

1
2
3 **Regional economic performance and the differential prevalence of corporate and family**
4
5 **business**
6
7
8
9

10 **Structured Abstract**
11
12
13

14 **Design/methodology/approach:** Hierarchical clustering is performed to map the regional
15 distribution of European family business.
16
17
18
19

20
21 **Purpose:** Previous studies have largely examined interregional variations of SME rather than
22 family firm concentrations. This paper addresses this gap through an analysis of firm type
23 indicators across Europe from the Eurostat Data Base, using social, economic and
24 demographic statistics at the NUTS 2 regional level to ascertain the nature, prevalence and
25 regional contexts of family firm concentrations.
26
27
28
29
30
31

32
33
34
35 **Findings:** Results show that the co-existence of family SMEs with large firms is negatively
36 related to regional economic performance, and this variation has implications for our
37 understanding of the survival and strategic behaviour of family firms.
38
39
40
41
42
43

44 **Originality/value:** The study promotes a new family business ‘in context’ than ‘by context’
45 point of view and paves the way for further empirical work with interregional family business
46 data at various spatial levels.
47
48
49
50
51
52
53

54
55
56 **Keywords:** Family firms; Self-employment; Context; Regional development; Europe.
57
58
59
60

Introduction

Although the importance of family businesses to national economies has been recognised for some time, their regional distribution is uneven and “little is known about where family firms tend to appear” (Chang, Chrisman, Chua and Kellermanns, 2008: 559). Using US state-level data, they illustrated how in less prosperous regions, family firms may play a “role of disproportionate importance in economic development” (ibid. p. 569). How external environmental conditions affect the regional distribution of family firms, these authors argue, is thus an important, but overlooked field of study amongst family business researchers. They suggested further research in other regional study contexts, not only different countries, but also differences between less aggregated regions. They also highlighted an important problem of causality, whether economic development caused by external factors in less developed regions allows more family firms to develop (because large non-family firms do not tend to locate in poor economic environments) or whether family firms by their presence and interactions cause a negative effect on economic development outcomes (Morck and Yeung, 2004). This asks the question whether family firms respond differently by regional context or whether their regional distribution is part of the regional context in the first place (Bika and Frazer, 2020). The need for more research on family business regional trends for policy formulation is further emphasised in a report to the EU Enterprise and Industry Directorate General, which highlights the need to “mainstream family-business-relevant issues”, particularly “the role family businesses play “in the stability and long-term growth of regions” (European Commission, 2009: 23).

The importance of considering national and regional contexts in family business research is pointed out by Colli, Perez and Rose (2003) who found significant differences as well as similarities in the capabilities and characteristics of family firms in three different countries. Regional context is also demonstrated as important for family business start-ups in

1
2
3 Sweden (Bird and Wennberg, 2014), not only in terms of population size and economic
4
5 development, but also regarding “embeddedness”, with new family firms tending to emerge
6
7 from the stock of pre-existing small family firms, and from where more favourable
8
9 community attitudes exist towards small firms. The density of family firms in Germany has
10
11 also been linked to higher levels of innovation output, as measured by the number of
12
13 successful patent applications (Block and Spiegel, 2013). More recently, Baù et al. (2019:
14
15 361) concluded, using once again the Swedish context: “family firms benefit from local
16
17 embeddedness more than non-family firms [in terms of business growth] and that this effect is
18
19 more pronounced in rural areas”. These authors stress the importance of regional ecology for
20
21 family firm presence, which is still poorly understood and “under-theorised” (Bird and
22
23 Wennberg, 2014: 421). It is thus desirable to extend studies into other regional contexts and
24
25 adopt an interregional lens.

26
27
28
29
30 This paper contributes to our understanding on how regional socio-economic context
31
32 relates to family business prevalence by examining regional variation of family firms in the
33
34 European community. Family firms form the majority of firms in Europe (IFERA, 2003), and
35
36 a sizeable proportion (some 40%) of medium and large sized firms are family owned (La
37
38 Porta, Lopez de Selanes and Shleifer, 1999). However, there is little empirical research on
39
40 interregional distributions and concentrations of family firms in Europe as a whole, and the
41
42 impact of family business growth asymmetries on this variation. This reflects that research
43
44 has so far tended to concentrate on SME concentrations rather than family business ones.
45
46 Even when the focus has moved to regional rates of continuing entrepreneurial activity (Ross,
47
48 Adams and Crossan, 2015), the unit of analysis has remained the SME rather than the family
49
50 business. This paper thus seeks to revisit the relationship between the presence of family
51
52 firms with their unique organizational structures (e.g. longevity, family employment and
53
54 succession) and the socio-economic characteristics/performance of European regions.
55
56
57
58
59
60

1
2
3 The rest of this article is structured as follows. The next section reviews family firm
4 concentrations in European regions and advances a conceptual framework for their
5 investigation. The research methods deployed in the collection and analysis of the secondary
6 data are then presented, followed by our findings on our hierarchical cluster analysis of family
7 firm concentrations in the EU-27. Finally, we offer conclusions and policy implications on the
8 impact of firm type prevalence on regional economic performance.
9
10
11
12
13
14
15
16
17
18

19 **2. A conceptual framework for investigating family firm concentrations and regional** 20 **development** 21 22

23 **2.1. Family Firm Concentrations in European Regions** 24 25

26
27
28 Regional performance has been a central preoccupation of European Union policy,
29 with substantial subsidies allocated to the development of poorer peripheral regions since the
30 1960s. In the 1970s and 1980s, much of the subsidy support was allocated to attracting inward
31 investment of larger corporate firms, but this policy was modified following the industrial
32 restructuring of the 1980s when many large corporate firms failed or reduced the scale of their
33 operations. Many such firms proved adept at relocating from one region to another to take
34 advantage of subsidies, but also prone to leaving the region once subsidies run out. This has
35 resulted in considerable socio-economic problems in regions in which they had been
36 important sources of employment. Thus, the policy of attracting inward investment that
37 dominated the 1970s and 1980s has been replaced by a much greater emphasis on indigenous
38 firm support, particularly growth orientated SMEs. In recent years there has been a further
39 shift in thinking from regarding regional economies as less “a collection of individual firms
40 each with its own set of capabilities and behaviours” and more as “enabling environments that
41 provide benefits to regional firms as a consequence of the shared social and institutional
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3 assets” (Birch, MacKinnon and Cumbers, 2010: 37). In this sense local business families with
4
5 long standing roots in the region, and well developed local social and business networks, can
6
7 be viewed as an important component of the ecosystem (Bird and Wennberg, 2014; Colli,
8
9 2013).

12 There is little empirical treatment of the relationship between firms’ characteristics
13
14 and the evolution of business clusters. Models of spatial agglomeration often assume a
15
16 substantial homogeneity of participating firms (Cainelli, Iacobucci and Morganti, 2006: 508)
17
18 and an unfaltering community (Johannisson and Lindholm Dahlstrand, 2009; Karlsen, 2011).
19
20 As Cumbers, Mackinnon and Chapman’s British study of SMEs in the Aberdeen oil complex
21
22 of the North Eastern Scotland (2003: 1690) reminds us “spatial proximity is not necessarily
23
24 translated into effective collaboration and learning between firms”. To this extent, the
25
26 emphasis on regional assets and competencies as an engine of competitiveness has omitted to
27
28 explore regional drawbacks such as the increased competition associated with firm
29
30 collocation (Sorenson and Audia, 2000) and more specifically, the co-existence and
31
32 interactions of family firms (predominantly SMEs) and large inward investing corporate
33
34 firms. Such co-existence may also represent a significant growth barrier to the economy if the
35
36 latter are transient and have supplier networks with firms located at a distance from the
37
38 region.
39
40
41
42
43

44 This study map will rectify this omission, whilst at the same time follow Cook et al.’s
45
46 (2007) logic of reporting on the problems or centrifugal forces of agglomeration (not only the
47
48 centripetal ones that firm interaction produces) and become part of recent studies questioning
49
50 the “ideal model” of cluster organization (Bell et al., 2009). Unequal power relations between
51
52 firms and heterogeneous firm-specific capabilities have so far been examined at the regional
53
54 level in relation to innovation (Sternberg and Arndt, 2001; Cumbers et al., 2003; Camisón and
55
56 Villar-López, 2012), governance (Bell et al., 2009), or business groups (Cainelli et al., 2006;
57
58
59
60

1
2
3 Brioschi, Brioschi and Cainelli, 2002). Our study's theoretical rationale embraces a focus on
4
5 the regional population of firms (innovation systems) rather than the collectiveness and
6
7 unquestioned societal embeddedness of regional business (industrial district) (Johannisson
8
9 and Lindholm Dahlstrand, 2009). We argue that this literature, however valid, largely fails to
10
11 profess anything in relation to the impact of non-family corporate and family businesses
12
13 prevalence on regional economic performance. Only two recent exceptions have examined
14
15 how family firms (as opposed to non-family ones) have comparative employment growth
16
17 advantages in Swedish regions with relatively low population density (Karlsson, 2018) or
18
19 how German regions with higher family firm density have higher levels of innovation output
20
21 (Block and Spiegel, 2013). This paper adopts a bottom-up view of regional economic
22
23 performance where the interaction of elements and relationships is seen as producing systemic
24
25 effects infused in *competitive asymmetry* (Camisón and Villar-López, 2012), such as flows of
26
27 resources, downsizing, or even policy uptake (Romanelli and Khessina, 2005; Kalantaridis
28
29 and Bika, 2006; 2011; Lounsbury, 2007; Bika, 2007; Greenwood et al., 2010). We suggest
30
31 that such asymmetry might be responsible for creating family business heterogeneity at the
32
33 regional level.
34
35
36
37
38
39
40
41

42 **2.2. A family firm-region conceptual framework**

43
44 We put together a conceptual framework in order to reach “a better understanding of
45
46 the family firm-region link” ... and how the heterogeneity of firms affects regional outcomes”
47
48 (Stough et al., 2015: 209). Drawing on Stough et al.'s suggestions (2015) for future research
49
50 questions and a promising research agenda, we ask: How does firm type prevalence affect
51
52 regional economic development outcomes? This endorses a view that tries to explain the
53
54 emergence and development of a region's corporate and family business growth practices
55
56 over time. More specifically, Block and Spiegel (2013) have investigated in Germany the
57
58
59
60

1
2
3 positive effect of regional family firm density (number of family firms divided by the number
4 of total firms) on regional innovation output (measured by the number of successful patent
5 applications). Karlsson (2018) found that “the employment growth of family firms and non-
6 family firms converges over firm size” and only micro- and small sized firms exhibit different
7 regional employment growth rates of family firms and non-family firms in Sweden. Karlsson
8 (2018) found that family firms are heterogeneous and range in size in the Swedish context,
9 but also the influence of their differences diminishes with size. In other words, one can safely
10 deduct that firm size trumps family firm influence and “larger firms are homogenous across
11 ownership categories” (Karlsson, 2018: 304).
12
13
14
15
16
17
18
19
20
21
22

23
24 Taking into account this literature, the conceptual framework employed by this
25 research to study European regional development sees the impact of microeconomic elements
26 of business growth asymmetries as being composed of three key dimensions: family workers,
27 self-employed and firm size (persons employed per local business unit) or class (more than 20
28 persons employed per local business unit). In this fashion, we move beyond the small but
29 important family business ‘by context’ literature (Carney and Gedajlovic, 2002; 2003; Sasaki
30 et al., 2019; 2020) that largely aims to understand how the context of family firms (from the
31 spatial and institutional to the social) is a key influence on enterprise activity. Instead we look
32 at family businesses ‘in context’ as a phenomenon that is historically specific and “bounded in
33 space and time” (Jackson et al., 2019: 34) where the family SME concentrations ‘constitute’
34 rather than (with the former ‘by context’ conceptualisation) ‘respond to’ the regional context
35 (Bika et al., 2019; Bika and Frazer, 2020). In our conceptual framework, the regional context
36 itself not only matters, but also stands in the middle of our conceptual framework (Figure 1),
37 is multi-dimensional and underpins our investigation on the effects of the different and
38 fluctuating configurations of family and non-family businesses and their employment growth
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3 asymmetries. The three dimensions of our family firm-region conceptual framework are
4
5 operationalized in workable variables as will be described in section 3 below.
6
7
8
9

10
11
12 **Insert Figure 1**
13
14
15
16
17
18
19

20 **3. Research approach and methods**

21 *Overview*

22
23 Reflecting our conceptual framework, our study compares regional levels of family business
24 concentration with regional performance measures. Data from the Eurostat Database of
25 regional indicators were used to carry out statistical comparisons. Eurostat is the main
26 statistical office of the European Union, which collects quality data on a large range of
27 business, economic and demographic indicators for comparing countries and regions within
28 the Europe Union, to inform policy decisions. Although overall the Eurostat-Regio Database
29 is rich, it is not comprehensive with many potentially interesting indicators of economic
30 performance missing for many regions, particularly for less macro regions. Hence, the study
31 had to be limited to measures that were mostly complete across all the regions of interest.
32
33 There are no direct data to measure the concentration or characteristics of family firms in the
34 regions, but variables exist to enable us only to construct proxy measures of family business
35 concentration. Finally, because there are so many regions to consider even at the medium
36 range of resolution adopted (NUTS 2 see below), a mechanism had to be found to aggregate
37 them in a meaningful way. This was achieved through a hierarchical cluster analysis that
38 produced eight groups with different characteristics of family business and industry
39 concentration.
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Details

The Eurostat-Regio database contains quantitative information at a number of different levels of European geographic aggregation and thus presented a valuable source for compiling the study's dataset as it benefits from its extensive potential for comparative analysis, regular data collection and its harmonized statistics. The European Union divides regions for policy purposes into hierarchical territorial units. The NUTS classification (Nomenclature of Territorial Units for Statistics) is a hierarchical system that enables (a) the collection, development and harmonisation of EU regional statistics and (b) the socio-economic analyses of the regions. Three levels of regional resolution are identified (NUTS 1, 2 and 3):

- NUTS 1: major socio-economic regions
- NUTS 2: basic regions for the application of regional policies
- NUTS 3: small regions for specific diagnoses

However, as the Eurostat-Regio dataset formation lacks comprehensiveness it often forces its users to rely on proxy variables, share data limitations and use a larger than desired level of aggregation that leads to suboptimal explanations for interesting research problems (Crescenzi, 2009). The selection of the geographic aggregation level and variables extracted for further investigation was made in such a way that Eurostat-Regio data availability problems were eliminated in the data-set by accessing variables with no missing values. (i.e. Number of NUTS 2 regions = 275, no missing values). The particular data used in the study's mapping exercise for the EU-27 include core economic indicators such as GDP 2000 (Purchasing Power Standards (PPS)) per inhabitant, sectoral distribution (NACE, 2002) alongside employment (such as unemployment rate, family workers and the self-employed)

and demographic indicators (such as population density, population change and high education i.e. persons having a university degree).

Table 1 presents the minimum/maximum, mean and standard deviation (square root of variance) of the NUTS 2 values for each variable used in cluster analysis. However, the great heterogeneity of NUTS 2 regions (as shown by the minimum and maximum columns) occasionally distorts the statistical results if the data are used in their raw form. For example, the case of NUTS 2 region UKI1 'Inner London' with GDP 54,151.10 affects the mean GDP for the EU-27 as a whole (19,227.92). To correct this, variables were standardized in the cluster analysis to eliminate differences in scales of measurement.

Particular emphasis was placed on professional status indicators available only for employed people (*breakdown by: Self-employed / Employee / Family-worker*) and collected through the Labour Force Survey because of their comparability potential with regional structural business data.

Insert Table 1

The observation unit for the regional structural business statistics is the local unit, which is an enterprise or part of one situated in one geographically identified place. Regional structural business data are available at the NUTS 2 level for very few variables including the 'number of local units'¹ and the 'number of persons employed'² among others. This study's regional structural business data collection came across a slightly accentuated problem of missing values (Number of NUTS 2 regions with available data = 246). Such business

¹ "At national level, the statistical unit is the enterprise. As an enterprise can consist of several local units, it is possible for the principal activity of the local unit to differ from that of the enterprise to which it belongs. Hence, national and regional structural business statistics are not entirely comparable" (Regions: Statistical Yearbook 2006: 117)

² The 'number of persons employed' refers to "those persons working in a local unit (paid or unpaid) and those working outside the unit while remaining part of it and being paid by it" (Regions: Statistical Yearbook 2004: 79); therefore, it includes working proprietors, unpaid family workers, part-time workers and seasonal workers.

1
2
3 statistics are normally presented by sectors of activity according to the NACE classification
4
5 (data availability is restricted to the non-financial business economy that is NACE sections C
6
7 to K, less J; non-financial business economy includes mining/quarrying, manufacturing,
8
9 electricity/gas/water supply, construction, wholesale/retail trade, hotels/restaurants, transport
10
11 and real estate; it excludes agricultural, forestry and public administration and other non-
12
13 market services). Another important constraint for this study's dataset is that business
14
15 demography indicators presented by size are only available at NUTS 1 level (country) and
16
17 therefore, the decision to apportion the existing data at NUTS 2 level had to be made
18
19 (Number of regions with available data = 140). To carry out the apportionment, regional data
20
21 at the NUTS 2 level for the '*number of local units*' were collected from regional structural
22
23 business statistics alongside national data at the NUTS 1 level for '*the number of enterprises*'
24
25 presented by size class (see footnote 1). The population covered was once again market
26
27 employment in the non-financial sectors, corresponding to NACE Sections C to K excluding J
28
29 that covers the financial sectors.
30
31
32
33
34

35
36 The methodology for the apportionment of the business demography data by large size
37
38 class to NUTS 2 level included the following steps: Firstly, the number of local units per
39
40 NUTS 2 Region *100 was divided by the total number of local units at NUTS 1 level
41
42 (country) in order to determine the 'apportionment share' of NUTS 1 local units for each
43
44 NUTS2 region (adding up to 100%). Secondly, the number of enterprises in the C_K size
45
46 class 20 employees or more *100 was divided by the total number of enterprises in the C_K
47
48 size class at NUTS 1 level (country) in order to find out the 'firm size class rate 20+'. Finally,
49
50 each 'apportionment share' of NUTS 1 local units for each NUTS 2 region (%) was divided
51
52 by the firm size class rate 20+ to get the percentage of local units in the C_K "*firm size class*
53
54 *20+*" (employees) at NUTS2 level. This apportioned business demography indicator
55
56 represents statistical raw data, broken down by size class and by region that may diverge to
57
58
59
60

1
2
3 some extent, but their scale is the same. Complementing this approach, the “*average firm*
4
5 *size*” came into play as another indicator that was used to approximate the share of large-sized
6
7 firms at NUTS 2 level. The persons employed at NUTS 2 level divided by the appropriate
8
9 regional number of local units was the calculation that underpinned the latter indicator. Both
10
11 these indicators were selected in order to portray the corporate business presence vis-à-vis the
12
13 family and self-employment patterns encountered at the European regional level.
14
15

16
17 Subsequently, a family and self-employment based clustering was sought to
18
19 substantiate this study’s claim about the importance of seeing family business in a wider
20
21 context of socio-economic interconnections that goes beyond how family firms contribute or
22
23 are affected by the context (Bika and Frazer, 2020). Cluster analysis is a well-known class of
24
25 statistical techniques, which was used here to find similarities and differences among
26
27 European regions on the basis of social, demographic and economic indicators. The intention
28
29 was to use this technique to provide a regional classification with high homogeneity within
30
31 clusters and with high variations between clusters. On account of the study’s small sample
32
33 size, hierarchical cluster analysis was performed applying the *Ward method (with Squared*
34
35 *Euclidean Distance Measure)*, a common clustering algorithm that has been extensively used
36
37 in previous studies of typologies and was selected for its ability to create compact clusters
38
39 (Hair et al., 1995). In a comparative study of agglomerative hierarchical methods, Blashfield
40
41 (1976) highlighted the accuracy advantages that the Ward method offers, whilst Pothos and
42
43 Chater (2001) argue that the choice of this similarity measure among others depends on how
44
45 well it performs on a given dataset. To this extent, the determination of the unknown number
46
47 of regional groups in hierarchical clustering was guided by the increase in within-cluster
48
49 distances as groups were merged. Relatively large increases, that signify the merging of less
50
51 similar cases (Harrigan, 1985; Carlyle, 2001), were apparent from the 7 to 8 cluster-solution.
52
53 Thus, the 8-cluster solution was employed here as the most appropriate one. The cluster
54
55
56
57
58
59
60

1
2
3 profiles presented in a thematic order, are: Capital, City, Mixed-Economy, SME, Diversified
4
5 Rural, Nordic, Coastal and Peripheral Regions. Table 2 reports the means and standard
6
7 deviation of economic, employment and demographic cross-tabulations carried out for each
8
9 cluster. Adding further detail to the results, a cross-tabulation of cluster membership by a
10
11 variety of business demography indicators is presented in Table 3 (“average firm size”: local
12
13 units/persons employed) and Table 4 (“large firm size class”: 20 employees or more).
14
15
16
17

18 **Insert Table 2, 3, and 4**

25 **4. Findings**

26
27 The development of typologies has been widely used as a means of organising
28
29 diversity, so that researchers can identify key differences amongst the large population of
30
31 entrepreneurs (Kalantaridis and Bika, 2006), family firms (Westhead and Howorth, 2007) or
32
33 local areas (Hodge and Monk, 2004; Rordríguez-Pose, 1998). In this study, the development
34
35 of European regional types was focused on family workers and self-employment data as an
36
37 aggregate proxy of the family firm prevalence. Here, hierarchical cluster analysis of NUTS 2
38
39 Eurostat-Regio data, in the EU-27, tentatively maps the distribution of European family
40
41 business but also shows poorer, sparsely populated regions with higher levels of family
42
43 workers and self-employment relating to high average firm size and firm size class (thus low
44
45 firm density levels and the presence of large corporate enterprises). However, it has been
46
47 widely acknowledged – at least at the European level – that “there is a strong correlation
48
49 between average enterprise size and economic prosperity, as measured by per capita GDP”
50
51 (ENSR, 2004: 28). This correlation is not found in our findings.
52
53
54
55

56
57 The results of the clustering are presented below in terms of NUTS 2 regional profiles
58
59 for the EU-27 (including Switzerland and Norway, no data availability for Malta) that is the
60

1
2
3 mean value of each available variable. The diagrammatic presentation of the results (Figure 2)
4
5 was based on standardized variables (i.e. standardized scores or z-scores were given as so
6
7 many standard deviation units above or below the mean). This was achieved by first
8
9 determining how far above or below the mean the raw score was and then dividing that
10
11 number by the Standard Deviation: z (standard score) = $(x - \text{mean}) / \text{standard deviation}$. A
12
13 position towards the centre of the Figure 2 indicated lower-than-average levels of self-
14
15 employment, family work, large enterprises and GDP/h, whilst a position at the edges of the
16
17 Figure 2 pointed towards the opposite trend for each regional cluster. Table 5 synthesizes the
18
19 distinguishing variables (relatively high or low cluster mean values in levels or changes) for
20
21 each emerging cluster. The detailed description of the EU-27 cluster profiles in a thematic
22
23 style of presentation follows:
24
25
26
27
28
29
30

31 **“Capital Regions”**, numbered Cluster 3, contains 4 NUTS 2 regions, comprising Inner
32
33 London, Brussels and other European capital cities. Their most distinguishing variables
34
35 were their urban character (the highest population density and positive population
36
37 change alongside the lowest percentage of utilisable agricultural area) and their
38
39 prosperous economy (the highest GDP/h). Family work was found to be relatively low,
40
41 as expected in areas of large conurbations. A higher-than-average employment in
42
43 financial intermediation/public administration/community activities, unemployment rate
44
45 and high education attainment combined with lower-than-average firm size suggested
46
47 the existence of a service economy that included a few large-sized manufacturing units
48
49 (the highest ‘average corporate manufacturing’). Their profile made these places
50
51 desirable to live in Europe and thus were characterised by an influx of population.
52
53
54
55
56
57
58
59
60

1
2
3 **“City Regions”**, numbered Cluster 2, contains 60 NUTS 2 regions, of which 32 were in the
4
5 UK, 6 in Belgium, 4 in the Netherlands and 4 in Switzerland, among many other
6
7 countries. Some capital cities were also included, with Vienna and Prague being some
8
9 obvious examples. The main distinguishing features were lower-than-average self-
10
11 employment, family work, unemployment and agricultural employment combined with
12
13 below average proportions of large firms (low “average firm size” and low “firm size
14
15 class 20+”). These were densely populated areas, inhabited by highly educated people
16
17 who predominantly worked in financial intermediation, transport or real estate sectors.
18
19 Moreover, rates of GDP/h were relatively high here which was partial evidence of
20
21 regional prosperity (Objective 2) and wealth creation i.e. the outcome of a blend of
22
23 socio-economic forces that are usually found in operation in the more urbanised parts of
24
25 Europe.
26
27
28
29
30
31
32

33 **“Mixed-Economy Regions”**, numbered Cluster 5, contains 41 NUTS 2 regions, comprising
34
35 an unusual mixture of Eastern European regions (12 were in Poland, 7 in Czech
36
37 Republic, 6 in Hungary and 6 in Bulgaria) with Northern British (North Eastern
38
39 Scotland) and Northern Greek (West Macedonia) regions. This was the most interesting
40
41 cluster profile for the purposes of this study’s enquiry. Objective 1 and border regions
42
43 were mostly included in this cluster. Their much higher-than-average utilisable
44
45 agricultural area (UAA) and levels of employment in agriculture rather accentuated the
46
47 mixed character of their economic activities (higher-than-average employment in
48
49 mining, manufacturing, electricity/water/gas supply and transport) and their lack of
50
51 dependency on a single sector. However, great distinctiveness was obtained by the co-
52
53 existence of family SMEs and large firms that was found in this regional cluster.
54
55 Higher-than-average means of family workers and self-employed people were combined
56
57
58
59
60

1
2
3 with a relatively high “average firm size” and most importantly, the highest “firm size
4 class 20+”. At the same time, this cluster’s particularity lay in its limited ability to retain
5 its population (for example, North Eastern Scotland: -1.41%), although its inhabitants
6 were not highly educated, and unfavourable economic development outcomes (highest
7 unemployment rate and lowest GDP/h).
8
9
10
11
12
13
14
15
16

17 **“SME Regions”**, numbered Cluster 1, contains 58 NUTS 2 regions, of which 26 were in
18 Germany, 8 in Austria, 9 in Italy and 8 in the Netherlands. Thus, this cluster accounts
19 for most of the territory of Germany and Austria and comprised rural areas (e.g. Emilia
20 Romagna, Tuscany, Franche-Comté) in and around most of the medium-sized
21 conurbations and “old industrial districts” i.e. Hannover, Düsseldorf, Salzburg and
22 Bologna, in the countries included. The high utilisable agricultural area as a percentage
23 of total area was one of the distinguishing factors in this cluster which suggested the
24 existence of pockets of farming activities but also an economic diversity scenario
25 provided this pattern was not accompanied by higher-than-average employment in
26 agriculture. Instead, many people were found to work in manufacturing, although the
27 cluster was characterised by lower-than-average size companies, including those in the
28 manufacturing sector. This cluster represents the success stories of Europe with higher-
29 than-average GDP/h, lower-than-average unemployment rates and a variety of small and
30 medium-sized firms. Higher-than-average levels of family workers were also observed
31 in these predominantly Objective 2 but also rural regions.
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53

54 **“Diversified Rural Regions”**, numbered Cluster 4, contains 32 NUTS 2 regions, of which 18
55 were in France, 8 in Italy and 4 in Belgium, comprising Bretagne, Basilicata and
56 Alentejo amongst many other areas of intensive farming. This cluster includes large
57
58
59
60

1
2
3 rural areas (the highest utilisable agricultural area as a percentage of total area) that were
4
5 inhabited by people without high education attainment levels. Small enterprises seem to
6
7 dominate this cluster that was characterised by lower-than-average levels of firms with
8
9 20 employees or more and higher-than-average levels of unemployment, family work
10
11 and self-employment. This profile went hand in hand with higher-than-average
12
13 employment in public administration/household services and pockets of entrepreneurial
14
15 dynamism and business growth in construction, hotels/restaurants, mining/energy
16
17 supply. To this extent, alternative revenue streams to farming were actively developed
18
19 in a regional diversification effort.
20
21
22
23
24
25

26 **“Nordic Regions”**, numbered Cluster 7, contains 30 NUTS 2 regions, of which 9 were in
27
28 Germany, 5 in Finland, 7 in Norway and 7 in Sweden. These less densely populated
29
30 regions (e.g. the UK Highlands and Islands) were mainly distinguished by higher-than-
31
32 average levels of employment in community activities/health and the lowest proportions
33
34 of family work and self-employment. Relatively high education attainment levels and
35
36 the over 65 year old’s employment rates characterised these Northern regions that also
37
38 came across as suffering from heavy population losses and utilisable agricultural land
39
40 limitations. Manufacturing units of lower-than-average size were encountered in this
41
42 cluster, however, a higher-than-average total incidence of firms with 20 employees or
43
44 more was also reported.
45
46
47
48
49
50

51 **“Coastal Regions”**, numbered Cluster 6, contains 31 NUTS 2 regions, of which 16 were in
52
53 Spain, 4 in Greece, 3 in Italy and 6 in Portugal. This cluster included many
54
55 Mediterranean Islands and other coastal regions such as Aegean Islands, Andalucía,
56
57 Cyprus and Acores that are well-known places of tourist attraction. Consequently, a
58
59
60

1
2
3 higher-than-average employment in the fishing industry, hotels/restaurants, household
4 services, trade and construction alongside relatively high mean values of family workers
5 and self-employed people were reported. These coastal regions were disadvantaged in
6 terms of agricultural land use and human capital (lower-than-average levels of utilisable
7 agricultural area and high education attainment combined with comparatively high over
8 65 years old employment rates). However, considerable business growth potential was
9 detected in various sectors of these coastal regions by virtue of their high “average firm
10 size”.

11
12
13
14
15
16
17
18
19
20
21
22
23
24 **“Peripheral Regions”**, numbered Cluster 8, contains 19 NUTS 2 regions, of which 8 were in
25 Greece, 4 in Poland and 7 in Romania. These were predominantly Objective 1, Border,
26 rural and sparsely populated regions with significantly lower-than-average levels of
27 highly educated people, GDP/h and employment in services or trade. A significant share
28 of their population was family workers, entered self-employment, worked over the age
29 of 65 years old or was employed in agriculture (the highest levels for all four
30 indicators). At the same time, fewer than average numbers of firms with more than 20
31 employees were reported. These were lagging regions that were unable to compete
32 effectively at the European level.

Insert Figure 2

33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
Several conclusions can be drawn from the cluster analysis results presented above where “clustering firms in different groups and aggregating them at the regional level is a feasible proxy for capturing aggregate firm behaviour” (Stough et al., 2015: 215). Firstly, the strong correlation between average firm size and economic prosperity, as measured by GDP, was rather conditional and not always verified at the NUTS 2 regional level, if all other

1
2
3 territorial factors were not held constant. Secondly, the persistence of regional disparities in
4 the EU-27 was reaffirmed (Rodríguez-Pose, 1998; Dunford, 1993). Thirdly, the co-existence
5 of family SMEs and large firms was a significant descriptor of the economic prosperity of
6 mixed-economy regions.
7
8
9
10

11
12 In this regional cluster, the example of North Eastern Scotland that also includes (the
13 “highly entrepreneurial”) Aberdeenshire (Ross, Crossan and Juleff, 2012) with its particular
14 family and self-employment patterns was especially informative. Cumbers et al. explained
15 (2003: 1692) that “as a result of oil-related development in the 1970s and 1980s, Aberdeen
16 was transformed from a locally controlled economy based upon traditional industries to a
17 heavily specialised, externally controlled agglomeration ... [with] a significant SME sector
18 (as locally based firms established themselves in the supply chain)” and grew (Vaessen and
19 Keeble, 1995). In our cluster analysis, though, corporate/family inter-firm concentrations
20 emerged as being correlated with a reduction in the competitiveness of a regional economy
21 and this relationship was mostly evident in such mixed-economy spaces. Interestingly, large
22 survey results confirm that more than 40% of Scottish (and Northern Irish) family SMEs were
23 approached about (and two thirds of this group positively considered) the option of selling the
24 business to outsiders in the 1990s (Cromie, Adams and Reid, 1999). Microeconomic elements
25 of business growth asymmetries surface here as impactful at these mixed-economy spaces.
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43

44 In summary, the EU-27 cluster analysis results here (see Table 5 for a synthesising
45 view) offers descriptive evidence for the proposition that family business renewal appears to
46 be closely connected to the firm type prevalence in the regional context and this has important
47 implications for regional competitiveness. To put it simply, it is the firm type prevalence
48 rather than the presence or type of family firms *per se* that affects regional outcomes.
49
50
51
52
53
54
55
56

57 **Insert Table 5**

5. Discussion and Conclusions

Family business research has concentrated primarily on micro causes and processes of strategic firm behavior (Stough et al., 2015), and there has relatively been little research on the impact of firm type prevalence on regional economic performance and social sustainability. Previous research has focused on the identification of distinct stages in the family firm lifecycle and challenges of their ownership, management and succession in a regional vacuum (for a critique of this see Colli, 2013; Bika and Kalantaridis, 2019) or promoted the idea that family firms have a negative effect on socioeconomic development outcomes (Morck and Yeung, 2004; Fogel, 2006). The different configurations of family and non-family firms at the European regional level and their impact on regional economic development outcomes has been the focus of our study (Stough et al., 2015). Our evidence shows that regional economic performance is correlated with the number and characteristics of interacting enterprises within a region (the system-based view) and that their variable degree of embeddedness, through strong forward and backward linkages, on the region influences their ability to exist, grow, innovate and diffuse knowledge. This adds to the body of “evidence showing that family firms affect regional processes through proximity dimensions” (Basco and Bartkevičiūtė, 2016: 718) rather than simply through their business transfer issues and other size related barriers.

Our contribution is twofold: Firstly, we contribute to the academic discussion around regional cohesion and the impact of microeconomic elements of business growth asymmetries. Our empirical enquiry complements Basco’s theoretical attempt (2015: 260) to explain how, “at the aggregate level, the composition of businesses (i.e., the type of firm, such as family or non-family firms) in the regional productive structure may affect the regional dimensions responsible for regional growth and development”. The impact of such

1
2
3 composition is of particular importance in resource scarce settings, where employment and
4
5 income generating opportunities may be limited and the natural advantage of family firms
6
7 (e.g. lower cost of financial/human resources for the business, local embeddedness and
8
9 limited dependence on well-developed infrastructure) becomes more critical for survival
10
11 (Chang et al., 2008; Bird and Wennberg, 2014). As a whole, the cluster analysis results
12
13 showed here that a symbiosis of family work, self-employment and corporate enterprise only
14
15 exists in the least favoured EU regions, a fact that has significant implications. Spatial
16
17 variations in prosperity were shown to be inversely associated with both average firm
18
19 size/class and rates of entrepreneurial participation, which can be adequately explained by
20
21 keeping in mind that family enterprising is a localised process (Basco, 2015).
22
23
24
25

26 We conclude that there is a need for a deeper understanding on how family firm
27
28 concentrations relate not only to regional economic performance, but also to models of
29
30 regional firm concentrations and business ecosystems. Our EU-27 data based study offers an
31
32 interregional view of family firm concentrations and supplements the small number of
33
34 pioneering studies on these issues at the national level (Chang et al., 2008 in the USA; Bird
35
36 and Wennberg, 2014; Karlsson, 2018 in Sweden; Block and Spiegel, 2013 in Germany). We
37
38 therefore move the debate beyond the employment growth advantages of family SMEs (as
39
40 opposed to non-family ones) in less densely populated areas (Backman and Palmberg, 2015;
41
42 Karlsson, 2018; Kim et al., 2019). We suggest that it is the firm type prevalence rather than
43
44 the uniqueness of the family firm type that matters the most and influences how family firms
45
46 interact with their environment.
47
48
49
50

51 Secondly, this study informs policy by turning attention to the impact of localization
52
53 effects from the co-existence of family SMEs with large firms and highlights the regional
54
55 development need to provide support for family SMEs. This is especially important given that
56
57 state intervention no longer revolves around generalizing the post-war norms of mass
58
59
60

1
2
3 consumption and therefore corporate enterprise, but is now rather “orientated to the supply
4 side, not the demand side, especially through the promotion of innovation and
5 competitiveness” (Goodwin et al., 1995: 1247). Large enterprises’ search for greater recourse
6 to local family businesses or the self-employed with negative consequences for the latter’s
7 survival prospects is proposed here as being correlated with certain regions becoming
8 underperformers. Should the policy makers decide to support family firms, then they “must
9 recognize the composition of firms within the space to ensure policy efficiency” (Basco,
10 2015: 268) and develop policies that substantially soften the effects of family vs. non-family
11 business growth behaviour on the regional context (not the other way round).
12
13
14
15
16
17
18
19
20
21
22

23
24 Thirdly, the NUTS data base is but one of many data bases in different countries
25 collecting information on the characteristics, regional concentrations and economic indicators
26 of firms. Few of these data bases differentiate family firms from non-family firms, despite the
27 fact that they comprise the majority of firms in all countries. One practical implication of this
28 study is the fact that it has demonstrated how, using proxy indicators of family firms, that it is
29 possible to obtain meaningful statistical findings for this neglected sector.
30
31
32
33
34
35
36

37
38 Our study also comes with limitations that indicate directions for future research. One
39 limitation is that despite the success of devising usable proxy measures, they still remain
40 proxy measures, and not ideal substitutes for a direct measure of family firms. We suggest
41 that such a classification would be complex, as the family business sector is diverse in both
42 size, sectoral distribution and the mix of ownership and control. Another limitation is a
43 consequence of the NUTS data base itself, which is not complete in all its levels, and thus
44 limited the scope of the analysis. This paper thus provides a base to inform much needed
45 future research on family firm concentrations, rather than a comprehensive appraisal of the
46 issues researched.
47
48
49
50
51
52
53
54
55
56
57
58
59
60

To conclude, this is a new family business ‘in context’ than ‘by context’ point of view (Bika and Frazer, 2020) that looks at the origins of family firm heterogeneity (Bika et al., 2019; Jaskiewicz et al. 2020) and moves the debate beyond simply understanding how the situational context informs both the nature and the characteristics of family enterprise activity. This also means that we should take seriously territorial proximity (e.g. through firm type prevalence incentives) and leave behind the ‘one-size-fits-all’ logic of current policy interventions for family firms (e.g. through tax benefits or succession advice) included in the European Union 2020 Strategy (Basco and Bartkevičiūtė, 2016). To this extent, further work with family business data at various spatial levels is called for, where a variety of variables, aggregated measurements and analyses are descriptively used, whilst considering family business vs. regional development causalities.

References

- Backman, M. and Palmberg, J. (2015). Contextualizing small family firms: How does the urban–rural context affect firm employment growth? *Journal of Family Business Strategy*, 6(4): 247-258.
- Basco, R. (2015) Family business and regional development – A theoretical model of regional familiness. *Journal of Family Business Strategy*, 6(4): 259-271.
- Basco, R. and Bartkevičiūtė, I. (2016). Is there any room for family business into European Union 2020 Strategy? Family business and regional public policy. *Local Economy*, 31(6): 709-732.
- Baù, M., Chirico, F., Pittino, D., Backman, M. and Klaesson, J. (2019). Roots to grow: Family firms and local embeddedness in rural and urban contexts. *Entrepreneurship Theory and Practice*, 43(2): 360-385.

- 1
2
3 Bell, S. J., Tracey, P. and Heide, J. B. (2009) The organization of regional clusters, *Academy*
4
5 *of Management Review*, 34: 623-642.
6
7
8 Bika, Z. and Frazer, M. L. (2020). The Affective Extension of 'Family' in the Context of
9
10 Changing Elite Business Networks. *Human Relations*
11
12 <https://doi.org/10.1177%2F0018726720924074>
13
14
15 Bika, Z. and Kalantaridis, C. (2019). Organizational-Social-Capital, Time and International
16
17 Family SMEs: An Empirical Study from the East of England. *European Management*
18
19 *Review*, 16(3): 525-541.
20
21
22 Bika, Z., Rosa, P. and Karakas, F. (2019). Multilayered socialization processes in
23
24 transgenerational family firms. *Family Business Review*, 32(3): 233-258.
25
26
27 Bika, Z. (2007) The Territorial Impact of the Farmers' Early Retirement Scheme, *Sociologia*
28
29 *Ruralis*, 47: 246-272.
30
31
32 Birch, K., Mackinnon, D. and Cumbers, A. (2010) Old Industrial Regions in Europe: A
33
34 Comparative Assessment of Economic Performance, *Regional Studies*, 44: 35-53.
35
36
37 Bird, M. and Wennberg, K. (2014) Regional influences on the prevalence of family versus
38
39 non-family start-ups. *Journal of Business Venturing*, 29: 421-436.
40
41
42 Blashfield, R. K. (1976) Mixture model tests of cluster analysis: accuracy of four
43
44 agglomerative hierarchical methods. *Psychological Bulletin*, 83: 377-388.
45
46
47 Block, J. H. and Spiegel, F. (2013). Family firm density and regional innovation output: An
48
49 exploratory analysis. *Journal of Family Business Strategy*, 4(4): 270-280.
50
51
52 Brioschi, F., Brioschi, M.S. and Cainelli, G. (2002) From the industrial district to the district
53
54 group: an insight into the evolution of local capitalism in Italy, *Regional Studies*, 36:
55
56 1037-1052.
57
58
59 Cainelli, G. Iacobucci, D. and Morganti, E. (2006) Spatial agglomeration and business
60
groups: New evidence from Italian districts, *Regional Studies*, 40: 507-518.

- 1
2
3 Camisón, C. and Villar-López, A. (2012) On how firms located in an industrial district profit
4 from knowledge spillovers: Adoption of an organic structure and innovation
5 capabilities. *British Journal of Management*, 23: 361-382.
6
7
8
9
10 Carlyle, A. (2001) Developing organized information displays for voluminous works: a study
11 of user clustering behavior”, *Information Processing and Management*, 35: 677-699.
12
13
14 Carney, M. and Gedajlovic, E. (2002) The co-evolution of institutional environments and
15 organizational strategies: The rise of family business groups in the ASEAN region.
16
17
18
19
20
21
22 Carney, M. and Gedajlovic, E. (2003) Strategic innovation and the administrative heritage of
23 East Asian family business groups. *Asia Pacific Journal of Management*, 20(1): 5-26.
24
25
26 Chang, E. P. C., Chrisman, J. J. and Chua, J. H. and Kellermanns, F. W. (2008) Regional
27 Economy as a Determinant of Family Firms in the United States: A Preliminary Report.
28
29
30
31
32
33
34 Colli, A., Perez, P. F. and Rose, M. B. (2003). National determinants of family firm
35 development? Family firms in Britain, Spain, and Italy in the nineteenth and twentieth
36 centuries. *Enterprise and Society*, 4: 28-64.
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
- Colli, A. (2013). Family firms between risks and opportunities: a literature review. *Socio-Economic Review*, 11: 577-599.
- Cook, G. A. S., Pandit, N. Beaverstock, J. V., Taylor, P. J. and Pain, K. (2007) The role of location in knowledge creation and diffusion: evidence of centripetal and centrifugal forces in the City of London financial services agglomeration. *Environment and Planning A*, 39: 1325-1345.
- Crescenzi, R. (2009) Undermining the Principle of Concentration? European Union Regional Policy and the Socioeconomic Disadvantage of European Regions. *Regional Studies*, 43: 111-133.

- 1
2
3 Cromie, S., Adams, J., Dunn, B., and Reid, R. (1999) Family firms in Scotland and Northern
4
5 Ireland: an empirical investigation. *Journal of Small Business and Enterprise*
6
7 *Development*, 6(3): 253-266.
8
9
10 Cumbers, A. Mackinnon, D. and Chapman, K. (2003) Innovation, collaboration, and learning
11
12 in regional clusters: a study of SMEs in the Aberdeen oil complex, *Environment and*
13
14 *Planning A*, 35: 1689-1706.
15
16
17 Dunford, M. (1993) Regional disparities in the European Community: evidence from the
18
19 REGIO databank, *Regional Studies*, 27, 727-743.
20
21
22 European Commission Enterprise and Industry Directorate General (2009), *Overview Of*
23
24 *Family Business Relevant Issues : Research, Networks, Policy Measures and Existing*
25
26 *Studies*. Final Report of the Expert Group.
27
28
29 European Network for SME Research (ENSR) (2004) Observatory of European SMEs 2003.
30
31 [http://europa.eu.int/comm/enterprise/enterprise_policy/analysis/doc/smes_observatory_](http://europa.eu.int/comm/enterprise/enterprise_policy/analysis/doc/smes_observatory_2003_report7_en.pdf)
32
33 [2003_report7_en.pdf](http://europa.eu.int/comm/enterprise/enterprise_policy/analysis/doc/smes_observatory_2003_report7_en.pdf) Brussels: European Commission.
34
35
36 Fogel, K. (2006). Oligarchic family control, social economic outcomes, and the quality of
37
38 government. *Journal of International Business Studies*, 37(5) : 603-622.
39
40
41 Gartner, W. B. (1988) Who is an Entrepreneur? Is the wrong question, *American Journal of*
42
43 *Small Business*, 18: 11-32.
44
45
46 Goodwin, M., Cloke, P. and Milbourne, P. (1995) Regulation theory and rural research:
47
48 theorising contemporary rural change, *Environment and Planning A*, 27: 1245-1260.
49
50
51 Greenwood, R., Díaz, A. M., Li, S. X. and Lorente, J. C. (2010) The multiplicity of
52
53 institutional logics and the heterogeneity of organizational responses, *Organization*
54
55 *Science*, 21: 521-539.
56
57
58 Hair, J., Anderson, R. Tatham, R. Black, W. (1995) *Multivariate Data Analysis with*
59
60 *Readings*, New Jersey: Simon and Schuster.

- 1
2
3 Harrigan, K. R. (1985) An application of clustering for strategic group analysis, *Strategic*
4
5 *Management Journal*, 6: 55-73.
6
7
8 Hodge, I. and Monk, S. (2004) The economic diversity of rural England: stylised fallacies and
9
10 uncertain evidence, *Journal of Rural Studies*, 20, 263-272.
11
12 International Family Enterprise Research Academy (IFERA) (2003) Family businesses
13
14 dominate. *Family Business Review*, 16(4): 235-240.
15
16
17 Jackson, G., Helfen, M., Kaplan, R., Kirsch, A. and Lohmeyer, N. (2019). The Problem of
18
19 De-Contextualization in Organization and Management Research. *Research in the*
20
21 *Sociology of Organizations* 59: 21-42.
22
23
24 Jaskiewicz, P., Neubaum, D. O., De Massis, A. and Holt, D. T. (2020). The Adulthood of
25
26 Family Business Research through Inbound and Outbound Theorizing. *Family Business*
27
28 *Review*, 33(1): 10-17.
29
30
31 Johannisson, B. and Lindholm Dahlstrand, A. (2009) Bridging the functional and territorial
32
33 rationales – proposing an integrating framework for regional dynamics. *European*
34
35 *Planning Studies*, 17: 1117-1133.
36
37
38 Kalantaridis, C. and Bika, Z. (2006) Local embeddedness and rural entrepreneurship: case-
39
40 study evidence from Cumbria, England, *Environment and Planning A*, 38: 1561-1579.
41
42
43 Kalantaridis, C. and Bika, Z. (2011) Entrepreneurial Origin and the Configuration of
44
45 Innovation in Rural Areas: The case of Cumbria, North West England. *Environment and*
46
47 *Planning A*, 43: 866-884.
48
49
50 Karlsen, A. (2011) “Cluster” Creation by Reconfiguring Communities of Practice. *European*
51
52 *Planning Studies*, 19: 753-773.
53
54
55 Karlsson, J. (2018). Does regional context matter for family firm employment growth?.
56
57 *Journal of Family Business Strategy*, 9(4): 293-310.
58
59
60

- 1
2
3 Kim, K., Haider, Z. A., Wu, Z. and Dou, J. (2019). Corporate Social Performance of Family
4 Firms: A Place-Based Perspective in the Context of Layoffs. *Journal of Business Ethics*.
5
6
7 La Porta, R., Lopez-de-Silanes, F., and Shleifer, A. (1999) Corporate ownership around the
8 world, *Journal of Finance*, 65: 471-517.
9
10
11
12 Lounsbury, M. (2007) A tale of two cities: competing logics and practice variation in the
13 professionalizing of mutual funds, *Academy of Management Journal*, 50: 289-307.
14
15
16
17 Morck, R. and Yeung, B. (2004). Family control and the rent-seeking society.
18
19 *Entrepreneurship Theory and Practice*, 28: 391–410.
20
21
22 Pothos, E. M. and Chater, N. (2001) Categorization by simplicity: a minimum description
23 length approach to unsupervised clustering. In: U. Hahn and M. Ramsar (Eds.)
24 *Similarity and Categorization*. Oxford: Oxford University Press.
25
26
27
28 Rodríguez-Pose, A. (1998) Social conditions and economic performance: the bond between
29 social structure and regional growth in Western Europe, *International Journal of Urban
30 and Regional Research*, 22: 443-459.
31
32
33
34
35 Romanelli, E. and Khessina, O. M. (2005) Regional Industrial Identity: Cluster
36 Configurations and Economic Development, *Organization Science*, 16: 344-358.
37
38
39
40 Ross, A. G., Crossan, K. and Juleff, L. (2012). How accurate are VAT registrations as a
41 measure of entrepreneurship? A spatial analysis of Scotland and its regions. *Local
42 Economy*, 27(3): 279-296.
43
44
45
46
47 Ross, A. G., Adams, J. and Crossan, K. (2015). Entrepreneurship and the spatial context: A
48 panel data study into regional determinants of small growing firms in Scotland. *Local
49 Economy*, 30(6): 672-688.
50
51
52
53
54 Sasaki, I., Ravasi, D. and Micelotta, E. (2019). Family Firms as Institutions: Cultural
55 reproduction and status maintenance among multi-centenary shinise in Kyoto.
56
57 *Organization Studies*, 40(6): 793-831.
58
59
60

- 1
2
3 Sasaki, I., Kotlar, J., Ravasi, D. and Vaara, E. (2020). Dealing with revered past: Historical
4 identity statements and strategic change in Japanese family firms. *Strategic*
5
6 *Management Journal*, 41(3): 590-623.
7
8
9
10 Sorenson, O. and Audia, P. G. (2000) The Social Structure of Entrepreneurial Activity:
11
12 Geographic Concentration of Footwear production in the United States, 1940-1989.
13
14 *American Journal of Sociology*, 106: 424-461.
15
16
17 Sternbert, R. and Arndt, O. (2001) The firm or the region: What determines the innovation
18
19 behavior of European firms? *Economic Geography*, 77: 364-382.
20
21
22 Stough, R., Welter, F., Block, J., Wennberg, K. and Basco, R. (2015). Family business and
23
24 regional science: "Bridging the gap". *Journal of Family Business Strategy*, 6(4): 208-
25
26 218.
27
28
29 Vaessen, P. and Keeble, D. (1995) Growth-oriented SMEs in Unfavourable Regional
30
31 Environments, *Regional Studies*, 29, 489-505.
32
33
34 Westhead, P. and Howorth, P. (2007) Types of private family firms: an exploratory
35
36 conceptual and empirical analysis, *Entrepreneurship and Regional Development*, 19:
37
38 405-431.
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Table 1: Variables used in NUTS 2 Regional Clustering

Clustering Variables (EUROSTAT-REGIO)	Variable Labels (ESPON Database Version 2_3)	N	Min.	Max.	Mean	Standard Deviation
Family workers in 2002	FAM_WORK_BOTH_02R	275	.00	50.42	3.76	7.01
Gross Domestic Product in 2000 Purchasing Power Standards (PPS) per head	GDP00PH (GDP in MIO PPS/inhabitants *1000000)	275	4,174.60	54,151.10	19,227.92	7,694.77
Self-employed persons in 2002	SELF_EMP_BOTH_02R	275	5.82	46.16	15.44	8.19
Persons with high education attainment 02	HIGH_EDU_TOTAL_02R	275	5.02	45.84	20.63	8.05
Employed persons in agriculture in 02	NACE_A_BOTH_02R	275	.00	52.17	7.22	9.01
Employed persons in fishing 02	NACE_B_BOTH_02R	275	.00	2.77	.1760	.40
Employed persons in mining/quarrying 02	NACE_C_BOTH_02R	275	.00	11.00	.58	1.22
Employed persons in manufacturing 02	NACE_D_BOTH_02R	275	1.63	36.38	18.80	7.04
Employed persons elect/gas/water supply in 02	NACE_E_BOTH_02R	275	.00	7.08	1.02	.72
Employed persons in construction 02	NACE_F_BOTH_02R	275	3.03	17.88	7.70	2.47
Employed persons in trade/repairs 02	NACE_G_BOTH_02R	275	6.14	21.86	14.30	2.20
Employed persons in hotels/restaurants 02	NACE_H_BOTH_02R	275	.37	23.92	4.23	2.56
Employed persons in transport/storage 02	NACE_I_BOTH_02R	275	2.40	20.39	6.19	1.82
Employed persons in finance. intermediation 02	NACE_J_BOTH_02R	275	.52	10.67	2.81	1.58
Employed persons in real estate/renting 02	NACE_K_BOTH_02R	275	.75	22.71	7.44	3.57
Employed persons in public administration 02	NACE_L_BOTH_02R	275	3.02	36.74	7.45	2.96
Employed persons in education 02	NACE_M_BOTH_02R	275	3.15	13.89	6.94	1.60
Employed persons in health/social work 02	NACE_N_BOTH_02R	275	2.55	22.33	9.46	4.09
Employed persons in community activities 02	NACE_O_BOTH_02R	275	1.21	9.72	4.24	1.40
Employed persons in household services 02	NACE_P_BOTH_02R	275	.00	6.33	.71	.94
Employed persons in extra-territorial bodies 02	NACE_Q_BOTH_02R	275	.00	3.92	.07	.30
Population Density in 2000 (km2)	POPENSITYkm2	275	.00	8.81	.34	.84
Percentage Population Change 1996-2000	PT00 and PT96	275	-25.32	16.28	.59	2.57
Unemployment Rate in 2000	UNRT00	275	1.50	31.00	8.74	5.69

Table 2: Cross tabulations of cluster membership (mean/std. deviation, N=275)

No	Cluster Names and Number of Regions	Family workers	Self-employed	GDP PPS/head	Pop. density	% Pop change	High education	Employed over 65 /Rate	Unemployment /Rate	UAA % of total area 1995-1996
1	SME Regions (58)	2.35	12.79	23,740.10	.21	1.25	18.36	3.32	4.94	47.41
		1.75	5.27	3405.05	.16	1.00	4.13	1.42	1.82	10.76
2	City Regions (60)	.84	11.87	24,000.06	.74	1.46	26.94	4.41	5.31	46.00
		.81	2.78	5812.20	.92	2.51	5.40	2.51	2.58	23.81
3	Capital Regions (4)	.64	12.38	40,494.55	4.85	3.94	29.77	3.60	12.37	26.10
		.29	3.40	17,713.95	3.60	1.98	11.28	2.61	9.45	32.53
4	Diversified Rural Regions (32)	2.83	14.88	18,298.90	.12	.58	18.47	2.07	11.93	56.93
		2.10	6.18	2,248.34	.09	1.21	6.21	2.07	5.44	13.61
5	Mixed Economy Regions (41)	3.14	14.95	9,508.75	.13	-.79	14.99	3.53	14.45	55.03
		3.60	5.98	3,743.55	.19	1.42	7.96	2.63	6.59	12.27
6	Coastal Regions (31)	3.99	23.60	17,950.56	.14	1.35	18.99	5.04	9.80	39.32
		4.47	7.91	4,318.33	.16	2.46	8.72	7.12	5.84	14.17
7	Nordic Regions (30)	.64	9.56	20,166.88	.07	-1.37	28.32	5.86	9.27	33.31
		.30	2.78	5,000.33	.08	4.94	5.00	4.47	5.29	23.85
8	Peripheral Regions (19)	25.42	33.49	9,046.02	.07	.07	12.08	14.56	10.17	52.54
		10.82	7.70	4,233.18	.02	1.26	3.56	11.59	3.36	13.79
	NUTS2 regions									
	<i>Sig. Between groups</i>	<i>0.000*</i>	<i>0.000*</i>	<i>0.000*</i>	<i>0.000*</i>	<i>0.000*</i>	<i>0.000*</i>	<i>0.000*</i>	<i>0.000*</i>	<i>0.000*</i>

Source: EUROSTAT-REGIO (Unit: N x 1000 – in persons) – * Owing to statistical rounding of numbers a probability of 0.000 does not mean zero, but that is less than 0.001 [or in other words, significant at $p < 0.001$]

Table 3: Average firm size & cluster membership: the sectoral view (mean/std. deviation), N=246

No	Cluster Names	Mining & Quarrying	Manufacturing	Elect./water/gas supply	Construction	Trade	Hotels/Restaurants	Transport	Real Estate
1	SME Regions	7.31	4.46	4.36	12.38	24.36	21.75	9.41	21.27
		5.18	4.08	2.71	14.05	11.59	6.57	4.14	11.25
2	City Regions	9.14	5.54	2.18	14.35	12.25	10.58	7.51	15.73
		5.52	3.25	.95	7.15	4.54	3.54	2.63	7.28
3	Capital Regions	5.25	18.39	3.20	10.08	28.49	18.47	16.14	21.52
		.00	12.74	1.01	.00	24.28	16.10	16.90	13.73
4	Diversified Rural Regions	12.96	11.10	6.43	26.35	32.84	34.16	13.57	32.32
		5.31	7.20	3.51	5.79	14.85	6.93	4.83	13.36
5	Mixed Economy Regions	5.36	9.72	2.73	25.40	31.99	28.25	21.56	40.23
		4.64	7.81	1.35	12.65	7.91	9.88	11.92	15.29
6	Coastal Regions	9.93	17.06	5.12	24.50	35.41	32.14	32.37	33.65
		5.38	15.60	3.78	12.93	7.20	9.93	16.86	12.54
7	Nordic Regions	11.27	5.28	8.43	19.18	24.17	20.30	19.67	20.78
		8.53	3.15	4.27	12.43	4.99	7.14	33.82	11.72
8	Peripheral Regions	5.76	11.91	1.52	26.81	32.95	29.81	27.86	38.35
		7.37	10.00	1.37	21.43	7.36	11.39	18.38	19.05
N	NUTS2 regions	209	232	182	246	201	201	241	226
	<i>Sig. Between groups</i>	<i>0.000*</i>	<i>0.000*</i>	<i>0.000*</i>	<i>0.000*</i>	<i>0.000*</i>	<i>0.000*</i>	<i>0.000*</i>	<i>0.002</i>

Source: EUROSTAT-REGIO (Average firm size – i.e. persons employed/no of local units per NACE C to K in 2002)

– * Owing to statistical rounding of numbers a probability of .000 does not mean zero, but that is less than 0.001 [or in other words, significant at $p < 0.001$]

Table 4: Apportioned business demography indicators by firm size class at NUTS 2 level, N=140

No	Cluster Names	Mean	No of NUTS 2 Regions	Countries (and No of NUTS 2 Regions)	Std. Deviation	Minimum	Maximum
1	SME Regions	2.68	17	IT (8), NL (8), UK (1)	2.92	.22	11.22
2	City Regions	1.53	40	CZ (1), ES (1), HU (1), NL (4), SE (1), UK (32)	2.49	.18	9.89
3	Capital Regions	.97	2	ES (1), UK (1 – Inner London)	1.24	.09	1.85
4	Diversified Rural Regions	1.79	10	IT (8), PT (1), UK (1 – Northern Ireland)	1.52	.29	4.56
5	Mixed Economy Regions	6.98	19	CZ (7), EE (1), HU (6), LT (1), LV (1), RO (1), SI (1), UK (1 – North Eastern Scotland)	6.28	.20	28.41
6	Coastal Regions	2.09	25	ES (16), IT (3), PT (6)	1.90	.17	7.30
7	Nordic Regions	5.55	20	DK (1), FI (4), NO (7), SE (7), UK (1 – Highlands and Islands)	7.12	.15	27.97
8	Peripheral Regions	1.58	7	RO (7)	.27	1.17	1.93
N	Total	3.10	140		4.43	.09	28.41
	<i>Sig. Between groups</i>	<i>0.000*</i>					

Source: EUROSTAT-REGIO (Firm size class 20 employees or more – i.e. No of Local Units Total%/C_KsizeclassRate in 2002) – * Owing to statistical rounding of numbers a probability of 0.000 does not mean zero, but that is less than 0.001 [or in other words, significant at $p < 0.001$]

Table 5: Cluster Profiles for the EU-27 (including Switzerland and Norway)

No	Cluster Names and No of Regions	NUTS 2 Examples	'HIGHER THAN AVERAGE'	'LOWER THAN AVERAGE'
1	SME Regions (Total: 58) [AT 8; CH 3; DE 26; FR 2; IE 1; IT 9; NL 8; UK 1]	Emilia Romagna, Tuscany, Hannover, Salzburg or Bologna	Objective 2 regions; Utilisable agricultural area; GDP/h; family workers; agriculture; employment in manufacturing	Average firm size; unemployment
2	City Regions (Total: 60) [AT 1; BE 6; CH 4; CZ 1; D3 5; ES 1; FI 1; FR 1; HU 1 IE 1 NL 4; SE 1; SK 1; UK 32]	Vienna, Zurich or Prague	Objective 2 regions; population density, high education, GDP/h; employment in financial intermediation/public administration/community activities	Self-employment; family workers; unemployment; agriculture; average firm size; average firm size; firm size class 20+
3	Capital Regions (Total: 4) [BE 1; ES 1; LU 1; UK 1]	Inner London or Brussels	Objective 2 regions; population density; population change; GDP/h; unemployment; high education; employment in financial intermediation/public administration/community activities	Utilisable agricultural area; agriculture; mining; manufacturing; family workers; average firm size
4	Diversified Rural Regions (Total: 32) [BE 4; FR 18; IT 8; PT 1; UK 1]	Bretagne, Basilicata, Alentejo or Northern Ireland	Utilisable agricultural area; high education; unemployment; family workers; self-employment; employment in public administration/household services; average firm size	Firm size class 20+
5	Mixed Economy Regions (Total: 41) [BG 6; CZ 7; EE 1; GR 1; HU 6; LT 1; LV 1; PL 12; RO 1; SI 1; SK 3; UK 1]	West Macedonia or North Eastern Scotland	Objective 1 and border regions; Utilisable agricultural area; unemployment; family workers; self-employment; average firm size; firm size class 20+; agriculture; employment in mining, manufacturing, electricity/water/gas supply and transport	High education, GDP/h; negative population change; household services
6	Coastal Regions (Total: 31) [CY 1; ES 16; FR 1 GR 4 IT 3; PT 6]	Aegean Islands, Andalucía, Cyprus or Acores	Self-employment; family workers; employment in the fishing industry, hotels/restaurants, household services, trade and construction; over 65 year old employment; average firm size	Utilisable agricultural area; high education
7	Nordic Regions (Total: 30) [DE 9; DK 1; FI 5 NO 7; SE 7; UK 1]	UK Highlands and Islands or Dresden	High education; over 65 year old employment; firm size class 20+; employment in community activities/health	Utilisable agricultural area; population density; average firm size; self-employment; family workers; household services; negative population change
8	Peripheral Regions (Total: 19) [GR 8; PL 4; RO 7]	Epirus, Crete, Thessaly, Podlaskie or Nord-Est	Objective 1 and border regions; Utilisable agricultural area; self-employment; family workers; over 65 year old employment; agriculture; employment in electricity/water/gas supply	Population density; high education; GDP/h; employment in financial intermediation/public administration/community activities, transport and trade; firm size class 20+

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Figure 1: A family firm-region conceptual framework

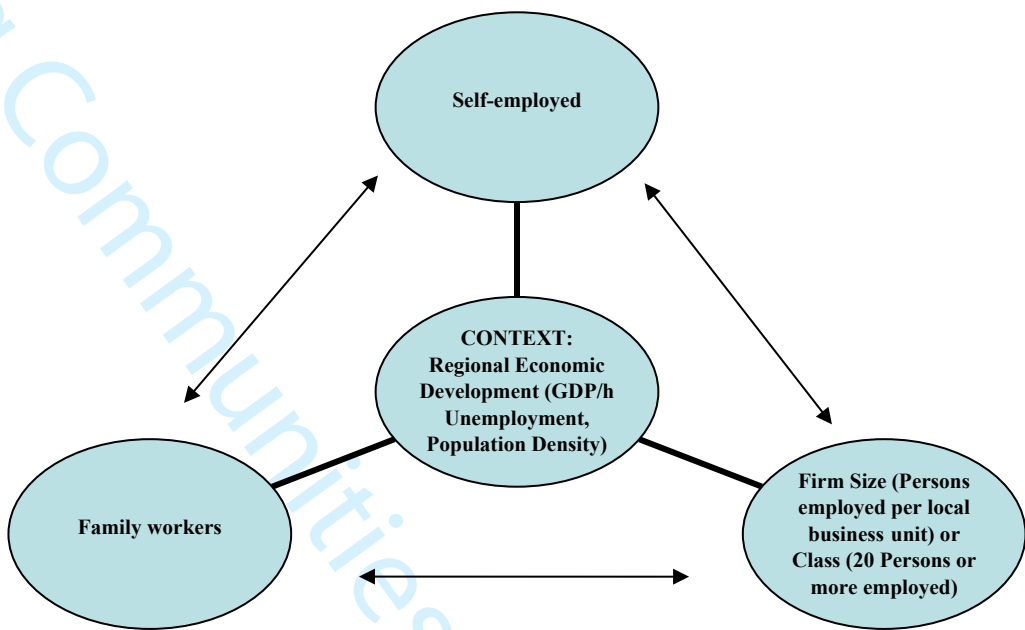


Figure 2: The impact of firm type prevalence on regional economic performance (standardized z-scores)

