

Does regional context matter for family firm employment growth?[☆]

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ABSTRACT

This study investigates the proposition that family firms have comparative employment growth advantages in relation to non-family firms in regions with relatively low population density. This premise is tested across metropolitan, urban and rural regions using total population data on domestically and privately owned, single-plant, non-listed limited liability firms in Sweden. A panel of more than 89,000 firms is followed over a seven-year period from 2004 to 2010. The average family firm is found to grow more slowly than the average non-family firm across the urban-rural context. However, in line with the study's conjecture, these differences are found to decrease across metropolitan, urban and rural regions.

1. Introduction

Business and economic theory both hypothesize that family firms should exhibit unique regional characteristics that set them apart from other firms (e.g., Astrachan, 1988; Basco, 2015; Chang, Chrisman, Chua, & Kellermanns, 2008). Moreover, research suggests that the unique link between family firms and regions signifies not only that they are likely to be particularly important for smaller communities but also that the success of family firms is largely affected by their locational choice (Astrachan, 1988; Chang et al., 2008; Habbershon & Williams, 1999).

Researchers have previously explored the connection between location and family firm performance (e.g., Backman & Palmberg, 2015; Bird & Wennberg, 2014; Block & Spiegel, 2013; Brewton, Danes, Stafford, & Haynes, 2010). However, despite these efforts, little is currently known empirically about the magnitude and nature of this relationship (Basco & Bartkeviciute, 2016; Chang et al., 2008; Stough, Welter, Block, Wennberg, & Basco, 2015). Only one study, Backman and Palmberg (2015), has described the impact of location on family firm growth. Although their approach was novel, Backman and Palmberg (2015) studied the impact of location on firm employment growth for a sample of only 1000 micro- and small-sized firms collected over one year, which limited the scope of their analysis. Because of these limitations, the question remains as to whether a similar relationship exists among family firms in general.

The aim of this article is to address the current lack of broader empirical evidence on the impact of location on family firm performance by providing evidence on family firm employment growth across the urban-rural context in Sweden. To achieve this aim, this study uses data on all private, domiciled, single-plant, non-listed limited liability firms in Sweden over the period 2004–2010, a total of approximately 89,000 firms per year. Family firms are identified using total population data on kinship, ownership and firm governance, and firm employment growth is studied across municipalities using information on regional characteristics and time distances between regions.

It is found that family firms contribute to the vast majority of net employment growth generated by domiciled, privately held, single-plant, non-listed limited liability firms across regions. Moreover, when comparing the employment growth rates of firms across the urban-rural context, it is found that the average family firm grows more slowly than the average non-family firm in metropolitan, urban and rural regions. Additional analysis shows that these differences decrease between metropolitan and urban regions, as well as between urban and rural regions, thereby giving support to the study's proposition and hypotheses. Finally, analysis shows that the regional growth rates of family firms and non-family firms differ only for micro- and small-sized firms, thereby indicating that the employment growth of family firms and non-family firm converges over firm size.

This article contributes to the literature in two ways. First, this investigation is the first total population study to analyze the employment

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growth of family firms across the urban-rural context. This analysis is performed by estimating employment growth rates of family firms and non-family firms across metropolitan, urban and rural regions. Three hypotheses are tested: First, that family firms have comparative employment growth advantages relative to non-family firms in urban regions compared with metropolitan regions; and second and third, that family firms have comparative employment growth advantages relative to non-family firms in rural regions compared with metropolitan and urban regions. Second, this investigation constitutes, to the best of the author's knowledge, the first total population study to characterize the economic significance of family firms for aggregate net employment growth across regions.

Given that most firms worldwide are family controlled, it is imperative that the regional dynamics of family firms be further explored (International Family Enterprise Research Academy (IFERA), 2003; La Porta, Lopez-De-Silanes, & Schleifer, 1999). Research on this topic is relevant not only to our understanding of individual firms but also to our understanding of the economy itself. Moreover, by uncovering the regional dynamics of family business, research may be able to guide policy makers and family business owners by providing estimates of the impact of location on firm employment growth. Such insight may serve as a tool to increase not only awareness among family firms regarding their possible strengths but also the efficiency of regional economic policy, which typically does not consider family ownership (Basco & Bartkeviciute, 2016).

The remainder of this article is organized as follows. The next section reviews the literature and discusses the terms 'family firm' and 'region'. Section 3 provides detail on the study's data, and Section 4 on its empirical method. Section 5 contains descriptive statistics and reports the economic contribution of family firms and non-family firms toward regional net employment growth. Section 6 examines family firm and non-family firm employment growth across metropolitan, urban and rural regions. Section 7 provides concluding remarks.

2. Previous empirical literature

The previous empirical literature suggests several ways in which family firms interact with the communities and regions where they operate, as well as how different local institutional settings may affect family firm formation, behavior and prosperity. Research suggests that family firms are affected by their local community culture; in particular, local characteristics such as community attitudes towards entrepreneurship have been inferred to affect the prevalence and behavior of family firms (Astrachan, 1988; Bird & Wennberg, 2014; Niehm, Swinney, & Miller, 2008; Sharma & Manikutty, 2005). In turn, research suggests that family firms affect their local communities, where they are thought to encourage cooperation between local businesses, reduce transaction costs and induce regional innovation processes (Anderson, Jack, & Dodd, 2005; Basco & Bartkeviciute, 2016; Block & Spiegel, 2013; Lester & Cannella, 2006). Furthermore, research also suggests that family firms are especially important for economic growth in rural regions; family firms are more likely than other firms to be located, grow and survive in rural communities (Bird & Wennberg, 2014; Brewton et al., 2010; Chang et al., 2008). However, although the influence of local conditions on family firms has been explored, most prior regional studies of family firms have addressed their dynamics across large regions such as countries. The relationship between family firms and their regional setting within a country has, consequently, received less academic attention (Backman & Palmberg, 2015; Basco, 2015).

Most closely related to this study is that of Backman and Palmberg (2015), who study family firm employment growth for micro and small (1–49 employees) limited liability firms across the urban-rural context in Sweden. The authors use panel data on 1000 firms, which they collected through telephone interviews in 2013 and complemented with firm-level data to study regional firm employment growth across

the period of 2008–2012. They find that firm governance has a significant influence on firm growth and that family firms grow more quickly than non-family firms in rural settings. As only a limited number of firms could be included in the survey, however, the authors could only control for a handful of industry-specific factors, meaning that they were not able to differentiate between high- and low-tech industries or knowledge- and labor-intensive industries, for example. Moreover, recent evidence suggests that the influence and implications of family ownership are likely to vary considerably across firms of different sizes (Andersson, Johansson, Karlsson, Lodefalk, & Poldahl, 2017a). Because of the limitations of previous research, the question remains as to the nature and magnitude of the relationship between location and employment growth among family firms in general.

The aim of this article is to go beyond the existing literature by providing large-scale evidence on the impact of location on family firm employment growth across the urban-rural context in Sweden. To achieve this aim, this study uses data on all private, domiciled, single-plant, non-listed limited liability firms in Sweden over the period 2004–2010, a total of approximately 89,000 firms per year. Family firms are identified using total population data on kinship, ownership and firm governance, and firm employment growth is studied across municipalities using information on regional characteristics and time distances between regions.

To understand the impact of location on family firm employment growth, however, it is first necessary to conceptualize the terms 'location' and 'family ownership'. In the next section, the concept of 'region' is first defined. Next, the implications of family ownership on firm performance are discussed. Finally, the relationship between family ownership and firm employment growth is contextualized across the urban-rural context.

3. Location and family firm employment growth

3.1. Defining the regional setting

Before discussing the notion of family ownership across the urban-rural context, it is necessary to first discuss the notion of 'region' itself. In this study, regions are divided into three commonly used categories: metropolitan, urban and rural regions. The underlying motivation for this categorization of regions is that resources tend to be unevenly distributed across space (Hoogstra & Dijk, 2004; Parr, 2002); as a result, actors in different regions face different economic conditions.

Rural regions are generally relatively poor, i.e., they have relatively low population and firm density as well as relative resource scarcity. Urban regions are, conversely, relatively rich, i.e., they have relatively high population and firm density as well as relative resource abundance. Finally, metropolitan regions are exceptionally rich urban regions that are characterized by extraordinary population and firm density as well as extraordinary resource abundance. Having defined 'region', it is now possible to relate this term to family firm performance. The following two sections discuss the performance of family and non-family firms, along with the implications of family ownership for firm performance across the urban-rural context.

3.2. Family ownership and firm performance

In this study, a resource-based view (RBV), as presented by Barney (1991); Penrose (1959) and Wernerfelt (1984), is adopted for examining firm performance. This view is chosen over equivalent approaches such as agency or stewardship approaches (e.g., Davis, Schoorman, & Donaldson, 1997; Fama & Jensen, 1983; Miller & Le Breton-Miller, 2006) because an RBV can embody the traits of those approaches while also excelling at isolating intangible resources that are unique to family firms (Cabrera-Suárez, De Saá-Pérez, & García-Almeida, 2001; Habbershon & Williams, 1999). Firms are therefore viewed as the sum of their resources, both in terms of immaterial

resources such as education and intellectual property, as well as real resources such as labor and capital. Put differently, by adopting an RBV approach, it is assumed that firm output increases monotonically with the amount of resources available for production and that firm performance is solely contingent on the cost and availability of the latter, given technology and market demand.

Taking into consideration the observable resources within a firm does not capture the whole picture of its performance, however. In order to account for the full performance dynamics of firms, it is also necessary to account for those resources that firms dispose of and utilize to *acquire* factor inputs but that are not observable in the same way as conventional resources. Hence, in constructing a model of firm performance, this study also uses the RBV to encompass the non-observable and intangible resources of firms that affect their ability to acquire inputs, as well as the conditions under which these resources are acquired. Such intangible resources – such as goodwill, sympathy, trust and reputation, also called “social capital” – involve entrenchment in networks between agents within and outside the firm (e.g., Hanifan, 1916; Putnam, 1993, 1995). Intangible resources also include firm-, market- and time-specific information (e.g., Hayek, 1945; Jovanovic, 1982). In other words, it is assumed that firms operate in markets characterized by incomplete and asymmetric information. In this setting, firms may, *ceteris paribus*, gain competitive advantages over other equivalent producers¹ by either having deeper knowledge of their business environment, i.e., by more efficiently identifying business opportunities than firms with less knowledge, or by disposing of greater levels of social capital, i.e., by seizing business opportunities at lower transaction costs than firms with less social capital, owing to greater levels of trust, goodwill and reputation.

Family firms are likely to be the facilitators of both of these attributes, as entrepreneurial families often live and work in the same community, meaning that they accumulate extensive local knowledge and close relations to local actors (Astrachan, 1988; Basco, 2015). The acquisition of local knowledge, however, is not necessarily a trait unique to family-owned firms, as any locally managed firm can be expected to exhibit similar characteristics. However, family firms *are* known to differ from non-family firms in terms of how they interact with other actors, i.e., how they make use of social capital. This is a trait that is unique to family firms and that has implications for their performance across regions. For the remainder of this section, the concept of social capital will therefore be used to characterize the differences between family firm and non-family firm performance.

Social capital theory predicts that family firms are inherently endowed with more social capital than non-family firms because family members continually interact over long time periods and consequently build up vast amounts of goodwill and mutual trust in a way that is difficult to replicate in professional business relationships (Arregle, Hitt, Sirmon, & Very, 2007; Habbershon & Williams, 1999; Pearson, Carr, & Shaw, 2008). This mechanism constitutes a basis of firm-internal competitive advantages for family firms over non-family firms as family members interact with lower levels of moral hazard and adverse selection compared to professional business partners (Danes, Stafford, Haynes, & Amarapurkar, 2009; Fama & Jensen, 1983; Tagiuri & Davis, 1996). In addition, social capital has important implications for explaining not only firm-internal factors that affect the performances of family firms and non-family firms but also the performances of both types of firms with respect to regional context. These implications stem from the informal way in which family members interact among themselves and often extend into the business lives of enterprising families, where family firms and their business partners form close-knit networks that are characterized by fellowship, trust and codependency rather than formal agreements (Habbershon & Williams, 1999; Le

Breton-Miller & Miller, 2006; Tagiuri & Davis, 1996; Zellweger, Eddleston, & Kellermanns, 2010; Zellweger, Kellermanns, Eddleston, & Memili, 2012). Conversely, theory also predicts that professionally managed firms rely primarily on formal contracts. Consequently, this means that compared to non-family firms, family firms typically have lower contracting and monitoring costs related to business partner interaction.^{2,3}

The proposed theoretical framework to analyze family firm and non-family firm performance hence predicts that family firms should, *ceteris paribus*, have competitive advantages relative to non-family firms because of their lower transaction costs related to business partner interaction. This infers, by extension, that family firms should have particularly strong competitive advantages relative to non-family firms in environments where such transaction costs are substantial. Transaction costs are known to vary considerably and distinctly across geographical regions, meaning that they constitute an ideal setting in which to test the performance implications of family ownership versus non-family ownership. Based on this, in the next section, the theoretical implications of location on family firm performance are discussed with respect to the urban-rural context.

3.2.1. Family firm employment growth and regional context

Having discussed the general implications of family ownership on firm performance and having operationalized the term ‘region’, it is now possible to discuss the notion of family ownership across the urban-rural context. In this section, the RBV is applied to contextualize the employment growth of family firms and non-family firms across metropolitan, urban and rural regions.

Urban agglomeration theory predicts that the density of actors and resources within regions will affect the circumstances and nature of economic activity (Ciccone & Hall, 1996; Combes, 2000; Krugman, 1991). Moreover, the same theory also predicts that the density of actors within regions is likely to determine the overall transaction costs associated with business interaction. This prediction stems from the finding that face-to-face contact, which is largely determined by the geographical proximity of actors, plays a central role in knowledge transfer among businesses (Balland, de Vaan, & Boschma, 2014; Storper & Venables, 2004). This means that firms within densely populated regions are predicted to benefit from their proximity to a large number of actors in the sense that they can inexpensively relay their intentions, trustworthiness and entrepreneurial ability to relevant local actors and can, conversely, collect sufficient information on the performance and behavior of current and potential business partners. Put differently, regional economic theory predicts that a high density of businesses within regions is likely to reduce the overall transaction costs related to business-to-business interaction, owing to lower levels of moral hazard and adverse selection (Storper & Venables, 2004). For the purpose of this study, this property is used to explain the difference in performance of firms across regions. Hence, it is assumed that firms in densely populated regions do, *ceteris paribus*, exhibit lower overall transaction costs relating to business-to-business interaction compared to firms in scarcely populated regions.⁴

² These relationships do not necessarily need to originate from a professional setting. Rather, entrepreneurial families often use personal connections and family reputation to initiate and maintain business relationships (Tagiuri & Davis, 1996).

³ Here, it is worth noting the implicit assumption that firms operate in competitive markets, i.e., it is assumed that no firm holds complete market power. Moreover, it is further assumed that firms cannot vertically integrate in order to completely internalize the transaction costs associated with business-to-business interaction.

⁴ In addition to geographical proximity, individuals can also utilize other proximity dimensions, such as cognitive, institutional, and social proximity (e.g., Basco, 2015). However, these dimensions are argued to lie outside the scope of the current article and are therefore not incorporated in the model.

¹ That is, firms that utilize equivalent production technology and that operate in the same market.

Rural regions are, as previously noted, characterized by relative resource and information scarcity, which stems from the fact that rural regions are, by definition, scarcely populated. This means that there are relatively few opportunities for face-to-face interaction between rural agents, meaning that rural business interactions are associated with relatively high transaction costs (Duranton & Puga, 2003). In this environment, entrepreneurs are instead assumed to be especially dependent on social capital to reduce contracting and monitoring costs (Davidsson & Honig, 2003; Lambooy, 2010). As family firms are assumed to be endowed with greater levels of social capital than non-family firms, they can therefore be expected to yield competitive advantages relative to the latter in rural regions. This stems from the fact that family firms can mediate the uncertainty associated with a rural location through the use of informal business networks and trust, rather than the use of contracts and monitoring (Astrachan, 1988; Lester & Cannella, 2006). Meanwhile, rural non-family firms, which are endowed with less social capital, are assumed to rely primarily on formal contracts and therefore incur greater transaction costs. This yields the prediction that compared with rural family firms, rural non-family firms incur higher transaction costs related to business interactions.

Urban regions are, in contrast to rural regions, characterized by relative resource abundance and relatively high population density. In this environment, transaction costs are likely to be considerably lower than in rural regions, as urban regions are more densely populated which, in turn, means that actors can more easily engage in face-to-face interaction. This density eases the transfer of tacit knowledge and allows firms to more efficiently screen and monitor potential business partners, as well as to signal their entrepreneurial ability and intentions to others. These characteristics lead to the formation of close-knit networks that are characterized by low levels of moral hazard and adverse selection; such reasoning implies that firms in urban regions incur lower transaction costs than firms in rural regions (Balland et al., 2014; Storper & Venables, 2004; Torre & Rallet, 2005). Finally, metropolitan regions exhibit similar characteristics to urban regions, although these traits are more pronounced in metropolitan regions due to their exceptionally high population and firm density. It can therefore be expected that firms in metropolitan regions exhibit even lower transaction costs than firms in urban and rural regions.

Hence, based on the abovementioned theory, it is predicted that family firms and non-family firms are likely to have similar levels of transaction costs in urban regions, owing to the benefits of geographical proximity. This implies that urban firms are less dependent than rural firms on family social capital to mediate uncertainty when conducting business. Moreover, by applying the same logic, it is predicted that metropolitan firms should be even less dependent on family social capital than firms in urban and rural regions, owing to an exceptionally high population density and, consequently, exceptionally low business transaction costs. As family firms and non-family firms in urban regions are likely to exhibit similar network characteristics, it is predicted that family firms should have fewer competitive advantages relative to non-family firms in urban regions compared to rural regions. Moreover, as networks are predicted to be even more homogeneous across business forms in metropolitan regions, it is therefore predicted that family firms should have even fewer competitive advantages relative to non-family firms in metropolitan regions compared to in urban and rural regions.

Summarizing the argument of this section, it is predicted that family firms are likely to be *relatively* competitive in urban regions compared to metropolitan regions. Moreover, it is predicted that family firms are likely to be *relatively* competitive in rural regions compared to metropolitan and urban regions. Put differently, family firms are expected to have *comparative* advantages relative to non-family firms in urban regions compared to metropolitan regions. Conversely, it is also predicted that family firms should have *comparative* advantages relative to non-family firms in rural regions compared to metropolitan and urban regions.⁵ This yields the overall proposition that family firms have comparative advantages relative to non-family firms in regions with

relatively low population density. To operationalize firm performance, this is represented as employment growth. These regional firm dynamics thereby lead to the following hypotheses:

H1. *Family firms have comparative employment growth advantages relative to non-family firms in urban regions compared to metropolitan regions.*

H2. *Family firms have comparative employment growth advantages relative to non-family firms in rural regions compared to metropolitan regions.*

H3. *Family firms have comparative employment growth advantages relative to non-family firms in rural regions compared to urban regions.*

4. Data

To test the aforementioned hypotheses, this article utilizes register data from Statistics Sweden for all domiciled, private sector firms in Sweden for the time period of 2004 to 2010. All firms have been classified as either family firms or non-family firms using the method employed by Andersson et al. (2017a); this process is described in Section 5.2. The data cover all Swedish legal forms, where family firms can assume the legal forms of sole proprietorships, partnerships and limited liability firms. However, the possibilities of analyzing these three legal forms simultaneously are limited because they fall under different tax, company and capital legislation. This study is therefore delimited to the most economically significant group: limited liability firms.⁶ In addition, this study is also delimited to single-plant firms. This choice is made because the goal of this study is to isolate the effects of individual regions on firm growth, whereas multi-plant firms may operate in several regions. For the same reason, firms that have relocated outside a region during the studied time period are also excluded.

Moreover, limited liability firms may be listed or non-listed. Listed firms and non-listed firms often operate in different markets, making the two groups scarcely comparable. Therefore, this study is again delimited to the most economically significant group: non-listed limited liability firms. Finally, it is currently only possible to identify domestic families, and therefore, it is only possible to link ownership across domestically owned firms. The study is therefore delimited to domiciled firms. In conclusion, this article examines all private, domiciled, single-plant, non-listed limited liability firms (henceforth referred to as firms) in Sweden that were located in one region over the period 2004–2010 – a total of over 89,000 firms per year.

5. Empirical approach

To analyze the employment growth of family firms across the urban-rural context, it is necessary to first conceptualize the analytical framework used to test the proposed hypotheses. In this section, the procedures of identifying family firms and regional interdependence are described, as is the econometric model used. In the last part of this section, descriptive statistics are presented.

5.1. Defining the family firm

Having reviewed the operational definitions of family firms⁷, this study adopts the definition put forward by the European Commission

⁵ Theory is, however, divided regarding the *absolute* competitiveness of family firms, which refers to whether they perform better or worse than non-family firms (e.g., De Clercq & Belausteguigoitia, 2015; Fama & Jensen, 1983; Gómez-Mejía, Haynes, Núñez-Nickel, Kathyryn, & Moyano-Fuentes, 2007). Hence, the absolute competitiveness of family firms is ultimately an empirical question.

⁶ In terms of employment, value added and sales.

⁷ For further discussion of the family firm definitions reviewed, see Andersson et al. (2017a).

(European Commission, 2009). This definition builds on meta-analysis of European family business definitions and it is, therefore, arguably a suitable and robust definition for the purpose of this study. Moreover, the definition is likely to be further used in the future as acknowledged organizations such as the European Union, the European Group of Owners Managed and Family Enterprises (GEEF), the Family Business Network (FBN) International and the Family Firm Institute (FFI) stand behind the definition. Finally, previous family firm studies have used the EC (2009) definition, including Backman and Palmberg (2015).⁸ By using this definition, it is therefore possible to compare the results of this study with those of related studies. The European Commission (2009) definition states that a firm of any size should be classified as a family firm if the following criteria are met:

- i The majority of decision-making rights are in the possession of the natural person(s) who established the firm, or in the possession of the natural person(s) who has/have acquired the share capital of the firm, or in the possession of their spouses, parents, child or children's direct heirs.
- ii The majority of decision-making rights are indirect or direct.
- iii At least one representative of the family or kin is formally involved in the governance of the firm.
- iv Listed companies meet the definition of family enterprise if the person who established or acquired the firm (share capital) or the families or descendants possess 25 percent as mandated by their share capital.

In other words, the European Commission (2009) definition states that a non-listed family firm is one where an individual or family controls a majority of its decision-making rights, given that at least one family member participates in the firm's governance. Meanwhile, a listed family firm constitutes one where an individual or family controls at least a quarter of its decision-making rights given, again, that at least one family member participates in its governance. As this study is concerned with family ownership in non-listed firms, family ownership is therefore discerned based on majority ownership. Decision-making rights are, in this context, defined as voting rights.

5.2. Identifying family firms

To identify family firms and non-family firms according to the European Commission (2009) definition, researchers are required to identify three aspects of firms, namely, 1) their owner(s); 2) their manager(s) and; 3) kinship relations among owners and managers. For the vast majority of the included firms, there is information on the identity of all owners, managers and their kinship bonds. Firm owners file their taxes on dividend income using a special form, which has been used to identify them. However, the data do not include the stakes of each owner. Therefore, ownership has been assumed to be equally distributed across identified firm owners. Meanwhile, Swedish administrative registers have complete information on all firm managers, including their positions within the firm. For the purpose of this study, management has been delimited to the board of directors and CEO. Operative decision-making does, of course, also take place at lower positions in the organizational hierarchy. However, it is ultimately the competence and decision-making of the top management team that dictates the appointment of these managers (Penrose, 1959). Therefore, to capture the ultimate decision-making of firms, the scope of this study has been delimited to the abovementioned managerial positions.

Next, once all firm owners and managers have been identified, the

last component of the European Commission (2009), i.e., the owning families, needs to be identified and defined. Within this study, a family is defined as a group of individuals who share kinship relations through marriage or blood for up to three generations, i.e., all parents, siblings, children and cousins of a given individual, including spouses to all of the above. This definition is chosen based on the extent of Swedish administrative data, which is delimited almost exclusively to one- to three-generation families.⁹ Next, once all kinship relations have been established among all Swedish residents, a family firm is then identified as one where at least half of all registered owners are related by blood or marriage, given that at least one family member is also part of the top management team (board of directors or CEO). Lastly, for a small number of firms, firm owners have not declared taxes on dividends. Consequently, it is therefore not possible to discern ownership for these firms using administrative data. Instead, ownership of these firms is assumed to correspond to the composition of top management, where firms are identified as family firms if at least fifty percent of all executive board members are related by blood or marriage.¹⁰

This process of identifying firm ownership yields a total of 140,585 family firms and 11,090 non-family firms, giving a total of 151,675 firms. A total of 45,865 of these firms did not survive for the entire period or were established during it, and an additional 16,337 firms changed their location. These firms are excluded from the analysis as they are not eligible for a panel. This means that the final population constitutes a total of 89,473 firms, which are observed over the entire period of 2004 to 2010 using complete data.

5.3. Econometric model

To analyze the impact of location on family firm growth, an econometric model similar to that of Backman and Palmberg (2015) and Evans (1987a) is utilized. The model is specified as follows:

$$\begin{aligned} \ln \text{Size}_{it} - \ln \text{Size}_{it-1} = & \alpha + D_1 \text{Family}_{it} + \tau \text{Size}_{it-1} + \mu \text{Age}_{it-1} \\ & + \beta_1 \text{Size}_{it-1} \times \text{Age}_{it-1} + \rho \text{Industry}_i + \delta \text{Year}_t \\ & + \beta_2 \text{Market Size}_{it} + \varepsilon_{it} \end{aligned} \quad (1)$$

where the employment growth of firm i during year t is related to its governance form (Family) as well as to its size, age, industry and year (Size, Age, Industry and Year). A measure for the size of each firm's immediate market (Market size) is also included. The above econometric specification is used to estimate the employment growth of family firms and non-family firms across metropolitan, urban and rural regions, respectively, using three separate ordinary least squares (OLS) regressions. Next, the presence of differences in the relative employment growth of family firms and non-family firms across metropolitan, urban and rural regions is estimated and tested using a Seemingly Unrelated Regressions (SUR) framework and Wald tests. Formally, a SUR framework and Wald tests are applied to test the study's hypotheses in the following terms:

$$D_{\text{Family, Urban}} > D_{\text{Family, Metropolitan}} \quad (2)$$

and

⁹ A small number of four- and five-generation families are identifiable in the data, accounting for approximately one percent of the population. However, no firm was managed by the fourth or fifth generation during the studied time period. Therefore, for simplicity, these kinship relations were omitted from the analysis.

¹⁰ Firms without known owners make up approximately five percent of the population and are exclusively micro and small firms (0–49 employees). Analysis of firms where ownership information is available shows that over 90 percent of all firm owners also hold seats on the board of directors. Therefore, it is concluded that executive board composition is likely a valid proxy for firm ownership.

⁸ Other studies include Andersson et al. (2017a); Andersson, Johansson, Karlsson, Lodefalk, and Poldahl, (2017b); Bjuggren, Daunfeldt, and Johansson, (2013); Bjuggren, Johansson, and Sjögren, (2011); Bornhäll, Johansson, and Palmberg, (2016) and Grundström, Öberg, and Öhrwall-Rönnbäck, (2012).

$$D_{\text{Family, Rural}} > D_{\text{Family, Metropolitan}} \quad (3)$$

and finally

$$D_{\text{Family, Rural}} > D_{\text{Family, Urban}} \quad (4)$$

i.e., the purpose here is to test both whether family firms have comparative employment growth advantages relative to non-family firms in urban regions compared to metropolitan regions (Equation 2) and whether they have comparative employment growth advantages relative to non-family firms in rural regions compared to metropolitan (Equation 3) and urban regions (Equation 4). In the following sections, the included variables are presented, along with descriptive statistics.

5.3.1. Firm growth

The dependent variable used is yearly per-firm employment growth from 2004 to 2010 (yearly difference in natural logarithms). A person is considered employed within a firm if that person has collected labor and/or business income from the firm equivalent to twenty percent of a full-time occupation (32 h per month). By choosing employment growth, rather than growth in other size-related measures such as value added or sales, the econometric analysis avoids many of the measurement problems associated with the latter, such as changes in input and output prices (across both industries and time) and financial manipulation (e.g., Coad & Hözl, 2012; Cressy, 2006). To explain firm growth, a number of independent variables are included with the aim of capturing firm- and location-related factors.

5.3.2. Other firm variables

On the firm level, the first thing to study is, of course, the variable of interest, i.e., whether a firm is family controlled or not (Family). Next, the growth literature shows that initial firm size likely affects a firm's growth rate (1987b, Birch, 1979; Evans, 1987a); this has also been confirmed in Swedish data (Anyadike-Danes et al., 2015; Yazdanfar & öhman, 2015).¹¹ Therefore, the absolute level of employment for each period at the end of the previous year is included (Size_{t-1}). Furthermore, each firm's age at the end of the previous year (Age_{t-1}) is taken into account because it is likely an important determinant of a firm's maturity and, consequently, its growth (1987b, Evans, 1987a). The lagged value of firm size and age are included, as the variable is measured at the end of each calendar year. Finally, firm growth can be expected to differ across industries (e.g., Hoogstra & Dijk, 2004; Klomp, Audretsch, & Thurik, 1998). Therefore, the industry of each firm is controlled for at the two-digit level (Industry) using revision 1.1 of the Statistical Classification of Economic Activities in the European Community (NACE rev. 1.1) classification.

5.3.3. Location variables

In addition to firm-specific variables, it is also necessary to control for the local conditions of each region. The term 'region' is operationalized by dividing the market into 'municipalities', which are the lowest level of government in Sweden; there are 290 in total. As previously indicated, these are divided into three categories – metropolitan municipalities (Metro), urban municipalities (Urban) and rural municipalities (Rural) – which are defined according to the taxonomy designed by the Swedish Board of Agriculture. In practice, metropolitan municipalities are represented by all municipalities within the functional regions of Stockholm, Malmö and Gothenburg.¹² Urban municipalities are defined as regional centers outside the metropolitan functional areas, including suburbs. Finally, rural municipalities comprise

all municipalities that are not classified as metropolitan or urban municipalities. This taxonomy is actively used by policymakers and has previously been used in Swedish regional economic studies, such as Backman and Palmberg (2015) and Westlund (2011). The taxonomy is therefore deemed suitable for the purpose of this study, as it allows comparison to both policy and previous Swedish studies. The choice of municipalities as a basis of the analysis instead of, for example, labor market regions, is made because municipalities are the smallest unit of measurement. By studying municipalities, the amount of possible heterogeneity within each region is thereby reduced. Municipalities have previously been used in Swedish regional economic studies that have used a similar methodology as this study, such as Johansson, Klaesson, and Olsson, (2003) and Karlsson and Gråsjö (2013).

There is, however, likely to be heterogeneity within metropolitan, urban and rural municipalities. Therefore, a measure of the economic capacity of each municipality is included. Economic capacity is measured as the market size of each municipality and, due to the likelihood of spillover between municipalities, as the economic capacity of its neighboring municipalities (Market size). The measure is based on an accessibility approach that captures the market size of each municipality and spillovers from outside markets. The spillovers of outside markets on a given municipality are estimated based on the following: a) the size of the outside market; b) the time distance between markets and; c) commuting patterns. Similar approaches have been used in several previous Swedish regional economic studies (Backman & Palmberg, 2015; Bird & Wennberg, 2014; Johansson et al., 2003; Karlsson & Gråsjö, 2013). Market size is measured as the total wage sum (WS) within a given municipality, where the wage sums of all other Swedish municipalities have been included and discounted for by time distance.

The market size measure differentiates between both intra-regional and extra-regional time distances. Intra-regional time distances are those that concern regions that are part of the same local labor market; conversely, extra-regional time distances are those that concern regions that are not part of the same local labor market.¹³ In practice, this means that the discounted income of intra-regional municipalities within a 30-minute range from a given municipality is included, and the discounted income of extra-regional municipalities within a 60-minute range is included, as it has been shown that commuters are likely to respond differently to travelling time depending on whether their destination lies within or outside their local labor market region (Johansson et al., 2003).

Accordingly, this measure allows correction for differences in market size across municipalities as well as for spatial interdependence, i.e., spillovers between municipalities.¹⁴ To calculate time distances between municipalities, an open-source navigation system, OpenStreetMap, is utilized, where time distance is defined as the travelling time between municipalities by car, measured in minutes.¹⁵ It is then stipulated that the market capacity of any municipality i depends both on the wage sum of municipality i itself as well as the wage sum of all other municipalities j , formally:

$$A_i^{\text{total}} = \sum_{j=1}^{290} WS_j f(c_{ij}) \quad (5)$$

where WS is the wage sum of any municipality j (including i) and where $f(c_{ij})$ is a distance decay function representing the accessibility between

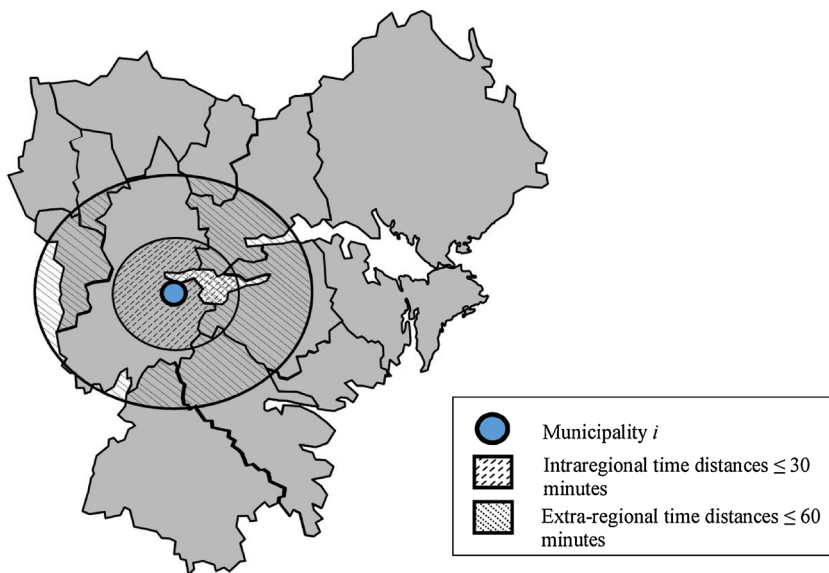
¹¹ There is currently debate regarding whether the influential variable is actually size or is instead age, given that most young firms are small (e.g., Haltiwanger, Jarmin, & Miranda, 2013; Zhang, Wall, & Neumark, 2011).

¹² Functional regions are independent economic regions based on current and projected commuting patterns between municipalities, i.e., they are similar to local labor markets.

¹³ Time distances are discounted by an inverse exponential function. This means that although all municipalities are included in the measure, the influence of faraway municipalities is small or zero.

¹⁴ For details, please see Appendix A.

¹⁵ Time distances are calculated using the method of Huber and Rust (2016). By comparing a random sample of time distances to those estimated by Google Maps[®], it is found that they are consistent with the latter and they are therefore deemed reliable; see Appendix B.



municipalities i and j . Following Johansson, Klaesson, and Olsson, 2002, this relationship is approximated using an inverse exponential function:

$$f(c_{ij}) = \exp(-\lambda t_{ij}) \quad (6)$$

where t_{ij} is the time distance between municipalities i and j and where λ is a set of pre-estimated time-sensitivity parameters as estimated by Johansson et al. (2003). Fig. 1 presents a graphical representation of the extent of the market for a given municipality (Örebro), based on the abovementioned methodology.

5.3.4. Descriptive statistics

As seen in Table 2, the average growth rate of privately held, domiciled, single-plant, non-listed limited liability firms over the full period is approximately 1 percent per year, whereas the median firm did not grow at all. This means that although the “typical” (median) firm did not grow over the studied time period, the sector as a whole (mean) did. This low average growth rate across firms is not surprising – it has previously been noted that most of the net job creation is confined to a small number of high-growth firms (Henrekson & Johansson, 2010). What can also be seen in Table 2 is that a majority of all private and domestically held non-listed limited liability firms are family firms (approximately 92 percent). This finding confirms the initial statement in this article that family firms represent a large share of the economy. Similar relationships can be observed across most sectors (Andersson et al., 2017a).

In Table 2, it can also be seen that the average firm is a micro firm, an expected result given that most Swedish firms are either micro firms or small firms. The average firm is also found to be quite young, approximately 15 years old. This is not surprising, as most firms and organizations do not normally remain in one single configuration longer than an average of three years (Statistics Sweden, 2006; Swedish Agency for Growth Policy Analysis, 2013). Moreover, it can also be observed that firms are clustered across space, with most firms situated within metropolitan and urban regions (69 percent). Moreover, the typical (median) firm is found to operate in a market the size of 8 billion Swedish Krona (SEK), or roughly €800 million per annum (Table 1).¹⁶

¹⁶ The median metropolitan firm operates in a market the size of SEK 44B (€4.4B), whereas the median urban firm operates in a market of SEK 7.5B (€750M) and the median rural firm in a market the size of SEK 2.9B (€290M).

Fig. 1. Intra- and extra-regional market for a given municipality (Örebro), local labor market regions.

Notes: Market size is calculated based on municipal incomes and time distances between destinations. Intra-regional time distances constitute those that lie within the same local labor market region. Conversely, extra-regional time distances constitute those that lie outside the local labor market region of a given municipality.

6. Regional characteristics and distribution of family firm growth

Before discussing this article’s hypotheses, it may be revealing to first descriptively characterize the employment growth of family firms across metropolitan, urban and rural regions. Two aspects of regional employment growth are studied: 1) the importance of family firms to regional net employment growth among single-plant firms; and 2) whether there are differences in the average growth of family firms and non-family firms within the same region.

First, the net employment growth of family firms in relation to total net employment growth is presented across local labor market regions for domiciled, single-plant, non-listed limited liability firms in Sweden. Next, the mean growth rates of family and non-family firms are compared across size (micro, small, medium and large firms) and regional type (metropolitan, urban and rural regions). All analyses concern the period of 2004–2010.

From Fig. 2, it is clear that family firms account for a majority of all net regional employment growth generated by privately held, domiciled, single-plant, non-listed limited liability firms. This applies not only to these firms but also to the economy as a whole; a similar distribution, although less inclined towards family firms, emerges across the entire population (see Appendix C).¹⁷ These results confirm that family firms are indeed an important source of job creation in most regions. Moreover, as seen from Fig. 2, family firms have, in fact, generated all net employment in several regions (all regions colored in black). At the same time, non-family, foreign and government-owned firms have reduced the size of their work forces in these regions. Instead, all regional net employment growth was generated by family firms. This means that a number of regions largely depend on the success of local family entrepreneurs, without which they would likely stagnate or even decrease in size. Most of these regions are, furthermore, characterized by low historical growth rates. This illustrates the importance of family firms for the prosperity and longevity of many regions, and regions with low growth in particular (all of which are rural regions). In this sense, these results seem to confirm the findings of Chang et al. (2008) who found that family firms were important for the growth of rural regions in the U.S. Moreover, recent analysis of Swedish data supports the notion that family firms are especially

¹⁷ The prevalence of family firms as regional net job creators is only rivaled by that of the government sector, where government sector employment may be part of regional growth policies, such as relocating government agencies to low-growth regions.

Table 1

Descriptive statistics (mean, median, min, max, standard deviation), all domestically and privately held non-listed limited liability firms.2004–2010.

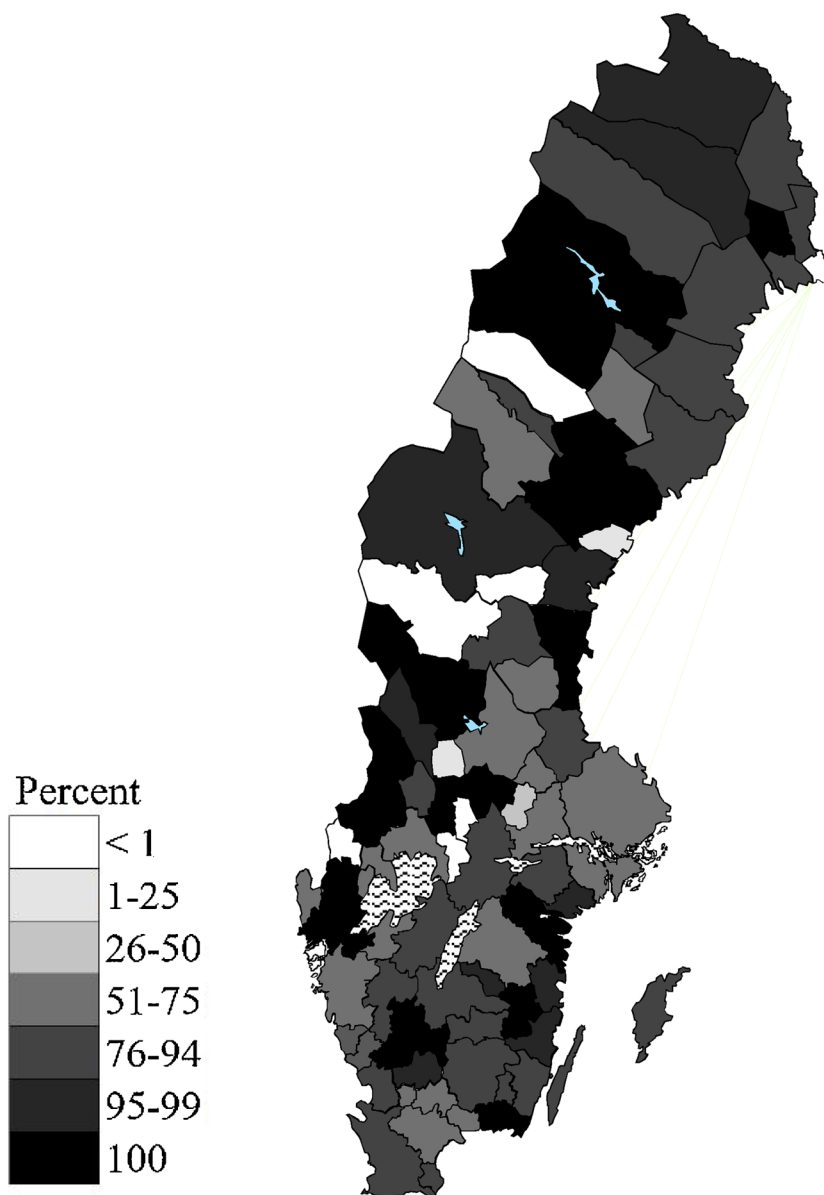
Variable	Definition	Mean	Median	Min	Max	SD
Growth	Annual employment growth, $\ln(\text{Size}_t) - \ln(\text{Size}_{t-1})$	0.01	0	-5.1	4.8	0.3
Family	Dummy assuming the value "1" if a firm is a family firm, "0" otherwise. ^a	0.9	1	0	1	0.3
Size	Number of employees, year t	7.8	4	1	4,317	22.5
Age	Firm age according to registers, year t ^b	14.8	14	1	109	9.1
Metro	Dummy assuming the value "1" if a municipality lies within the functional regions of Stockholm, Gothenburg and Malmö, "0" otherwise	0.4	0	0	1	0.5
Urban	Dummy assuming the value "1" if a municipality belongs to a regional center outside the metropolitan regions, "0" otherwise	0.3	0	0	1	0.4
Rural	Dummy assuming the value "1" if a municipality does not belong to a metropolitan functional region or to a regional center, "0" otherwise	0.3	0	0	1	0.5
Market size	Total wage-sum of municipality i and adjacent municipalities, billion Swedish Krona (billion SEK) ^c	27.6	8.3	0.1	142	41

Notes: Descriptive values across the period of 2004–2010, privately and domestically held, single-plant, non-listed limited liability firms.

^a A firm is considered a family firm if a family controls at least 50 percent of the firm's decision-making rights and participates in firm governance.

^b Firm age is reported as actual firm age for all firms founded after 1900. All firms founded before 1900 are reported as $\text{Year}_t - 1900$.

^c Market size is calculated as the total wage sum of a given municipality and wage sums of adjacent municipalities, discounted for travelling distance by car and commuting patterns, i.e., distance decay effects. The measure "Market size" therefore captures the market potential of each municipality.

**Fig. 2.** Family firm share of net employment growth, domiciled single-plant limited liability firms.2004–2010.

Notes: Family firm share of net employment growth across domestically owned, single-plant, non-listed limited liability firms. Family firms and non-family firms. Local labor market regions, 2004–2010.

Table 2

Pairwise t-tests of mean annual growth rates, family firms (bold) and non-family firms. Micro, small, medium and large firms across regions, 2004–2010 (%).

Region	Firm size				
	(1) All sizes	(2) Micro	(3) Small	(4) Medium	(5) Large
All regions	0.94 *** 2.43***	1.45 *** 4.37***	-1.51 *** 0.36***	-2.72 -2.09	-3.42 -3.52
Metropolitan	1.21 *** 3.19***	1.64 *** 4.98***	-11.72 *** 1.2***	-2.24 -0.16	-3.15 -3
Urban	0.88 *** 2.18***	1.42 *** 4.13***	-1.65 *** -0.003***	-3.52 -1.95	-4.76 -4.91
Rural	0.72 1.21	1.26 *** 3.33***	-1.73 ** -0.84**	-2.59 -2.95	-2.5 -3.95

Notes: Comparison of mean annual growth rates between family firms and non-family firms (dY_{Family} , $dY_{\text{Non-family}}$), 2004–2010. Size is, in this table, defined as the firms' sizes during the year 2004. Domiciled, single-plant, non-listed limited liability firms across local labor markets. For brevity, standard errors are not included; significance is instead indicated by stars. Family firm growth rates are indicated in bold font.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

common in rural regions (Bird & Wennberg, 2014).

The second question of this section – whether family firms and non-family firms have similar growth rates within the same regions – is, however, left unexplained by Fig. 2. This question is instead answered in Table 2, which illustrates the difference in average regional growth rates of family firms and non-family firms across firm sizes and regional categories.

The findings in Column 1 of Table 2 seem to support the study's underlying proposition: the growth rates of family firms and non-family firms seem to differ within and across regions. Moreover, family firms are found to consistently grow more slowly than non-family firms across all regional types. As seen from Table 2, the regional differences in growth between family firms and non-family firms are most pronounced among micro and small firms but are less pronounced among medium- and large-sized firms, thus confirming the findings of Andersson et al. (2017a).

Taking the above indications into consideration, the results of Table 2 suggest that the initial predictions made in this article are correct: the growth of family firms relative to non-family firms appears to vary across regional types. However, the numbers presented in this section are not adjusted for relevant determinants of firm growth, such as industry, regional spillovers, firm size and age. Therefore, in Section 7, the econometric model specified in Section 5 is utilized to study the impact of location on family firm growth while holding constant a number of growth determinants.

7. Econometric results: Family firm growth and regional context

In this section, the employment growth of family firms is further explored across the urban-rural context using the econometric model specified in Section 5. First, the employment growth of family firms and non-family firms are analyzed in separate regressions across metropolitan, urban and rural regions. Second, the study's hypotheses are tested in terms of whether family firms have comparative employment growth advantages relative to non-family firms in urban regions compared to metropolitan regions and moreover, whether they have comparative employment growth advantages relative to non-family firms in rural regions compared to metropolitan and urban regions. This is tested by estimating differences in the employment growth of family firms relative to non-family firms across the urban-rural context. Differences in growth rates across regional types are estimated and tested

Table 3

Results of OLS regression analysis: Difference in annual employment growth between family firms and non-family firms across regional type. 2004–2010.

Regional type	(1) All Regions	(2) Metropolitan	(3) Urban	(4) Rural
Family	-0.05*** (0.002)	-0.06*** (0.003)	-0.05*** (0.003)	-0.03*** (0.003)
Age _{t-1} (log)	-0.09*** (0.002)	-0.1*** (0.002)	-0.09*** (0.005)	-0.08*** (0.002)
Size _{t-1} (log)	-0.01*** (0.001)	-0.02*** (0.001)	-0.02*** (0.001)	-0.01*** (0.001)
Market size (log)	0.0004 (0.001)	0.0005 (0.001)	0.00004 (0.002)	-0.0004 (0.001)
R ²	0.04	0.05	0.04	0.05
F-value	345	138	92	135
N (Firms per year)	89,473	34,556	23,869	31,048
N (Municipalities)	290	47	46	197

Notes: Dependent variable: Annual employment growth ($\ln Y_t - \ln Y_{t-1}$). Column 1 presents the average differences in annual employment growth for family firms and non-family firms across all regions. Columns 2–4 present equivalent regression estimates for each regional type. Size refers to the number of employees. All regressions are controlled for industry (2-digit NACE rev 1.1.), polynomials of firm size and firm age, and size-specific age factors. Estimates for firm size and firm age are combined into two overall estimates using marginal effects. Column 1 includes dummies for regional categories, i.e., metropolitan, urban and rural regions. Clustered standard errors (firm).

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

using a SUR framework and Wald tests. Third, the analysis is decomposed across firm sizes to analyze the impact of location on the employment growth of family firms across micro, small, medium and large firms separately. Fourth, a robustness analysis is conducted to test the sensitivity of the estimated relationships. Fifth, and finally, the similarities and differences between the approaches used are discussed, as are similarities and differences between these findings and those of previous studies.

Table 3 presents the results of four separate OLS regressions using the econometric specification presented in Section 5. This model has been used to estimate the average difference in annual firm employment growth between family firms and non-family firms in general (across regions), as well as in metropolitan, urban and rural regions separately (Column 1 to Column 4 of Table 3). Meanwhile, Table 4 presents the results of Wald tests on whether the growth of family firms relative to non-family firms differs across the urban-rural context. The underlying analysis of Table 4 has been conducted using a SUR

Table 4

Results of Wald tests: Differences in point estimates, family firm growth compared to non-family firm growth across metropolitan, urban and rural regions, 2004–2010. Significantly different (YES/NO).

Empirical test	Difference in point estimates	Significantly different (YES/NO)
$D_{\text{Family, Urban}} - D_{\text{Family, Metropolitan}}$	0.013	YES***
$D_{\text{Family, Rural}} - D_{\text{Family, Metropolitan}}$	0.024	YES**
$D_{\text{Family, Rural}} - D_{\text{Family, Urban}}$	0.011	YES***

Notes: Dependent variable: Annual employment growth ($\ln Y_t - \ln Y_{t-1}$). All regressions are controlled for industry (2-digit NACE rev 1.1.), polynomials of firm size and firm age, and size-specific age factors. Results of Wald tests on whether the coefficients for family ownership (Family) in Table 3 are significantly different across regression models. Wald tests are based on Seemingly Unrelated Regressions where Columns 2–4 of Table 3 have been estimated jointly. Clustered standard errors (municipality).

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

framework where Columns 2–4 in Table 3 have been estimated jointly. In all other respects, except for the method of estimation, however, the analysis of Table 4 is equivalent to that of Table 3.

Column 1 of Table 3 depicts the baseline model, which contains the average difference between family firm growth and non-family firm growth. From this, it is shown that, on average, family firms grow approximately 5 percent more slowly than non-family firms per year (Family). This result differs from that of Backman and Palmberg (2015), who found no evidence for growth differences between family firms and non-family firms in general. The reasons why family firms grow more slowly than non-family firms, on average, can be due to multiple factors. For example, previous literature suggests that family firms are more risk averse than non-family firms and that they prioritize long-term growth and control over short-term performance (Andersson et al., 2017a; Hiebl, 2012; Le Breton-Miller & Miller, 2006; Zellweger, 2007). Moreover, similar relationships to those of Column 1 in Table 3 have been identified by Chang et al. (2008) on the regional level, where it was found that family firms are more common in low-growth regions. In other words, the fact that family firms grow more slowly than non-family firms, on average, is perhaps not very surprising. This is not, however, to say that family firms are economically insignificant. As shown in the previous section, family firms account for a majority of private sector employment growth by single-plant firms across regions. This means that although the average family firm grows more slowly than its non-family equivalent, the sheer size of the family business sector means that the impact of location on family business employment growth has considerable macroeconomic implications. Additional findings in Column 1 show that initial firm size and age are negatively associated with firm growth in general, which is consistent with general findings within the firm growth literature.

Column 2 of Table 3 contains the results for the regional growth rates of metropolitan family firms and non-family firms. Here it is shown, similarly to Column 1, that metropolitan family firms grow more slowly than their non-family equivalents – approximately 6 percent slower per year (Family). This result is somewhat similar to the estimate of Backman and Palmberg (2015), although they did not establish a significant relationship. Note that metropolitan family firms exhibit seemingly lower relative growth compared to family firms in general. This could be because the competitive advantage of family firms, relative to non-family firms is lower in metropolitan regions than in the economy as a whole, as the net benefit of social capital is likely to be especially low in those regions. These results do therefore seem to conform to predictions made from theory regarding the level of transaction costs and the competitiveness of family firms in metropolitan regions.

Column 3 of Table 3 presents the regional growth rates for urban family firms and non-family firms. Here, it is shown that urban family firms grow approximately 5 percent more slowly than urban non-family firms (Family). Moreover, as seen in Table 4, this estimate is significantly different from that of metropolitan firms. When comparing the point estimates for family ownership across metropolitan and urban regions, it is clear that this difference in growth constitutes approximately 1.3 percent. In other words, family firms grow, on average, 1.3 percent more quickly in relation to non-family firms in urban regions compared to metropolitan regions.

Based on these results, it is possible to confirm the study's first hypothesis that family firms have comparative employment growth advantages relative to non-family firms in urban regions compared to metropolitan regions. This divergence in the relative growth rates of family firms is attributed to the fact that transaction costs are higher in urban regions than in metropolitan regions, thereby implying that a greater benefit is derived from family social capital in urban regions. This result is, again, similar to that of Backman and Palmberg (2015), who estimated a similar difference between urban and metropolitan firms, although they did not establish a significant relationship for either region.

Finally, Column 4 of Table 3 presents the regional growth rates of rural family firms and non-family firms. In Column 4 it is shown, as in Columns 2 and 3 that family firms grow significantly more slowly than non-family firms in a rural setting – approximately 3 percent more slowly per year (Family). This result is in opposition to that of Backman and Palmberg (2015), who instead found that rural family firms *outgrow* rural non-family firms by approximately 13 percent per year. This could be due to those authors' use of a limited sample of firms, or possibly to size heterogeneity that they were not able to capture. Moreover, as seen in Table 4, this estimated difference in employment growth between family firms and non-family firms is significantly smaller than the differences in metropolitan and urban regions. When comparing the point estimates for family ownership across regions in Table 3, it is clear that family firms grow, on average, 1.1 versus 2.4 percentage points more quickly in relation to non-family firms in rural regions compared to metropolitan and urban regions.

Based on these results, it is also possible to confirm the study's second and third hypotheses, namely, that family firms do seem to have comparative employment growth advantages relative to non-family firms in rural regions compared to metropolitan and urban regions. This divergence is attributed to transaction costs being higher in rural regions than in metropolitan and urban regions, thereby implying a greater use of family social capital in rural regions. The reason why family firms grow less than non-family firms, despite their regional advantages, is unclear. One cause may be that some family firms do not seek growth but are merely managed to provide steady and sufficient income to the owning family (Aparicio, Basco, Iturralde, & Maseda, 2017; Chua, Chrisman, & Sharma, 1999; Habbershon, Williams, & MacMillan, 2003; Sirmon & Hitt, 2003). In other words, these lower growth rates could reflect differences in growth ambitions among family firms and non-family firms. Another possible explanation could simply be that there is a negative tradeoff between concentration of ownership and firm growth in general (e.g., Evert, Martin, McLeod, & Payne, 2016; Oswald, Muse, & Rutherford, 2009; Pindado & Requejo, 2015).

The results presented in Table 3 are similar to those of Backman and Palmberg (2015), although they differ for firms in rural regions. Backman and Palmberg (2015) found that rural family firms *outgrow* rural non-family firms, whereas this study finds that the former grow more slowly than the latter. As previously discussed, this could be due to differences in population size, but it could also be because Backman and Palmberg (2015) only studied micro and small firms. It is therefore possible that these differences emerge as a result of previously unidentified firm size heterogeneity across regional contexts. Therefore, to investigate whether these results differ due to heterogeneity across firm size, an additional analysis is undertaken in which the econometric specification presented in Section 5 is employed across firm size categories. In Table 5, four models equivalent to those of Table 3 are presented across micro (1–9 employees), small (10–49 employees), medium (50–249 employees) and large firms (≥ 250 employees).

As seen from Table 5, the differences in growth between family firms and non-family firms are most pronounced among micro- and small-sized firms. In fact, when moving toward medium- and large-sized firms, it is apparent that the differences between family and non-family firm growth are no longer significant. Recalling the previous discussion, this speaks to the notion that the results in Table 3 are driven by micro and small family-owned firms rather than by a general tradeoff between ownership and firm employment growth. The reason why medium- and large-sized firms exhibit no significant differences in growth rates across family firms and non-family firms is unclear. However, this result is consistent with the findings of previous research, which has found that larger firms tend to be homogenous across ownership categories (Andersson et al., 2017a; Habbershon, 2006). This could imply that medium- and large-sized firms are managed in a similar way, regardless of whether they are family owned.

Table 5

Results of OLS regression analysis: Annual employment growth in family firms compared to non-family firms across regional types and firm size, 2004–2010.

Regional type	Metropolitan	Urban	Rural
Micro	−0.07*** (0.004)	−0.06*** (0.005)	−0.05*** (0.005)
Small	−0.01*** (0.003)	−0.01*** (0.003)	−0.01* (0.003)
Medium	−0.002 (0.01)	−0.01 (0.01)	0.01 (0.01)
Large	0.003 (0.03)	−0.02 (0.06)	0.02 (0.04)

Notes: Dependent variable: Annual employment growth ($\ln Y_t - \ln Y_{t-1}$). Size refers to the number of employees. "Micro" refers to firms with 1–9 employees, "Small" refers to firms with 10–49 employees, "Medium" refers to firms with 50–249 employees and "Large" refers to firms with 250 employees or more. All regressions are controlled for industry (2-digit NACE rev 1.1.), five (micro, small) and two (medium, large) polynomials of firm size, two polynomials of firm age, and size-specific age factors. For brevity, only estimates concerning family ownership (Family) are included in this table. Clustered standard errors (firm).

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table 6

Robustness checks. Estimates for family ownership on annual employment growth across regional categories using OLS (clustered at municipality and firm levels), fixed effects and random effects estimators and the results of Breusch-Pagan Lagrange multiplier tests. 2004–2010.

Regional category	(1) OLS – Cluster at firm	(2) OLS – Cluster at municipality	(3) Fixed effects	(4) Random effects	(5) LM test ^ψ (Pr > χ^2)
All regions	−0.05*** (0.002)	−0.05*** (0.004)	−0.04*** (0.005)	−0.05*** (0.002)	1.00
Metropolitan	−0.06*** (0.003)	−0.06*** (0.004)	−0.05*** (0.01)	−0.06*** (0.003)	1.00
Urban	−0.05*** (0.003)	−0.05*** (0.003)	−0.03** (0.01)	−0.05*** (0.003)	0.00
Rural	−0.03*** (0.003)	−0.03*** (0.003)	−0.03** (0.01)	−0.03*** (0.003)	1.00

Notes: Dependent variable: Annual employment growth ($\ln Y_t - \ln Y_{t-1}$). Standard errors in parentheses. Estimates for family ownership ($D_1\text{Family}$). All regressions control for firm size, age, industry and market size.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

^ψ This refers to the Breusch-Pagan Lagrange multiplier test.

7.1. Robustness checks

To investigate whether the results of Tables 4 and 5 are robust, a number of robustness checks have been conducted. Table 6 presents the results of this analysis, where the specification used in Tables 4 and 5 has been applied to incorporate different levels of model clustering as well as fixed and random effects. The presence of random effects has also been tested for by conducting Breusch-Pagan Lagrange multiplier tests.

Column 1 and Column 2 present estimates using specifications equivalent to those of Tables 4 and 5, where standard errors have been clustered at the firm and municipality levels, respectively. As observed, the variance seems to be lower for estimates in Column 1 than in Column 2, which speaks in favor of clustering standard errors at the firm level, as used in Tables 4 and 5. Column 3 of Table 6 presents estimates using a similar specification to that of Column 1, where the

impact of family ownership (Family) has been estimated using firm fixed effects. As shown, the relative employment growth of family firms vis-à-vis non-family firms does not change considerably when firm fixed effects are added, which suggests that the relationship between family ownership and employment growth is stable across firms. Put differently, this suggests that the relationship observed in Tables 4 and 5 is due to family ownership itself and not due to exogenous, firm-specific factors.

Lastly, Column 4 of Table 6 presents estimates using a specification similar to those of Column 1 and Column 3, where the impact of family ownership (Family) has been estimated using random effects. This comparison shows that the estimated impact of family ownership on urban firm employment growth differs between random effects and OLS. By conducting Breusch-Pagan Lagrange multiplier tests, it is concluded that this is likely due to the presence of random effects for urban firms (Column 5). However, a random effects estimator is likely to be unsuitable for the purpose of this study and is therefore not utilized.¹⁸ Based on the results of Table 6, it is proposed that the econometric specifications used in Tables 4 and 5 are likely both robust and suitable for the purpose of this study.

7.2. Summary

Summarizing the results of this section, it is possible to confirm the study's proposition that family firms seem to have comparative employment growth advantages in relation to non-family firms in regions with relatively low population density. This is manifested in that family firms seem to have a comparative growth advantage in urban regions compared to metropolitan regions. Moreover, they also seem to have a comparative employment growth advantage relative to non-family firms in rural regions compared to metropolitan and urban regions. These differences in relative growth rates are attributed to the fact that family firms, to a greater extent than non-family firms, use social capital to form informal and tight-knit networks, thereby reducing their contracting and monitoring costs. By conducting a number of robustness checks, these results are also shown to be insensitive to changes in both model specification and estimation method.

The estimates yielded here suggest that family firms grow 1.3 percent more quickly relative to non-family firms in urban regions compared to metropolitan regions, whereas they grow 1.1 and 2.5 percentage points more quickly relative to non-family firms in rural regions compared to metropolitan and urban regions, respectively. These results seem to validate the findings of Backman and Palmberg (2015), although the magnitude of these estimates is found to be smaller. Backman and Palmberg (2015) estimated that rural family firms outgrow rural non-family firms by approximately 13 percentage points per year, whereas this article shows that they grow 3 percentage points more slowly than rural non-family firms per year. The difference in results between the two studies is considerable – approximately 16 percentage points. Moreover, this study identifies a negative relationship, whereas Backman and Palmberg (2015) identified the latter relationship to be positive. The cause of these differences is further investigated by conducting a supplementary analysis across firm sizes. The findings of this analysis suggest that the differences in results between this study and Backman and Palmberg (2015) are due to their use of a limited sample, rather than to differences in the scope of firm sizes included in the two studies. By extending the scope of the previous literature, the results of this study will hopefully provide guidance to both theory and practice in the field of family business.

Furthermore, the results presented in this section do seem to confirm the findings of other related studies, such as Chang et al. (2008),

¹⁸ This is due to the likely correlation between firm employment growth, family ownership (Family) and exogenous variables, such as socioemotional wealth and risk preferences.

who found that family firms are more prevalent in low-growth regions. The findings of this section seem to describe the same relationship, although at the firm level rather than the regional level. Moreover, the results of this section also seem to support to the findings of [Bird and Wennberg \(2014\)](#) and [Brewton et al. \(2010\)](#), who found that family firms are more likely to start up and survive in rural regions than in urban regions. The results of this section show that family firms benefit from a rural location, thereby adding analogous evidence to the results of the abovementioned studies.

When studying the regional growth rates of family firms across firm sizes, it is found that only micro- and small-sized family firms and non-family firms exhibit growth differences across regions. Meanwhile, medium and large firms exhibit no regional differences in firm growth across ownership categories. This may imply that larger firms are homogeneous across ownership categories. This finding is comparable to the findings of [Andersson et al. \(2017a\)](#) and [Habbershon \(2006\)](#). However, to disentangle this relationship, more research is needed.

8. Concluding remarks

This study shows that family firms are the primary source of regional employment growth among privately held, domiciled, single-plant limited liability firms in Sweden. Moreover, its results suggest that family firms play an especially important role in job creation in rural regions. This highlights the need for awareness among policymakers of the specificities of family firms – e.g., what drives their investment, innovation and employment processes – when designing regional economic policy. Currently, family business is rarely considered in regional policy discussions, whereas the results of this study imply that policy makers – by not considering family firms – risk ignoring the largest job creating sector across regions ([Basco & Bartkeviciute, 2016](#)).

When comparing the employment growth rates of family firms and non-family firms across the urban-rural context, it is found that family firms grow more slowly than their non-family equivalents across metropolitan, urban and rural regions. These differences are shown to decrease across metropolitan and urban regions, as well as across urban and rural regions. The results thereby support the study's underlying proposition in that family firms *do* seem to have comparative employment growth advantages in relation to non-family firms in regions with relatively low population density. When comparing the employment growth rates of family firms and non-family firms across firm sizes, it is found that their growth rates differ only for micro- and small-sized firms (0–49 employees). Meanwhile, medium- and large-sized firms exhibit no differences in growth across ownership categories. This result is consistent with previous research, which has found that larger family firms and non-family firms tend to be similar ([Andersson et al., 2017a](#); [Habbershon, 2006](#)).

This article contributes to the current literature by presenting the first large-scale evidence indicating both the regional economic significance of family firms and their comparative advantages across the urban-rural context. Using total population data rather than firm samples, this study presents significantly more precise and inclusive estimates of the impact of location on family firm employment growth than was previously possible. The results of this study confirm the findings of [Backman and Palmberg \(2015\)](#), although the estimated competitiveness of family firms in rural regions differs between the two studies. The divergence in results between these two studies is likely due to their use of a firm sample rather than to differences in scope.

The results also seem to confirm the findings of other related studies in that family firms are found to benefit from a rural location and that they are especially important for the growth of rural regions. [Bird and Wennberg \(2014\)](#) and [Brewton et al. \(2010\)](#) found that family firms are more likely to locate and survive in rural regions compared to urban regions. Meanwhile, this study shows that family firms benefit from a rural location, thereby yielding evidence analogous to that of the abovementioned studies. Moreover, the results of this study show that

family firms grow more slowly across regions, which is similar to the findings of [Chang et al. \(2008\)](#) at the regional level for the U.S. economy.

This study concerns Sweden. However, the results can be applied to other countries. In several respects, Sweden is a typical European economy with respect to the nature and role of social capital in society ([European Commission, 2005](#)). Therefore, it is likely that similar business relationships can be observed in other Western economies. Moreover, because of Sweden's large government sector, it is likely that family firms make an even greater contribution to regional employment growth in other economies. The methodology presented is general and can be applied to any administrative dataset. The results of this study may therefore hopefully guide future research both in Sweden and internationally.

A limitation of this study is that the current analysis is based on a dichotomous categorization of family firms and non-family firms. Meanwhile, previous research suggests that firm behavior differs substantially between different types of family firms, such as first- and second-generation family firms (e.g., [Achleitner, Kaserer, & Kauf, 2012](#); [Bennedsen, Nielsen, Perez-Gonzalez, & Wolfenzon, 2007](#); [Dyer, 2018](#); [Molly, Laveren, & Deloof, 2010](#)). Therefore, it is likely that further regional dynamics will be revealed if the term 'family firm' is disaggregated. However, this type of examination would require a different empirical approach and a different set of theories than those applied in this article. Therefore, such an analysis is found to be beyond the scope of this particular study. Another limitation of this study is that it only studies the *growth* of firms. Thus, it does not capture the full dynamics of employment. For example, the analysis presented here does not account for the duration of each employment; however, prior literature suggests that short-term firm employment growth tends to be volatile, whereas the growth of family firms tends to be resilient and steadfast ([Bjuggren, 2015](#); [Block, 2010](#); [Brewton et al., 2010](#); [Lee, Phan, & Ding, 2016](#)). It is therefore possible that family firms provide slower, albeit more dependable, growth than do non-family firms. However, asserting such relationships would also require a set of analytical tools that lie beyond the scope of this article.

A third limitation of this study is that the analysis explains only a limited share of firm employment growth – between approximately 4 and 5 percent (adjusted R^2). This issue is not specific to this article but is instead typical for firm growth studies ([Coad & Hölzl, 2012](#); [Coad, 2009](#)). This lack of explanatory power stems from the fact that many determinants of firm growth are currently not observable in administrative data, such as entrepreneurial skill and intent, growth ambitions and strategic orientation (e.g., [Penrose, 1959](#); [Schumpeter, 1934](#); [Wiklund, Patzelt, & Shepherd, 2009](#)). Thus, although quantitatively inclusive, the analysis does not account for numerous factors that likely affect firm growth. However, this concern is an inherent issue when studying firm growth and cannot be solved within the confines of this article.

A fourth limitation of this study is that the analysis is restricted to the specific time period of 2004–2010. Therefore, the research does not reflect more recent developments in markets and policies. The reason for selecting this particular period for study is that data are only available for these years. A concern relevant to the period in question is that it includes part of the 2007/2008 global financial crisis, which could potentially have influenced the results. However, analyses over subsets of the studied time period suggest that this influence is marginal.

For future research, a natural extension of this study would be to use a qualitative ([Fletcher, De Massis, & Nordqvist, 2016](#)) or mixed approach ([Reilly & Jones, 2017](#)) to further disentangle the relationship between location and family firm performance. Moreover, another possible extension of this work could be to analyze family firms and regional context with respect to succession and control. Most economies experience increased urbanization, in which young individuals typically move from rural communities to cities ([European Urban](#)

Knowledge Network, 2013). This is likely to pose considerable challenges to rural family firms concerning intergenerational succession and long-term planning (Inwood & Sharp, 2012). However, there is relatively little knowledge about how these issues are resolved in practice. Finally, previous research suggests that family firms generate positive externalities that transcend the individual businesses in ques-

tion (Basco, 2015; Block & Spiegel, 2013). Another potentially meaningful extension of this work could therefore be to extend this analysis to the regional level, which has not yet been done. This holds the potential to provide new insights into the nature of regional economic growth and the implications of regional economic policy.

Appendix A. Testing for spatial interdependence

To test for spatial interdependence in regional firm growth, Moran's I is calculated for net employment growth across municipalities of all domiciled, single-plant, non-listed limited liability firms between 2004 and 2010; see Table A1.

As seen in Table A1, the null hypothesis is rejected because there is spatial interdependence in regional net employment growth. To test for whether the yielded accessibility measure (Market size) corrects for this, Moran's I is calculated for a naïve model of growth where market size is the only explanatory variable.

Table A1

Moran's I for net employment growth across municipalities. Domiciled single-plant, non-listed limited liability firms, 2004–2010.

Variable	I	E(I)	SD(I)	Z	p-value
Growth	0.296	−0.001	0.003	90.116	0

Notes: Moran's I is calculated using the module developed by Pisati (2001).

As seen in Table A2, it is no longer possible to reject the null hypothesis, and it is thereby assumed that there is no longer spatial interdependence in firm growth once market size (Market size) is taken into account.

Table A2

Moran's I for firm growth and accessibility (Market size), domiciled, single-plant, non-listed limited liability firms, 2004–2010.

Variable	Statistic	df	p-value
Market size	0.727	1	0.467

Notes: Moran's I is calculated using the module developed by Pisati (2001).

Appendix B. Comparison of time distances

To ensure that the yielded estimates of time distances are correct, distances are plotted across municipalities and compared to a random sample of time distances against those yielded by Google Maps[®].¹⁹ To gain an acceptable level of confidence in the results, a random sample of 75 time distances is drawn out of the 290 possible. Across the sample, the same point of departure is used: Örebro municipality. The yielded time distances do not differ substantially from those of Google Maps[®] except for the island of Gotland, Sweden's largest island. When plotting the material, the same relationship is found; the time distance to Gotland stands out, where municipality numbers should be somewhat linearly associated with time distance. However, this does not affect the study's results, as Gotland is too far away from its neighboring municipalities to receive spillovers from the latter, even if time distances are applied that are substantially lower than those estimated by Google Maps[®].

See Table B1 and Fig. B1.

¹⁹ Although Google Maps[®] would be a preferable source to calculate all time distances, Google's map API does not allow extraction of a sufficient number of time distances. Instead, the OpenStreetMap system is used, which is an open-source GPS mapping system and the method developed by Huber and Rust (2016).

Table B1

Comparison of time-distances between osrtime and Google Maps API, minutes.

Municipality name	osrtime	Google Maps	Difference, minutes	Difference, percent (%)	Municipality name	osrtime	Google Maps	Difference, minutes	Difference, percent (%)	Municipality name	osrtime	Google Maps	Difference, minutes	Difference, percent (%)
Tingsryd	264	260	4	1	Gagnef	144	146	2	1	Bollebygd	211	201	10	5
Leksand	158	163	6	3	Eksjö	158	160	2	2	Ragunda	400	383	17	5
Botkyrka	114	115	1	1	Ulricehamn	172	174	2	1	Bollnäs	239	228	11	5
Hallsberg	23	46	23	50	Arvidsjaur	689	637	52	8	Trelleborg	340	330	10	3
Huddinge	123	132	9	7	Gnosjö	197	189	8	4	Tranås	118	142	24	17
Örskelljunga	257	253	4	2	Öckerö	235	249	14	6	Sigtuna	130	114	16	14
Jonköping	143	146	3	2	Gotland	747	410	337	82	Kristinehamn	52	56	4	7
Klippan	274	267	7	3	Arjeplog	770	721	49	7	Sundbyberg	129	120	9	7
Sunne	126	124	2	1	Bjurholm	490	469	21	4	Upplands Väsby	123	141	18	13
Falun	140	143	3	2	Nyköping	117	120	3	2	Ronneby	300	293	7	2
Lycksele	573	534	39	7	Söderhamn	218	213	5	2	Örebro	0	0	0	0
Knivsta	169	120	49	41	Kalix	700	698	2	0	Markaryd	239	237	2	1
Tanum	227	210	17	8	Vännäs	496	475	21	4	Vaxholm	149	142	7	5
Kungälv	209	202	7	3	Åtvidaberg	132	135	3	2	Sollentuna	125	112	13	12
Vindeln	521	509	12	2	Munkedal	202	208	6	3	Karlsborg	79	78	1	1
Vallentuna	135	128	7	5	Älvsbyn	674	668	6	1	Älvålen	236	221	15	7
Filipstad	72	72	0	0	Nordmaling	445	438	7	2	Ystad	349	343	6	2
Fagersta	86	80	6	7	Simrishamn	352	339	13	4	Bromölla	311	297	14	5
Karlskoga	34	34	0	1	Kungsör	44	45	1	3	Säter	131	127	4	3
Ljungby	211	209	2	1	Årjäng	150	145	5	3	Höör	300	294	6	2
Hylte	232	234	2	1	Borgholm	299	294	5	2	Kalmar	270	268	2	1
Lindesberg	34	39	5	13	Vaggeryd	165	163	2	1	Åre	482	468	14	3
Bräcke	410	373	37	10	Nynäshamn	147	144	3	2	Habo	144	140	4	3
Ånge	374	361	13	4	Storuman	645	624	21	3	Forshaga	96	94	2	2
Burlöv	315	306	9	3	Kinda	141	142	1	0	Olofström	297	276	21	7

Notes: Random sample of 75 destinations calculated with the osrtime-command, compared to routes calculated by Google Maps[®]. Time is measured in minutes. "osrtime" refers to the STATA-command developed by Huber and Rust (2016).

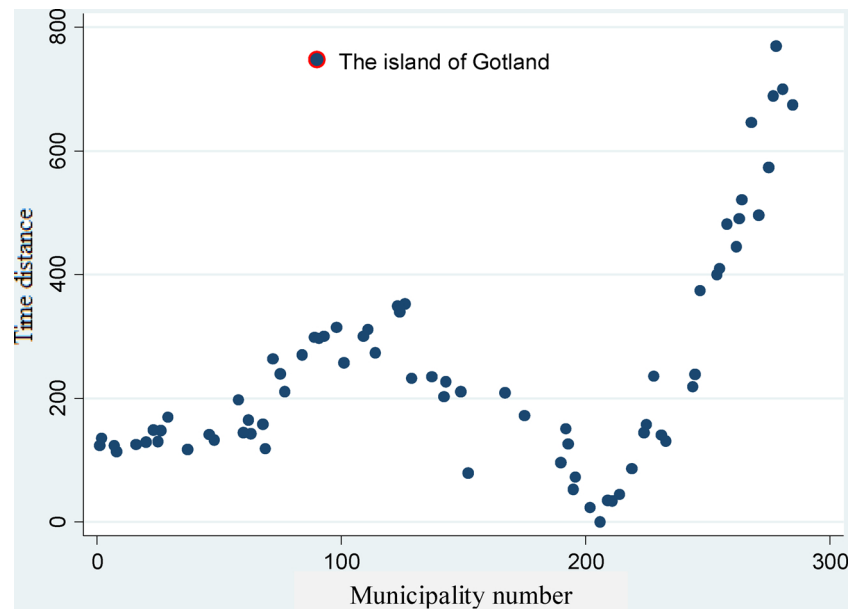


Fig. B1. Time-distance to all Swedish municipalities from Örebro municipality. Commuting time by car, minutes.

Appendix C. Family firm share of regional net employment growth across all firms, organizations and ownership categories

See [Fig. C1](#).

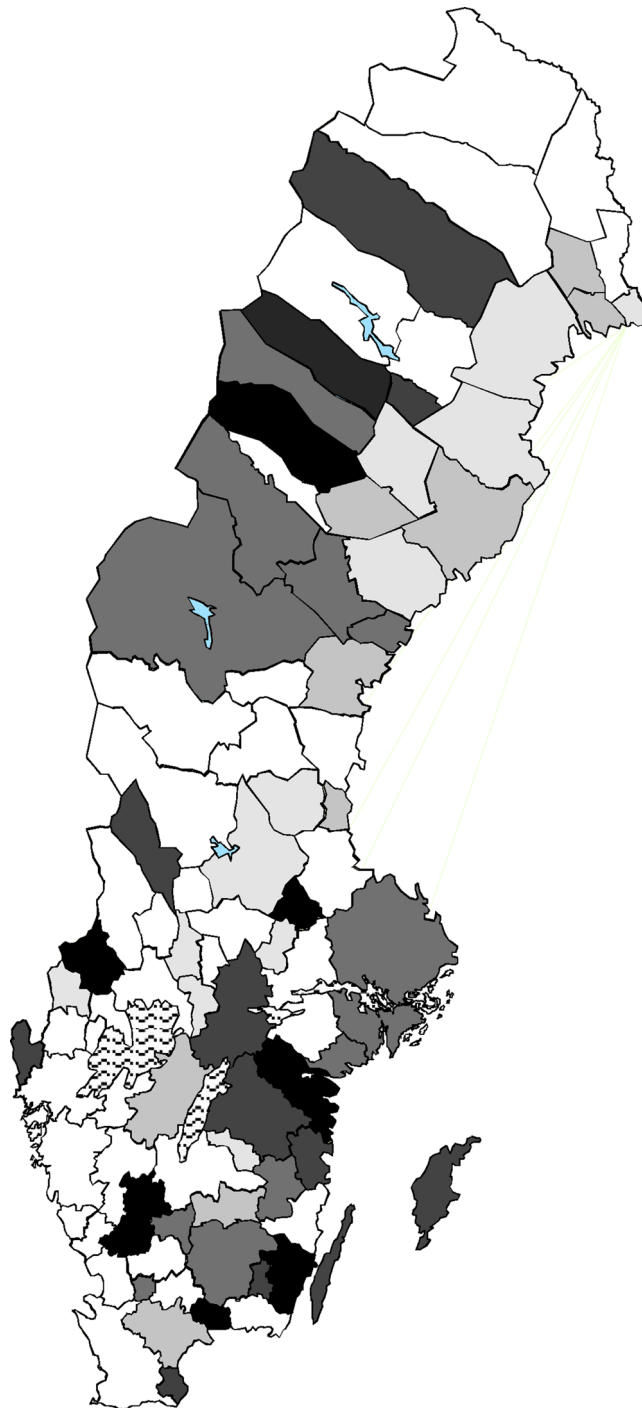


Fig. C1. Family firm share of regional net employment growth, all firms and organizations. 2004–2010.
Family firm share of net employment growth among all firms and all legal forms across local labor market regions, 2004–2010.

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