, et al. (2014) and Neffke, et al. (2016).

This paper intends to contribute to knowledge of regional resilience to establishment closures, and as such, the contribution of this paper is primarily to provide systematic empirical evidence on regional resilience. In this context, "resilience" refers to the ability to adapt to a shock incurred by business closures. Hence, this paper intends to explore which regional characteristics influence that region's resilience to displacement.[1] It is argued that in resilient regions, the competences of displaced workers can be re-utilized in other firms or industrial sectors. Hence, the extent to which displaced workers are re-employed in the same region within one year of displacement is investigated, as is the re-employment of displaced workers from other regions (total re-employment). Primarily inspired by the indicators of regional

resilience discussed by Modica and Reggiani (2015), five areas of determinants of regional resilience to displacement are identified. Thus, the regional context in terms of the characteristics of the i) regional closures, ii) individuals in the region, iii) regional industry, iv) regional economy and v) regional attractiveness are thought to influence regional resilience to displacement in terms of the ability to re-employ displaced workers.

The characteristics of regional closures include, for example, the regional share and average size of closures, while the employee characteristics of the region include their education and the share of individuals with a foreign background in the region. The characteristics of the regional industry include measures of unrelated and related industry variety (Frenken et al. 2007; Boschma et al. 2012), the industry structure in terms of its share of the manufacturing industry, services sector and entrepreneurial activity in terms of entry rates. Characteristics of the regional economy include the size of the region and its unemployment level. Finally, regional attractiveness is measured by an index that includes for example, social, economic, health and education conditions that affect the attractiveness of living in a region. In the empirical part of the paper, a unique matched firm-employee dataset is used to study regional patterns of displaced worker re-employment in 81 Swedish labour market (LM) regions from 2001 to 2009. In the first step of the empirical analysis, a panel data setting is employed to generate general knowledge of the determinants of regional resilience to displacement. However, in a second step of the empirical analysis, the heterogeneity of regional reactions to shocks (Fingleton et al. (2012) is acknowledged, and it is hypothesised that the importance of some determinants of resilience may vary across regional contexts. Hence, a quantile regression methodology is employed to explore possible non-linear relations across heterogeneous regions. Understanding how the process of re-employment after displacement differs across regions should be of interest to policymakers. Further knowledge about which factors influence regional resilience to displacement is crucial to formulating well-targeted labour market policies and developing strategies to address regional economic shocks induced by displacement.

2. Regional resilience and re-employment of displacements

The term "resilience" originates from the Latin word "resilio", which means rebound and refers to the ability to adapt to change (Martin, 2012; Reggiani, 2013). The term has been used in different fields of science. The term *engineering resilience*, used in physical science, refers to the ability of a system to return to equilibrium after a shock or disturbance (Pimm, 1984). Engineering resilience is measured by the speed at which the system returns to equilibrium (Modica and Reggiani, 2015). *Ecological resilience* refers to the extent to which a shock can be absorbed by a local stable domain before shifting to another stable equilibrium (Holling, 1973). As such, ecological resilience measures the elasticity of a system to a shock (Modica and Reggiani, 2015).

Applying the resilience literature to a regional context, Chapple and Lester (2010 p. 86), define regional resilience as "the ability to transform regional outcomes in face of a challenge." In the regional resilience context, Martin (2012) introduced the term "*adaptive resilience*"[1] which relates to the capacity of a regional economy to reconfigure, that is, to adapt its structure (i.e., its firms, industries, technologies) to maintain an acceptable growth path in terms of output, employment, and wealth over time (Martin, 2012). This self-organizing adaptability may occur both in response to external shocks and due to internal emergent mechanisms (Martin and Sunley (2007). According to Martin (2012), adaptive resilience will depend on, for example, the rate of entrepreneurial activity and new firm formation, the innovativeness of incumbent firms, their willingness to shift to new products or sectors, the diversity of the regional industry structure and the availability of labour with the appropriate skills. The present paper investigates the extent to which regions are able to absorb displaced employees from both within the region and from other regions. Furthermore, the perspective must be regarded as rather short term (the one-year absorptive capacity for displaced employees). As such, perhaps the closest notion of resilience applicable is ecological resilience because the question under investigation is the absorptive capacity of the region.

According to Modica and Reggiani (2015), indicators of regional resilience generally fall into six categories. Most measures of resilience account for socio-economic factors and access to financial resources. Such measures include income per capita, employment, economic diversification and educational attainment. Accessibility of infrastructure is also considered important for a region to be able to react to shocks or disturbances efficiently. Furthermore, a community's capacity to collaborate may influence its ability to react to shocks. Finally, innovation and technology, as well as the natural environment, can be important for reducing the impacts of shocks, where the latter is primarily relevant for shocks such as natural disasters.

Understanding the determinants of regional differences in resilience is complex, with many different factors being simultaneously important (Fingleton et al., 2012). It also should be noted that regions differ in their resilience patterns, primarily in their initial resilience to shocks (Fingleton et al., 2012). As an example, the multifaceted issues that are assumed to influence

regional resilience are addressed by the Resilience Capacity Index (RCI) created by Cowell (2013). This index consists of multiple components in three areas: economic capacity, socio-demographic capacity, and community connectivity capacity.

The process of determining which factors are of importance for regional resilience to displacement identified the above-mentioned categories of indicators of regional resilience developed by Modica and Reggiani (2015), in particular, the areas of regional economic capacity, socio-demographic capacity, and measures reflecting recent interest in the importance of regional industry diversity to regional growth (Frenken et al. 2007 and Boschma et al. 2012). Another source of inspiration is the entrepreneurial spawning literature (Hyytinen and Maliranta, 2008; Elfenbein et al., 2010), which discusses to what extent selection mechanisms and learning from current employment influence the labour mobility patterns of different types of firms.

Inspired by these strands of the literature, five categories of possible explanatory variables of regional resilience to displacement, measured as variation in regional re-employment rates, are identified. Hence, the factors that are argued to measure the regional capacity to re-employ employees affected by displacement are the following categories: the characteristics of the i) regional closures, ii) individuals in a region, iii) regional industry, iv) regional economy and v) regional attractiveness

i) Characteristics of regional closures

The characteristics of regional closures include a measure that indicates the severity of the regional shock, as measured by the share of displacement in the region. The adjustment process may be slower and the re-employment possibilities may be smaller if a large number of workers are displaced simultaneously. However, it can also be argued that because some regions show persistently high rates of new firm formation (Andersson and Koster, 2011) and entry and exit rates tend to be highly positively correlated (Geroski, 1995), some regions may exhibit persistently high displacement rates as consequence of having an industry composition with substantial firm turbulence.

Furthermore, regional business closure characteristics such as the average size and age of the closed establishments may influence the transition patterns of employees. If the establishments closed in the region are large, it may be more difficult to re-employ large numbers of workers that have similar skills. In addition, Huttunen et al. (2003) suggest that in larger firms, human capital is more firm specific, which may have negative consequences for employment transitions and post-displacement wages. Nevertheless, some potential opposing forces may also be at work. A starting point in the discussion of the importance of firm size and age for re-employment after displacement is the alternatives available in the job market after displacement, including transitions to entrepreneurship. In the entrepreneurship literature, the small firm effect on entrepreneurial spawning has been investigated for some time. On this matter, Elfenbein et al. (2010) discuss selection effects among individuals working for small firms who transition into entrepreneurship, since such employees may, for example, be less risk averse. Alternatively, individuals who prefer more independence and less bureaucracy choose

to work for small firms. Individuals with these characteristics then have a higher probability of becoming entrepreneurs. During their time in the small firm, they may also learn entrepreneurial skills that increase their probability of becoming entrepreneurs themselves. The small firm effect of entrepreneurial spawning has been empirically supported by authors such as Hyttinen and Maliranta (2008). In the case of labour market transitions after displacement, these effects imply that employees from larger firms have higher probabilities of transitioning into employment rather into entrepreneurship.

Furthermore, there may be institutional factors that influence the transition process and imply that the employees of larger companies have better chances of re-employment after displacement (Nyström, 2016). Large firms may provide access to human resources departments that provide guidance and support for their employees during the process of finding a new job after displacement. Furthermore, there may also be a positive signalling effect associated with previous employment in a large firm. As argued by Aldrich (1999), large, established firms can rely on their reputations and name recognition in the recruitment processes and are thus able to attract more applicants compared to small, new firms. A larger pool of applicants for positions implies that large established firms can select higher-quality employees (Turban and Cable, 2003). Being selected for employment by a large, established firm from among a large pool of applicants may signal the high quality of the employee throughout the process of finding a new job after a closure. It is then possible that previous employment in a large firm may be more valuable in the labour market because the employees have references from a well-recognized "brand" in the region. In addition, employees in large firms can be expected to be more likely to receive additional institutional support in the aftermath of a closure. In the case of large closures, there are sometimes special joint initiatives from the firm and local government authorities to support displaced workers, which may result in higher re-employment rates. Furthermore, in Sweden, employees covered by a collective agreement have access to support provided by job security councils, which complement the unemployment benefit system of the Swedish labour market. Regarding the empirical evidence on firm size and labour market transition, Huttunen et al. (2003) find stronger and more long-lasting negative effects on employment and wages for employees who are displaced from larger plants, while Ros (2013) does not find any statistically significant effect of establishment size on the probability of transitioning to paid employment after displacement.

Regarding firm age and re-employment transitions after displacement, some of the above-mentioned arguments for the employees of small firms are also valid for the employees of new firms, including the selection mechanism and entrepreneurial learning. It is also possible that institutional support increases with the age of the firm because the firm may be more likely to be covered by employment security council support after being active in the market for some time. Regarding the empirical evidence on the new firm effect on entrepreneurial spawning, Wagner (2004) and Sørensen, (2007) find that younger firms are more likely to create entrepreneurial spawning. In summary, there are theoretical arguments both for and against the claim that the employees of larger, older firms have better re-employment possibilities. Nevertheless, existing previous empirical evidence suggests a negative or ambiguous relationship.

ii) Characteristics of individuals in the region

The skills and human capital characteristics of the labour force in a region may be key determinants of regional resilience. Among those who argue that skills and human capital are of importance for regions affected by adverse regional shocks are Glaeser et al. (2014), Chapple and Lester (2010), and Martin (2012). Duschl (2014) finds that a qualified workforce in a region makes the economy more resilient. Furthermore, the demographics of a region may influence its resilience. Regions with a high share of individuals with foreign backgrounds may experience more difficulties re-employing displaced workers. Individuals with foreign backgrounds may experience difficulties in the labour market as a result of language difficulties, non-validated foreign qualifications or even discrimination. Having received employment (but becoming displaced) makes it easier to overcome these barriers when applying for a new job after displacement. Nevertheless, the above-mentioned problems may serve as barriers to re-employment. Regarding this relationship, it should be mentioned that many regions with low regional growth tend to have higher in-migration of individuals with foreign backgrounds. For instance, in these regions, housing is available at a reasonable cost. At the same time, some municipalities in the Stockholm region receive proportionally fewer individuals with foreign backgrounds. For instance, 15 of the 20 municipalities with the highest unemployment rates in Sweden received substantially more refugees than the average Swedish municipality (DN, 2016). Hence, there are reasons to expect endogeneity in this relationship.

iii) Characteristics of the regional industries

Agglomeration economies, i.e., benefits produced by firms locating close to each other, are vital in new economic growth theory. By locating close to other firms in the same sector (localization economies), a firm can benefit from Marshallian externalities due to labour market pooling, access to specialized suppliers and knowledge spill-overs (Henderson, 2003 and Feser, 2002). At the same time, an excessively narrow regional specialization implies the dangers of path dependence and lock-in, which may decrease the probability of radical innovation and renewal of the economy (Martin and Sunley, 2006). Moreover, regions with more diverse industries are less likely to experience large changes in employment because they are less affected by exogenous changes in demand for their products (Chapple and Lester, 2010). In addition, they are more likely to have industries at different stages of the product life cycle (Markusen, 1985). Thus, varied regional industry composition can act as portfolio diversification strategy to address the risk of demand shocks (Attaran, 1986; Frenken et al. 2007). However, external economies available to local firms may also arise from being located near a variety of sectors (Jacobs externalities). Proximity to a variety of sectors may create possibilities for interacting and combining ideas, practices and technologies between sectors, which may enhance regional competitiveness (Jacobs, 1969). Thus, there is tension between the regional competitiveness that can be achieved by regional specialisation and the diversification that may act as a shock absorber in the region during an economic shock (Essletzbichler, 2007). Following these arguments, different types of externalities (e.g., localization and Jacobs externalities) may have different implications for the ability of a region to absorb displaced workers. Hence, regions with a greater variety of unrelated industries can be expected to have better capacities to absorb displaced workers. At the same time, regions

with a high degree of related industries may imply greater regional competitiveness and, hence, a greater ability to absorb displacement; however, there is also a greater risk that negative demand shocks diffuse into related industries, which would make the labour market for displaced workers even more difficult. Hence, the resulting effect is unclear.

In the framework of regional ability to absorb displacement and the empirical evidence regarding the relationship between sectoral diversity and resilience, Frenken et al. (2007) find unrelated variety to be important for regional resilience because it dampens unemployment growth. Boschma et al. (2012) find that Spanish provinces with a wide range of related industries show higher growth rates. Furthermore, according to Duschl (2014), German regions with a diversified and heterogeneous regional industrial structure have more resilient regional economies. As noted by Neffke et al. (2016), relatively little is known about how the regional industry mix influences the post-displacement careers of displaced workers. However, in their recent paper, Neffke et al. (2016) find that the presence of related industries in the region help keep displaced workers in the region in the aftermath of establishment closure. Previous empirical evidence supports a positive effect even though the effect from a theoretical perspective is ambiguous; thus, unrelated and related industry variety are expected to be positively related to regional resilience to displacement.

In addition to the measures of variety, measures that broadly characterize regional industrial sectors in terms of their shares of the manufacturing industry, service sector and public sector are included. A region characterized by a high level of entrepreneurial activity may also exhibit a higher likelihood of re-employment. Here, because entrepreneurial activity is an important driver of economic change (Schumpeter, 1934), a regional economy characterized by many entrepreneurial ventures can create variety (Essletzbichler, 2007; Holm and Østergaard, 2015), which may increase the likelihood of re-employing displaced workers. Hence, a measure of entrepreneurial activity, entry rates, is included in the empirical analysis. Regarding turbulence and entrepreneurial activity, Holm and Østergaard (2015) find that for the Danish ICT sector, regions characterized by small, young companies were more adaptable to the shock induced by the dot.com bubble and grew more than other regions.

Finally, the sectoral composition of a region may influence its resilience to shocks. Diodato and Weterings (2014) argue that when an economic shock affects a regional economy, its ability to reabsorb laid-off workers depends on intersectoral labour mobility and the geographical location of the region. Intersectoral mobility refers to skill relatedness, i.e., the extent to which skills acquired in a previous job can be used in a new sector (Neffke and Henning, 2013) For the Dutch economy, skill relatedness, both within and across sectors, is highest in the service sector. The empirical findings of Diodato and Weterings (2014) support the role of intersectoral mobility as important for the reabsorption of laid-off workers because they find that service-oriented regions recover from economic shocks more rapidly. Further, Fingleton et al. (2012) argue that regions specialized in manufacturing should be less resilient than regions dominated by services because the manufacturing industry is typically assumed to be more cyclically sensitive than services. Thus, regions with high shares of manufacturing are expected to be less

resilient to displacement, while re-employment in regions with higher shares of services are expected to be more resilient.

iv) Characteristics of the regional economies

Neffke et al. (2016) propose three reasons for why the local conditions affect the job search process of displaced workers. The size and growth of the local economy will affect the arrival rate of job offers and the wage offers that may be available. Furthermore, the larger number of jobs available in a larger region improves the possibilities for a better match. Finally, social networks, which often are local, are expected to affect the process of finding a job after displacement. Similar arguments are suggested in the regional resilience literature. For example, Chapple and Lester (2010) propose that region size affects resilience. In a large region, turbulence in terms of new firm creation and labour mobility is greater in absolute terms. Thus, the possibility of finding an employment match in terms of competence and skills after displacement is expected to be better in large regions.

Another indicator of local economic conditions is the regional unemployment level. However, the direction of this relationship is less clear from both theoretical and empirical perspectives. If high unemployment rates reflect an unfavourable economic situation in the region, it is possible that establishment closure rates are higher when unemployment rates are high. However, when opportunities for re-employment decrease due to high unemployment rates, it is possible that entrepreneurs decide to stay in business longer, delaying exits (Nyström, 2007a). If such mechanisms also affect the relationship between unemployment and re-employment capacity, the relationship may be ambiguous. Studying exit rates at the regional level, Nyström (2007a) finds a negative relationship between unemployment rates and exit rates, but this relationship appears to vary across sectors. However, the relationship is statistically insignificant in the majority of the industrial sectors investigated. An additional issue relates to the distribution of available jobs in regions with high unemployment levels; recently displaced workers may be in a better position than already unemployed workers to obtain available jobs. Hence, it is possible that displacement causes unemployed workers to remain persistently unemployed rather than severely affecting the re-employment rates of displaced workers. Regarding the empirical evidence on the relationship between displacement and unemployment, Jacobson et al. (1993) find that local labour market conditions affect the severity of displacement effects. Andersson et al. (2014) find that access to jobs significantly decreases with the duration of joblessness. However, Folmer and van Dijk (1988) do not find that regional demand for employment significantly influences unemployment spells after displacement.

v) Regional attractiveness

Finally, it is hypothesized that the attractiveness of a region as a place to live from a social, economic or educational perspective influences the resilience of the region to displacement. The possible positive effects of attractive regions' ability to re-employ displaced workers are twofold. First, an attractive region may generate more opportunities, which also generate additional openings for employment or entrepreneurship for displaced workers. Second, once

affected by a firm closure, the individual may be more likely to stay in the region if it is attractive.

Employment shocks may induce labour mobility across regions (Fingleton et al. 2012). Some displaced workers decide to move or to commute to a different region for a new job. According to the descriptive statistics for Sweden provided by Magnergård (2013), approximately 14 per cent of Swedish displaced workers either move or start to commute in the aftermath of displacement. Accordingly, the empirical analysis distinguishes between regional capacity to re-employ displaced workers in the same region and total re-employment, which includes displaced employees from other regions. Note that the mobility and conditions of individuals who are affected by displacement are influenced by institutional support for displaced workers. For instance, in the Swedish unemployment insurance system, there are no strong requests from the Swedish public employment service to apply for jobs outside of the current occupation or area of residence at the beginning of an unemployment period. However, as the length of the unemployment period increases, there is stronger pressure to apply for jobs in different sectors/occupations and regions. For a further discussion of the institutions affecting displaced workers, see Nyström (2016).

3. Data and empirical strategy

3.1 Defining displacement and re-employment

Most of the variables included in this empirical analysis originate from the individual firm-level data provided by Statistics Sweden through the Micro Data Online Access (MONA) database (for definitions and exceptions, see Table 1). This database is used to identify establishment closures and re-employment within one year, and the available dataset makes calculating regional measures of re-employment possible for a panel over the 2001-2009 period. The definition of displacement varies substantially across studies (see Nyström and Viklund Ros, 2014). However, several authors conclude that because the closure process starts several years before the finalized closure is reported in statistics, particularly for large-scale business closures, a flexible time window must be imposed. The methodology applied to define displacement in this paper is the same used by Eliason and Storrie (2006), von Greiff (2009), and Nyström and Viklund Ros (2014). According to this methodology, the closure process is defined to as one, two or three years long depending on the size of the establishment and the observed patterns of job reductions.[5] This methodology implies that only establishments that have closed due to exits (not e.g. mergers and acquisitions) are included. Furthermore, displaced workers in the age-span 25-55 are included while transitions to self-employment are excluded. In this paper, 81 local labour market (LM) regions defined based on commuting pattern are used. For further details of definitions of displacement, re-employment and definition of LM regions, see Nyström and Viklund Ros (2014). This paper also includes descriptive data and maps of regional displacement and re-employment patterns.

Regarding the explanatory variables, measures of related and unrelated variety in regional industry, as defined by Frenken et al. (2007) and Boschma et al. (2012), are used. Following Boschma et al. (2012), unrelated variety (UV) is defined as:

$$\boldsymbol{UV_{rt} = \sum_{g=1}^{G} Pg_{rt} log_2(\frac{1}{Pg_{rt}})} \quad \textbf{(1)}$$

where Pg_{rt} is the 2-digit NACE employment share (industry *g*) of region *r* in year *t*.
The related variety (RV) measure indicates the extent to which the possibilities of positive externalities originate from knowledge spill-overs between related industries in the region. These learning possibilities are argued to enhance regional performance (Boschma et al. 2012). Related variety is defined as:

$$\boldsymbol{RV_{rt} = \sum_{g=1}^{G} Pg_{rt} Hg_{rt}} \quad \textbf{(2)}$$

where

$$\boldsymbol{Hg_{rt} = \sum_{i \in S_g} \frac{Pi_{rt}}{Pg_{rt}} log_2(\frac{1}{Pi_{rt}/Pg_{rt}})} \quad \textbf{(3)}$$

where Pi_{rt} is the 5-digit SIC employment share of region r in year t, and Pg_{rt} is the 2-digit NACE employment share of region r in year t.

Regarding regional attractiveness a measure constructed by the Swedish journal Fokus[3] is used in this paper. The index is based on different statistical sources, such as Statistics Sweden, the Swedish Confederation of Employers and the Swedish National Agency for Education. The index covers six areas that are argued to be important for the attractiveness of living in different regions; private economy, economic situation of the municipality, Social and security aspects, leisure, jobs and growth, education.[4] Table 1 provides definition of the additional explanatory variables used in the paper. Table 2 provides some descriptive statistics.

Tables 1 and 2 about here

3.2 Empirical strategy

The empirical study is conducted in two steps. First, the relationship is investigated in a panel data setting. A fixed effects model including time and regional fixed effects is estimated.[2] However, such a setting does not enable us to explore whether the effects of some of the above-mentioned variables differ across regions with low or high absorptive capacity because such asymmetries in the data could not be detected in the panel data estimations.[3] Hence, a quantile regression methodology is used in the second part of the analysis. Quantile regression provides an opportunity to explore such asymmetries because it provides a more detailed description of the relationships between the dependent and independent variables. Hence, quantile regression

techniques can address skewed distributions, and a quantile regression analysis detects whether the marginal effects of independent variables differ across the distribution. Further details about the quantile regression method can be found in, for instance, Koenker (2005). The simultaneous quantile regression methodology was used in this empirical analysis.[4]

In the empirical analysis strong correlations between some of the variables were detected. Therefore, multicollinearity problems may be expected if the correlated variables are included in the same regression.[5] Hence, variables whose correlations exceeded 0.7 were not included in the same regression, for instance, the correlations between displacement share and average size of the closure and between unrelated and related variety. Furthermore, due to possible endogeneity issues (see the more detailed discussion on this matter in the robustness checks section), several versions of models excluding or including variables that may cause endogeneity problems were estimated. Blank spaces in the tables imply that a specific variable is not included in the model. Accordingly, a strategy to estimate different versions of the model excluding correlated variables results in 12 models.

4. Empirical findings

4.1 Fixed effects estimations

Re-employment in the same region

Table 3 presents the results of fixed effects models of the relationships between re-employment in the same region and regional characteristics. Models 1-6 focus on the relation with unrelated variety. Models 1-3 include the size of the closure, whereas Models 4-6 include the displacement shares. Models 7-12 focus on the relation with related variety. Models 7-9 include the size of the closure, whereas Models 10-12 include the displacement shares.

Table 3 about here

Regarding the characteristics of the regional closures, the empirical evidence shows that the average size of the closures in the regions is statistically significantly and positively related to re-employment (Models 1-3 and 7-9). Hence, it is possible that both signalling and institutional support are more likely to be available to the employees of large firms, resulting in higher re-employment rates. According to the arguments from the entrepreneurial spawning literature, it is also possible that the employees of small firms have higher probabilities of transitioning into either necessity- or opportunity-based entrepreneurship. These findings partly contradict previous empirical findings of negative or statistically insignificant effects on the relationship between establishment size and transition to new employment (Huttunen, et al. 2003 and Ros, 2013). However, it should be stressed that the present empirical analysis is conducted at a higher level of aggregation, which implies that the average size of closed establishments also may reflect regional size and industry structure. Thus, more successful regions may have larger firms which might result in that these regions can re-employ more displaced workers. The empirical findings also suggest that the average age of the closure is statistically significant and positively

related to re-employment rates. A possible explanation for this finding is similar to the establishment size effect, i.e., better access to institutional support, and the firm age effect related to the probability of transitioning into entrepreneurship (Wagner 2004, and Sørensen, 2007). However, note that this result is not statistically significant across all models. Finally, displacement rate in the regions is statistically significantly and positively related to re-employment in some versions of the models (Models 4-5 and 10-11). Hence, somewhat surprisingly this measure of the magnitude of regional displacements rather indicate that some regions have persistently high turbulence of firms (Andersson and Koster, 2011) and are able to re-employ them in the same region.

Regarding the characteristics of the individuals in a region, a higher share of individuals with foreign backgrounds is negatively related to re-employment. The coefficient is negative and statistically significant in all models. For models including the share of employees with university educations (Models 3b and 6b), the coefficient is positive but not statistically significant. Regarding the characteristics of the regional industry, in some model specifications, there is evidence that more entrepreneurial regional economies, in terms of the entry rate, are better able to absorb displacement. The coefficient is consistently positive but not statistically significant across all models (Models 2c, 3, 5c, 6, 8c, 9, 11c and 12). Furthermore, regions with higher shares of manufacturing are able to re-employ more displaced workers (the coefficients are positive and statistically significant in all models). Thus, the findings of Diodato and Weterings (2014) that service-oriented regions recover more rapidly after economic shocks are not supported. Regarding the relationships with other characteristics of regional industry, including unrelated and related variety and re-employment rates, none of the coefficients are statistically significant. Neither the variables reflecting the characteristics of the regional economy nor regional attractiveness are statistically significant.

Total re-employment in the region

Table 4 presents the results of the fixed effects models of the relationship between total re-employment of displacement in the region and regional characteristics. Consistent with the analysis of re-employment in the same region, Models 1-6 in Table 4 focus on the relation with unrelated variety. Models 1-3 include the size of the closure, whereas Models 4-6 include the displacement shares. Models 7-12 focus on the relation with related variety. Models 7-9 include the measure on average size of the closures, whereas Models 10-12 include the displacement shares.

Table 4 about here

Both the average size of the closure and the share of displacement are statistically significant and negatively related to total re-employment rates. This is in contrast with the findings regarding re-employment in the same region. However, these findings are in line with Huttunen et al. (2003) that employees in large firms have more firm-specific capital that may negatively affect transitions after displacement. Comparing the results from re-employment in the same region and total re-employment suggests that if the region has a high share and larger average size of displacement, the region is unlikely to be able to employ displaced workers from other

regions. The age of the closure is not found to have any statistically significant relation to re-employment rates. Regarding the characteristics of the individuals in the region, those with a high share of employees with foreign backgrounds tend to re-employ fewer displaced workers (negative and statistically significant coefficients in all models). For the characteristics of the regional industry, the share of the public sector is positively related to re-employment capacity in some model specifications. Neither in this case there is support for the hypothesis that regions with a high share of manufacturing industry have lower re-employment rates. Furthermore, in four of the models (Models 9 11b, 11c and 12), related variety is statistically significant and negatively related to re-employment rates. Hence, there is some evidence that related variety does not induce inter-regional labour mobility of displaced workers. There are no statistically significant results for the variables measuring the relationship between characteristics of the regional economy and regional attractiveness.

Robustness checks

Spatial correlations may be present even though it can be that possible problems with spatial correlation are reduced by using LM regions. Hence the fixed effect models were also estimated after controlling for spatial autocorrelation. This robustness test could be performed for Models 1-2, 4-5, 7-8 and 10-11, which are balanced panels.[6] All statistically significant coefficients reported above are robust in terms of sign and significance at least at the 10% level. Hence, the findings are robust with regard to possible spatial correlation.

Another issue in the empirical analysis is possible endogeneity problems. In the panel data estimations, a first step in addressing this issue was to exclude some of the variables (for instance unemployment, regional attractiveness and foreign background), which were expected to potentially create endogeneity problems. Another way to address possible endogeneity is to account for regional trends in the regressions.[7,8] This can be achieved by creating interaction terms between regional dummies and time. All statistically significant coefficients analysed above remain robust in terms of sign and significance at least at the 10% level for most variables and model specifications. One exception is the share of employees with a foreign background in the region: this variable is statistically insignificant in all models explaining total re-employment rates (Table 4) if regional trends are included. The possibility of a bi-directional causal relationship regarding the share of individuals with foreign backgrounds in the region was discussed above. Furthermore, the relationship between total re-employment and the share of the public sector is sensitive to the inclusion of area-specific trends. The positive sign is robust to the inclusion of regional trends, but the statistical significance decreases below 10% for some models. Hence, even if the majority of the results appear to be robust when including region-specific trends, interpretations regarding causal relationships between the variables should be made with caution and relationships should be discussed instead. Finally, the explanatory power of the models is relatively low. Hence, future work on the resilience to displacement must investigate additional variables that may be of importance to this relationship.

4.2 Quantile regressions

Re-employment in the same region

Tables 5 and 6 report the results of the simultaneous quantile regressions investigating regional variation in the rate of re-employment in the same region. The model includes time dummies and dummy variables for the Stockholm, Gothenburg and Malmö metropolitan regions. Except for these additions, the results reported in panel 5a correspond to Model 3 estimated in the fixed effects model, whereas panel 5b corresponds to Model 6. In Table 6, panels a and b correspond to Models 9 and 12 in the fixed effects model estimations, respectively.

Tables 5 and 6 about here

Tables 5a and 6a confirm the finding that the average size of regional closures is positively related to the re-employment rate (the coefficient is positive and statistically significant in most quantiles (Q20-90 in panel 5a and Q10-Q20 and Q40-90 in panel 6a)), whereas panels 5b and 6b indicate that the positive relationship between re-employment and displacement share that was found in some versions of the panel data estimations in Models 4-6 are primarily related to the quantiles that able to re-employ a higher share of displacement (Q60-Q90 in panel 5b and Q50-Q90 in 6b). Again, the share of individuals with foreign backgrounds is negatively related to re-employment in nearly all quantiles (panels 5a and b and 6a and b), but the coefficient is not statistically significant in all quantiles. Regarding the characteristics of the regional industry, the share of the public sector is positively related to re-employment in quantiles up to approximately Q70, whereas the entry rates (which had statistically significant, positive coefficients in some of the fixed effects estimation models in Tables 3 and 4) are primarily positively related to re-employment in the lower quantiles (except for panel 6b, where Q60-Q70 and Q90 also exhibit statistically significant relationships). Hence, these findings support the idea that an entrepreneurial regional economy can create variety and regional resilience, at least in some regions (Essletzbichler, 2007; Holm and Østergaard, 2015).

However, perhaps the most interesting results generated by the quantile regressions are related to the industry variety and attractiveness of the region measures. According to Tables 5 and 6, unrelated variety is positively related to re-employment in quantiles Q10-Q60 (panel 5a) and Q10-Q80 (panel 5b), whereas related variety is positively related to re-employment in the same region in Q10-Q70 (panel 6a) and Q10-Q80 (panel 6b). Furthermore, the relationship becomes negative in Q90. These findings are in line with the previous empirical findings by Duschl (2014) and Neffke et al. (2016), but they add to this empirical literature by indicating a non-linear relationship and implying that industrial variety is more important in regions with lower resilience. Accordingly, industrial variety appears to be less important for regions that are most successful in re-employing displaced workers. Regarding regional attractiveness, measured by the attractiveness of living index, there is a negative, statistically significant relationship in certain quantiles in the upper half of the distribution, implying that for the regions that are able to absorb the greatest amount of displacement (approximately Q60-Q90), more attractive regions tend to re-employ more workers in the same region.[9] Given that the analysis provided in this paper is conducted from a short-run perspective (re-employment within one year) the

detected non-linearities support the idea that reactions to shocks (in terms of displacement) differ across regions (Fingleton et al., 2012).

It is also interesting to note that the dummy variables for the three metropolitan regions are positive and statistically significant in almost all quantiles. More detailed descriptive statistics of regional displacement and re-employment rate are available in Nyström and Viklund Ros (2014) and show that Stockholm has persistently high re-employment rates in the same region. All three metropolitan regions have an average re-employment rate above 60 per cent, which are among the highest re-employment rates. Hence, metropolitan regions are able to absorb more displaced workers within the region. This supports the idea that being located in a dense area increases the probability of finding a good match within the same region Andersson et al. (2014).

Total re-employment in the region

Tables 7 and 8 report the results of the simultaneous quantile regressions investigating regional variation in the total re-employment rate. The results reported in panel 7a correspond to Model 3 estimated in the fixed effects estimations, whereas panel 7b refers to Model 6. Tables 8a and b correspond to Models 9 and 12 in the fixed effects model estimations, respectively.

Tables 7 and 8 about here

Panels 7a and b confirm the panel data results of a statistically significant negative relationship with the average size of the closure, the displacement rate and the total re-employment capacity of the region. However, the quantile regression results do not show any statistically significant negative relationships for the share of individuals with foreign backgrounds. Some interesting patterns with regard to the two measures of variety are observed. The results show a statistically significant positive relationship between the two variety measures and the total re-employment rates, primarily in the lower quantiles of the distribution (approximately Q10-Q50). In fact, the variety measures appear to have a non-linear relationship with total re-employment rates because the relationship becomes negative in the upper quantiles. The relationship is positive in the lower parts of the distributions, whereas the relationship is negative in the upper parts (Q80-Q90 for related variety in Tables 8a and b and Q90 for unrelated variety in Tables 7a and b) of the distribution. Hence, the negative effect found in the fixed effect models regarding related variety (Table 4) was primarily driven by regions in the upper quantiles of the distribution. Again, these findings are in line with previous empirical research (e.g., Duschl, 2014), but they add the non-linear dimension. Regarding the attractiveness of living index, as for the findings on the relationship with re-employment in the same region, there is a negative statistically significant effect for some quantiles in the upper part of the distribution (around Q70-Q90 in Tables 7b and 8b), implying that the most attractive regions also re-employ more displaced workers in total.

The empirical results also show that the regional unemployment rate is negatively related to re-employment in certain quantiles. However, there are no clear patterns of statistically significant coefficients in Tables 7a and 8a on this topic. In the panel data regressions, this variable was

not statistically significant, and the signs of the coefficients were not consistent across the models. Hence, it is difficult to draw strong conclusions about the relationship between unemployment rates and total re-employment capacity. However, as previously mentioned, there is a certain degree of ambiguity regarding the empirical evidence on the relationship between unemployment and exit rates at the regional and industry levels. It could be hypothesized that employees affected by displacement are in a better position than already unemployed individuals because they have more recent working experience. In that case, it is possible that displacement leads to persistent unemployment among the already unemployed in the region. Whether such a process of labour market dynamics evolve as a consequence of displacement would be an interesting topic for future research.

In the model specifications explaining total re-employment rates, the dummy variables for the three metropolitan regions are not statistically significant. In fact, no region qualifies based on the criteria used to identify regions with persistently high total re-employment rate in Nyström and Viklund Ros (2014). Hence, high total re-employment is not a prevalent phenomenon in metropolitan regions and seems to vary comparably over time.

5. Conclusions

This paper has studied the extent to which the characteristics of the i) regional closures, ii) individuals in the region, iii) regional industry iv) regional economy and v) regional attractiveness influence regional resilience to displacement in terms of the ability to re-employ displaced workers within the same region or in terms of total displacement. The empirical evidence covers displacement in 81 Swedish LM regions over the 2001-2009 period. The empirical setting includes fixed effects panel data estimations and quantile regressions that enable the exploration of possible non-linear relationships between variables. Robustness checks with respect to handling spatial correlation and endogeneity are performed, but it should be emphasised that still issues related to endogeneity constitute a limitation of this study.

The empirical findings provide no evidence of regions being less resilient to displacement in terms of re-employment in the same region if the firms that close down are larger. This is an interesting finding, which may be explained by the possibility that employees displaced from large firms have better access to institutional support from their firms, labour market institutions or government agencies during the job search process compared to the employees in small firms. Alternatively, employees in small firms may be more prone to transitioning to entrepreneurship after displacement, or the average size of closed establishments may reflect the inherent regional industry structure. From a policy perspective, this is an interesting finding and may attract more interest to the dynamics of small firm closures. Furthermore, a higher share of displacement in the region does not have a negative effect on re-employment rates in the same region. In fact, the relationship is positive, indicating increased regional resilience. This may be a reflection of some regions with turbulent industry composition, with both entry and exit of firms taking place simultaneously, which implies that displacement is absorbed within the same region. However, the empirical results indicate that if the region has a larger average size of establishment closures and high share of displacement, they are unlikely to be

able to employ displaced workers from other regions, i.e., they tend to have lower total re-employment rates. Assuming that local social networks are important in the process of finding a new job after displacement, possibilities for inter-regional labour mobility may be limited if the potential receiving region is under distress in terms of large closures and high shares of displacement. Regarding the characteristics of individuals in the region, the share of individuals with foreign backgrounds is negatively related to re-employment in the fixed effects models. However, this relationship is sensitive to endogeneity issues, and the findings are not robust in the quantile regressions.

Furthermore, as noted above, Duschl (2014) finds diversity to be positively related to resilience, while Neffke et al. (2016) find that proximity to related industries is important for employment transitions after displacement. However, this paper explores possible non-linear relationships. The quantile regressions indicated that both related and unrelated variety can increase the resilience of regions with low re-employment capacities to shocks induced by displacement, whereas variety is negatively related to re-employment capacity in regions that have the highest re-employment capacity. These findings are relevant for both re-employment patterns in the same region and total re-employment rates. Hence, the advantages of specialization and external economies of agglomeration and the vulnerability to displacement if industry variety is limited vary across regions. Thus, the determinants of re-employment in the aftermath of displacement are heterogeneous, and regional policies considering the type of region under investigation must be pursued. Measures aimed at stimulating industrial variety may be more effective in regions with low abilities to re-employ displaced workers, whereas such polices may be less effective in regions with already high levels of resilience to displacement. Industry turbulence (here measured by the entry rate) is positively related to regional resilience to displacement in the same region, primarily in regions that have lower resilience to displacement. Hence, an entrepreneurial region may exhibit an increased ability to absorb displacement. Furthermore, some non-linear patterns with respect to the relationship between regional attractiveness, as measured by an attractiveness of living index, and resilience to displacement are found. The findings suggest that regional attractiveness is positively related to resilience in regions that already have a certain degree of resilience to displacement (the upper quantiles). This finding is particularly valid for the measure of re-employment in the same region. Regional attractiveness appears to have no effect for less resilient regions. A final interesting observation indicates that metropolitan regions have better possibilities for absorbing displacement within their own region.

Notes

[1] For an elaborate discussion of the concept of resilience and various interpretations in the spatial economic literature, see Modica and Reggiani (2015). See also Boschma (2015) for an elaboration of an evolutionary perspective on regional resilience. Furthermore, it should be stressed that the concept of regional resilience does not remain undebated in the literature. For instance, Hassink (2010) argues that the contribution of the regional resilience concept is relatively limited compared to existing concepts, such as path dependence.

[2] The choice of a fixed effects model is then confirmed by Hausman tests.

[3] An alternative approach would be to estimate the relationships for different subsets of the data, for example, distinguishing between regions with low, medium or high resilience to displacements. However, with this strategy, a considerable amount of information will be lost because only a limited number of observations are used in each regression. The advantage of using the simultaneous quantile regression is that all observations are used in the estimations.

[4] The STATA–software was used (sqreg) was used for the estimation.

[5] Running an OLS resulted in a VIF value >10, indicating problems with multicollinearity.

[6] For this purpose, the xsmle STATA procedure for correcting for spatial correlation in panel data models was applied. The specified model was a spatial-error model (sem) using spatial fixed effects. A binary contiguity weight matrix was used to define the weighting matrix.

[7] Other possible remedies to address possible endogeneity problems are adopting an IV approach. However, the success of adopting an IV approach relies heavily on finding suitable instrumental variables. Unfortunately, the lack of access to valid instrumental variables makes such an approach unfeasible in the current analysis.

[8] This approach follows the methodology used by Gagliardi, Iammarino, & Rodríguez-Pose (2015).

[8] The index ranges from 1-290, where 1 refers to the most attractive region to live in.

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Table 1. Definition of variables

Variables	Description
Re-employment	
Re-employment in same region	Fraction of displaced workers who are re-employed in the same region within a year of the displacement
Re-employment total	Fraction of displaced workers who are re-employed regardless of whether they were displaced in that region. This measure may exceed 100 per cent if the region attracts displaced employees from other regions.
Characteristics of regional closures	
Displacement share	Share of displaced workers in the region.
Average size of closure	Mean employment size of closed establishments in the region.
Average age of closure	Mean employment age of closed establishments in the region.
Characteristics of the individuals in the region	
Higher education[#]	Share of employees with tertiary or research education in the region.
Foreign background	Share of employees born abroad or having both parents born abroad in the region
Characteristics of the regional industry	
Entry rate	Share if new establishments in the region
Manufacturing sector	Share of employment in the manufacturing sector (SIC 15-37).
Low end service sector	Share of employment in low-end service sector (SIC 40-64).
Public sector	Share of employees working in the public sector and other service activities (SIC 75-99).
Unrelated Variety	Industry variety defined according to equation 1.
Related Variety	Industry related variety defined according to equation 2.
Characteristics of the regional economy	
Unemployment rate	Unemployment rate in the region (source AMS, 2014)
Population (ln)[#]	Natural logarithm value of the population in the region.
Regional attractiveness	
Attractiveness of living [##]	Average ranking of the attractiveness of living in the region according to the journal Fokus Available at www.fokus.se At the

municipality level this index range from 1 to 290 where 1 refers to the most attractive municipality to live in.

[#] Results of models including these variables is reported in Nyström (2016b).

[##]The index is based on different statistical sources, such as Statistics Sweden, the Swedish Confederation of Employers and the Swedish National Agency for Education. The index covers six areas that are argued to be important for the attractiveness of living in different regions; private economy, economic situation of the municipality, Social and security aspects, leisure, jobs and growth, education. Note that the content of the index varies to some degree across years. The optimal construction of an index such as this one can always be discussed. Later versions of the index have been developed to try to improve the quality of the index further. However, note that the purpose of using this index in this context is to facilitate the inclusion of a broad measure of regional attractiveness. Unfortunately, the variable measuring the attractiveness of living in a region was not available prior to 2006. However, because the data published for 2006 are based on data from 2005, the attractiveness of living in an area was matched to data on displacement and re-employment from 2005-2009 to enable inclusion of an additional year. However, including this year still implies that that the data only cover the 2005-2009 period. Hence, the regression models including this variable rely on a shorter panel. Information about the construction of this index and data can be found on www.fokus.se

Table 2: Summary statistics

Variable	N	Mean	Std, Dev,	Min	Max
Re-employment same region	729	0.538	0.106	0.148	0.846
Re-employment total	729	0.794	0.168	0.347	1.943
Displacement share	729	0.012	0.007	0.001	0.070
Average size of closure	729	3.663	1.684	1.000	19.096
Average age of closure	729	4.685	1.086	0.000	10.273
Higher education	729	0.117	0.038	0.054	0.257
Foreign background	729	0.099	0.063	0.025	0.485
Entry rate	729	0.073	0.013	0.034	0.133
Manufacturing sector	729	0.089	0.022	0.034	0.236
Low end service sector	729	0.357	0.031	0.226	0.449
Public sector	729	0.211	0.026	0.138	0.293
Unrelated variety	729	2.940	0.127	2.471	3.188
Related variety	729	1.623	0.251	1.002	2.160
Unemployment rate	729	6.108	2.363	2.040	17.320
Population (ln)	729	9.799	1.360	6.910	13.740
Attractiveness of living	405	162.030	66.151	5.000	289.000

Table 3: Summary of findings re-employment of displacements in the same region (models 1-12)

	Model 1	Model 2a	Model 2b	Model 2c	Model 3a	Model 3b	Model 4	Model 5a	Model 5b	Model 5c	Model 6a	Model 6b	Model 7	Model 8a	Model 8b	Model 8c	Model 9	Model 10	Model 11a	Model 11b	Model 11c	Model 12
Characteristics of regional closures																						
Displacement share							3.069***	3.089***	3.095***	3.291***	2.483	2.502						3.129***	3.152***	3.165***	3.236***	2.474
							(0.905)	(0.914)	(0.911)	(0.921)	(1.803)	(1.837)						(0.915)	(0.930)	(0.925)	(0.948)	(1.793)
Average size of closure	0.014***	0.014***	0.014***	0.014***	0.013*	0.013*							0.014***	0.014***	0.014***	0.014***	0.013*					
	(0.003)	(0.003)	(0.003)	(0.003)	(0.007)	(0.007)							(0.003)	(0.003)	(0.003)	(0.003)	(0.007)					
Average age of closure	0.007*	0.007*	0.008**	0.004	0.009	0.009	0.007*	0.007*	0.008**	0.0084	0.010	0.009*	0.007*	0.007*	0.007*	0.005	0.010	0.007*	0.007*	0.007*	0.005	0.010
	(0.004)	(0.004)	(0.004)	(0.004)	(0.007)	(0.007)	(0.004)	(0.004)	(0.004)	(0.004)	(0.007)	(0.006)	(0.004)	(0.004)	(0.004)	(0.004)	(0.006)	(0.004)	(0.004)	(0.004)	(0.004)	(0.006)
Characteristics of the individuals in the region																						
University education						0.481						0.172										
						(1.236)						(1.283)										
Foreign background	-2.277***	-2.216***	-2.434***		-3.169***	-3.588**	-2.069***	-2.028***	-2.167***		-3.280***	-3.430**	-2.497***	-2.398***	-2.652***		-3.039***	-2.319***	-2.249***	-2.401***		-3.069***
	(0.633)	(0.597)	(0.578)		(1.184)	(1.564)	(0.628)	(0.602)	(0.578)		(1.143)	(1.571)	(0.830)	(0.760)	(0.678)		(1.271)	(0.814)	(0.750)	(0.659)		(1.235)
Characteristics of the regional industry																						
Entry rate	0.979*	0.991*	0.933*	0.553	1.144	1.146	1.025*	1.033*	1.000*	0.654	1.073	1.072	0.911*	0.929*	0.859*	0.687	1.159	0.973*	0.987*	0.947*	0.767	1.103
	(0.550)	(0.542)	(0.522)	(0.527)	(0.971)	(0.968)	(0.551)	(0.542)	(0.527)	(0.523)	(0.977)	(0.977)	(0.522)	(0.515)	(0.486)	(0.523)	(0.972)	(0.527)	(0.518)	(0.492)	(0.525)	(0.979)
Manufacturing sector	1.747**	1.789**	1.730**	2.598**	2.976*	3.058*	1.717**	1.742**	1.702**	2.466**	2.944*	2.973*	1.728**	1.777**	1.721**	2.510**	2.917*	1.727**	1.761**	1.724**	2.440**	2.859*
	(0.771)	(0.745)	(0.757)	(0.663)	(1.634)	(1.688)	(0.771)	(0.746)	(0.750)	(0.668)	(1.596)	(1.659)	(0.734)	(0.710)	(0.718)	(0.621)	(1.606)	(0.742)	(0.719)	(0.718)	(0.627)	(1.573)
Low end service sector	-0.070	-0.080	-0.115	-0.021	0.281	0.275	-0.148	-0.155	-0.177	-0.105	0.268	-0.266	-0.088	-0.096	-0.134	-0.001	0.289	-0.184	-0.191	-0.214	-0.104	0.283
	(0.603)	(0.594)	(0.589)	(0.599)	(0.686)	(0.691)	(0.601)	(0.591)	(0.582)	(0.596)	(0.655)	(0.658)	(0.555)	(0.551)	(0.541)	(0.558)	(0.695)	(0.552)	(0.548)	(0.535)	(0.499)	(0.674)
Public sector	0.728	0.764	0.873*	0.628	1.039	1.051	0.654	0.677	0.744	0.541	1.081	1.0867	0.740	0.785	0.891	0.615	1.040	0.666	0.697	0.759	0.532	1.077
	(0.519)	(0.467)	(0.443)	(0.490)	(0.805)	(0.813)	(0.517)	(0.466)	(0.447)	(0.487)	(0.799)	(0.804)	(0.515)	(0.472)	(0.446)	(0.446)	(0.813)	(0.512)	(0.469)	(0.450)	(0.499)	(0.807)
Unrelated Variety	-0.024	-0.024	-0.034	-0.036	0.061	0.085	0.006	0.005	-0.001	0.059	0.108	0.117										
	(0.178)	(0.176)	(0.169)	(0.185)	(0.269)	(0.273)	(0.187)	(0.185)	(0.178)	(0.193)	(0.276)	(0.279)										
Related Variety													0.061	0.055	0.071	-0.078	-0.099	0.065	0.062	0.072	-0.061	-0.161
													(0.109)	(0.107)	(0.097)	(0.090)	(0.277)	(0.109)	(0.107)	(0.096)	(0.091)	(0.273)
Characteristics of regional economy																						
Unemployment rate	0.005	0.004		0.006	0.007	0.006	0.003	0.002		0.004	0.006	0.005	0.004	0.004		0.006	0.007	0.003	0.002			0.006
	(0.004)	(0.004)		(0.004)	(0.004)	(0.005)	(0.004)	(0.004)		(0.004)	(0.004)	(0.005)	(0.004)	(0.004)		(0.004)	(0.005)	(0.004)	(0.004)			(0.005)
Ln population	0.058						0.037						0.074					0.053				
	(0.169)						(0.164)						(0.171)					(0.166)				
Regional attractiveness																						
Attractiveness of living					1.690×10^{-5} (1.833×10^{-4})	1.750×10^{-5} (1.827×10^{-4})					4.100×10^{-5} (1.8923×10^{-4})	4.140×10^{-5} (1.891×10^{-4})					2.190×10^{-5} (1.802×10^{-4})					4.810×10^{-5} (1.862×10^{-4})
Constant	-0.208	0.356	0.421	-0.074	-0.127	-0.220	-0.046	0.314	0.359	-0.069	-0.231	-0.265	-0.504	0.216	0.237	0.149	0.201	-0.237	0.263	0.275	0.199	0.326
	(1.877)	(0.624)	(0.591)	(0.636)	(0.967)	(0.996)	(1.856)	(0.653)	(0.616)	(0.662)	(0.972)	(0.993)	(1.668)	(0.186)	(0.181)	(0.191)	(0.596)	(1.617)	(0.178)	(0.096)	(0.183)	(0.575)
R^2	0.087	0.010	0.010	0.004	0.008	0.015	0.056	0.008	0.008	0.001	0.007	0.009	0.115	0.018	0.021	0.003	0.001	0.088	0.015	0.017	0.007	0.000

N	729	729	729	729	405	405	729	729	729	729	405	405	729	729	729	729	405	729	729	729	729	405

* p<0.10, ** p<0.05 and *** p<0.01. Clustered robust std. errors in parentheses.

Table 4: Summary of findings total re-employment of displacements in the region (models 1-12)

	Model 1	Model 2a	Model 2b	Model 2c	Model 3a	Model 3b	Model 4	Model 5a	Model 5b	Model 5c	Model 6a	Model 6b	Model 7	Model 8a	Model 8b	Model 8c	Model 9	Model 10	Model 11a	Model 11b	Model 11c	Model 12
Characteristics of regional closures																						
Displacement share							-9.789***	-9.666***	-9.669***	-9.263***	-12.781***	-12.961***						-9.857***	-9.773***	-9.776***	-9.640***	-12.683***
							(1.375)	(1.373)	(1.375)	(1.361)	(3.115)	(3.313)						(1.404)	(1.405)	(1.409)	(1.396)	(3.176)
Average size of closure	-0.028***	-0.028***	-0.028***	-0.027***	-0.043***	-0.045***							-0.028***	-0.028***	-0.028***	-0.028***	-0.044***					
	(0.006)	(0.006)	(0.006)	(0.006)	(0.010)	(0.011)							(0.006)	(0.006)	(0.006)	(0.006)	(0.010)					
Average age of closure	0.001	0.001	-0.001	-0.006	0.002	0.003	0.003	0.002	0.002	-0.004	0.005	0.006	-1.155×10^{-4}	-1.216×10^{-4}	-3.911×10^{-4}	-0.003	0.004	0.003	0.003	0.003	-4.9321×10^{-4}	0.007
	(0.013)	(0.013)	(0.013)	(0.011)	(0.016)	(0.016)	(0.012)	(0.012)	(0.012)	(0.010)	(0.016)	(0.016)	(0.013)	(0.013)	(0.013)	(0.013)	(0.016)	(0.013)	(0.013)	(0.013)	(0.012)	(0.016)
Characteristics of the individuals in the region																						
University education						-1.999						-1.631										
						(2.468)						(2.374)										
Foreign background	-3.309**	-3.265**	-3.038**		-5.925***	-4.185*	-4.307***	-4.053**	-3.990***		-5.786***	-4.356*	-3.074**	-3.053**	-2.790**		-5.178***	-3.790**	-3.537**	-3.508**		-5.305***
	(1.529)	(1.459)	(1.376)		(1.823)	(2.468)	(1.556)	(1.467)	(1.386)		(1.808)	(2.548)	(1.530)	(1.458)	(1.396)		(1.803)	(1.625)	(1.652)	(1.451)		(1.851)
Characteristics of the regional industry																						
Entry rate	0.075	0.083	0.143	-0.561	-0.653	-0.662	-0.494	-0.442	-0.427	-1.199	-0.694	-0.695	0.217	0.220	0.293	-0.087	-0.518	-0.276	-0.228	-0.220	-0.572	-0.560
	(1.201)	(1.196)	(1.203)	(1.004)	(2.459)	(0.484)	(1.166)	(1.164)	(1.172)	(0.994)	(2.330)	(2.344)	(1.180)	(1.176)	(1.182)	(1.075)	(1.803)	(1.119)	(1.118)	(1.130)	(1.021)	(2.342)
Manufacturing sector	0.731	0.761	0.822	1.954	5.603**	5.264**	0.952	1.112	1.130	2.557**	5.856**	5.581**	0.846	0.856	0.915	1.789	5.481***	1.086	1.206	1.213	2.273	5.952***
	(1.169)	(1.203)	(1.172)	(1.161)	(2.286)	(2.282)	(1.236)	(1.270)	(1.235)	(1.214)	(2.294)	(2.300)	(1.154)	(1.198)	(1.167)	(1.166)	(2.071)	(1.221)	(1.262)	(1.227)	(1.210)	(2.086)
Low end service sector	-0.236	-0.243	-0.207	-0.157	0.616	0.639	-0.015	-0.056	-0.046	0.044	0.311	0.333	-0.260	-0.262	-0.223	-0.141	0.604	-0.010	-0.034	-0.029	0.104	0.267
	(0.635)	(0.646)	(0.655)	(0.668)	(1.173)	(1.164)	(0.641)	(0.633)	(0.629)	(0.665)	(1.159)	(1.145)	(0.600)	(0.609)	(0.621)	(0.635)	(1.224)	(0.500)	(0.595)	(0.591)	(0.625)	(1.186)
Public sector	1.697**	1.724**	1.161*	1.523*	1.512	1.463	2.031	2.172	2.141**	1.900**	1.886	1.840	1.683*	1.693**	1.584*	1.477*	1.544	2.004**	2.114**	2.102**	1.855**	1.907
	(0.847)	(0.848)	(0.871)	(0.864)	(1.559)	(1.535)	(0.839)	(0.816)	(0.822)	(0.854)	(1.484)	(1.457)	(0.847)	(0.845)	(0.877)	(0.879)	(1.482)	(0.839)	(0.817)	(0.827)	(0.865)	(1.438)
Unrelated Variety	0.124	0.122	0.130	0.214	0.589	0.489	0.146	0.138	0.141	0.247	0.576	0.490										
	(0.274)	(0.272)	(0.274)	(0.276)	(0.437)	(0.504)	(0.262)	(0.261)	(0.260)	(0.263)	(0.446)	(0.506)										
Related Variety													-0.080	-0.081	-0.097	-0.251	-0.695**	-0.159	-0.171	-0.173**	-0.365**	-0.543*
													(0.156)	(0.158)	(0.161)	(0.155)	(0.309)	(0.151)	(0.151)	(0.151)	(0.143)	(0.295)
Characteristics of regional economy																						
Unemployment rate	-0.004	-0.004		-3.993×10^{-4}	-0.001	0.001	0.002	-0.001		0.003	0.001	0.003	-0.004	-0.004		-2.738×10^{-4}	0.001	0.002	-4.223×10^{-4}		0.003	0.003
	(0.007)	(0.006)		(0.006)	(0.008)	(0.009)	(0.007)	(0.006)		(0.006)	(0.008)	(0.009)	(0.007)	(0.006)		(0.006)	(0.008)	(0.007)	(0.006)		(0.006)	(0.008)
Ln population	0.042						0.231						0.016					0.187				
	(0.347)						(0.346)						(0.344)					(0.346)				
Regional Attractiveness																						
Attractiveness of living					3.450×10^{-4}	3.424×10^{-4}					2.761×10^{-4}	2.719×10^{-4}					3.715×10^{-4}					2.897×10^{-4}
					(3.993×10^{-4})	(4.000×10^{-4})					(3.730×10^{-4})	(3.718×10^{-4})					(3.941×10^{-4})					3.718×10^{-4})

Constant	0.123 (3.568)	0.529 (0.880)	0.462 (0.871)	-0.105 (0.881)	1.223 (1.617)	-0.834 (1.836)	-1.859 (3.521)	0.389 (0.864)	0.370 (0.845)	-0.375 (0.844)	-1.223 (1.673)	-0.895 (1.868)	0.838 (3.318)	0.989 (0.293)	0.967 (0.281)	0.905 (0.297)	1.552 (0.906)	-0.811 (0.346)	0.996 (0.293)	0.994 (0.280)	0.895 (0.296)	1.287 (0.864)
R^2	0.025	0.019	0.019	0.028	0.023	0.022	0.032	0.032	0.032	0.056	0.032	0.0034	0.019	0.016	0.015	0.004	0.013	0.040	0.028	0.028	0.018	0.022
N	729	729	729	729	405	405	729	729	729	729	405	405	729	729	729	729	405	729	729	729	729	405

* p<0.10, ** p<0.05 and *** p<0.01. Clustered robust std. errors in parentheses.

Table 5: Results of quantile regressions re-employment in the same region (Models 3a and 6a)

	Panel a	(model 3)								Panel b	(model 6)							
	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90
Characteristics of regional closures:																		
Displacement share										1.189 (1.304)	2.370* (1.257)	1.921 (1.914)	1.564 (2.290)	3.128 (2.842)	5.462** (2.745)	5.037** (2.042)	4.489** (2.213)	5.873*** (2.248)
Average size of closure	0.011* (0.006)	0.010* (0.005)	0.012* (0.006)	0.018*** (0.006)	0.022*** (0.007)	0.021*** (0.006)	0.025*** (0.007)	0.027*** (0.008)	0.025** (0.010)									
Average age of closure	0.021** (0.010)	0.012 (0.008)	0.009 (0.007)	0.003 (0.008)	-1.474×10^{-4} (0.006)	-5.290×10^{-7} (0.006)	0.002 (0.006)	-0.001 (0.008)	0.001 (0.011)	0.015* (0.009)	0.010 (0.007)	0.008 (0.005)	0.003 (0.006)	-0.001 (0.005)	0.003 (0.006)	0.004 (0.007)	0.006 (0.009)	0.003 (0.009)
Characteristics of individuals in the region:																		
Foreign background	0.009 (0.115)	-0.083 (0.080)	-0.182** (0.077)	-0.188*** (0.066)	-0.307*** (0.071)	-0.357*** (0.080)	-0.224* (0.115)	-0.307* (0.167)	-0.171 (0.161)	0.064 (0.081)	-0.134* (0.080)	-0.216*** (0.083)	-0.204** (0.102)	-0.312*** (0.113)	-0.324*** (0.102)	-0.277*** (0.103)	-0.284** (0.143)	-0.357** (0.162)
Characteristics of the regional industry:																		
Entry rate	1.897** (0.960)	2.179*** (0.671)	1.118 (0.707)	0.777 (0.632)	1.172* (0.652)	1.495* (0.808)	1.105 (0.800)	0.740 (0.961)	1.630 (1.323)	1.356* (0.787)	1.991*** (0.703)	1.144 (0.745)	0.656 (0.888)	0.796 (0.901)	1.414* (0.858)	0.940 (0.811)	0.965 (1.120)	2.074 (1.260)
Manufacturing sector	-0.615 (0.443)	-0.503** (0.249)	-0.492 (0.325)	-0.645** (0.263)	-0.291 (0.277)	-0.313 (0.367)	-0.332 (0.394)	0.014 (0.350)	-0.020 (0.321)	-0.581 (0.671)	-0.145 (0.507)	-0.605 (0.457)	-0.831* (0.446)	-0.366 (0.390)	-0.313 (0.399)	-0.364 (0.404)	-0.241 (0.480)	0.252 (0.614)
Low end service sector	-0.074 (0.316)	-0.518* (0.281)	-0.332 (0.259)	-0.535* (0.283)	-0.470** (0.234)	-0.528*** (0.173)	-0.423** (0.208)	-0.399 (0.280)	-0.445 (0.334)	-0.145 (0.321)	-0.622** (0.285)	-0.394 (0.266)	-0.472** (0.235)	-0.416** (0.194)	-0.578*** (0.184)	-0.601*** (0.176)	-0.451 (0.291)	-0.496* (0.264)
Public sector	1.003 (0.648)	1.078* (0.476)	0.958** (0.448)	0.815** (0.390)	0.620** (0.303)	0.632** (0.289)	0.477* (0.285)	0.424 (0.270)	-0.067 (0.268)	0.955*** (0.353)	1.345*** (0.341)	1.022*** (0.311)	0.850*** (0.326)	0.879*** (0.312)	0.841*** (0.240)	0.661** (0.269)	0.281 (0.250)	0.196 (0.397)
Unrelated variety	0.444*** (0.096)	0.461*** (0.060)	0.435*** (0.060)	0.305*** (0.063)	0.241*** (0.060)	0.170*** (0.066)	0.081 (0.065)	0.057 (0.063)	-0.051 (0.075)	0.461*** (0.101)	0.499*** (0.051)	0.484*** (0.053)	0.342*** (0.058)	0.293*** (0.067)	0.151*** (0.055)	0.154*** (0.040)	0.150*** (0.043)	0.033 (0.052)
Characteristics of regional economy:																		
Unemployment rate	-0.002 (0.009)	0.004 (0.004)	0.009* (0.005)	0.003 (0.005)	0.004 (0.005)	0.006* (0.004)	0.007* (0.004)	0.009*** (0.003)	0.013*** (0.005)	-0.007 (0.011)	-0.004 (0.005)	0.006** (0.003)	0.002 (0.006)	0.001 (0.005)	-0.001 (0.004)	0.002 (0.004)	0.004 (0.004)	0.009* (0.005)
Metropolitan region	0.067** (0.030)	0.054** (0.024)	0.059*** (0.020)	0.059** (0.024)	0.074*** (0.017)	0.066*** (0.015)	0.059*** (0.018)	0.076*** (0.023)	0.044 (0.030)	0.075** (0.032)	0.051* (0.026)	0.052** (0.022)	0.043** (0.021)	0.062** (0.025)	0.044 (0.028)	0.040 (0.025)	0.048* (0.027)	0.012 (0.042)
Regional attractiveness:																		
Attractiveness of living ranking	-0.602×10^{-4} (2.341×10^{-4})	-1.130×10^{-4} (1.169×10^{-4})	-2.131×10^{-4}*** (6.860×10^{-5})	-1.120×10^{-4} (0.990×10^{-4})	-1.020×10^{-4} (1.141×10^{-4})	-1.906×10^{-4} (1.415×10^{-4})	-2.787×10^{-4}*** (1.008×10^{-4})	-3.190×10^{-4}*** (1.072×10^{-4})	-4.211×10^{-4}*** (1.382×10^{-4})	0.858×10^{-4} (2.093×10^{-4})	-1.240×10^{-4} (1.583×10^{-4})	-1.697×10^{-4} (1.069×10^{-4})	-1.899×10^{-4}* (1.089×10^{-4})	-0.677×10^{-4} (1.166×10^{-4})	-1.071×10^{-4} (1.266×10^{-4})	-1.992×10^{-4}* (1.104×10^{-4})	-2.207×10^{-4}* (1.235×10^{-4})	-4.080×10^{-4}*** (1.285×10^{-4})
Constant	-1.258*** (0.389)	-1.150*** (0.253)	-1.014*** (0.253)	-0.431 (0.282)	-0.251 (0.262)	-0.026 (0.237)	0.261 (0.198)	0.363 (0.249)	0.743*** (0.236)	-1.192*** (0.317)	-1.266*** (0.219)	-1.105*** (0.215)	-0.488** (0.210)	-0.393* (0.236)	0.039 (0.220)	0.133 (0.182)	0.163 (0.240)	0.464 (0.303)

* p<0.10, ** p<0.05 and *** p<0.01. Robust std. errors in parentheses. N= 405

Table 6: Results of quantile regressions re-employment in the same region (Models 9 and 12)

	Panel a	(model 9)								Panel b	(model 12)							
	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90
Characteristics of regional closures:																		
Displacement share										1.796 (1.466)	1.189 (1.269)	1.719 (1.968)	2.080 (2.170)	3.801* (2.216)	4.712* (2.534)	4.534** (1.939)	4.542* (2.362)	4.948** (2.057)
Average size of closure	0.009** (0.004)	0.010*** (0.003)	0.007 (0.005)	0.014*** (0.005)	0.016*** (0.005)	0.016** (0.006)	0.023*** (0.006)	0.025*** (0.009)	0.025*** (0.008)									
Average age of closure	0.014 (0.011)	0.020*** (0.006)	0.018** (0.009)	0.010 (0.008)	0.008 (0.007)	0.004 (0.007)	0.001 (0.007)	0.003 (0.009)	2.859×10^{-4} (0.008)	0.012 (0.009)	0.020** (0.009)	0.020** (0.009)	0.011 (0.009)	0.011** (0.005)	0.005 (0.005)	0.002 (0.004)	0.005 (0.005)	0.009 (0.010)
Characteristics of individuals in the region:																		
Foreign background	-0.135 (0.126)	-0.146 (0.108)	-0.263** (0.123)	-0.369*** (0.113)	-0.373*** (0.124)	-0.343*** (0.114)	-0.288** (0.113)	-0.296* (0.176)	-0.133 (0.154)	-0.159 (0.116)	-0.155* (0.086)	-0.308** (0.123)	-0.396*** (0.141)	-0.430*** (0.145)	-0.319** (0.135)	-0.310** (0.121)	-0.342*** (0.128)	-0.256 (0.161)
Characteristics of the regional industry:																		
Entry rate	2.131*** (0.580)	1.501*** (0.490)	1.772* (0.922)	1.310 (0.851)	1.042 (0.644)	1.439** (0.717)	1.099** (0.469)	0.648 (0.774)	2.545*** (0.835)	1.925*** (0.556)	1.488** (0.708)	1.656** (0.703)	1.173* (0.686)	0.872 (0.634)	1.008* (0.563)	1.379** (0.603)	0.516 (0.796)	2.557*** (0.916)
Manufacturing sector	0.510 (0.368)	0.050 (0.292)	0.088 (0.363)	0.073 (0.366)	-0.011 (0.312)	-0.278 (0.416)	-0.172 (0.347)	0.060 (0.361)	-0.591 (0.385)	0.685 (0.422)	0.204 (0.281)	0.191 (0.226)	-0.234 (0.353)	0.179 (0.419)	-0.132 (0.419)	-1.326×10^{-4} (0.387)	0.047 (0.320)	0.048 (0.467)
Low end service sector	-0.279 (0.229)	-0.224 (0.189)	-0.268 (0.188)	-0.378** (0.191)	-0.363* (0.185)	-0.413** (0.173)	-0.298*** (0.116)	-0.343* (0.191)	-0.477** (0.186)	-0.314 (0.350)	-0.219 (0.227)	-0.336 (0.298)	-0.354 (0.296)	-0.372 (0.242)	-0.471*** (0.182)	-0.471*** (0.163)	-0.421 (0.273)	-0.482** (0.223)
Public sector	0.766** (0.358)	1.024*** (0.299)	1.070*** (0.322)	0.856*** (0.312)	0.703** (0.310)	0.481 (0.368)	0.447* (0.250)	0.285 (0.261)	-0.010 (0.250)	0.830* (0.502)	1.143*** (0.436)	1.095*** (0.417)	0.847** (0.339)	0.913*** (0.239)	0.769*** (0.266)	0.544** (0.252)	0.320 (0.233)	0.145 (0.350)
Related variety	0.251*** (0.032)	0.229*** (0.017)	0.200*** (0.030)	0.179*** (0.034)	0.135*** (0.038)	0.085** (0.037)	0.050* (0.030)	0.036 (0.042)	-0.082* (0.049)	0.262*** (0.035)	0.242*** (0.025)	0.223*** (0.035)	0.212*** (0.036)	0.168*** (0.033)	0.098*** (0.019)	0.085*** (0.013)	0.085*** (0.024)	-0.023 (0.035)
Characteristics of regional economy:																		
Unemployment rate	-0.001 (0.007)	-0.006 (0.006)	-0.003 (0.004)	0.002 (0.005)	0.001 (0.004)	0.005 (0.004)	0.007* (0.004)	0.009** (0.004)	0.006 (0.007)	-0.003 (0.008)	-0.008 (0.006)	-0.004 (0.006)	3.436×10^{-4} (0.006)	-0.001 (0.005)	0.986×10^{-4} (0.005)	0.002 (0.004)	0.006 (0.004)	0.005 (0.004)
Metropolitan region	0.030 (0.033)	0.047 (0.034)	0.050** (0.025)	0.056** (0.024)	0.061*** (0.020)	0.052** (0.021)	0.064*** (0.021)	0.082*** (0.030)	0.017 (0.037)	0.028 (0.032)	0.044** (0.021)	0.043** (0.018)	0.049*** (0.017)	0.052** (0.020)	0.040*** (0.015)	0.025 (0.016)	0.060** (0.025)	0.012 (0.035)
Regional attractiveness:																		
Attractiveness of living ranking	-1.682×10^{-4} (1.239×10^{-4})	-1.799×10^{-4}** (0.725×10^{-4})	-1.963×10^{-4}* (1.014×10^{-4})	-1.577×10^{-4}** $(0.0788v10^{-4})$	-0.952×10^{-4} (0.864×10^{-4})	-1.657×10^{-4}** (0.828×10^{-4})	-3.014×10^{-4}*** (0.637×10^{-4})	-3.161×10^{-4}*** (0.815×10^{-4})	-3.831×10^{-4}*** (1.065×10^{-4})	-1.530×10^{-4} (1.500×10^{-4})	-1.701×10^{-4} (1.063×10^{-4})	-1.396×10^{-4} (1.022×10^{-4})	-1.658×10^{-4}** (0.772×10^{-4})	-1.056×10^{-4} $(0.842\times*10^{-4})$	-1.647×10^{-4}* $(0.875\times*10^{-4})$	-1.798×10^{-4}* $(0.951\times*10^{-4})$	-2.699×10^{-4}* (1.380×10^{-4})	-4.544×10^{-4}*** (1.163×10^{-4})
Constant	-0.308** (0.129)	-0.225** (0.088)	-0.167 (0.142)	0.009 (0.163)	0.151 (0.142)	0.319** (0.135)	0.382*** (0.098)	0.462*** (0.142)	0.750*** (0.152)	-0.299* (0.174)	-0.261 (0.187)	-0.190 (0.165)	-0.028 (0.171)	0.072 (0.161)	0.307** (0.127)	0.364*** (0.113)	0.450*** (0.128)	0.588*** (0.182)

* p<0.10, ** p<0.05 and *** p<0.01. Robust std. errors in parentheses. N= 405

Table 7: Results of quantile regressions re-employment total (Models 3a and 6a)

	Panel a	(model 3)								Panel b	(model 6)							
	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90
Characteristics of regional closures:																		
Displacement share										-9.386*** (3.035)	-9.103*** (3.001)	-8.103*** (2.694)	-9.192*** (2.542)	-10.171*** (2.389)	-9.286*** (2.640)	-9.574*** (2.738)	-5.248 (4.267)	-11.148*** (3.581)
Average size of closure	-0.019** (0.008)	-0.016** (0.007)	-0.017** (0.008)	-0.019** (0.008)	-0.016** (0.008)	-0.018** (0.008)	-0.022*** (0.008)	-0.024** (0.010)	-0.043*** (0.013)									
Average age of closure	0.004 (0.006)	0.010 (0.006)	0.007 (0.006)	0.007 (0.007)	-0.004 (0.007)	-0.005 (0.009)	-0.001 (0.010)	-0.003 (0.020)	0.012 (0.027)	0.003 (0.009)	0.010 (0.009)	0.014 (0.008)	0.004 (0.009)	0.004 (0.008)	-0.909×10^{-4} (0.009)	0.006 (0.011)	0.004 (0.019)	0.028 (0.027)
Characteristics of individuals in the region:																		
Foreign background	0.009 (0.116)	-0.146 (0.149)	-0.107 (0.158)	-0.151 (0.127)	-0.142 (0.135)	-0.226 (0.173)	-0.255 (0.159)	-0.389* (0.230)	0.001 (0.351)	0.049 (0.131)	-0.055 (0.139)	-0.140 (0.139)	-0.200 (0.180)	-0.217 (0.194)	-0.032 (0.195)	-0.091 (0.193)	-0.243 (0.260)	0.056 (0.246)
Characteristics of the regional industry:																		
Entry rate	0.833 (0.901)	0.937 (0.712)	0.831 (0.776)	-0.375 (0.666)	-1.380** (0.559)	-0.489 (0.736)	-0.531 (1.000)	-1.440 (1.813)	2.328 (2.084)	1.979** (0.824)	1.327 (1.004)	1.316 (1.093)	0.237 (0.831)	0.101 (0.797)	0.011 (0.959)	0.746 (1.368)	-0.304 (2.498)	3.791 (3.255)
Manufacturing sector	-0.203 (0.471)	-0.349 (0.396)	0.070 (0.377)	-0.152 (0.487)	-0.365 (0.463)	0.455 (0.395)	0.196 (0.417)	-0.138 (0.794)	2.236 (1.376)	-0.558 (0.426)	-0.739 (0.508)	-0.177 (0.557)	-0.341 (0.510)	-0.481 (0.486)	0.041 (0.530)	-0.030 (0.774)	-0.163 (0.957)	1.969 (1.554)
Low end service sector	-0.403 (0.472)	-0.339 (0.396)	-0.230 (0.310)	-0.099 (0.300)	-0.020 (0.277)	0.099 (0.298)	0.061 (0.383)	0.161 (0.495)	0.739×10^{-4} (0.799)	-0.342 (0.368)	-0.241 (0.320)	-0.067 (0.370)	0.172 (0.234)	0.216 (0.184)	0.159 (0.190)	0.144 (0.302)	0.458 (0.524)	-0.043 (0.717)
Public sector	0.915 (0.614)	0.408 (0.483)	0.709 (0.458)	0.524 (0.387)	0.435 (0.431)	0.527 (0.345)	0.470 (0.484)	0.114 (0.709)	-1.046 (0.900)	0.105 (0.458)	0.265 (0.340)	0.481 (0.417)	-0.102 (0.445)	-0.091 (0.386)	-0.167 (0.373)	-0.022 (0.415)	-0.201 (0.781)	-1.993** (0.874)
Unrelated variety	0.501*** (0.088)	0.471*** (0.078)	0.332*** (0.118)	0.231** (0.104)	0.161 (0.125)	0.100 (0.141)	0.011 (0.191)	-0.088 (0.275)	-0.664** (0.329)	0.456*** (0.110)	0.412*** (0.102)	0.322*** (0.113)	0.176 (0.107)	0.133* (0.074)	0.046 (0.087)	-0.037 (0.134)	-0.201 (0.243)	-0.773*** (0.269)
Characteristics of regional economy:																		
Unemployment rate	-0.002 (0.012)	-0.001 (0.007)	-0.007 (0.006)	-0.012*** (0.004)	-0.011* (0.006)	-0.011* (0.006)	-0.011* (0.006)	-0.010 (0.010)	-0.024* (0.015)	0.009 (0.011)	0.005 (0.006)	-0.002 (0.006)	-2.460×10^{-4} (0.005)	-0.003 (0.005)	-0.002 (0.004)	-0.001 (0.006)	-0.007 (0.010)	-0.014 (0.010)
Metropolitan region	0.001 (0.041)	0.008 (0.023)	-0.002 (0.019)	-0.011 (0.022)	-0.032* (0.018)	-0.035 (0.023)	-0.048 (0.031)	-0.033 (0.043)	-0.068 (0.086)	9.580×10^{-6} (0.023)	0.012 (0.023)	0.007 (0.023)	0.003 (0.030)	-0.002 (0.030)	-0.011 (0.034)	0.001 (0.033)	-0.029 (0.061)	-0.033 (0.083)
Regional attractiveness:																		
Attractiveness of living ranking	-2.999×10^{-4}** (1.466×10^{-4})	-1.137×10^{-4} (1.307×10^{-4})	-0.101×10^{-4} (1.431×10^{-4})	5.280×10^{-6} (1.408×10^{-4})	-0.610×10^{-4} (1.653×10^{-4})	-0.270×10^{-4} (1.995×10^{-4})	-0.713×10^{-4} (1.797×10^{-4})	-1.188×10^{-4} (2.236×10^{-4})	2.003×10^{-4} (3.629×10^{-4})	-2.799×10^{-4} (1.716×10^{-4})	-1.339×10^{-4} (1.511×10^{-4})	-0.973×10^{-4} (1.493×10^{-4})	-0.839×10^{-4} (1.499×10^{-4})	-0.064×10^{-4} (1.181×10^{-4})	-0.386×10^{-4} (1.353×10^{-4})	-0.972×10^{-4} (1.662×10^{-4})	-1.114×10^{-4} (2.071×10^{-4})	-1.650×10^{-4} (3.057×10^{-4})
Constant	-0.822** (0.376)	-0.679** (0.296)	-0.337 (0.349)	0.144 (0.361)	0.505 (0.371)	0.525 (0.415)	0.868 (0.587)	1.348* (0.794)	2.940** (1.207)	-0.662* (0.377)	-0.521 (0.371)	-0.353 (0.399)	0.281 (0.398)	0.466 (0.303)	0.733 (0.339)	0.904* (0.499)	1.459* (0.854)	3.259*** (0.915)

* p<0.10, ** p<0.05 and *** p<0.01. Robust std. errors in parentheses. N= 405

Table 8: Results of quantile regressions re-employment total (Models 9 and 12)

	Panel a	(model 9)								Panel b	(model 12)							
	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90
Characteristics of regional closures:																		
Displacement share										-10.243*** (3.247)	-10.790*** (3.264)	-9.022*** (3.222)	-8.526*** (2.661)	-9.823*** (2.913)	-9.199*** (3.523)	-7.572** (3.449)	-6.878* (4.029)	-7.772** (3.614)
Average size of closure	-0.019*** (0.007)	-0.024*** (0.006)	-0.018*** (0.005)	-0.019** (0.008)	-0.022*** (0.008)	-0.018** (0.007)	-0.023*** (0.005)	-0.024*** (0.007)	-0.035* (0.020)									
Average age of closure	0.007 (0.013)	0.022* (0.012)	0.016 (0.014)	0.009 (0.013)	0.001 (0.014)	-0.004 (0.014)	-0.002 (0.014)	-0.009 (0.020)	0.006 (0.044)	0.001 (0.012)	0.018** (0.009)	0.016* (0.009)	0.009 (0.011)	0.004 (0.012)	-0.001 (0.012)	2.966×10^{-4} (0.011)	-0.011 (0.019)	0.003 (0.035)
Characteristics of individuals in the region:																		
Foreign background	-0.202 (0.166)	-0.274* (0.154)	-0.275* (0.160)	-0.227* (0.129)	-0.161 (0.123)	-0.229* (0.139)	-0.246* (0.133)	-0.362 (0.241)	0.060 (0.351)	-0.115 (0.136)	-0.126 (0.141)	-0.208 (0.129)	-0.266 (0.173)	-0.159 (0.193)	-0.065 (0.202)	-0.134 (0.173)	-0.095 (0.275)	0.345 (0.269)
Characteristics of regional industry:																		
Entry rate	1.570* (0.823)	1.381 (1.067)	0.679 (0.950)	-0.053 (0.959)	-0.898 (0.757)	-0.739 (0.954)	-0.710 (1.386)	-1.471 (1.629)	-0.270 (4.213)	2.660** (1.106)	1.719 (1.151)	1.746 (1.322)	0.030 (1.287)	-0.183 (1.077)	-0.016 (1.209)	0.218 (1.430)	-0.870 (2.019)	0.570 (2.858)
Manufacturing sector	0.667 (0.514)	0.689 (0.492)	0.475 (0.613)	0.199 (0.584)	0.022 (0.481)	0.513 (0.548)	0.124 (0.597)	-0.227 (0.527)	-0.080 (1.352)	0.162 (0.309)	0.085 (0.423)	0.458 (0.368)	-0.115 (0.447)	-0.333 (0.482)	0.113 (0.394)	-0.078 (0.472)	-0.508 (0.632)	0.040 (1.276)
Low end service sector	-0.350 (0.286)	-0.142 (0.257)	-0.088 (0.317)	-0.051 (0.274)	-0.050 (0.277)	0.175 (0.314)	0.039 (0.388)	-0.050 (0.526)	-0.319 (0.857)	-0.334 (0.314)	0.131 (0.368)	0.029 (0.405)	0.292 (0.333)	0.439* (0.250)	0.240 (0.271)	0.143 (0.305)	0.148 (0.467)	-0.369 (0.752)
Public sector	0.527 (0.452)	0.873** (0.402)	0.722** (0.302)	0.551* (0.310)	0.485 (0.322)	0.350 (0.295)	0.487 (0.443)	0.123 (0.520)	-0.439 (1.075)	-0.030 (0.421)	0.263 (0.403)	0.314 (0.413)	-0.032 (0.306)	-0.098 (0.237)	-0.206 (0.247)	0.216 (0.358)	-0.110 (0.527)	-1.106 (0.928)
Related variety	0.265*** (0.042)	0.237*** (0.054)	0.181*** (0.054)	0.137*** (0.050)	0.118** (0.049)	0.056 (0.051)	-0.019 (0.049)	-0.104* (0.060)	-0.350*** (0.122)	0.261*** (0.042)	0.178*** (0.036)	0.170*** (0.040)	0.106** (0.052)	0.072** (0.036)	0.032 (0.032)	-0.052 (0.033)	-0.183*** (0.052)	-0.416*** (0.107)
Characteristics of regional economy:																		
Unemployment rate	-0.002 (0.007)	-0.006 (0.005)	-0.010** (0.005)	-0.011** (0.005)	-0.012* (0.006)	-0.011 (0.007)	-0.011 (0.009)	-0.015* (0.009)	-0.029** (0.012)	0.007 (0.010)	0.003 (0.009)	-0.002 (0.008)	-0.001 (0.006)	-0.004 (0.007)	-0.001 (0.007)	-0.004 (0.007)	-0.015** (0.007)	-0.021 (0.013)
Metropolitan region	-0.020 (0.043)	0.001 (0.027)	-0.006 (0.026)	-0.027 (0.026)	-0.040 (0.028)	-0.040 (0.027)	-0.037 (0.027)	-0.025 (0.034)	-0.035 (0.054)	-0.018 (0.036)	-0.009 (0.034)	-0.006 (0.029)	-0.001 (0.025)	-0.025 (0.027)	-0.021 (0.024)	-4.586×10^{-4} (0.028)	-0.003 (0.036)	-0.022 (0.052)
Regional attractiveness:																		
Attractiveness of living ranking	-3.148×10^{-4}** (1.540×10^{-4})	-0.722×10^{-4} (1.322×10^{-4})	-0.684×10^{-4} (0.978×10^{-4})	-0.776×10^{-4} (1.332×10^{-4})	-0.239×10^{-4} (1.462×10^{-4})	-0.305×10^{-4} (1.445×10^{-4})	-1.131×10^{-4} (1.685×10^{-4})	-0.226×10^{-4} (1.937×10^{-4})	2.423×10^{-4} (2.543×10^{-4})	-3.461×10^{-4}* (1.938×10^{-4})	-2.941×10^{-4} (1.830×10^{-4})	-1.459×10^{-4} (1.868×10^{-4})	-1.271×10^{-4} (1.191×10^{-4})	-0.709×10^{-4} (0.942×10^{-4})	-0.872×10^{-4} (1.170×10^{-4})	-1.199×10^{-4} (1.387×10^{-4})	1.250×10^{-4} (2.206×10^{-4})	0.224×10^{-4} (2.150×10^{-4})
Constant	0.131 (0.185)	0.028 (0.243)	0.273 (0.292)	0.515* (0.271)	0.662*** (0.230)	0.745*** (0.198)	0.968*** (0.294)	1.412*** (0.386)	1.989*** (0.718)	0.197 (0.186)	0.194 (0.201)	0.225 (0.220)	0.544** (0.236)	0.660*** (0.213)	0.787*** (0.196)	0.928*** (0.175)	1.456*** (0.328)	2.137*** (0.566)

* p<0.10, ** p<0.05 and *** p<0.01. Robust std. errors in parentheses. N= 405