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## The diversity of entrepreneurial regimes in Europe

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# **The Diversity of Entrepreneurial Regimes in Europe**

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# The Diversity of Entrepreneurial Regimes in Europe

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**Abstract.** Although institutional reforms are necessary to increase rates of entrepreneurship in European countries, we argue that one-size-fits-all reform strategies are unlikely to be successful. Reform strategies must be informed by a better knowledge of the varieties of European capitalism and the institutional complementarities that drive these differences. We investigate these issues by gathering a number of potentially relevant entrepreneurial regime measurements as well as indicators of formal and informal institutions based on data available from the 2000s onward. We employ principal component analysis, factor analysis and cluster analysis to examine how 21 European countries and the United States cluster in the entrepreneurial and institutional dimensions. Our results reveal six country clusters, or entrepreneurial regimes, with a distinct bundle of entrepreneurial characteristics and institutional attributes. The main implication is that different reform strategies are appropriate to promote entrepreneurship and economic growth in European countries in different clusters.

*JEL* Codes: L5; M13; O31; P14.

*Keywords:* Entrepreneurship; Innovation; Institutions; Regulation.

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# 1 Introduction

Since Joseph Schumpeter's (1934) seminal work, the view that an economy's long-term growth depends on its ability to exploit innovations has gained much traction (Cohen 2010). The function of creating these innovations is typically ascribed to the entrepreneur, who Schumpeter and others came to see as the *primus motor* for economic growth (Henrekson and Stenkula 2007: 23). Entrepreneurs do not operate in a vacuum, however; they are constrained and enabled by their institutional environment (Estrin et al. 2013; North 1990; Aldrich 2011). Formal and informal institutions affect and incentivize individual behavior, thereby influencing the extent and productive character of an economy's entrepreneurship and, consequently, its economic development (Baumol 1990; Mueller and Thomas 2000; Hwang and Powell 2005; Acs et al. 2008; Acemoglu and Robinson 2012; Stenholm et al. 2013; Urbano and Alvarez 2014).

As the European Union struggles with economic problems, the necessity of institutional reforms across its 28 member states is becoming increasingly obvious, with the goal of increasing economic efficiency and enabling a transition to a more entrepreneurial economy (Audretsch 2007; Audretsch and Thurik 2000). A best-practice reform approach is to identify a country (whether a member or non-member) that appears to be performing well in a particular institutional dimension and to promote and adopt this institution in other countries (Rodrik 2008). However, such an approach neglects the fact that each country has evolved its particular bundle institutions, many of which are complementary to one another (Hall and Soskice 2001). For example, excessive taxation of stock options gains effectively bars the development of a vibrant venture capital industry (Henrekson and Sanandaji 2014a). Reforms that fail to account for institutional complementarities risk rendering the overall institutional system less efficient (Braunerhjelm and Henrekson 2015: 26). This challenge may explain, for example, why European imitation of policies aimed at stimulating venture capital has been unsuccessful (European Commission 2011, 2013).

Institutional complementarities are central to the logic permeating the varieties of capitalism approach to comparative politics (Hall and Soskice 2001). Given their existence, one cannot simply compensate for a major weakness in one institutional element by improving other elements. Rather, a prudent and viable reform approach is to identify and eliminate major institutional bottlenecks (Acs et al. 2014b). Furthermore, complementarities imply that good performance may be associated with multiple institutional forms (Amable 2003: 5; Calmfors and Driffil 1988; Freeman 2000).

In this paper, we will analyze the present entrepreneurial climate across EU member states and identify institutions that are potentially relevant to this climate. Studies with a similar focus have been conducted previously. Notably, the national system of entrepreneurship approach, pioneered by Acs et al. (2014a), takes a step in this direction by emphasizing the "dynamic, institutionally embedded interaction between entrepreneurial attitudes, activities, and aspirations, by individuals, which drives

the allocation of resources through the creation and operation of new ventures.”<sup>1</sup> Our approach is similar, as we combine formal macro-level institutional features with informal institutions, including individual attitudes toward entrepreneurship. However, rather than ranking national economies in terms of how entrepreneurial they are, we focus on varieties of institutional forms and how they relate to entrepreneurial regimes.

We study 21 European countries and include the United States as a point of comparison because it is typically perceived as a successful entrepreneurial society. We identify a number of potentially relevant entrepreneurship indicators as well as potentially relevant formal and informal institutions. To identify institutional complementarities, we employ two techniques that have been previously used in the varieties of capitalism literature (e.g., Amable 2003): we use *principal component analysis* to construct orthogonal dimensions from the measures at hand and employ *cluster analysis* to determine how countries cluster in these dimensions.

Our results are consistent with previous typologies suggested in the varieties of capitalism literature, with a number of important differences. The first cluster consists of the United States, the United Kingdom, and Ireland. Despite striking similarities in their formal and informal institutions, the countries actually differ in their entrepreneurial regimes. The Nordic countries are similar across all institutional dimensions and in their entrepreneurial regime. Contrary to the previous varieties of capitalism literature, however, wide variation exists across continental Europe. Switzerland, the Netherlands and Austria form a group with an entrepreneurial regime akin to the Nordic regime but with another bundle of institutions, whereas Belgium and France form another cluster with similarities in all of the examined dimensions. Germany, however, clusters with the Mediterranean countries. All the Eastern European countries form a final group, as they are relatively similar across all dimensions.

The contribution of this study is twofold. First, we add to the varieties of capitalism typology by considering institutions that have been identified as important determinants of the entrepreneurial climate. Second, as a consequence of the first point, we highlight the presence of varieties of entrepreneurial regimes in Europe. Hence, a one-size-fits-all policy approach is unlikely to be successful in promoting European entrepreneurship. For example, although considering the U.S. experience as a reference point may assist in formulating a reform strategy for Ireland and England, differences in the institutional structure in other European countries highlight the need for strategies that are explicitly tailored for those countries.

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<sup>1</sup> Braunerhjelm and Henrekson (2015: 7) consider this approach important but ultimately insufficient, as “the institutional variables that are used, such as technology absorption, gender equality, R&D spending, and depth of capital markets, are not institutional variables; they are outcomes resulting from the evolution of the economic system in a given institutional setup.” Issues related to data availability raise similar concerns for the current study, as some of our measures are outcome variables rather than direct measures of the institutional structure. Focusing only on direct measures would come at the cost of excluding potentially important determinants of entrepreneurial activity, such as educational attainment. To address this concern, we check the robustness of our findings by excluding the outcome-related indicators. We return to this issue in section 4.

## 2. Institutional complementarities and entrepreneurial regimes

North (1991: 97) describes institutions as the “humanly devised constraints that structure political, economic and social interaction.” Formal institutions are what Williamson (1998, 2000) describes as rules of a political, judiciary and bureaucratic type, whereas informal institutions are the customs, traditions, and norms that permeate society. Although much is known about the workings of specific institutions and how they affect actor incentives in a given setting, research on the process by which countries change their institutional setup remains insufficient.

Institutional change can be regarded as a result of competition, in which some institutional forms persist and spread because they outperform others (cf. Tiebout 1956; Hodgson, 1999, 2004; Ochel 2003). According to this efficiency hypothesis, countries “copy” institutions that provide competitive advantages (Blyth et al. 2011; Aydin 2007; La Porta et al. 2008). Substantial political reforms, however, are typically “delayed”; that is, they are implemented not when rational and informed observers expect them to enhance welfare but substantially later (Drazen 1996). This status quo bias may arise because of uncertainty about the benefits of reform (Fernandez and Rodrik 1991) or because existing institutions become entrenched when powerful elites gain advantage from them (Nelson and Winter 2002; Acemoglu and Robinson 2012).

A growing body of literature also highlights a path dependency in the institutional setup of countries, which draws attention to the importance of historical context (e.g., Sokoloff and Engerman 2000; Acemoglu et al. 2001; Giuliano and Nunn 2013). For instance, research has shown that stringent labor market regulations persist despite being economically inefficient (Alesina et al. 2010). Differences in the current size of pension systems among European countries have been linked to divergent patterns in historical family organization that date back to the Middle Ages (Reher 1998; Galasso and Profeta 2011; Bisin and Verdier 2001; Nunn 2009). When institutions do change, it can result from endogenous processes, such as change in educational attainment (Murtin and Wacziarg 2014), or from critical junctures that serve as exogenous determinants of institutional change (Katznelson 1997). Notably, real-world institutional change can also be simultaneously characterized by deliberate design processes and by unintentional, spontaneous evolutionary processes (Hayek 1973, 1978; Knight and Johnson 2007; Kingston and Caballero 2009).

However, European leaders have evidently made a conscious choice to turn the European Union into an institutional convergence club. Its member states’ acceptance and implementation of the *acquis communautaire* have led to institutional convergence in important areas (Plümper et al. 2006; Aydin 2007; Schneider and Häge 2008). Nevertheless, the European Union remains composed of 28 distinct nation states that differ in institutional setups and economic outcomes.

The varieties of capitalism perspective was established by the seminal work of Hall and Soskice (2001: 8–9). Their comparative approach to capitalism identifies institutional complementarities as a

main driver of the differences between the varieties of capitalism (Hall and Soskice 2001: 17–18; Aoki 1994; Ebner 2010). Institutions are complementary if the presence or efficiency of one institution increases the returns from or efficiency of the other. Conversely, they are substitutable if the absence or inefficiency of one institution increases the returns of using the other (Voigt and Kiwit 1998; See Ebner 2010 for a formal expression). The point is that “nations with a particular type of coordination in one sphere of the economy should tend to develop complementary practices in other spheres as well” (Hall and Soskice 2001: 18). Therefore, institutional practices should not be randomly distributed across nations. Rather, we should be able to observe country clustering in the dimensions that divide varieties of capitalism from one another (cf. Hözl 2006; Page 2006; Pagano 2011).

The existence of institutional complementarities implies that viable policy changes must be compatible with existing institutional patterns. In Ebner’s view (2010), institutional change will be incremental, as it must contain a wide array of linkages among institutional subsystems. However, complementarity may also mean that a specific change will not stay localized, but instead have effects that extend throughout the institutional system. The fear of such snowballing can explain the existence of institutional inertia, as even piecemeal changes are blocked for fear that they will lead to major changes (Amable 2003: 7; Aoki 2001).

In their original formulation, Hall and Soskice (2001) emphasize coordination and the presence of institutions that enable (i) the exchange of information, (ii) monitoring of behavior, and the (iii) sanctioning of defections from cooperation, and “it is for the presence of such institutions that we look when comparing nations” (Hall and Soskice 2001: 9–11; cf. Ostrom 1990). These researchers identify a core distinction between two types of political economies: *liberal market economies*, in which firms coordinate their activities primarily via firm hierarchies and competitive market arrangements (cf. Williamson 1985), and *coordinated market economies*, in which coordination relies more heavily on non-market relationships.<sup>2</sup> Other varieties of institutional structures have been considered and examined before and since their work (see, e.g., Esping-Andersen 1990; Albert 1991; Amable et al. 1997; Amable 2003).

Previous research suggests that entrepreneurship has numerous important prerequisites, such as education (Kuratko 2005; Béchar and Grégoire 2005), the labor market (Poschke 2013), and taxes (Cullen and Gordon 2007). Although both top-down and bottom-up convergence may have occurred over the years, countries still differ substantially in their institutional setup. In a cross-country comparison, Amable (2003) considers five distinct dimensions and finds several varieties of capitalism. Four models in his typology are relevant for the countries considered here, and we briefly describe them below.

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<sup>2</sup> For the case of coordinated market economies Hall and Soskice (2001: 11) add a fourth type of institution: Deliberative institutions that encourage relevant actors to engage in collective discussion and reach agreements.

In *the market-based model*, akin to Hall and Soskice (2001)'s liberal market economy, the state gives a high degree of autonomy to agents. The United States and the United Kingdom are typical examples. The labor market is rather deregulated, labor is mobile, and trade unions are not influential. The research and education system is based on competition, whereas property rights and patents are well protected to promote innovation. Minority shareholders are well protected, and venture capital is important to the financial market of the liberal market economy. In comparison, *the social democratic model*, commonly found in the Scandinavian countries, is more egalitarian with respect to education and wage setting, with more centralized wage bargaining, while the banking system is highly concentrated, and social protection is strong. *The continental European model* (e.g., Germany, France) shares many of these traits but is further characterized by strong institutionalization of the rules regulating the labor force, whereas social protection primarily concerns employment. Finally, *the Mediterranean model*, which primarily characterizes the South European countries, provides more moderate levels of social protection with high investments in poverty alleviation and pensions. External shareholders are not well protected, and venture capital is limited. Education expenditure is also low in this model.

Amable's (2003) groups constitute an important benchmark for our analysis. As argued earlier, a first step in identifying viable political and institutional change of importance to entrepreneurship involves better understanding the varieties of capitalism and the entrepreneurial climate that currently characterizes the European Union and its member states. To achieve this objective, we analyze the present entrepreneurial climate across EU member states and the institutions that are potentially relevant to this climate. More specifically, in the next section, we study five areas of interest, including a number of entrepreneurial regime characteristics (section 3.1), as well as four sets of institutional variables that potentially influence entrepreneurship: economic, financial and political institutions (3.2); labor market institutions and social spending (3.3); institutions of knowledge and education (3.4); and informal institutions (3.5).

The institutional environment dimensions are selected based on two criteria. First, we gather information on a set of institutional indicators that have been shown to promote entrepreneurial activity in the previous literature (see, e.g., Acs et al. 2014a; Estrin et al. 2013; Henrekson 2014; Heckhavarria and Reynolds 2009). Second, we would like our choice of dimensions to reflect the four hierarchical levels of social analysis defined in Williamson (2000). Informal institutions (3.5) map to the highest (social embeddedness) level, while the economic, financial and political institutions (3.2) correspond to the second (institutional environment) level.<sup>3</sup> Similarly, labor market institutions and social spending (3.3) and institutions of knowledge and education (3.4) can be mapped to the third

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<sup>3</sup> One could argue that political, economic and financial institutions include indicators that also concern the third level in Williamson's model. However, because of the limited number of indicators on the second level (i.e., the QoG indicators and a few indicators from financial institution databases, such as property rights protection) and the overlap between these three dimensions (La Porta et al. 1999), we combine these three dimensions under one heading.



(governance) level, while the entrepreneurial regime characteristics that we consider (3.1) correspond to the lowest (market) level in Williamson's analysis.

The empirical analysis of this paper is divided into two parts. In section 3, we consider each of the aforementioned areas separately, and in section 4, we synthesize the results by considering them simultaneously.

### **3 The Empirical Evidence**

To undertake our analysis, we employ two techniques that have previously been used in the varieties of capitalism literature (e.g., Amable 2003). *Principal component analysis* is used to construct orthogonal dimensions from the measures at hand, and *cluster analysis* is used to identify how countries cluster in these dimensions.

Principal component analysis reduces the dimensionality of a dataset with a large number of interrelated variables, with minimal information loss (Jolliffe 2002). This method produces a minimum number of uncorrelated and orthogonal principal components—linear combinations of weighted observed variables that explain a maximum amount of variance in the indicators. Traditionally, components with an eigenvalue equal to or greater than 1 are retained, but given the scope of our task, we are occasionally stricter and choose higher benchmarks. The components are rotated to facilitate interpretation (Abdi and Williams, 2010).

Meanwhile, cluster analysis enables us to identify homogenous groups of observations with maximal within-group similarity combined with maximal between-group dissimilarity (Gatignon 2010: 295). In this section, we employ these two techniques to define the five areas of interest. Notably, the area to which an indicator belongs is sometimes unclear, as pension funds, for example, could be considered either labor market institutions or financial institutions. However, because all indicators are evaluated together in section 4, such choices do not prompt concerns regarding the overall conclusions that can be drawn from the study.

To conserve space, we do not provide details regarding the variables included in this section. An overview of the data sources, the content of the variables, the ways they are measured and their descriptive statistics can be found in Tables A.1 and A.2 in the appendix.

#### **3.1 Entrepreneurial Regimes**

Today, the importance of entrepreneurship is generally undisputed (Baumol 2010; Lazear 2005; Caree and Thurik 2010), but its definition and measurement are topics of considerable debate. While many regional policies aim to increase the prevalence of new and small firms (e.g., Fischer and Nijkamp 1988; Sternberg 2012), “most small businesses are best described as permanently small rather than as nascent entrepreneurial firms” (Henrekson and Sanandaji 2014b: 1760; cf. Nightingale and Coad

2014). Researchers increasingly emphasize the need to focus on measures that adequately capture innovative and growth-oriented entrepreneurship (Shane 2009; Stam et al. 2012; Henrekson and Sanandaji 2014b) and on the distinction between opportunity and necessity entrepreneurship (i.e., whether one becomes an entrepreneur because of a good business idea or other considerations, such as a lack of a better means of earning a living (Vivarelli 2013)).<sup>4</sup>

While our empirical approach is informed by the Schumpeterian view of the entrepreneur as an innovator, principal component analysis makes it possible to cast the net wide in regard to what entrepreneurial approximations to consider. In fact, even seemingly “irrelevant” variables can be informative by virtue of their relationship with the other variables. Furthermore, one of the main reasons for undertaking a principal component analysis is to reduce the dimensionality of a dataset to the factors with the most variation across countries. Theory and previous empirical evidence inform our interpretation of these dimensions.

To cover as many countries and variables as possible, we consult the GEM database, which contains a number of indicators meant to capture an economy’s entrepreneurial activities, aspirations, and attitudes. The database covers the period from 2001 to 2014, but coverage differs across countries, years and variables. Some countries have values only in a couple of years for some variables, whereas others have (almost) unbroken time series. To remedy this problem, we compute the variable average over the 2010–2014 period for each country and use this average in the principal component analysis. We complement this with OECD (2015c) data on patents (see Tables A.1 and A.2 in the appendix).

In total, GEM data are available for 25 of the EU-28 countries. No data are available for Bulgaria, Cyprus, and Malta. Because data on some variables in the subsequent steps of our analysis are missing for six other countries (Croatia, Greece, Latvia, Luxembourg, Lithuania and Romania), we exclude them at this stage. In total, this method yields 22 observations for each of the 14 variables included in the analysis, as we include 19 EU-28 countries in the analysis, together with Norway, Switzerland and the United States as points of comparison.<sup>5</sup>

The principal component analysis yields three components with an eigenvalue above one. Together, they explain 69.8% of the variation in the data. Table 1 shows how each variable loads onto the three components.

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<sup>4</sup> Empirical research demonstrates that it is not new or small firms per se but rather a fairly narrow group of ambitious entrepreneurs that is important for economic growth (Wong et al. 2005; Stam et al. 2009, 2011). Others emphasize that a positive significant relationship can be observed only between opportunity entrepreneurship and economic development (Carree et al. 2007; Acs 2008; Acs et al. 2008).

<sup>5</sup> The 22 countries included in the analysis are Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, the Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, the United Kingdom and the United States. Repeating the same steps as in 3.1 but without restricting the sample in the described manner yields results that are qualitatively similar. These results are available from the authors upon request.

Table 1. Entrepreneurial regimes: Principal components (eigenvectors).

Name	Comp1	Comp2	Comp3
Entrepreneurial intention	0.336	-0.231	0.180
Established business ownership rate	0.160	0.403	-0.191
Fear of failure rate	0.047	-0.430	-0.142
Growth expectation early-stage	0.268	0.042	0.365
Improvement-driven opportunity entrepreneurship	-0.242	0.302	0.354
International orientation early-stage entrepreneurial activity	0.012	-0.143	0.495
Ln(patents)	-0.263	0.081	-0.217
Nascent entrepreneurship Rate	0.401	0.118	0.091
Necessity-driven entrepreneurship	0.305	-0.315	-0.233
New business ownership rate	0.348	0.306	-0.099
New product early-stage entrepreneurial activity	0.119	-0.238	0.426
Perceived Capabilities	0.293	0.218	-0.164
Perceived opportunities	-0.142	0.364	0.284
Total early-stage entrepreneurial activity	0.406	0.189	0.020
Eigenvalue	4.800	3.101	1.876
Variance explained	0.343	0.222	0.134

The first principal component has an eigenvalue of 4.80 and explains 34.3% of the variance in the data. The variables with the highest positive loadings are *Total early-stage entrepreneurial activity*, *Nascent entrepreneurship Rate*, *New business ownership rate*, *Entrepreneurial intention*, and *Necessity-driven entrepreneurship*. The variable loadings suggest that this component should be considered a measure of the economy's prevalence of nascent entrepreneurial activities, with a higher positive value signifying more activity. The finding that *Necessity-driven entrepreneurship* loads positively but that the variables with the highest negative loadings are *Ln(patents)*, *Improvement-driven opportunity entrepreneurship* and *Perceived opportunities* suggests that the nascent activity along this dimension is necessity-based rather than opportunity-based.

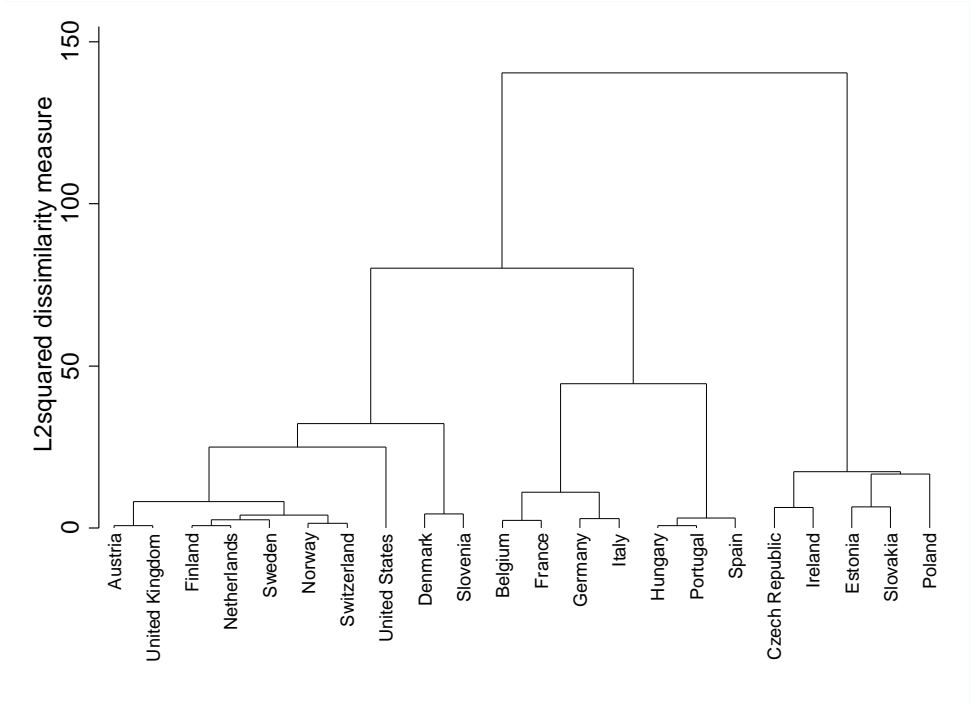
With an eigenvalue of 3.10, the second principal component explains 22.2% of the total data variance. The variables with the highest negative loadings are *Fear of failure rate* and *Necessity-driven entrepreneurship*. The highest positive loadings accrue to *Established business ownership rate*, *Perceived opportunities*, *New business ownership rate*, and *Improvement-driven opportunity entrepreneurship*. This dimension appears to capture a conflict between risk aversion (–) and new and established business activity of an opportunity-driven kind (+).

The third component has an eigenvalue of 1.88 and explains 13.4% of the variance in the data. The three indicators that GEM labels entrepreneurial aspirations (*International orientation early-stage entrepreneurial activity*, *New product early-stage entrepreneurial activity* and *Growth expectation early stage*) have the highest positive loadings, followed by *Improvement-driven opportunity entrepreneurship* and *Perceived opportunities*. Notably, *Necessity-driven entrepreneurship*, together with *Ln(patents)* and *Established business ownership rate*, has the greatest negative loadings. This

result suggests that the dimension captures a tradeoff between aspirational and opportunity entrepreneurship (+) and a necessity entrepreneurship characterized by many patents and established businesses (-).

Notably, the opportunity entrepreneurship measures contribute to defining each of the three dimensions described above. In the first dimension, they are on the negative side in a dimension that can be described as necessity-based nascent activity. In the second dimension, new and established opportunity-driven businesses are juxtaposed with high-risk aversion. In the third dimension, a tradeoff between opportunity entrepreneurship and established activities emerges. Overall, this result suggests that opportunity-driven entrepreneurship can occur in both new and incumbent businesses (dimension 2) and can be missing in both nascent activities (dimension 1) and established activities (dimension 3).

Figure 1. Entrepreneurial regimes: Dendrogram from cluster analysis.



We refer the reader to Figures A1 and A2 in the appendix to observe how the countries score in these three dimensions. Here, we focus on how countries cluster when we consider all three dimensions simultaneously. We therefore undertake cluster analysis using the Ward algorithm to group countries according to predicted values from the first three principal components. The result of this exercise is displayed as a dendrogram in Figure 1.

On the far left, we observe a group of countries (Austria, the United Kingdom, Finland, the Netherlands, Sweden, Norway and Switzerland) that all score negatively in the first dimension and positively in the second dimension. Hence, this group can be rather easily categorized as having relatively little necessity-based nascent entrepreneurship and relatively greater opportunity

entrepreneurship in new and incumbent businesses. The United States is close to this group but is noteworthy for having a positive score in the first dimension, which indicates high levels of nascent/necessity entrepreneurship *and* opportunity entrepreneurship. Meanwhile, Denmark and Slovenia also have negative scores in the first dimension, but their high positive scores are notable in the third dimension, with high levels of aspirational and opportunity entrepreneurship. More distantly, we find a group of countries united by their (sometimes modest) negative scores in the second dimension. In this group, Belgium, France, Germany and Italy also have a negative score in the first dimension, whereas Hungary, Portugal and Spain share a high negative score in the third dimension. Finally, a more distant group consists of countries that all have high positive scores for the first dimension, indicating strong necessity-based nascent activity: the Czech Republic, Ireland, Estonia, Slovakia and Poland.

### **3.2 Political, economic and financial institutions**

The importance of financial, economic and political regulatory institutions for entrepreneurship and economic growth is well established. First, the evidence indicates a positive effect of free-market institutions on important variables such as wealth and economic growth (Berggren 2003; Doucouliagos and Ulubasoglu 2006; De Haan et al. 2006). Notably, the importance of institutions in protecting ownership and providing a “rule of law” for society has been convincingly demonstrated (North 1990; Baumol 2002; Rodrik et al. 2004; Acemoglu and Robinson 2012).

Gordon (2004) and Bosma and Harding (2007) claim that growth differences between the United States and Europe are due to differences in the quality of regulation. Excessive product market regulations deter entry, reduce firm growth and impede aggregate growth and productivity (Djankov et al. 2007; Gentry and Hubbard 2000; Nicoletti and Scarpetta 2003; Arnold et al. 2008; Ciccone and Papaionnou 2006; Ardagna and Lusardi 2010). Costs associated with regulatory compliance are particularly damaging to new and small firms (Glaeser and Kerr 2009; Fonseca et al. 2001; 2007), and the positive effects associated with skills (education) are considerably weaker in more regulated economies, particularly for opportunity-based entrepreneurship (Ciccone and Papaioannou 2006; Ardagna and Lusardi 2009; Klapper and Love 2011). The tax system also has important consequences for the supply and character of entrepreneurship, although four principal channels can be identified (Braunerhjelm and Henrekson 2015: 14-15; see also Henrekson and Stenkula 2010; Stenkula 2012; Henrekson and Sanandaji 2016).<sup>6</sup>

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<sup>6</sup> The four channels are (i) an absolute effect, whereby an absolute increase in the taxation of entrepreneurs lowers the supply and effort of potential entrepreneurs by lowering the expected after-tax reward (see, e.g., OECD 1998); (ii) a relative effect, whereby taxation alters the relative return of different activities, which can positively influence some forms of entrepreneurial activities in the economy; (iii) an evasion effect, where one decides to become an entrepreneur or to be self-employed in order to exploit opportunities that decrease the tax burden, such as underreporting incomes or overstating costs (Robson and Wren 1999; Engström and Holmlund 2009); and (iv) an insurance effect, as proportional taxation with full loss offset may

Table 2. Political and economic institutions: Principal components (eigenvectors).

	Comp1	Comp2	Comp3	Comp4
FI legal structure and property rights protection	0.299	-0.102	0.082	-0.059
QoG Rule of law	0.295	-0.127	0.034	-0.046
QoG Regulatory quality	0.295	0.107	0.001	-0.125
QoG Control of corruption	0.295	-0.142	0.048	0.010
QoG Government effectiveness	0.293	-0.129	0.006	-0.044
DB trading across borders	0.258	0.088	0.012	0.104
DB paying taxes	0.250	0.054	-0.043	-0.031
DB starting business	0.237	-0.031	-0.204	-0.089
DB resolving insolvency	0.234	-0.041	-0.239	0.142
FI access to sound money	0.223	0.025	-0.126	0.417
DB construction permits	0.230	0.047	0.140	0.315
FI freedom to trade internationally	0.215	0.082	-0.251	0.129
DB enforcing contracts	0.208	-0.016	-0.028	-0.382
FI regulation of credit, labor and business	0.192	0.334	-0.049	-0.258
DB getting electricity	0.190	-0.183	0.346	0.416
DB getting credit	0.147	0.474	0.104	-0.281
QoG Political Stability	0.135	-0.418	0.127	-0.401
DB registering property	0.130	0.157	0.527	-0.019
DB protecting minority investors	0.059	0.245	-0.529	0.093
FI small size of government	-0.021	0.524	0.290	0.113
Eigenvalue	10.264	2.078	1.728	1.224
Variance explained	0.513	0.104	0.086	0.061

We draw on three data sources to examine these institutions. First, we use the World Bank's Doing Business Database (DB), which measures regulations applying to SMEs through their life cycle, and calculate measures of business regulations and their enforcement across 189 economies. Second, we use the Economic Freedom of the World index (FI), a commonly employed index jointly published by the Fraser Institute and the Cato Institute, with five subcomponents that reflect a country's institutional quality with respect to a functioning market economy. Finally, we use data from the Quality of Government (QoG) Institute, which is devoted to the study of government institutions. For each of the variables included, we take averages over the period 2000-2009<sup>7</sup> (see Tables A.1 and A.2 in the appendix).

encourage risk taking and thereby stimulate entrepreneurship (Domar and Musgrave 1944). By contrast, a progressive tax system with imperfect loss offset is more likely to discourage entrepreneurship (Gentry and Hubbard 2000; Cullen and Gordon 2007).

<sup>7</sup> This time period is chosen because the Quality of Government indicators are available only through 2010. However, the institutional variables are likely to change more slowly than the entrepreneurship indicators. Therefore, this approach should not prompt any concerns regarding the results presented in section 4.

Principal component analysis reveals four components with an eigenvalue larger than 1, as shown in Table 2. Together, these components explain 75.4% of the variation in the data, but the first component singlehandedly explains more than half of the total data variation.

The first component has an eigenvalue of 10.3 and explains 51.3% of the variation in the data. Nearly all variables point in the same direction along the first axis, indicating the existence of a “size effect” (Escoffier and Pagès 1998). The two variables with the highest positive loadings are *FI legal structure and property rights protection* and *QoG Rule of Law*. We interpret this to mean that countries are primarily differentiated according to the general quality of their legal systems.

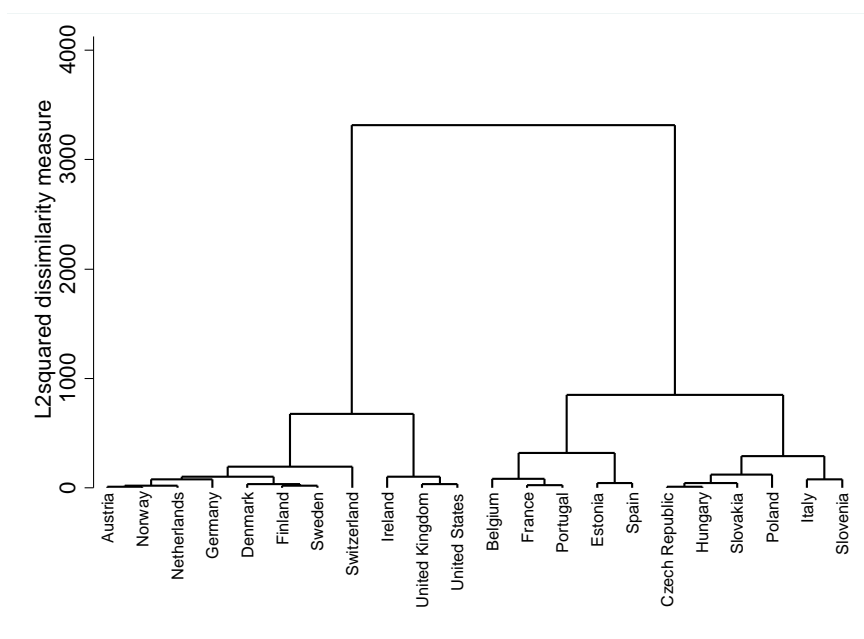
The second component has an eigenvalue of 2.1 and explains a more modest 10.4% of the variation. Interestingly, the variable *FI small size of government* has the highest positive loading, whereas *QoG Political Stability* has the highest negative loading. A possible interpretation is that a state’s scope and scale must be sufficient to maintain political stability.

The third dimension has an eigenvalue of 1.7 and explains 8.6% of the variation. This dimension loads highest on the positive side in *DB registering property* and on the negative side in *DB protecting minority investors*, suggesting a potential tradeoff between the protection of minority investors and the ease by which property can be registered. Finally, the fourth component, with an eigenvalue of 1.2, explains 6.1% of the variation and exhibits its highest positive loading for *FI access to sound money*, in contrast to *QoG Political Stability*, which again shows the highest negative loading.

Figures A3 and A4 in the appendix show countries’ representations in the first and second factorial planes, respectively. The results of the cluster analysis are displayed in Figure 2, which confirms the importance of the first dimension, as countries cluster into groups primarily based on how they score in this dimension. The left-hand side in the dendrogram shows the group of countries that scored highest in this dimension and that can thus be described as having high-quality legal systems. All countries in this group are Western European, except the United States. Of this group, Ireland, the United Kingdom and the United States are prominent as having high scores in the second dimension, suggesting that these countries have good legal systems but also that their smaller governments are less politically stable.

On the right-hand side, the larger group can also be divided into two subgroups. The first consists of a group of countries (Belgium, France, Portugal, Estonia and Spain) with moderate scores in the first dimension (and positive scores in the fourth dimension, although they are quite different in magnitude). The second group consists of the bulk of Eastern European countries and Italy, united by their negative scores in the first dimension.

Figure 2. Political, financial and economic institutions: Dendrogram from cluster analysis.



### 3.3 Labor market institutions and social spending

The welfare literature has shown that labor market institutions and social spending are closely related (e.g., Hemerijk 2013, Lindert 2004; Esping-Andersen 1990) and can play a crucial role in determining the level of social security provided. Enterprise formation has been shown to be influenced by economic risks, social risk insurance, unemployment compensation, union power, and labor protection (Kanniainen and Vesala 2005).

Stringent, inflexible labor institutions are an obstacle to entrepreneurial activity that may inhibit creative destruction (Djankov et al. 2002; Desai et al. 2003; Caballero and Hammour (2000) and lower firms' innovative performance (Kaiser et al. 2011; Braunerhjelm et al. 2014; Scarpetta and Tressel 2004). More stringent labor market regulations appear to lead to lower rates of firm entry (Micco and Pagès 2006; Autor et al. 2007; Kugler and Pica 2008) and lower foreign direct investments (Javorcik et al. 2006; Gross and Ryan 2008). By contrast, less regulated labor market institutions increase the flexibility of high-risk entrepreneurial companies and thus increase the likelihood of rapid firm growth (Bartelsmann et al. 2004; Bosma and Levie 2010).

According to Henrekson and Sanandaji (2014), decentralized wage-setting institutions encourage (potential) high-growth firms. Under generous social security systems, people are believed to have little incentive to establish their own businesses (Sinn 1996; Wennekers et al. 2005), although no systematic evidence of this link has been provided (Braunerhjelm and Henrekson 2015). For instance, if job security is closely linked to job tenure, the effect of a generous welfare system may no longer hold. Consider, for example, Denmark's flexicurity model that combines generous welfare systems with weak job security mandates (Andersen and Svarer 2007). In effect, under this model, the



opportunity cost of resigning from a tenured system to pursue self-employment is substantially lower in Denmark than in Sweden, where security is tied to tenure.

The ways in which countries organize their pension systems are also relevant. Pension funds are less likely than business angels or VC firms to channel funds to entrepreneurs, and hence, if individuals are required to maintain a larger portion of their savings in national pension funds, the availability of small business financing will suffer (Braunerhjelm and Henrekson 2015). However, pension funds can provide financial sources for young start-ups. For instance, since 2014, Danish Growth Capital, a government investment, has aimed to improve access to risk capital for entrepreneurs and SMEs by creating a fund-of-funds with pension funds contributing one-third of the fund (OECD 2015a).

To obtain an overview of how labor market and social spending institutions are organized, we use a number of indicators from the OECD database that are potentially relevant for entrepreneurial activity (Kanniaianen and Vesela 2005). Again, we take the country average of the data for the period between 2000 and 2009. We should emphasize here that the replacement rate variables show projected future entitlements for male workers who enter the labor market in 2012 and spend their entire working lives under the same set of rules<sup>8</sup> (see Tables A.1 and A.2 in the appendix).

Table 3. Labor markets and social spending: Principal components (eigenvectors).

	Comp1	Comp2	Comp3	Comp4
Trade union density	0.200	0.270	0.172	-0.344
Regular employment protection legislation	-0.264	0.243	-0.145	-0.129
Temporary employment protection legislation	-0.258	0.224	0.189	-0.120
Pension funds as a percentage of GDP	0.313	-0.019	-0.028	0.418
Low income male worker pension net replacement rate	0.150	0.350	-0.296	0.064
Medium income male worker pension net replacement rate	-0.126	0.348	-0.281	0.308
High income male worker pension net replacement rate	-0.189	0.337	-0.259	0.164
Social spending on family	0.287	0.068	0.114	-0.394
Social spending on health	0.029	-0.217	0.267	0.479
Social spending on housing	0.253	-0.123	0.241	-0.046
Social spending on income	0.239	0.295	-0.027	-0.193
Social spending on labor	0.143	0.384	0.287	0.174
Social spending on old age	-0.389	0.040	0.084	-0.092
Social spending on other	0.322	0.154	-0.050	0.222
Social spending on survivors	-0.397	-0.014	0.235	0.095
Total social spending	-0.118	0.231	0.509	0.070
Social spending on unemployment	0.028	0.283	0.362	0.156
Eigenvalue	4.19	3.50	2.40	2.01
Variance explained	.25	.21	.14	.12

<sup>8</sup> While the pension replacement rates are also available for women, these indicators had a correlation of .99.

The principal component analysis reveals four components with an eigenvalue above 2 (we ignore a fifth component with an eigenvalue of 1.02), together explaining 71% of the variation in the data. Table 3 shows how each variable loads onto these components.

The first component has an eigenvalue of 4.19 and explains 25% of the variation in the data. The variables with the highest positive loadings are *Pension funds as a percentage of GDP* and *Social spending on other*, whereas *Social spending old age* and *Social spending on survivors* have the highest negative loadings. The first dimension hence reveals a tradeoff that countries face when determining how and where to direct their social investments.

The second component has an eigenvalue of 3.50 and explains 21% of the variation. All the highest loading indicators are positive in this component. The finding that it appears to be determined by the three pension replacement rate variables and *Social spending labor* suggests that it captures the extent to which a country's pension and social system caters to the needs of its working population.

The third component has an eigenvalue of 2.40 and explains 14% of the variation in the data, with *Total social spending* and *Social spending on unemployment* having the highest loadings, both of which are positive. Thus, this component largely appears to capture the amount of overall social spending, with a focus on unemployment, in which a higher score indicates a more generous social welfare regime. The fourth component, with an eigenvalue of 2.01, is more difficult to interpret. Whereas trade union density and social spending in family load negatively, social spending on health and the size of pension funds determine the positive side of this component.

Figures A5 and A6 in the appendix reveal how countries score in the four dimensions. In Figure 3, we show how countries are grouped when we use cluster analysis to consider all four dimensions simultaneously. On the right-hand side, the Nordic countries, the Anglo-Saxon countries, Switzerland and the Netherlands form a group that scores particularly high on the first component, suggesting that they prioritize large pension funds and other forms of social spending over social spending on survivors and the elderly.<sup>9</sup> Here, the United States, the United Kingdom, and Ireland are notable for scoring negatively in the second dimension, with lower pension replacement rates than the other countries.

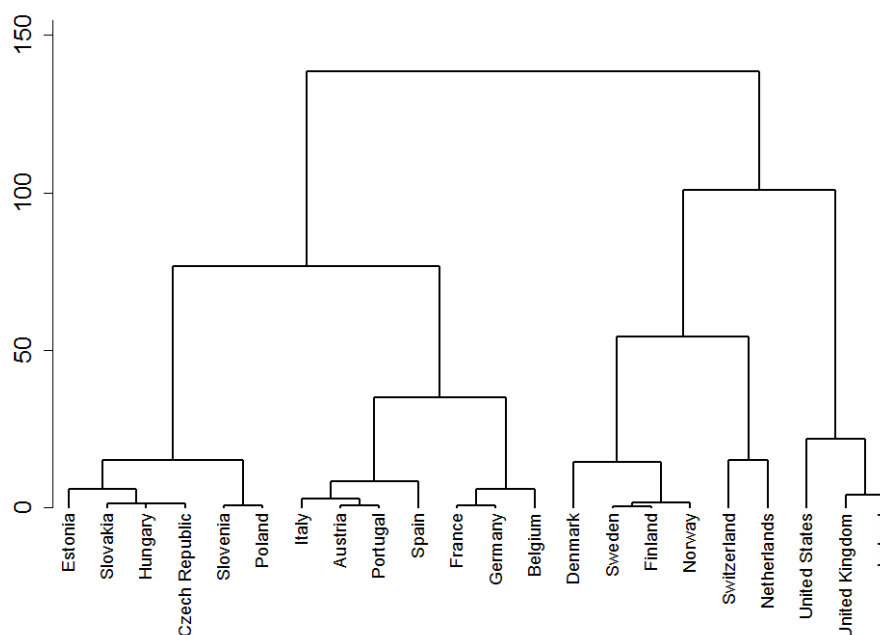
On the left-hand side we find the Mediterranean, Eastern European and Continental European countries, all of which have low scores in the first dimension and hence appear to prioritize social spending on the elderly and survivors. This group clusters into two subgroups primarily based on the fourth component, for which the Eastern European countries have negative scores; thus, these countries perform better in terms of trade union density and social spending on family than in terms of pension funds and social spending on health. The other group is relatively neutral in the fourth

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<sup>9</sup> Please refer to the appendix and Adela et al. (2011) for further explanation of the indicators.

dimension but can be subdivided based on the second dimension: the Mediterranean countries and Austria have higher pension replacement rates than France, Germany and Belgium.

Figure 3. Labor markets and social spending: Dendrogram from cluster analysis.



### 3.4 Institutions of Education and Knowledge

Both the education of individual entrepreneurs and regional and national educational attainment have been shown to be among the strongest drivers of entrepreneurial performance, including self-employment income, firm survival, profits and growth (Van der Sluis et al. 2008; Unger et al. 2011; Millán et al. 2014). For instance, Stam (2015) argues that the presence of a diverse and skilled group of workers may be the most important element of an effective entrepreneurial ecosystem (cf. Lee et al. 2004; Gennaioli et al. 2013; Millán et al. 2014).<sup>10</sup>

As Audretsch et al. (2006) note, innovative activities are typically considered the result of systematic and purposeful efforts to create new knowledge by investing in R&D, followed by commercialization (Griliches 1979; Chandler 1990; Cohen and Levinthal 1989; Warsh 2006), and many models associate R&D with innovation and firm growth (cf. Pakes and Ericson 1998; Klette and Griliches 2000; Romer 1986, 1990; Aghion and Howitt 1992; Segerstrom 1995) and emphasize the importance of knowledge spillovers. Such models predominantly regard the growth process as an R&D race in which a fraction of R&D translates into successful innovations.

<sup>10</sup> However, human capital in an entrepreneurial setting means more than formal education. In their meta-analysis, Unger et al. (2011) find that indicators of human capital that are more closely associated with entrepreneurial tasks are more closely related to entrepreneurial success, underscoring the importance of specific human capital. Pointing to Lazear's (2004) suggestion that entrepreneurs are "jacks of all trades" who need a broad combination of skills to be successful, Van der Sluis et al. (2008) argue that both the level of education and its focus (e.g., whether there are entrepreneurial training programs) are important. Unfortunately, we are unable to capture entrepreneurial-specific training, as the inclusion of these variables would substantially decrease our country coverage.

However, Acs (2009: 328) argues that although “the new growth theory is a step forward in our understanding of the growth process, the essence of the Schumpeterian entrepreneur is missed.” While knowledge-driven innovation is frequently regarded as the outcome of R&D activities, a set of other means of innovation, such as learning by doing, networking and combinatorial insights, suggests a role for entrepreneurs (Braunerhjelm 2011). Scholars such as Acs et al. (2004, 2009) and Braunerhjelm et al. (2010) have attempted to introduce entrepreneurs who innovate but are not involved in R&D activities into growth models

We use a number of indicators from OECD databases to capture the level of education and knowledge in a society (see Tables A.1 and A.2 in the appendix). The results from the principal component analysis are displayed in Table 4, revealing two components with eigenvalues above one. Together, they explain 74% of the variation in the data.

Table 4. Education and knowledge: Principal components (eigenvectors)

	Comp1	Comp2
Expenditures on educational institutions	0.346	0.191
Expenditure per student, primary education	0.360	-0.295
Expenditure per student, secondary education	0.357	-0.331
Expenditure per student, tertiary education	0.403	-0.166
Percentage who attained tertiary degree ages 25–64	0.354	-0.014
Enrollment rate ages 15–19	-0.029	0.566
Enrollment rate ages 20–29	0.235	0.595
R&D expenditure	0.390	0.040
Researcher per head	0.358	0.253
Eigenvalues	4.97	1.73
Variance explained	0.55	0.19

The first component has an eigenvalue of 4.97 and explains more than half of the variation in the data. The high positive loadings of the variables measuring expenditures on formal education and the two research indicators suggest that this component captures the extent of the government’s support for research and formal education. The second component has an eigenvalue of 1.73 and explains 19 per cent of the total variation in the data. The two educational enrollment indicators have the highest loadings on the second component and determine the positive side of this component. This component therefore appears to capture educational enrollment.

Figure 4. Education and knowledge: Dendrogram from cluster analysis.

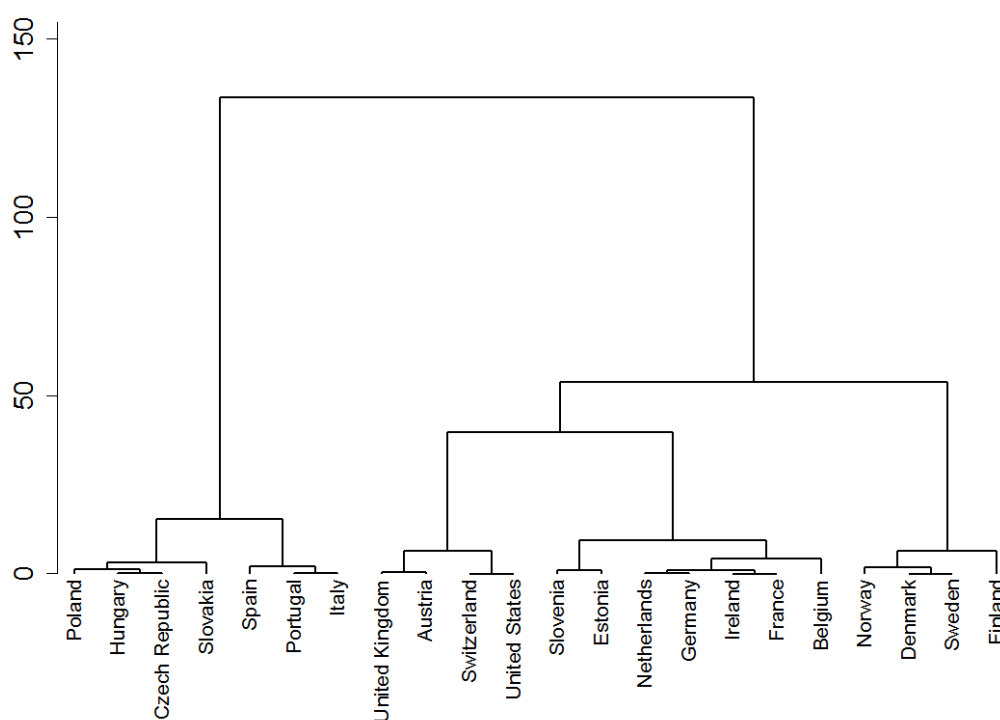


Figure A7 in the appendix shows how countries perform with respect to these two components. Figure 4 shows how countries cluster when these two dimensions are considered together based on predicted values for the two components. Unsurprisingly, the first component for total governmental support is the main driver in determining country clusters; all countries (Nordic, northern Western European, and Anglo-Saxon countries) that have positive values in this dimension are found on the right-hand side, together with Estonia and Slovenia, which exhibit moderate negative scores. Of the countries in this group, the Scandinavian countries are noteworthy with their high educational enrollment.

The left-hand side consists of Mediterranean countries and the remaining Eastern European countries. All of these countries score relatively low in the first dimension but differ in the second dimension, with Eastern European countries showing higher enrollment rates than the Mediterranean countries.

### 3.5 Informal institutions

The idea that informal institutions affect economic performance is not new (Cole et al. 1992; Sabatini 2008, see Maseland 2013 and Pasimeni and Pasimeni 2015 for a discussion). The suggested link between the culture and development of countries dates back at least as far as Weber (1930), who argued that Protestantism provided the moral foundation for a modern market-based economy. The interest in attitudinal factors and cultural beliefs as explanations for persistent differences in institutions and economic performance has recently increased (e.g., Gorodnichenko and Roland 2011; Greif 1994; Tabellini 2008).

Putnam (1993: 167) for example, highlights the importance of social capital, the “trust, norms and networks that can improve the efficiency of society by facilitating coordinated actions.” Such informal institutions can function as substitutes for formal institutions in reducing transaction costs (Arrow 1972; Glaeser et al. 2002) and are deemed highly relevant even in advanced market economies (Dixit 2009). For instance, a large body of literature highlights the importance of social capital for growth and productivity (Glaeser et al. 2002; Sobel 2002; La Porta et al. 1997) and for entrepreneurship and innovation (Brüderl and Preisendörfer 1998; Dakhli and De Clerq 2004). Among these informal institutions, trust is possibly the most important for enabling economic coordination, efficiency and growth (Knack and Keefer 1997; Zak and Knack 2001; Karlan 2005; Sabatini 2008; Pugno and Verme 2012). Cultural factors such individualism, power distance, uncertainty avoidance, masculinity and self-expressive values have also been shown to be drivers of innovation and entrepreneurship (Shane 1993; Hechavarria and Reynolds 2009; Taylor and Wilson 2012).

Another reason to consider informal institutions is that the success of reforms of formal institutions may hinge on them. Intrinsic incentives generated by norms and prosocial preferences can, for example, interact with standard monetary or other extrinsic incentives (Bénabou and Tirole 2003; Sandel 2012), and institutional reforms can prove counterproductive if they destroy the existing benefits of prosocial preferences (Dixit 2009; Ebner 2009; Lundström and Stevenson 2005). Dixit (2009: 919) notes that one important requirement for shifting an institutional equilibrium is that the new institutions interact well with existing institutions, as attested by case studies on how formal reforms can damage informal norms (Shipton 1988; Ensminger 1997; Kranton and Swamy 1999) and how the introduction of a new legal system depends on existing norms and familiarity (Berkowitz et al. 2003).

In the principal component analysis, we employ the widely used indicators for informal institutions from Hofstede (2010) (see Tables A1 and A2 in the appendix).<sup>11</sup> All the indicators are available for only one point in time. The results from a principal component analysis of the six indicators of informal institutions are presented in Table 5. The first two components have eigenvalues above one and explain 68% of the total variation in the data.

The first component has an eigenvalue of 2.72 and explains nearly half of the total variation. Uncertainty avoidance and power distance load positively on this component, while the indulgence indicator determines the negative side. This result suggests that a high value of this component reflects an acceptance of power distance that relates to a will to avoid uncertainty while allowing for relatively free gratification of the basic desire to enjoy life. The second component has an eigenvalue of 1.36 and explains 23% of the total variation. Masculinity, individualism and long-term orientation have the highest loadings in this component, all of which have a positive sign.

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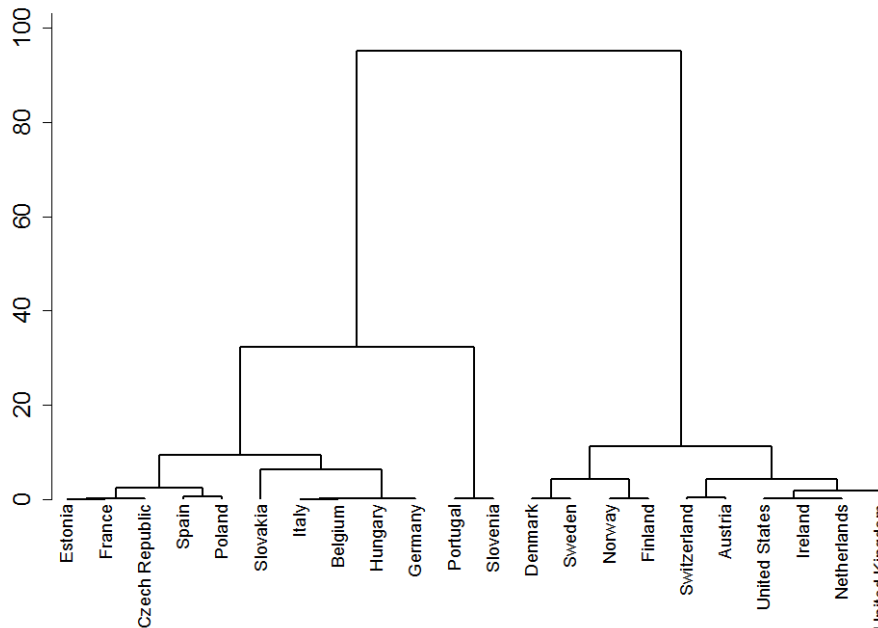
<sup>11</sup> Although self-expressive values would also have been interesting to include here, we choose to exclude this indicator because it did not have the same country coverage.

Table 5. Informal institutions: Principal Component Analysis (eigenvectors)

	Comp1	Comp2
Power distance index	0.491	0.005
Individualism vs. collectivism	-0.372	0.543
Masculinity vs. femininity	0.230	0.616
Uncertainty avoidance index	0.492	-0.198
Long-term orientation vs. short-term normative orientation	0.242	0.533
Indulgence vs. restraint	-0.517	-0.050
Eigenvalue	2.72	1.36
Explained Variance	.45	.23

Figure A8 in the appendix shows how countries score on the first and second components. Figure 5 shows how countries cluster when the predicted values from these two components are considered together. The left-hand side shows a group of countries preferring uncertainty avoidance and indulgence while accepting power distance. This group consists of Continental European, Mediterranean and Eastern European countries. Of these countries, Slovenia and Portugal are notable because of their particularly high negative scores in the second dimension. The right-hand side also exhibits a divide between countries: the Anglo-Saxon countries, Switzerland and Austria form a group that values individualism, long-term orientation and masculinity, whereas the Scandinavian countries score negatively in this dimension.

Figure 5. Informal Institutions: Dendrogram from cluster analysis.



## 4 The Diversity of Entrepreneurial Regimes

To better understand the complementarities and features of the institutional structures underlying

entrepreneurial regimes, we proceed by evaluating all the relevant institutional characteristics together. In this section, therefore, we synthesize our analysis from section 3. Incorporating all dimensions simultaneously enables us to examine whether the links between countries belonging to the same cluster at the end appear early on, and it provides an indication of the relative coherence of the country groupings and the specific mechanisms governing institutional complementarities for each model (Amable 2003: 171). We follow the strategy in Amable (2003) and aggregate the data in a step-by-step analysis. In each step, we apply a factor analysis, followed by a cluster analysis.

Similar to principal component analysis, factor analysis is a variable reduction technique, but the two types of analyses differ. Notably, factor analysis hinges on the idea of latent constructs (also referred to as factors, underlying constructs, or unobserved variables), which can be measured indirectly by determining their influence to responses on measured variables (Suhr 2005). Because the diversity in entrepreneurial regimes can be considered a latent variable, factor analysis is suitable at this stage.

We begin by considering the economic, financial and political institutions (examined in section 3.2), as these variables are likely to influence entrepreneurship both directly and indirectly by shaping the other relevant institutional factors. We then add the variables of labor market and social spending (section 3.3), followed by knowledge and education institutions (section 3.4) and informal institutions (section 3.5). Finally, we incorporate indicators for entrepreneurial activity (section 3.1) to arrive at an overview of the diversity of entrepreneurial regimes.

The results of the factor analysis are available upon request. Here, we present results from the cluster analysis, as shown in Table 6. Countries appear in rows, and the steps in the cluster analysis are presented in columns (1)-(5). For each analysis, a country is given a number representing the cluster to which it currently belongs (the actual number has no particular meaning).

Column (5) shows the final clustering of countries into six groups. For the sake of comparison, the last column indicates the cluster group from Amable (2003) to which each country belongs if the country in question was present in his analysis.<sup>12</sup> While the clustering corresponds fairly well with those suggested in Amable et al. (1997) and Amable (2000; 2003), there are important exceptions. Below, we describe the results and explain how the emerging clusters are distinct, particularly in view of the findings in section 3.

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<sup>12</sup> In Amable's (2003) original model, the Asian market economy constitutes the fifth cluster. However, given the geographical scope of our paper, this cluster is not relevant and is therefore excluded from the current study.



Table 6. The Diversity of Modern Capitalism: Re-evaluated: Six Models

	(1)	(2)	(3)	(4)	(5)	
	Financial Economic Political Institutions	Financial Economic Political /Labor	Financial Economic Political /Labor/Education	Financial Economic Political / Labor/ Education/ Informal Institutions	Financial Economic Political / Labor/ Education/ Informal Institutions/ Entrepreneurship	Clusters in Amable (2003), if applicable.
<b>Anglo-Saxon</b>						
USA	1	1	1	1	1	Market-based capitalism
United Kingdom	1	1	1	1	1	Market-based capitalism
Ireland	1	1	1	1	1	Continental European Capitalism
<b>Nordic</b>						
Denmark	4	5	5	5	5	Social-democratic capitalism
Finland	5	5	5	5	5	Social-democratic capitalism
Sweden	4	5	5	5	5	Social-democratic capitalism
Norway	5	5	5	5	5	Continental European Capitalism
<b>The continental trio</b>						
Netherlands	5	5	2	6	6	Continental European Capitalism
Switzerland	6	1	1	1	6	Continental European Capitalism
Austria	4	4	4	4	6	Continental European Capitalism
<b>The continental couple</b>						
Belgium	3	3	3	3	3	Continental European Capitalism
France	3	3	3	3	3	Continental European Capitalism
<b>Mainly Mediterranean</b>						
Germany	4	4	3	4	4	Continental European Capitalism
Italy	1	4	4	8	4	Mediterranean Capitalism
Portugal	3	4	4	8	4	Mediterranean Capitalism
Spain	1	4	4	4	4	Mediterranean Capitalism
<b>Eastern European</b>						
Hungary	2	2	2	2	2	
Poland	2	2	2	7	2	
Czech Republic	2	2	2	2	2	
Estonia	1	2	2	2	2	
Slovakia	2	2	2	2	2	
Slovenia	3	2	2	7	2	

In line with previous classifications in the varieties of capitalism literature, the United States and the United Kingdom have liberal market economy characteristics. Contrary to Amable's (2003) typology, however, Ireland is not classified as a continental European country but instead is grouped with the United States and the United Kingdom. The grouping of these three countries is perhaps unsurprising, as all of them combine good legal systems with the following: an emphasis on small government (3.2);

prioritize investment funds and other forms of social spending over spending on survivors and the elderly while also having low pension replacement rates (3.3); have high governmental expenditure on education and moderate school enrollment (3.4); and value individualism, long-term orientations and masculinity (3.5). Nevertheless, the countries differ with respect to their entrepreneurial regimes: the United Kingdom has little necessity-based nascent activity and moderate opportunity entrepreneurship in new and established activities, whereas Ireland has much necessity-based nascent activity, and the United States has a large amount of both (3.1).

The Nordic countries form a group akin to the social-democratic capitalism group in Amable (2003) but with the addition of Norway, which belonged to the continental group in his analysis. In fact, the countries are closely aligned with respect to all institutions investigated in section 3. Hence, the group has good legal systems and large governments (3.2) and prioritizes investment funds and other forms of social spending over spending on survivors and the elderly while also having high pension replacement rates (3.3). Furthermore, this group has high governmental expenditure in education (3.4) but does not strongly value individualism, long-term orientation and masculinity (3.5). Although all countries have relatively little necessity-based nascent entrepreneurship and moderate levels of opportunity-entrepreneurship in new and established businesses, Denmark is notable in having more aspirational and opportunity entrepreneurship (3.1).

Switzerland, a continental European country in Amable's (2003) analysis, shares many characteristics with the group of Anglo-Saxon countries but differs slightly with respect to political and economic institutions (3.2). This country constitutes a separate and somewhat surprising category in the final model, together with the Netherlands, a country that shares many characteristics with the Nordic countries, and Austria, which shares many characteristics with the Mediterranean model. In fact, in the final analysis, these three countries appear to be grouped largely by their entrepreneurial regime, which is akin to the Nordic regime (3.1). Nevertheless, the three countries are similar in having high-quality legal systems (3.2); having high governmental expenditure on research and education (3.4); and valuing individualism, long-term orientation and masculinity (3.5).

Belgium and France form a group, and section 3 reveals similarities between the countries—combining low levels of nascent necessity-based entrepreneurship and opportunity entrepreneurship in new and established businesses (3.1); high social spending on the elderly and survivors as well as low pension replacement rates (3.3); high government expenditure on education and modest school enrollment (3.4); a preference for uncertainty avoidance, acceptance of power distance and indulgence (3.5); and a high-quality legal system (3.2).

Germany, a continental European country in Amable (2003), clusters in the final analysis with the countries from Amable's (2003) Mediterranean model. This result appears to arise mainly from their similarity in entrepreneurial regimes (3.1), as Germany shares several characteristics with the other

Continental European countries: high social spending on the elderly population and high expenditure (3.3); high government expenditure on education and modest school enrollment (3.4); and a preference for uncertainty avoidance, acceptance of power distance and indulgence (3.5).

The Eastern European countries form a final group. These six countries are fairly closely aligned in all areas, notably with respect to the moderate to low quality of their legal systems (3.2) and their high social spending on the elderly and survivors as well as on health and pensions (3.3). The Czech Republic and Poland appear to form a core that is similar across all analyses in section 3. Hungary also borrows some characteristics related to entrepreneurship (3.1) from the Mediterranean model. Surprisingly, in the analysis in section 3, Slovenia differs from the other countries with respect to the entrepreneurial regime, with less necessity-based nascent activity and more aspirational and opportunity entrepreneurship (3.1).<sup>13</sup>

## 5 Conclusion/Discussion

Despite wide acknowledgement of the importance of the institutional setting for entrepreneurship, the commonly used approach in the empirical literature is to test the impact of different types of institutional characteristics on entrepreneurship against one another to identify the most relevant institutions (e.g., Estrin et al. 2013). This approach has important merits, as it provides policy makers with insight into which institutions matter most for entrepreneurship and, therefore, which institutions should be prioritized. However, a fuller picture of the institutional structure of a country is needed for reform agendas to be successful. This paper argues that entrepreneurship policies aimed at altering a particular institutional constraint are unlikely to be sustainable in the long term because such approaches neglect the complementarities among institutions. Thus, if other institutions are not supportive of a newly implemented institution, such an institution will be more difficult to justify and more costly to maintain.

We focused on providing an empirical assessment of the complementarities and diversity of the institutional structures in 21 European countries and the United States. In summary, our exercise yielded six clusters. The first cluster consists of the United States, the United Kingdom, and Ireland, which exhibit striking similarities in their formal and informal institutions but actually differ in their entrepreneurial regimes. The Nordic countries form a second group that is similar across all institutional dimensions and similar in their entrepreneurial regimes. Meanwhile, wide variation exists

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<sup>13</sup> As discussed earlier, the approach of Acs et al. (2014a) has been criticized for using outcome variables as institutional indicators. To check the robustness of the findings here, we narrowed the focus of our analysis of institutional variables by excluding indicators for educational attainment, social expenditure, and research and development. Although the overall clustering of countries remains similar to the results presented in the text, a main difference is that the distinction between the Eastern European, continental European and Mediterranean countries becomes less visible. Poland and Hungary form a cluster together with Italy in this specification. The exclusion of entrepreneurial indicators also reveals a picture similar to the previous specification, in which the distinction between the Eastern European and Mediterranean countries becomes less visible.

across continental Europe: Switzerland, the Netherlands and Austria form a group with an entrepreneurial regime akin to the Nordic regime but with another bundle of institutions, whereas Belgium and France are similar in all of the examined dimensions. Germany, however, clusters together with the Mediterranean countries, forming the least intuitive grouping. All the Eastern European countries form a final group that is relatively similar across the examined dimensions.

Some of these results merit additional discussion. First, in the varieties of capitalism framework, Ireland is typically argued to show characteristics of the continental European model. Our results contradict this view of Ireland, grouping the country together with the United States and the United Kingdom. Arguably, the substantial improvement in Ireland's performance relative to other countries in recent years has rendered the country more similar to the United States and the United Kingdom. For instance, in terms of entrepreneurship, Ireland now ranks 11th among the OECD countries, 9th among the EU-28 countries and 2nd among the EU-15 countries (GEM 2015). Despite Ireland's progress, however, access to loan finance and credit facilities from banks has been identified as constraints for entrepreneurial activity. Our findings suggest that following a strategy for financial institutions related to those used in the United States and the United Kingdom would be more useful than introducing reforms that make it easier for banks or government provide funds—a strategy followed in social democratic countries such as Denmark. However, Ireland, the United Kingdom and to some extent Switzerland are the only countries whose institutional characteristics resemble those of the United States. Hence, it is improbable that other countries could successfully imitate policy strategies of the United States and hope to achieve similar results.

In fact, our findings suggest that there is no one-size-fits-all approach to create an entrepreneurial society in Europe. Furthermore, entrepreneurship flourishes in areas other than the United States and the United Kingdom. For example, *The Economist* (2013) stated as follows: “The Nordic region is becoming a hothouse of entrepreneurship.” The finding that this region has a very distinct institutional bundle is illustrative. Likewise, Berlin is a new attraction for start-ups. Our findings in this paper highlight the necessity of identifying entrepreneurship policies that correspond to the diversity of institutional structures in Europe.

An interesting direction for future research would be to explore the consequences of the diversity of institutional structures for different types of entrepreneurial activity. Baumol (1990) argues that institutions are likely to affect the allocation of entrepreneurial activity. The literature would benefit from more detailed research on the types of entrepreneurial activity that flourish under the different forms of institutional structure described in the current study. Furthermore, our study provides a snapshot of institutions over a limited time period and therefore does not elucidate the changes occurring in the institutional structure. The history of institutional evolution has been far from unidirectional, and institutional reversals are common throughout history (Schein 2012; Bergh and

Lyttkens 2014). A historical study of the evolution of institutional diversity would therefore be another important avenue for future research.

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## Appendix

### Data and Measurement

Table A.1. Overview of all the Measures included in the Current Study		
Variable	Description	Source
<b>Entrepreneurial regimes</b>		
<i>New business ownership rate</i>	Percentage of 18-64 population who are currently a owner-manager of a new business, i.e., owning and managing a running business that has paid salaries, wages, or any other payments to the owners for more than three months, but not more than 42 months	Global Entrepreneurship Monitor (GEM) data
<i>Established business ownership rate</i>	Percentage of 18-64 population who are currently owner-manager of an established business, i.e., owning and managing a running business that has paid salaries, wages, or any other payments to the owners for more than 42 months	GEM data
<i>Fear of failure rate</i>	Percentage of 18-64 population with positive perceived opportunities who indicate that fear of failure would prevent them from setting up a business	GEM data
<i>Entrepreneurial intention</i>	Percentage of 18-64 population (individuals involved in any stage of entrepreneurial activity excluded) who intend to start a business within three years	GEM data
<i>Perceived opportunities</i>	Percentage of 18-64 who see good opportunities to start a firm in the area where they	GEM data
<i>Patents</i>	This indicator covers data on patent applications to the European Patent Office, the US Patent and Trademark Office (USPTO), patent applications filed under the Patent Co-operation Treaty that designate EPO, as well as Triadic patent families, largely deriving from the EPO's Worldwide Patent Statistical Database. The log of patent data is taken for the analysis.	OECD (2015c)
<i>Nascent entrepreneurship Rate</i>	Percentage of 18-64 population who are currently a nascent entrepreneur, i.e., actively involved in setting up a business they will own or co-own; this business has not paid salaries, wages, or any other payments to the owners for more than three months	GEM data
<i>Perceived Capabilities</i>	Percentage of 18-64 population who believe to have the required skills and knowledge to start a business	GEM data
<i>Growth expectation early-stage</i>	Percentage of TEA who expect to employ at least five employees five years from now	GEM data
<i>Improvement-driven opportunity entrepreneurship</i>	Percentage of those involved in TEA who (i) claim to be driven by opportunity as opposed to finding no other option for work; and (ii) who indicate the main driver for being involved in this opportunity is being independent or increasing their income, rather than just maintaining their income	GEM data
<i>Necessity-driven entrepreneurship</i>	Percentage of those involved in TEA who are involved in entrepreneurship because they had no other option for work	GEM data
<i>New product early-stage entrepreneurial activity</i>	Percentage of TEA who indicate that their product or service is new to at least some customers	GEM data
<i>International orientation early-stage entrepreneurial activity</i>	Percentage of TEA who indicate that at least 25% of the customers come from other countries	GEM data
<i>Total early-stage entrepreneurial activity</i>	Percentage of 18-64 population who are either a nascent entrepreneur or owner-manager of a new business	GEM data
<b>Economic and political institutions</b>		
<i>DB construction permits</i>	This index captures industry to build a warehouse along with the time and cost to complete each procedure. It also captures the building quality control index, evaluating the quality of building regulations, the strength of quality control and safety mechanisms, liability and insurance regimes, and professional certification requirements. The ranking of economies on the	World Bank Doing Business (2015)

	ease of starting a business is determined by sorting their distance to frontier scores for starting a business. These scores are the simple average of the distance to frontier scores for each of the component indicators. The same methodology was applied below in construction of the other sub-indices.		
<i>DB enforcing contracts</i>	This indicator gathers information on the quality and efficiency of the court system. It studies the codes of civil procedure and other court regulations as well as questionnaires completed by local litigation lawyers and judges.	World Doing (2015)	Bank Business
<i>DB getting credit</i>	This indicator is composed of two subsets of measures. The first indicator looks at whether features that facilitate lending exist within the applicable collateral and bankruptcy laws. The second set measures the coverage, scope and accessibility of credit information available through credit reporting service providers such as credit bureaus or credit registries.	World Doing (2015)	Bank Business
<i>DB getting electricity</i>	This indicator looks at the procedures such as applications and contracts with electricity utilities, required for a business to obtain a permanent electricity connection and supply for a standardized warehouse.	World Doing (2015)	Bank Business
<i>DB paying taxes</i>	This indicator records the taxes and mandatory contributions that a medium-size company must pay in a given year as well as the administrative burden of paying taxes and contributions.	World Doing (2015)	Bank Business
<i>DB protecting minority investors</i>	This indicator looks at the protection of minority investors from conflicts of interest through one set of indicators and shareholders' rights in corporate governance through another.	World Doing (2015)	Bank Business
<i>DB registering property</i>	This indicator looks at the easiness of registering property. It collects information on the procedures necessary for a business (the buyer) to purchase a property from another business (the seller) and to transfer the property title to the buyer's name so that the buyer can use the property for expanding its business, use the property as collateral in taking new loans or, if necessary, sell the property to another business. It also measures the time and cost to complete each of these procedures.	World Doing (2015)	Bank Business
<i>DB resolving insolvency</i>	This indicator looks at the time, cost and outcome of insolvency proceedings involving domestic entities as well as the strength of the legal framework applicable to liquidation and reorganization proceedings.	World Doing (2015)	Bank Business
<i>DB starting business</i>	This indicator captures all procedures officially required, or commonly done in practice, for an entrepreneur to start up and formally operate an industrial or commercial business, as well as the time and cost to complete these procedures and the paid-in minimum capital requirement.	World Doing (2015)	Bank Business
<i>DB trading across borders</i>	This indicators looks at the time and cost related with the logistical process of exporting and importing goods.	World Doing (2015)	Bank Business
<i>FI access to sound money</i>	This indicator is composed of four sub indices, namely money growth , standard deviation of inflation, inflation: most recent year, and Freedom to own foreign currency bank accounts.	Gwartney et al. (2015)	
<i>FI freedom to trade internationally</i>	The components in this area are designed to measure a wide variety of restraints that affect international exchange: tariffs, quotas, hidden administrative restraints, and controls on exchange rates and the movement of capital.	Gwartney et al. (2015)	
<i>FI legal structure and property rights protection</i>	The key ingredients of a legal system consistent with economic freedom are rule of law, security of property rights, an independent and unbiased judiciary, and impartial and effective enforcement of the law. The nine components in this area are indicators of how effectively the protective functions of government are performed.	Gwartney et al. (2015)	
<i>FI regulation of credit, labor and business</i>	This index focuses on regulatory restraints that limit the freedom of exchange in credit, labor, and product markets. It reflects conditions in the domestic credit market, provides evidence on the extent to which the banking industry is privately owned, measure the extent to which these restraints upon economic freedom are present, and measures the regulation of business activities.	Gwartney et al. (2015)	
<i>FI small size of government</i>	Called Size of government in the FI database. This measure indicates the extent to which countries rely on the political	Gwartney et al.	



	process to allocate resources and goods and services. It is calculated based on four components. The first two components are government consumption as a share of total consumption and transfers and subsidies as a share of GDP. The third component measures the extent to which countries use private investment and enterprises rather than government investment and firms to direct resources. The fourth component looks at the top marginal income tax rate and the top marginal income and payroll tax rate and the income threshold at which these rates begin to apply.	(2015)
<i>QoG Control of corruption</i>	This indicator is measured based on the perceptions of corruption, defined as the exercise of public power for private gain. It captures the frequency of additional payments to get things done, to the effects of corruption on the business environment, measuring grand corruption in the political arena or in the tendency of elite firms to engage in state capture. More detailed information on this index and on the other Quality of Government (QoG) indicators can be found at: <a href="http://info.worldbank.org/governance/wgi/index.aspx#doc-over">http://info.worldbank.org/governance/wgi/index.aspx#doc-over</a>	Kaufman et al. (2010)
<i>QoG Government effectiveness</i>	This index captures on a continuous scale perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.	Kaufman et al. (2010)
<i>QoG Political Stability</i>	This index measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism.	Kaufman et al. (2010)
<i>QoG Regulatory quality</i>	This index looks at the perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.	Kaufman et al. (2010)
<i>QoG Rule of law</i>	This index perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.	Kaufman et al. (2010)
<b>Labor markets: OECD data.</b>		
<i>Trade union density</i>	This indicator is defined as the percentage of employees who are members of a trade union.	OECD (2013a)
<i>Regular employment protection legislation</i>	This is a composite measure of employment protection for regular employment. The indicator focuses on the conditions for terminating employment, including required notification and involvement of third parties (such as courts, labor inspectorates, and workers' councils); notice periods and severance pay; the conditions under which it is permissible to lay off an employee; and the repercussions if a dismissal is found to be unfair. Most countries have additional provisions for collective dismissals.	OECD (2013b)
<i>Temporary employment protection legislation</i>	This index is same as the employment protection legislation index described above but constructed particularly on temporary type of employment.	OECD (2013b)
<i>Pension funds as a percentage of GDP</i>	It is defined as pension funds as the share of GDP.	OECD (2015d)
<i>Low income male worker pension net replacement rate</i>	This indicator is based on net pension replacement rate calculated based on the assumption that during the retirement, he will earn half of the average income. The net pension replacement rate is defined as the individual net pension entitlement divided by net pre-retirement earnings, taking account of personal income taxes and social security contributions paid by workers and pensioners.	OECD (2015e)
<i>Medium income male worker pension net replacement rate</i>	This indicator is based on net pension replacement rate calculated based on the assumption that during the retirement, he will the full average income.	OECD (2015e)
<i>High income male worker pension net replacement rate</i>	This indicator is based on net pension replacement rate calculated based on the assumption that during the retirement, he will earn one and a half times more of the average income	OECD (2015e)
<i>Social spending family</i>	Presents public and private benefits with a social purpose grouped along family. This expenditure is often related to the costs associated with raising children or with the support of other dependents.	OECD (2016)
<i>Social spending health</i>	Presents public and private benefits with a social purpose grouped along health.	OECD (2016)
<i>Social spending housing</i>	Presents public and private benefits with a social purpose grouped along housing. Spending items recorded under this heading include rent subsidies and other benefits to the individual to help with housing costs.	OECD (2016)

<i>Social spending income</i>	Presents public and private benefits with a social purpose grouped along income	OECD (2016)
<i>Social spending labor</i>	Presents public and private benefits with a social purpose grouped along labor. This category contains all social expenditure (other than education) which is aimed at the improvement of the beneficiaries' prospect of finding gainful employment or to otherwise increase their earnings capacity.	OECD (2016)
<i>Social spending old age</i>	Presents public and private benefits with a social purpose grouped along elderly population. Old-age cash benefits provide an income for people retired from the labor market or guarantee incomes when a person has reached a 'standard' pensionable age or fulfilled the necessary contributory requirements. This category also includes early retirement pensions: pensions paid before the beneficiary has reached the 'standard' pensionable age relevant to the programme.	OECD (2016)
<i>Social spending other</i>	Presents public and private benefits with a social purpose in other fields. This category includes social expenditure (both in cash and in kind) for those people who for various reasons fall outside the scope of the relevant programme covering a particular contingency, or if this other benefit is insufficient to meet their needs. Social expenditure related to immigrants/refugees and indigenous people are separately recorded in this category.	OECD (2016)
<i>Social spending survivors</i>	Presents public and private benefits with a social purpose grouped along survivors. Many countries have social expenditure programmes in the public sphere, which provide the spouse or dependent of a deceased person with a benefit (either in cash or in kind). Expenditure in this policy area has been grouped under survivors. Allowances and supplements for dependent children of the recipient of a survivors' benefit are also recorded here (Adela, Fron and Ladaquie 2011).	OECD (2016)
<i>Social spending total</i>	presents total public and private benefits with a social purpose	OECD (2016)
<i>Social spending unemployment</i>	presents public and private benefits with a social purpose grouped along unemployment	OECD (2016)
<b>Knowledge and education: OECD data.</b>		
<i>Expenditures on educational institutions</i>	Expenditure on educational institutions as a percentage of GDP, from public sources for all levels of education	OECD (2014)
<i>Expenditure per student, primary education</i>	Expenditure per student, primary education measured annually in equivalent USD converted using PPPs	OECD (2014)
<i>Expenditure per student, secondary education</i>	Expenditure per student, secondary education measured annually in equivalent USD converted using PPPs	OECD (2014)
<i>Expenditure per student, tertiary education</i>	Expenditure per student, tertiary education measured annually in equivalent USD converted using PPPs	OECD (2014)
<i>Percentage who attained tertiary degree ages 25-64</i>	Percentage of the population which attained tertiary degree between the age group 25-64	OECD (2014)
<i>Enrollment rate ages 15-19</i>	The percentage of 15-19 year-olds enrolled in full-time and part-time education.	OECD (2014)
<i>Enrollment rate ages 20-29</i>	The percentage of 20-29 year-olds enrolled in full-time and part-time education.	OECD (2014)
<i>R&amp;D expenditure</i>	Measured as the percentage of the GDP per capita invested in the fields of research and development	OECD (2015b)
<i>Researcher per head</i>	Researchers in research and development field expressed per thousand people employed	OECD (2015b)
<b>Informal institutions</b>		
<i>Power distance index</i>	This dimension expresses the degree to which the less powerful members of a society accept and expect that power is distributed unequally. The fundamental issue here is how a society handles inequalities among people. People in societies exhibiting a large degree of Power Distance accept a hierarchical order in which everybody has a place and which needs no further justification. In societies with low Power Distance, people strive to equalize the distribution of power and demand justification for inequalities of power. It is measured on a continuous scale ranging from 0 to 100.	Hofstede (201)
<i>Individualism vs. collectivism</i>	On a 0-100 continuous scale captures the degree to which individuals are integrated into groups. On the individualist side we find societies in which the ties between individuals are loose: everyone is expected to look after him/herself and his/her immediate family. collectivism, represents a preference for a tightly-knit framework in society in which individuals can expect their relatives or members of a particular in-group to look after them in exchange for unquestioning loyalty.	Hofstede (2010)

<i>Masculinity vs. femininity</i>	The masculinity side represents a preference in society for achievement, heroism, assertiveness and material rewards for success. Society at large is more competitive. Its opposite, femininity, stands for a preference for cooperation, modesty, caring for the weak and quality of life. It is measured on a continuous scale ranging from 0 to 100.	Hofstede (2010)
<i>Uncertainty avoidance index</i>	It expresses the degree to which the members of a society feel uncomfortable with uncertainty and ambiguity for future.	Hofstede (2010)
<i>Long-term orientation vs. short-term normative orientation</i>	Societies who score low on this dimension, for example, prefer to maintain time-honoured traditions and norms while viewing societal change with suspicion. Those with a culture which scores high, on the other hand, take a more pragmatic approach: they encourage thrift and efforts in modern education as a way to prepare for the future.	Hofstede (2010)
<i>Indulgence vs. restraint</i>	Indulgence stands for a society that allows relatively free gratification of basic and natural human drives related to enjoying life and having fun. Restraint stands for a society that suppresses gratification of needs and regulates it by means of strict social norms.	Hofstede (2010)

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Table A2. Descriptive statistics (N=22)

Entrepreneurial regimes: GEM data.	Mean	Std. Dev.	Min	Max
New business ownership rate	2.99	0.89	1.34	4.6
Established business ownership rate	6.48	1.71	3.02	9.27
Fear of failure rate	36.84	4.81	28.91	48.04
Entrepreneurial intention	10.46	3.7	6.13	19.27
Perceived opportunities	35.45	14.32	17.15	67.72
Nascent entrepreneurship Rate	4.46	1.71	2.33	8.19
Perceived Capabilities	43.2	6.76	33.2	56.03
Growth expectation early-stage	24.89	7.06	13.9	34.88
Improvement-driven opportunity entrepreneurship	51.16	11.07	33.46	68.7
Necessity-driven entrepreneurship	19.36	9.02	6.94	43.12
New product early-stage entrepreneurial activity	46.47	9.56	30.57	68.69
International orientation early-stage entrepreneurial activity	19.61	5.08	9.99	26.96
Total early-stage entrepreneurial activity	7.32	2.37	3.63	12.27
Economic and political institutions: DB, FI, and QoG data.	Mean	Std. Dev.	Min	Max
DB construction permits	72.69	11.33	43.34	91.59
DB enforcing contracts	69.19	10.88	37.28	81.78
DB getting credit	69.84	15.95	29.17	100
DB getting electricity	79.13	11.97	55.03	98.34
DB paying taxes	74.55	12.76	50.43	95.28
DB protecting minority investors	58.09	13.25	30	83.33
DB registering property	71.35	16.41	35.54	94.27
DB resolving insolvency	69.34	23.54	20.24	97.09
DB starting business	82.93	8.2	63.65	91.71
DB trading across borders	84.87	5.9	73.54	93.15
FI access to sound money	9.37	0.32	8.68	9.73
FI freedom to trade internationally	8.39	0.4	7.32	8.95
FI legal structure and property rights protection	7.57	1.05	5.82	9.03
FI regulation of credit, labor and business	7.29	0.58	6.2	8.4
FI small size of government	5.3	1.04	3.54	7.76
QoG Control of corruption	1.41	0.74	0.27	2.47
QoG Government effectiveness	1.45	0.53	0.49	2.2
QoG Political Stability	0.87	0.38	-0.05	1.56
QoG Regulatory quality	1.37	0.32	0.79	1.81
QoG Rule of law	1.35	0.51	0.43	1.94
Labor markets: OECD data.	Mean	Std. Dev.	Min	Max
Trade union density	31.6	20.53	7.74	74.58
Regular employment protection legislation	2.31	0.82	0.26	4.47
Temporary employment protection legislation	1.58	0.9	0.25	3.63
Pension funds as a percentage of GDP	25.98	35.13	0.08	112.1
Low income male worker pension net replacement rate	75.4	14.43	49.88	111.95
Medium income male worker pension net replacement rate	63.72	14.16	40.56	95.87
High income male worker pension net replacement rate	59.2	16.75	29.63	91.56
Social spending family	4.83	1.66	2.09	7.81

Social spending health	13.44	2.26	9.7	18.34
Social spending housing	0.66	0.71	0	3.09
Social spending income	5.92	2.01	3.27	10.6
Social spending labor	1.42	0.76	0.19	2.99
Social spending old age	16.79	3.67	8.5	24.32
Social spending other	0.94	0.54	0.1	1.9
Social spending survivors	2.45	1.68	0	5.12
Social spending total	48.81	4.69	38.63	56.68
Social spending unemployment	2.34	1.59	0.6	6.47
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Knowledge and education: OECD data.	Mean	Std. Dev.	Min	Max
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Expenditures on educational institutions	5.34	0.95	3.84	7.5
Expenditure per student, primary education	8277.08	2376.09	4566.42	12907.41
Expenditure per student, secondary education	9940.31	2944.56	4574.07	15891.34
Expenditure per student, tertiary education	14800.87	5164.73	7867.93	26021.29
Percentage who attained tertiary degree ages 25-64	27.19	8.55	14.3	41.1
Enrollment rate ages 15-19	85.5	4.86	72.62	92.72
Enrollment rate ages 20-29	25.96	6.54	16.95	42.63
R&D expenditure	1.86	0.86	0.46	3.55
Researcher per head	7.59	2.84	3.78	15.95
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Informal institutions: Hofstede data.	Mean	Std. Dev.	Min	Max
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Power distance index	46.5	21.08	11	104
Individualism vs. collectivism	65.18	16.31	27	91
Masculinity vs. femininity	49.45	28.09	5	110
Uncertainty avoidance index	64.36	22.82	23	104
Long-term orientation vs. short-term normative orientation	54.61	19.02	24.43	82.87
Indulgence vs. restraint	49.69	17.72	16.29	77.68

## Figures and discussion

### 1. Entrepreneurial Regimes

Figure A1 shows the countries' representations in the first factorial plane. The horizontal axis is the first principal component (a higher score indicates more necessity-based nascent activity), and the vertical axis is the second principal component (a higher score signifies more opportunity-based new and established business activity). All Eastern European countries except Slovenia are grouped on the positive side of the first dimension. In the upper-right quadrant, the United States is notable for having higher levels of nascent/necessity entrepreneurship and opportunity entrepreneurship. The group of Western European and Nordic countries scores the lowest in the first dimension, along with Italy—which, together with France, Germany and Belgium, also has very low scores in the second dimension. In the upper-left quadrant, we find a group of countries characterized by less necessity-

driven nascent entrepreneurship (first dimension) but more opportunity entrepreneurship (second dimension). The Nordic countries, Netherlands and Switzerland are in this group.

Figure A1. Entrepreneurial Regimes: Country scores along the first and second factorial axes.

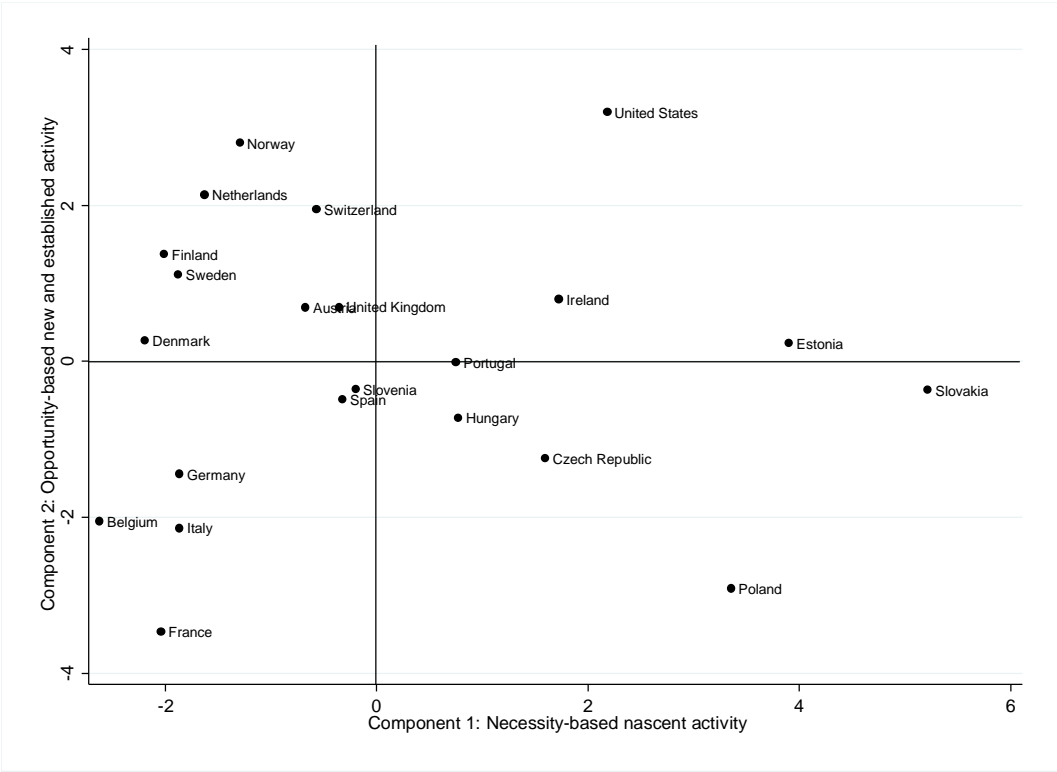
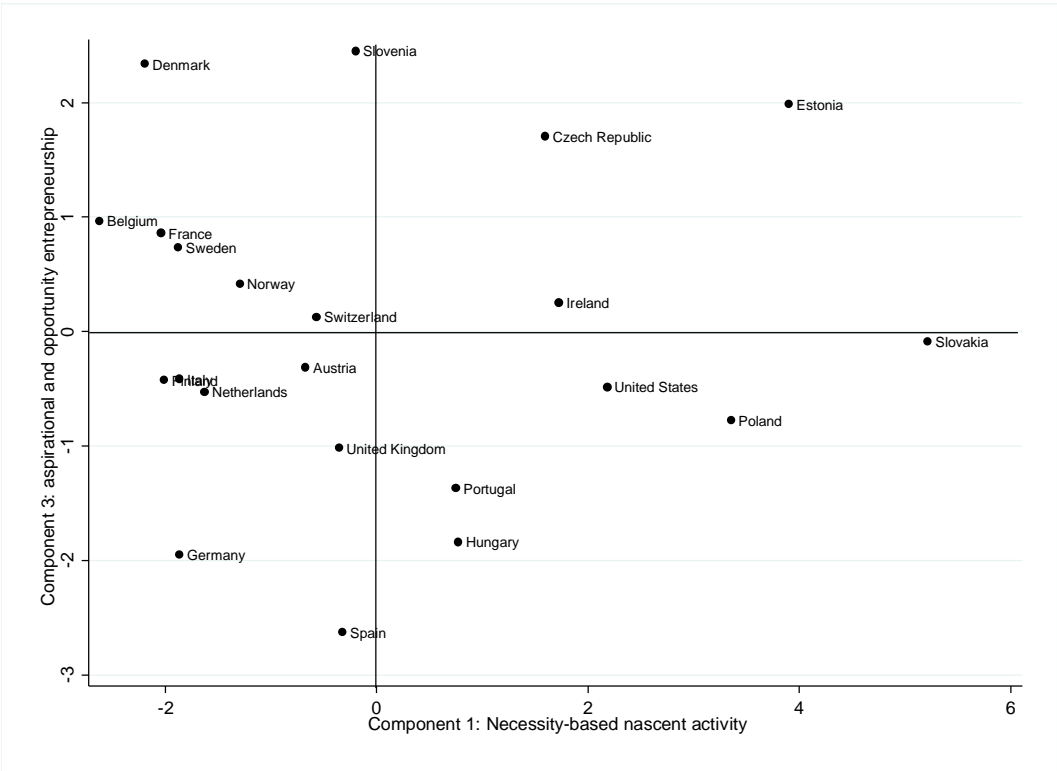


Figure A2. Entrepreneurial Regimes: Country scores along the first and third factorial axes.

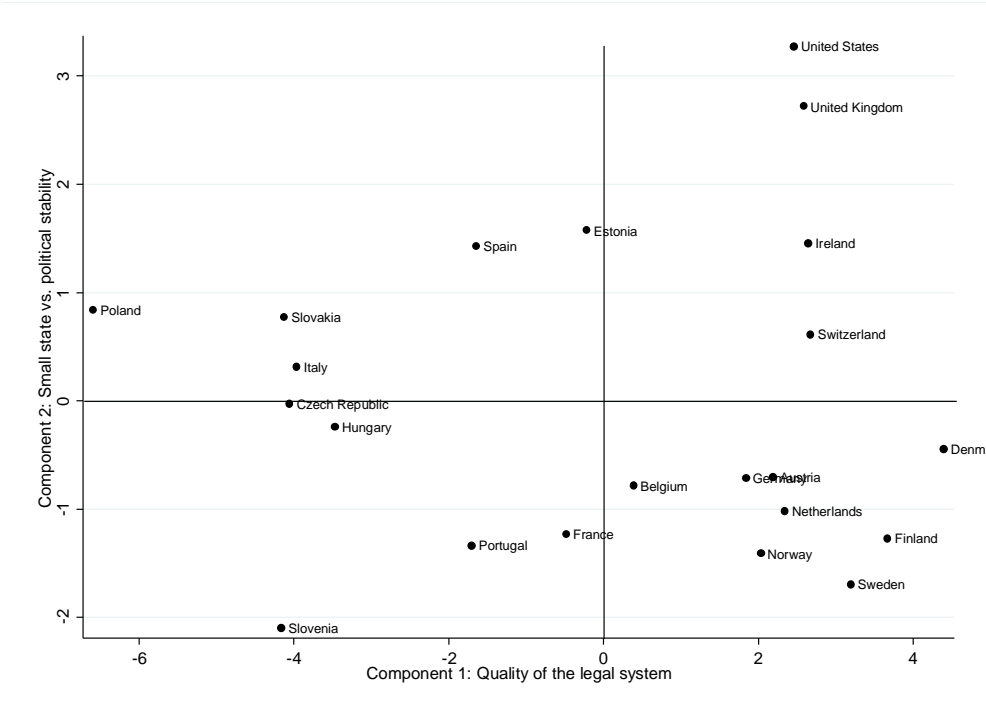


In Figure A2, the vertical axis has been replaced by the third dimension, which captures a tradeoff between aspirational and opportunity entrepreneurship (+) and a form of necessity entrepreneurship characterized by many patents and established businesses (-). We note that three Eastern European countries score the highest in this dimension, together with Denmark. Meanwhile, Spain, Germany, Hungary and Portugal exhibit the highest negative scores.

**2 Political, Financial and Economic Institutions**

In Figure A3, the horizontal axis is the first principal component (a higher score indicates higher legal quality), and the vertical axis is the second principal component (a higher score indicates smaller government, and a lower score represents greater political stability). All the Eastern European and Mediterranean countries are located on the negative side, with Poland scoring particularly low. On the positive side, Denmark, Finland and Sweden exhibit the highest positive scores. For the second axis, the United States and the United Kingdom have the highest positive scores, whereas Slovenia and Sweden have the highest negative scores.

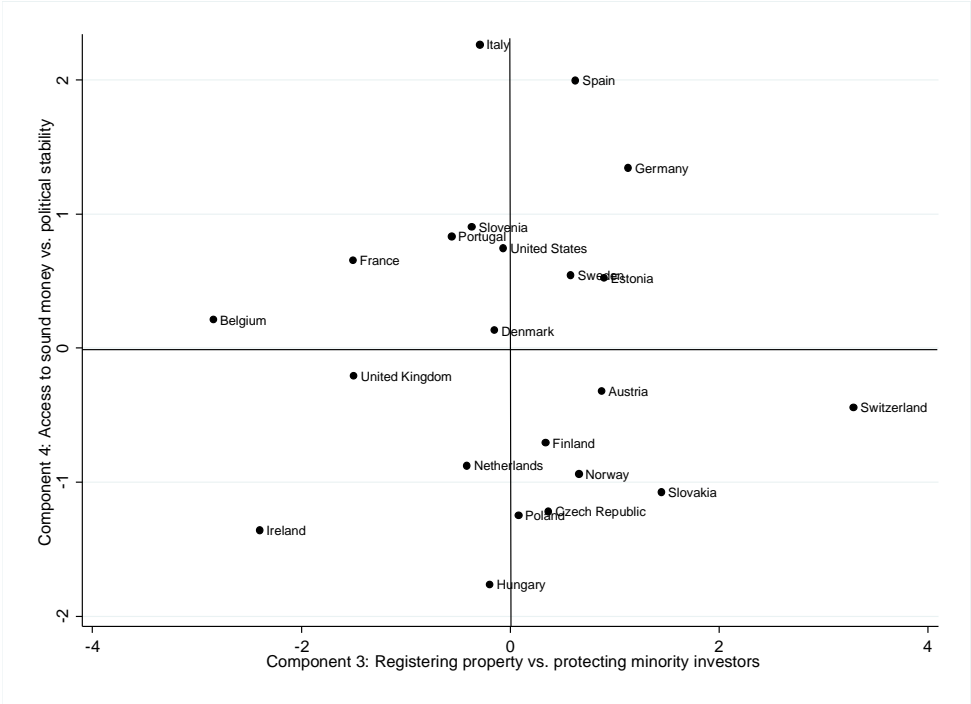
Figure A3. Political and economic institutions: Country scores along the first and second factorial axes.



In Figure A4, the horizontal axis is component 3 (protection of minority investors vs. ease of registering property), and the vertical axis is component 4 (access to sound money vs. political stability). Switzerland by far has the highest positive score in the third dimension (suggesting an ease of registering property), whereas Belgium and Ireland have the highest negative value. In the fourth dimension, Italy and Spain score the highest, whereas Hungary and Ireland score the lowest. The

majority of countries are located in the middle of this factorial plane; this result suggests that the differences here are less marked.

Figure A4. Political, financial and economic institutions: Country scores along the third and fourth factorial axes.



**3. Labor markets**

Figure A5. Labor markets and social spending: Country scores along the first and second factorial axes.

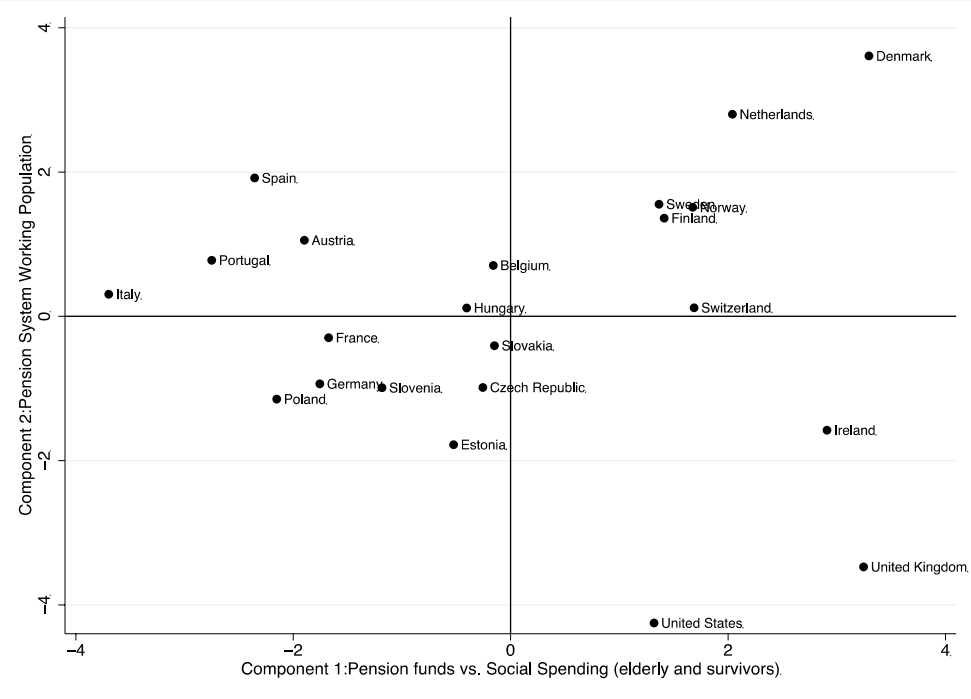
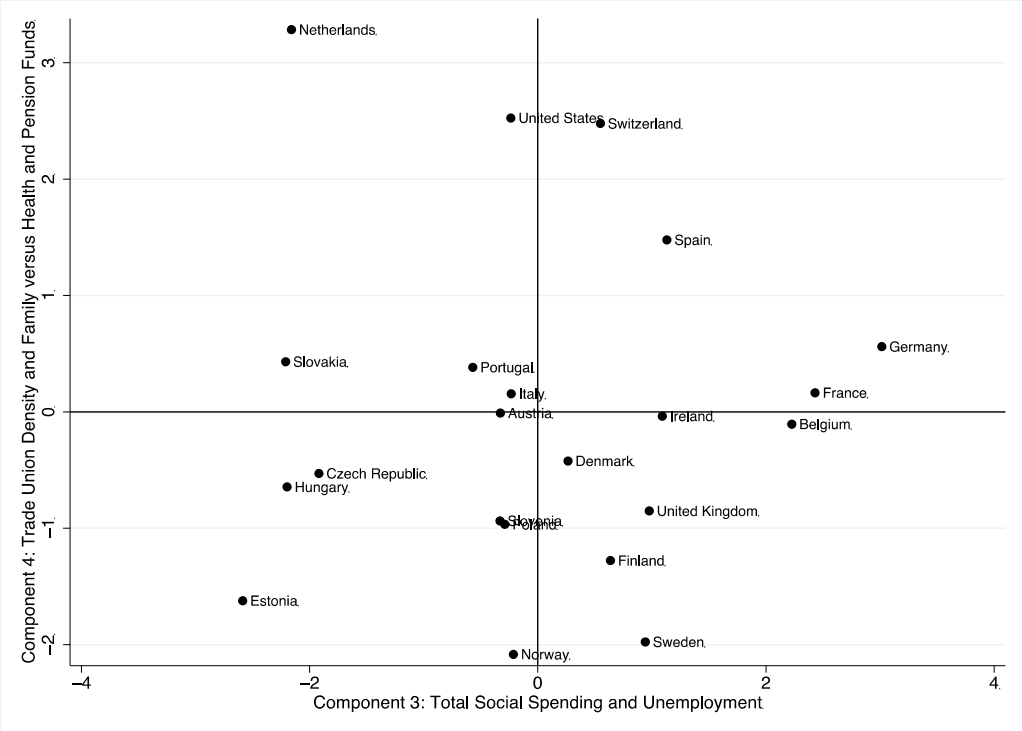




Figure A5 presents how countries perform in the first two dimensions. The horizontal axis is the tradeoff between pension funds and social spending in the elderly population, and the vertical axis is the pension system for the working population. For the first dimension, the Scandinavian countries, the Netherlands and Anglo-Saxon countries have positive scores, whereas the Mediterranean countries, France, Germany, Austria, and Poland exhibit negative scores. The Eastern European countries score somewhere in the middle for the first component. For the second dimension, again, the Nordic countries and the Netherlands together with Spain and Belgium have positive scores, whereas the Anglo-Saxon countries, Germany, France and the majority of the Eastern European countries (except Hungary) exhibit negative scores.

Figure A6 reveals a diverse picture. The Nordic countries (except Norway), Ireland, Switzerland, Spain, Germany and France have positive scores for the third component, which indicates a generous overall social spending system with high unemployment benefits. Meanwhile, the Netherlands, the Mediterranean countries (except Spain), and the Eastern European countries have negative scores for the third component. The United States, the Mediterranean countries, France, Germany and Switzerland have positive scores for the fourth component, which reveals a tradeoff between high trade union density and social spending on family and pension funds and health. The Nordic countries, the United Kingdom, Ireland, together with the Eastern European countries, present negative scores for this component.

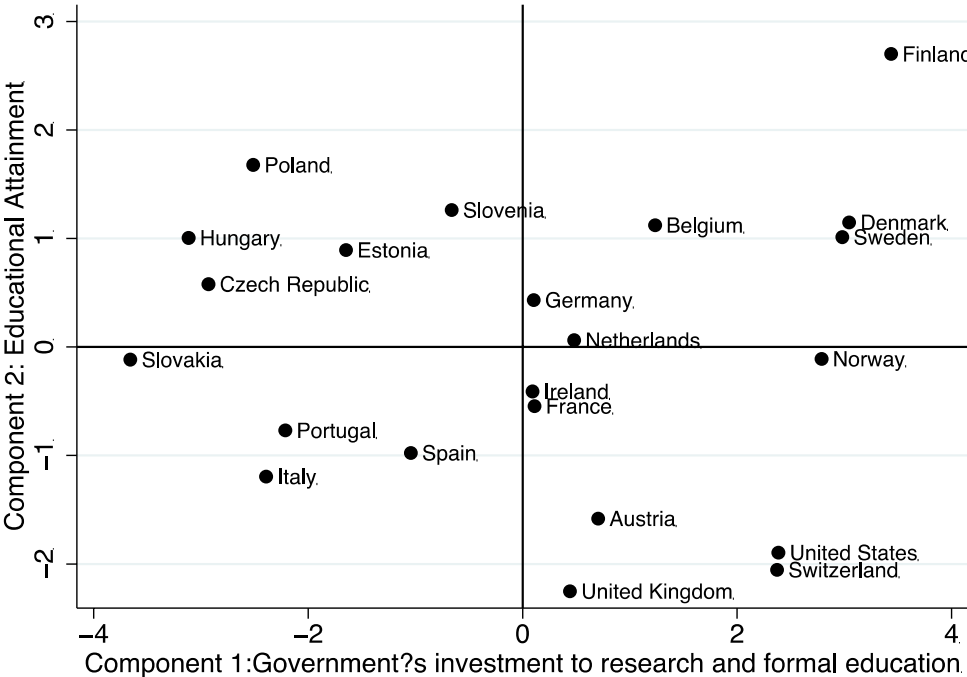
Figure A6. Labor markets and social spending: Country scores along the third and fourth factorial axes



**4 Education and knowledge**

Figure A7 shows the first factorial plane with respect to education and knowledge. The Scandinavian countries, the northern Western European countries, and the Anglo-Saxon countries (except Ireland) are characterized by high government investment in education and research and development, whereas the opposite trend is visible in the Mediterranean and Eastern European countries. For the second component, which concerns high educational enrollment, the Eastern European countries (except Slovakia) and the Nordic countries show positive scores. The Mediterranean and Anglo-Saxon countries, Austria, and Switzerland also have negative scores in the second dimension.

Figure A7. Education and knowledge: Country scores along the first and second factorial axes



**5 Informal Institutions**

Figure A8 shows the first factorial plane with respect to informal institutions. The Mediterranean countries, France, Germany, Belgium and Italy score high on avoiding uncertainty avoidance, accepting power distance and allowing relatively free gratification of the basic and natural human needs to enjoy life. Switzerland and Austria show more neutral scores for this component, whereas the Scandinavian countries, the Anglo-Saxon countries and the Netherlands receive negative scores for this component. For the second component, the Anglo-Saxon countries, the Netherlands, the Eastern European countries (except Poland and Slovenia), Germany, France and Italy show a greater preference for masculinity (representing a societal preference for achievement, heroism, assertiveness and material rewards for success), individualism and long-term orientation. The Nordic countries, Spain, Poland, Slovenia and Portugal earn negative scores for these values.

Figure A8. Informal Institutions: Country scores along the first and second factorial axes

