

## Administrative Burdens for Establishing Companies in EU Countries

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### Abstract

*Establishing a company requires not only a viable opportunity, but also many other factors in the business environment, including the ability to overcome administrative barriers in regulatory and administrative systems, which is particularly important. Therefore, the main aim of this paper is to analyse and compare the administrative burdens when establishing a company in EU countries. To assess the actual differences and similarities in administrative burdens in the process of establishing a company, countries were grouped according to four indicators using a cluster analysis. To get insights into changes in a particular country and compare it with other EU countries in terms of administrative burdens for starting a company, data from 2004, 2007, and 2016 were used. The findings show that, despite intense pressure and extensive measures implemented in the EU to reduce administrative burdens, the differences among EU member countries are still remarkable and the relative performance of some countries worsens despite absolute lessening of burdens on the national level.*

**Keywords:** administrative burdens, company establishment, EU countries, cluster analysis, Doing Business data

**JEL Classification:** L26, M13

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### Introduction

The institutional framework in which companies have to perform is limited to and controlled by a public regulatory and administration system, which may be more or less open, supportive or unsupportive for companies. A national policy influences the development of an economy in three ways (Nikolić, Pečarić and

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Fredotović, 1998): first, through the legislative system, which establishes a regulatory mechanism; second, through the development process at the national level via various short- and long-term economic policy measures; and third, by encouraging entrepreneurship.

Through the entrepreneurship process, from the establishment of the company to its closure, entrepreneurs are constantly exposed to administrative systems and their requirements. They have to carry out different procedures related to the company's establishment, the hiring and firing of employees, the obtaining of various licenses, state regulatory statistical and tax reporting, different administrative costs (e.g., taxes, fees), and the significant amount of time spent implementing all those administrative requirements. Fulfilling all these administrative requirements can negatively affect the establishment and operation of companies in particular countries. The aim of this paper is to analyse administrative procedures, costs, and time needed when establishing a company. Therefore, administrative burdens for company establishment are compared among EU countries during a certain period of time.

The first part of the paper reviews the literature to provide an overview of administrative burdens stemming from the regulatory system, focusing on the company establishment phase. This is followed by a discussion of the impact of regulatory burdens on fostering or hindering entrepreneurship. The theoretical framework concludes with an overview of the EU's role in lessening regulatory burdens. The empirical part of the paper employs the cluster analysis and provides detailed insights into the differences and changes in administrative burdens among EU countries in the first stage of the company lifecycle. The paper concludes by revealing absolute and relative changes in administrative burdens among observed countries.

## **1. Literature Review**

### **1.1. Entrepreneurship Process and the Role of Regulatory Systems**

The entrepreneurship process follows certain characteristic phases, from establishment until a company's closure, and starts with the exploitation of the business idea, requiring its implementation in a formal form. Thus, entrepreneurs establish some type of company, which is mainly determined by the regulatory system, although the regulatory system impacts companies throughout their lifecycle (OECD, 2007) or entrepreneurship process. In the first phase, the establishment of the company, the entrepreneur is first exposed to dealing with the regulations and administrative requirements and fulfilling them to successfully

start the business. Regulations represent a set of instruments by which governments establish requirements on businesses and citizens and are introduced to support public policies in particular areas (Revenue, 2008), including the legal establishment of companies, taxation, environmental protection, health and safety, employment rights, and the closing of a company. For companies, regulations can cause advantages or burdens. They can create benefits for the participants in an economy by setting the framework for a competitive and low-cost business environment (Revenue, 2008). Regulatory burdens include all costs that result from mandatory obligations placed on businesses by public authorities due to a law, decree, or similar act (EC, 2007). These costs involve not only accounting costs that can be expressed in monetary terms, but also opportunity costs, which are benefits of the alternative that was forgone – that is, the benefits that could have been received if alternative options were taken. No analysis was found that identified how many new businesses and benefits from these businesses have been lost due to high administrative burdens that prevented entrepreneurial ideas from being realized.

In an economic system, entrepreneurs are a scarce resource; therefore, it is particularly important to understand how their potential is utilized. The institutional system and rules of the economic system play a major role in channelling the entrepreneurial potential to be exploited. It is always possible for economic policy to support the creation and operation of companies, but it has to consider that the effectiveness of support depends on the companies' lifecycle. Companies have different needs, and external factors affect them differently depending on the stage of their lifecycle. The establishment and operation of a company require capital; therefore, the influence of an income limit (Fonseca, Michaud and Sopraseuth, 2007; Braunerhjelm and Eklund, 2014) has to be considered because it can have a negative impact. For example, Evans and Jovanović (1989) demonstrated that the richer people are, the more likely they are to become entrepreneurs. A lack of wealth prevents people from undertaking entrepreneurial activities. It follows that the primary interest of financial business support is to remove liquidity constraints and enable people without their own resources to become involved in entrepreneurial activities. Therefore, the most appropriate way to support entrepreneurship is to facilitate access to capital. However, this concept was very quickly criticized. Cressy (1999), for example, criticized Evans and Jovanović's model by arguing that taking risks is critical issue that outweighs financial ones. Wealthier people should be more predisposed to entrepreneurial activity because their wealth reduces risk aversion. Therefore, not only is financial support important, but also other measures might reduce the risks for entrepreneurs.

In addition, transaction costs (e.g., costs of searching for and acquiring information, costs of negotiation and decision making, costs of motivation and the execution of agreements, costs of control and performance evaluation, and compliance costs of business activities) can be critical factors for companies. Here again, the effectiveness of support depends on the companies' lifecycles (Van Stel, Storey and Thurik, 2007), as represented in Table 1.

**Table 1**  
**Possibilities of Economic Policy to Support Entrepreneurship in Different Lifecycle Phases**

Entrepreneurship phase	Lowering entry barriers	Lowering barriers for growth and expansion	Providing advice, support, and finances from public funds
Nascent entrepreneurs from necessity	Strong influence	Weak influence	Strong influence
Nascent entrepreneurs from opportunity	Strong influence	Weak influence	Strong influence
Entrepreneurs (new and established companies)	Weak influence	Strong influence	Strong influence

Source: Van Stel, Storey and Thurik (2007), p. 172.

The economic policy affects the level of companies in a society in two ways (Sobel, Clark and Lee, 2007): by shaping the quality and quantity of inputs for the entrepreneurial process and by shaping the institutional framework that designs the "rules of the game" (Baumol, 1993a). However, the key question is always whom do different incentives target. It is important to influence not only the number of companies, but also – and primarily – their quality. Influence over the institutional framework takes place through the entire set of laws, rules of a competitive market, government interventions, the legal system, tax rules, and other factors, all of which direct individuals to decide to engage in different types of entrepreneurship – namely, productive, unproductive, or destructive (Baumol, 1993b). Creative people will get involved in productive entrepreneurship in countries that ensure property rights, a fair and balanced legal system (Sobel, Clark and Lee, 2007), and appropriate implementation of agreements. This is in contrast to countries with incomplete and inadequate systems and institutions, where more people will engage in unproductive or destructive entrepreneurship. The more unregulated the institutional structure is and the slower and more unresponsive the public administration is, the greater the chances are that companies will be directed towards maintaining the status quo instead of pursuing innovation, growth, and internationalization (Lodge, 2005; Bradač and Rebernik, 2010). The institutional framework and its improvements are key elements in establishing the framework conditions for economic development

(Smallbone, 2007; Crnogaj et al., 2014). Therefore, governments face the challenge of reducing unnecessary and detrimental barriers while simultaneously not deregulating the system as a whole when implementing particular reforms.

Modern and responsive public administration positively affects the exploration of business opportunities and serves as a supportive environment. In contrast, obsolete and unresponsive public administration further complicates entrepreneurs' lives and negatively impacts new business creations as well as companies' successful operations. In general, economic policymakers have two main ways of promoting entrepreneurship (Van Stel, Storey and Thurik, 2007; Nemeč, Ochrana and Šumpíková, 2008): acting in the direction of low regulation or high support. Low regulation can direct economic policies in two areas. It can enable a business to start up in the quickest, simplest, and most inexpensive way; it can also minimize the number and scope of regulations for already-operating companies. Taxpayers actually shoulder the cost of a high level of entrepreneurship support services, which can take the form of advice, the provision of information, education, financial incentives, and subsidies. The policy of less regulated environments is characteristic in the USA, while a more regulated supportive environment is more typical of European countries. However, an unresponsive public administration brings additional risks. The entrepreneurial process represents permanent Schumpeterian creative destruction and a recombination of resources and is largely based on the principle of "attempt-error" (Zahra, Sapienza and Davidsson, 2006; Clark and Dwight, 2006; Sobel, Clark and Lee, 2007). Therefore, resources have to be free for entrepreneurial activity and should not be burdened by numerous administrative barriers that negatively affects entrepreneurs' core mission – namely, the manufacturing and provision of products and services customers are willing to purchase. The effectiveness of the entrepreneurial process depends not only on successful products and services, but also on how quickly failures are identified and inefficient combinations of resources are eliminated to make room for more successful combinations. The more bureaucratic and politicised an economic system is, the less effective it is. In a strong economy, there will always be huge dynamics involving new companies and their failures (Hall and Sobel, 2006, p. 4). Figure 1 represents the elements of the entrepreneurship process called the "rules of the game" that have important impacts on the outcomes of the entrepreneurship process (Hall and Sobel, 2006). In this framework, the entrepreneurship process can take place and can be accelerated or hindered.

The scarcity of entrepreneurial talent should be a motivation to exploit it as efficiently as possible and to focus on innovative, development-oriented companies. The answers to questions such as what can be done to help people with

entrepreneurial aspirations (nascent entrepreneurs) realize their plans and why do people who have plans to develop a company (increased employment, market share, and revenue) fail to accomplish those plans are unfortunately not known in detail in either theory or practice – especially in the latter. However, the fundamental frameworks that encourage or hinder them are known. Rigid and unresponsive public administration certainly has hindering effects. Even Adam Smith wrote in *The Wealth of Nations* more than 230 years ago that a rise from the lowest barbarism to the highest level of affluence, not need much else than peace, moderate taxes and a tolerable matter of legal system (tolerable administration of justice) – the rest comes naturally.

Figure 1

### Impacts of Policy on Outcomes of the Entrepreneurship Process



Source: Hall and Sobel (2006), p. 4.

### 1.2. Impact of Administrative Burdens on Companies' Establishment

All societies need a certain amount of regulation for their protection, the improvement of social standards, and other important societal goals that would not come about by themselves. However, regulations should be carefully targeted and effective and should not go beyond what is necessary to achieve their specific purpose (EC, 2007). As the institutional framework for companies contains a regulatory system with an administrative system, it is important that the framework is open and contemporary. A regulatory system is the full scope of legal instruments and decisions which governments establish and represent conditions on the behaviour of companies and citizens (OECD, 1994; 2014). Consequently, regulations and other requirements represent costs for companies. Costs can be divided into direct costs (money) and opportunity costs (resources needed to fulfil particular requirements). The regulatory system contains processes of public consultation, communication, and updating (Smallbone, 2007, p. 206) and should have some quality standards (OECD, 1994), including coherence, consistency and balance between different policies, stability and predictability

of regulatory requirements, ease of management, monitoring, oversight, responsiveness, transparency and openness to companies, consistency and fairness in implementation, and the adaptation to changing circumstances.

As some previous studies have pointed out, the impact of regulations on entrepreneurial entry tend to negative impact regulations on the establishment of new companies (e.g., Autorm, Kerr and Kugler, 2007; Kugler and Pica, 2008). Without a doubt, regulations are needed to secure transparent and efficient markets (Braunerhjelm and Eklund, 2014). However, too much regulation may hinder entrepreneurial dynamics. The level of regulation may therefore improve an economy by affecting the performance of entrepreneurial activity (Nicoletti and Scarpetta, 2003; Djankov, 2008). As some studies (Ciccone and Papaioannou, 2007; Ardagna and Lusardi, 2010) have shown, higher regulation influences the lower level of entrepreneurship and smaller start-ups' sizes. The level of costs to establish a company, mostly referred to as high taxes (Cullen and Gordon, 2007) and complex tax regulations (Braunerhjelm and Eklund, 2014), determines how new start-ups enter the market (Fonseca, Michaud and Sopraseuth, 2007; Glaeser and Kerr, 2009). In addition, as Giannetti and Simonov (2004) and Glaeser and Kerr (2009) revealed, more informal regulations positively influence the level of entrepreneurship.

The literature includes different definitions and explanations, but administrative burdens have no common definitions because of their complexity and difficulty (Nicoletti and Scarpatta, 2003). The administrative burdens for companies are the effort required to supply obligatory information as required by national laws and/or regulations (Kox, 2005). They can be measured by different categories, such as direct and indirect costs and for a single piece of information provided or as a benchmark for information required during a particular time period (Kox, 2005). Direct costs are financial expenses incurred during this compliance process. Indirect costs are less obvious but also important; they can hinder innovation, create unnecessary barriers to trade and investment, lessen economic efficiency if they become excessive in number and complexity, and affect the overall cost efficiency of domestic companies. Hence, at a macro level, they can have a significant impact on the competitiveness of an economy internationally (Revenue, 2008). As Wegrich (2009) claimed, administrative costs are defined as those parts of the regulatory costs imposed by information obligations included in laws or secondary legislation. Administrative costs are distinguished from substantial compliance costs (costs emerging from compliance with regulatory standards; e.g., emission standards). In addition, the description of how administrative burdens are defined or can be measured depends on the field of research to which they are applied (Van Stel and Stunnenberg, 2006). The complex administrative system plays a significant role in explaining entrepreneurial drive,

and potential entrepreneurs are negatively affected by their perception of administrative complexity (Grilo and Thurik, 2005). Van Stel and Stunnenberg (2006) found that administrative complexity is negatively related to business ownership. When administrative procedures related to business start-ups are complex, potential entrepreneurs are discouraged from starting new companies. The greater the administrative complexity is, the more efforts entrepreneurs need to comply with. Consequently, potential entrepreneurs could lose interest in setting up a business due to the complexities and ambiguities associated with starting a business (Van Stel and Stunnenberg, 2006).

However, huge differences in requirements for starting a new company exist between countries. Some previous studies used World Bank Data to address the regulations' impact on new companies' establishment. Desai Gompers and Lerner (2003) found a negative correlation between company entry and the number of start-up procedures in 35 European countries. Klapper, Laeven and Rajan (2004) analysed whether entry regulation hinders entry in industries with different average entry rates at the company, industry, and national levels. Ho and Wong (2007) found that differences in regulatory costs affect opportunity- and necessity-driven entrepreneurship. Regulatory costs have a restrictive impact on opportunity entrepreneurship and no impact on necessity entrepreneurship. The further found that the impact of regulatory costs is dependent on the income level of countries. A more recent study by Divanbeigi and Ramalho (2015) used World Bank data to provide strong evidence of the role of business regulations in enabling company creation. The authors confirmed the thesis that an overall sound business regulatory system is associated with higher levels of new business entry testing different types of regulations.

When analysing the EU's efforts to minimize, abolish, or prevent administrative burdens, it can be concluded that the majority of efforts are focused on the phase of establishing a business. To make the business environment friendly to companies, many governments in Europe concentrate their efforts on reviewing and simplifying administrative regulations. Therefore, we defined the following hypothesis:

*H1: EU countries reduced their administrative burdens and consequently made better conditions for starting a company during the observed period.*

As early as the 1970s, some western European countries faced the negative effects of strict regulations. Therefore, the logical policy response was to reduce regulatory burdens for companies. The 1990s saw a shift from lessening regulations to improving the quality of regulations (Smallbone, 2007). Administrative regulations can improve the functioning of markets and achieve environmental and social goals without imposing a significant compliance burden on firms if they are



appropriately designed (Revenue, 2008). Administrative burden reduction is part of the 'better regulation' agenda established at the top of the public sector reform agenda in central governments across Europe and the wider OECD world (Wegrich, 2009). The EU's Better Regulation policy (EC, 2010) aims to simplify and improve existing regulations, better design new regulations, and reinforce the respect and effectiveness of the rules, all in line with the EU's proportionality principle.

Despite great efforts at the EU level to minimize administrative burdens, differences among EU countries are still considerable. To measure improvements made, regulatory impact assessments have been introduced and are regarded as a core tool for better regulation agenda (Radaelli, 2007; Radaelli and De Francesco, 2007; Radaelli and Fritsch, 2012). Impact assessment, screening, and simplification concern businesses of all sizes (EC, 2007; 2011; Poel et al., 2014). The EU focuses in particular on administrative costs (not on all compliance costs) that are a part of compliance costs emerging from the information obligations of laws and regulations paying special attention to companies. A better regulation strategy is based on three key action lines (EC, 2010): (1) promoting the design and application of better regulation tools at the EU level, including the simplification and reduction of administrative burdens and impact assessment; (2) working more closely with member states to ensure that better regulation principles are applied consistently throughout the EU by all regulators; and (3) reinforcing the constructive dialogue between stakeholders and all regulators at the EU and national levels. Consequently, EU countries have implemented various reforms to improve the performance of national economies. Some studies that measured the quality of business environment have found a strong correlation between the dynamic efficiency of firms and the overall quality of regulations, based on the Doing Business Data in 44 countries (Desai and Eklund, 2014). Bosma and Levie (2010) found a strong correlation between the new business entry rate and the overall quality of regulations. As the European Commission only provides guidelines for national economies on how to improve their regulatory environment in the area of establishing companies, we have doubts that all EU member states actually reduced administrative burdens so much that they are comparable. Establishment is the first phase, and particular countries pay different levels of attention to each of these segments, although they are all EU members. Therefore, we wanted to examine whether differences occur in particular segments that are important when establishing a company from the administrative burdens' point of view. Thus, we defined the following hypothesis:

*H2: Each observed EU country does not belong to the same group of countries for each segment (processes, time, costs, and capital) and observed year.*

## 2. Research Methodology and Data

Starting and operating a company require the entrepreneur to deal constantly with public administrative burdens, which consist of procedures and associated costs and could represent an obstacle and reduce entrepreneurial activity (Klapper, Laeven and Rajan, 2006). Already the establishment of a company is associated with them and continues throughout the company's lifecycle. Administrative burdens facing a start-up can be measured by the number of procedures, time, costs, and minimum capital required. For the purposes of the empirical part of this paper, we used the Doing Business database (Doing Business Data, 2016) to analyse public administration burdens applied to companies during the first stages of their lifecycles in EU countries. We focused on the first lifecycle stage – namely, starting a business. The sample consists of all EU countries for which the data on administrative burdens for starting a company were available (data were used for 28 EU countries). To observe the dynamic view of the changes in administrative burdens for starting a company, data from years 2004, 2007, and 2016 were used.

Table 2 presents the initial data about administrative burdens on starting a business used in the analysis. The following indicators for measuring administrative burdens in starting a business were used (Doing Business, 2012):

- *Number of procedures needed to establish a company*, which is defined as any interaction of the company founders with external parties (e.g., government agencies, lawyers, auditors, or notaries). Interactions between a company's founders or officers and its employees are not counted as procedures. Procedures that must be completed in the same building but in different offices are counted as separate procedures. If founders have to visit the same office several times for different sequential procedures, each is counted separately. Similarly, each electronic procedure is counted separately.

- *Time* is measured in calendar days. The measure captures the median duration that incorporation lawyers indicate is necessary to complete a procedure with minimum follow-up with government agencies and no extra payments. It is assumed that the minimum time required for each procedure is one day, except for procedures that can be fully completed online, for which the time required is recorded as half a day. Although procedures can take place simultaneously, they cannot start on the same day (that is, simultaneous procedures start on consecutive days). A procedure is considered completed once the company has received the final documents.

- *Cost* is measured as a percentage of the economy's income per capita. It includes all official fees and data for fees for legal or professional services if such services are required by law. Fees for purchasing and legalizing company books are included if these transactions are required by law.

• *Paid-in minimum capital requirement* reflects the amount that the entrepreneur needs to deposit in a bank or with a notary before registration and up to three months following incorporation and is recorded as a percentage of the economy's income per capita. The amount is typically specified in the commercial code or the company law.

Table 2

**Initial Data on Administrative Burdens Indicators when Establishing Companies**

Economy	Procedures <sup>1</sup> 2004	Time <sup>2</sup> 2004	Cost <sup>3</sup> 2004	Paid-in mini- mum capital <sup>4</sup> 2004	Procedures <sup>1</sup> 2007	Time <sup>2</sup> 2007	Cost <sup>3</sup> 2007	Paid-in mini- mum capital <sup>4</sup> 2007	Procedures <sup>1</sup> 2016	Time <sup>2</sup> 2016	Cost <sup>3</sup> 2016	Paid-in mini- mum capital <sup>4</sup> 2016
Austria	8	25	6.1	65.6	8	25	5.6	59.6	8	22	0.3	13.1
Belgium	7	56	11.1	24.1	4	27	5.8	21.8	3	4	4.8	17.2
Bulgaria	11	32	10.4	86.7	9	32	7.9	63.9	4	18	0.7	0
Croatia	11	29	16.3	25.5	9	25	11.5	20.6	7	12	3.3	26.6
Cyprus	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	6	8	12.2	0
Czech Republic	10	40	10	47.4	10	24	8.9	36.8	8	15	6.7	0
Denmark	5	7	0	49.8	4	6	0	44.6	4	3	0.2	14.3
Estonia	6	72	8	53	6	35	5.1	34.3	3	3.5	1.3	17.3
Finland	3	31	1.1	29.8	3	14	1.1	27.1	3	14	1	6.8
France	8	41	1.3	29.2	5	7	1.1	0	5	4	0.8	0
Germany	9	45	5.9	49.1	9	22	5.1	46.2	9	10.5	1.8	33.9
Greece	15	38	32.7	135.2	15	38	21.7	116	5	13	2.2	0
Hungary	6	52	40.4	96.4	6	38	20.9	74.2	4	5	7.3	47.7
Ireland	4	18	10.4	0	4	13	0.3	0	4	6	0.2	0
Italy	9	23	22.1	11.6	9	13	20	10.4	5	5.5	13.8	0
Latvia	5	16	10.1	45	5	16	3.5	26.1	4	5.5	1.5	0
Lithuania	8	26	4	68	7	26	2.8	48.8	2	3.5	0.6	0
Luxembourg	n.a.	n.a.	n.a.	n.a.	6	29	11.9	22.7	6	18.5	2	22.6
Malta	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	10	28	10.7	1.4
Netherlands	7	9	13.3	67.2	6	8	7.2	62.3	4	4	4.6	0
Poland	10	56	21.3	247.4	10	31	19.2	204.4	4	30	12.2	11.4
Portugal	11	78	12	40.4	7	6.5	7.9	38.7	3	2.5	2.2	0
Romania	6	29	10.9	2.9	5	11	4.4	1.6	5	8	2	0.6
Slovak Republic	10	103	9.4	50.3	9	27	4.8	39.1	6	11.5	1.5	18.5
Slovenia	9	60	14.8	19.9	9	60	9.4	54	2	6	0	41.8
Spain	10	138	16.8	17.9	10	60	16.2	14.6	7	14	5.2	13.4
Sweden	3	16	0.7	38.5	3	16	0.7	33.7	3	7	0.5	12
United Kingdom	6	13	1	0	6	10.5	0.7	0	4	4.5	0.1	0

Notes: <sup>1</sup> Number of procedures. <sup>2</sup> In days. <sup>3</sup> As % of the economy's income per capita. <sup>4</sup> As % of the economy's income per capita.

Source: Doing Business Data (2016).

To ascertain similarities or differences among countries in terms of conditions for starting a company, a cluster analysis can be employed to group countries with similar conditions for starting a company and consequently establish the areas of administrative burdens in which some improvements can be made at the national level. The cluster analysis method is generally used to group data with similar characteristics. It is an explorative analysis that tries to identify

structures within the data. A detailed explanation of the cluster analysis can be found in the methodological literature (e.g., Hair et al., 2006; Xu and Wunsch II, 2008). According to Cramer (2003), a cluster analysis is often applied to determine how cases rather than variables can be grouped together. The cluster analysis procedure creates clusters from the observations supplied that display similar characteristics. To form these clusters, each observation begins the procedure in a separate group. Close observations are then gradually combined to form new groups until only the desired number of groups remains (Yildiz, 2013). The classification of similar objects into groups has always played an essential role in science. Not only for identifying a structure already present in the data, but also for imposing a structure on a more or less homogeneous data set that has to be split up in a rational way. Therefore, a cluster analysis is quite different from a discriminant analysis in that the former actually establishes the groups whereas the latter assigns objects to predefined groups (Kaufman and Rousseeuw, 2005). The cluster analysis in our paper was performed to reduce the complexity and compare EU countries' administrative burdens in the establishing phase (visualize countries' positioning). Rather than examining country-level indicators in isolation, clustering offers the opportunity to determine which countries are similar and explore the relationships between variables driving cluster membership. Understanding heterogeneity between EU countries makes it easier to diagnose economic (in-)efficiency. Such a cluster-based approach offers a new way of dividing and understanding economies and formulating better policy measures and actions.

The first step in our analysis used the agglomerative hierarchical clustering process; in the second step, a  $k$ -means non-hierarchical clustering process was employed. Each indicator in Table 2 was used separately in the cluster analysis. The clusters were formed using Ward's minimum variance approach to ensure the least within-cluster variation.

### 3. Data Analysis and Results

The hierarchical cluster analysis using squared Euclidean distance and Ward linkage was performed on a sample in order to determine the appropriate number of clusters. Because the data from four measured indicators have different meanings and are measured on different scales, it was not appropriate to include all indicators in one process at the same time. Another option was to standardize all data, but this would lead to the deviation among variables being lost and the results losing their variability. Therefore, we decided to conduct a cluster analysis for each indicator separately. According to the initial process of the hierarchical

clustering process, we decided to use three clusters for each indicator. In the next step, we used a *k*-means cluster analysis to extract three clusters. The results are represented for each indicator used in the analysis. Clusters are indicated from 1 to 3, where cluster 1 includes countries facing the fewest burdens when establishing a company and cluster 3 includes countries with the most burdens for each indicator. The summarized results of the cluster analysis for the all indicators when establishing a company in years 2004, 2007, and 2016 are presented in Table 3.

Table 3

**Results of Cluster Analysis for Each Indicator in Years 2004, 2007, and 2016**

Clusters	Procedures		Time		Cost		Capital	
	Final cluster centres 2004	No. of countries in cluster 2004	Final cluster centres 2004	No. of countries in cluster 2004	Final cluster centres 2004	No. of countries in cluster 2004	Final cluster centres 2004	No. of countries in cluster 2004
Cluster 1	5	11	21	13	6	14	20	12
Cluster 2	10	13	54	10	15	9	68	12
Cluster 3	15	1	121	2	37	2	247	1
Clusters	Procedures		Time		Cost		Capital	
	Final cluster centres 2007	No. of countries in cluster 2007	Final cluster centres 2007	No. of countries in cluster 2007	Final cluster centres 2007	No. of countries in cluster 2007	Final cluster centres 2007	No. of countries in cluster 2007
Cluster 1	5	13	11	11	3	14	13	11
Cluster 2	9	12	29	13	9	7	54	14
Cluster 3	15	1	60	2	20	5	204	1
Clusters	Procedures		Time		Cost		Capital	
	Final cluster centres 2016	No. of countries in cluster 2016	Final cluster centres 2016	No. of countries in cluster 2016	Final cluster centres 2016	No. of countries in cluster 2016	Final cluster centres 2016	No. of countries in cluster 2016
Cluster 1	3	15	5	16	1	19	1	15
Cluster 2	6	9	14	9	6	5	17	10
Cluster 3	9	4	27	3	12	4	41	3

Source: Authors' calculation.

The results indicate that, in 2004, cluster 1 for the indicator *Procedures* includes 11 countries characterized by the lowest number of procedures (5 on average). In 2004, these countries had to fulfil three to seven procedures to establish a company. Cluster 2 consists of 13 countries required to fulfil 10 procedures on average (between 8 and 11) in the same year. However, cluster 3 – with the highest number of procedures – contains only one country (i.e., Greece), which was required to fulfil 15 procedures in 2004 to establish a company. To compare the same indicator in year 2007, 13 countries had the fewest procedures (cluster 1) to fulfil (i.e., 5) on average. Compared to 2004, in 2007 differences

emerged only in cluster, which comprised 12 countries and 9 procedures on average. Furthermore, cluster 3 still had only one country required to fulfil 15 procedures in 2007, and it was still Greece. A noticeable improvement in reducing the number of procedures occurred in 2016: Cluster 1 included 15 countries with 3 procedures on average, cluster 2 included 9 countries with 6 procedures on average, and cluster 3 had 4 countries and 9 procedures on average. The progress is seen particularly in the last observed period of time, when cluster 3 countries had to fulfil only 9 procedures on average, while in 2007 both cluster 2 and cluster 3 countries had to fulfil 15 procedures. Improvement was also evident in cluster 1, which required 5 procedures in 2004 and 2007 but only 3 in 2016 on average.

For the indicator *Time*, the differences are even bigger. Cluster 1 (13 countries) took 21 days on average to establish a company in 2004. In the same year, cluster 2 (10 countries) took 54 days and cluster 3 (2 countries) took 121 days. By 2007, a significant reduction in the duration of establishing a company was evident, especially among those with the highest duration: cluster 3 (2 countries) took 60 days, cluster 2 (13 countries) took 29 days, and cluster 1 (11 countries) took 11 days on average. The time was further reduced by 2016, when cluster 1 needed only 5 days on average to establish a company, cluster 2 (9 countries) needed 14 days, and cluster 3 (3 countries) needed 27 days. Thus, in the majority of EU countries, the time needed to establish a company during the observed period was reduced – so much so that the shortest time (21 days) on average in 2004 became almost the same as the longest time (27 days) on average in 2016.

The indicator *Cost* includes all expenses in the process of establishing a company and is measured as a percentage of the country's income per capita. This indicator also improved during the observed period. In 2004, cluster 1 (14 countries) needed 6% of the economy's income per capita on average to establish a company, cluster 2 (9 countries) needed 15%, and cluster 3 (2 countries) required 37%. In 2007, cluster 1 (14 countries) needed 3% of the country's income per capita, cluster 2 (7 countries) required 9%, and cluster 3 (5 countries) required 20% on average. These required expenses decreased even further by 2016: Cluster 1 (19 countries) needed only 1% of the country's income per capita on average, cluster 2 (5 countries) needed 6%, and cluster 3 (4 countries) needed 12%. The costs for establishing a company declined in all countries from 2004 to 2016, but only one country in the EU had no expenses in 2016: Slovenia.

Similarly, the indicator *Minimum Required Capital* for establishing a company is measured as a percentage of the economy's income per capita. In 2004, the required capital for establishing a company was relatively high compared to 2007 and 2016. In 2004, cluster 1 (12 countries) required 20% of the country's income per capita for capital on average, cluster 2 (12 countries) required 68%,

and cluster 3 (1 country: Poland) required 247%. Although by 2007 it has already decreased, it was still considerably above the average and the same country was still in cluster 3, requiring 204% of the country's income per capita on average in capital to establish a company. Meanwhile, cluster 2 (14 countries) required 54% and cluster 1 (11 countries) required 13%. By 2016, huge progress had been made in lowering the required capital. Cluster 1 (15 countries) required 1% of the country's income per capita on average, cluster 2 (10 countries) required 17%, cluster 3 (3 countries) needed 41%. Only in the last observed year was the difference among EU countries' required capital to establish a company reduced.

The detailed cluster analysis, examining single indicators as well as a dynamic point of view, clearly shows a diminishing of administrative burdens during the time, but there are still important differences between countries with the lowest and highest burdens when establishing a company. The cluster for each country and indicator during the observed period of time are presented in Table 4. Together with the data in Table 2, relative changes in burdens for starting a company during the observed time for each country can be identified.

Although the efforts at the EU level to minimize or prevent different types of burdens for companies are very intensive, some remarkable differences still exist at the country level. The analysis provided by countries and their relative performance to other EU countries shows a mixed picture. The *Sum of clusters* column in Table 4 shows the summarized result of cluster membership for all four indicators, where countries in cluster 1 have the least burdens for a particular indicator and countries in cluster 3 have the poorest results or the highest administrative burdens. This column represents the sum of cluster memberships for all indicators, which could be between 4 and 12 because there are four indicators ranging from 1 to 3; the lower the sum, the better the result for the particular country. In addition, in the last column countries were grouped into three groups. Countries with four to five cluster memberships were marked as "best", those with six to eight were marked as "middle", and those with nine and ten were marked as "worst" for each year. However, the relative performance to other countries could abolish the improvement of a particular country and even lead to membership in a cluster with the poorest results.

To get insights into the changes in particular country and compare it with other countries in the EU, a detailed analysis is essential.

*Austria* is one of the countries whose relative performance worsened during the observed period. This country did not reduce the number of procedures, the time needed to establish a company shortened slightly from 2007 to 2016, and the required capital was significantly reduced. However, these small changes lowered

Austria's relative performance compared to other EU countries, and its cluster membership changed towards clusters with lower results, consequently changing its position from a country with middle barriers (in 2004 and 2007) to a country with the most barriers (in 2016).

*Belgium* reduced barriers to establishing a company; mostly shortened the time needed to establish a company, and reduced the required capital. However, compared to other countries, its position in 2004 and 2016 was among countries with middle barriers while in 2007 it was among the countries with the least barriers.

*Bulgaria* was among countries with middle barriers to establishing a company in 2004 and 2007, but its relative position was lower in 2007 because it implemented small improvements. In 2016, it was among countries with the least barriers, mainly because of the reduced cost of establishment and lowered required capital.

*Croatia* faced middle barriers all three observed years, with a very moderate reduction of all four types of barriers to establishing a company. Consequently, its relative position did not improve. The data for *Cyprus* are available only for 2016, when it was positioned among countries with middle barriers.

The *Czech Republic* was among countries with middle establishment barriers in all three observed years, but its relative position worsened over time. Although the required capital was minimized, the other three indicators were not reduced enough; in particular, procedures and time to establish a company remained high compared to other countries.

*Denmark* had few barriers; consequently, it was among the countries with the lowest barriers in all observed periods. Only the indicator required capital for the establishment of a company was somewhat high, positioning Denmark in cluster 2, but other indicators positioned it in cluster 1.

*Estonia* was among countries with middle barriers in 2004 and 2007, while in the last period it made huge improvements and positioned itself among the countries with the least barriers. It made the most improvements in shortening the time needed to establish a company and reducing the required capital.

*Finland* was among countries with the lowest barriers in all observed years. However, its position in the time indicator worsened during the last period, positioning it in cluster 2 in 2016, because it did not improve this indicator during this period. However, all other indicators were relatively low compared to other countries; therefore, its position was still among the best countries.

*France* was among countries with middle barriers in 2004. However, improvements made by 2007 shifted it to the countries with the least barriers – a position it maintained in 2016 as well. Barriers were mostly reduced by shortening the time needed to establish a company and minimizing the required capital.



Table 4

## Cluster Membership for Each Indicator in Years 2004, 2007, and 2016

Country	Year	Cluster membership				Sum of clusters	Level of barriers
		Procedures	Time	Cost	Capital		
Austria	2004	2	1	1	2	6	Middle
	2007	2	2	1	2	7	Middle
	2016	3	3	1	2	9	Worst
Belgium	2004	1	2	2	1	6	Middle
	2007	1	2	1	1	5	Best
	2016	1	1	2	2	6	Middle
Bulgaria	2004	2	1	1	2	6	Middle
	2007	2	2	2	2	8	Middle
	2016	1	2	1	1	5	Best
Croatia	2004	2	1	2	1	6	Middle
	2007	2	2	2	1	7	Middle
	2016	2	2	1	2	7	Middle
Cyprus	2004	–	–	–	–	–	–
	2007	–	–	–	–	–	–
	2016	2	1	3	1	7	Middle
Czech Republic	2004	2	2	1	2	7	Middle
	2007	2	2	2	2	8	Middle
	2016	3	2	2	1	8	Middle
Denmark	2004	1	1	1	2	5	Best
	2007	1	1	1	2	5	Best
	2016	1	1	1	2	5	Best
Estonia	2004	1	2	1	2	6	Middle
	2007	1	2	1	2	6	Middle
	2016	1	1	1	2	5	Best
Finland	2004	1	1	1	1	4	Best
	2007	1	1	1	1	4	Best
	2016	1	2	1	1	5	Best
France	2004	2	2	1	1	6	Middle
	2007	1	1	1	1	4	Best
	2016	2	1	1	1	5	Best
Germany	2004	2	2	1	2	7	Middle
	2007	2	2	1	2	7	Middle
	2016	3	2	1	3	9	Worst
Greece	2004	3	2	3	2	10	Worst
	2007	3	2	3	2	10	Worst
	2016	2	2	1	1	6	Middle
Hungary	2004	1	2	3	2	8	Middle
	2007	1	2	3	2	8	Middle
	2016	1	1	2	3	7	Middle
Ireland	2004	1	1	1	1	4	Best
	2007	1	1	1	1	4	Best
	2016	1	1	1	1	4	Best
Italy	2004	2	1	2	1	6	Middle
	2007	2	1	3	1	7	Middle
	2016	2	1	3	1	7	Middle
Latvia	2004	1	1	1	2	5	Best
	2007	1	1	1	1	4	Best
	2016	1	1	1	1	4	Best
Lithuania	2004	2	1	1	2	6	Middle
	2007	2	2	1	2	7	Middle
	2016	1	1	1	1	4	Best

Luxembourg	2004	–				–	–
	2007	1	2	2	1	6	Middle
	2016	2	2	1	2	7	Middle
Malta	2004	–				–	–
	2007					–	–
	2016	3	3	3	1	10	Worst
Netherlands	2004	1	1	2	2	6	Middle
	2007	1	1	2	2	6	Middle
	2016	1	1	2	1	5	Best
Poland	2004	2	2	2	3	9	Worst
	2007	2	2	3	3	10	Worst
	2016	1	3	3	2	9	Worst
Portugal	2004	2	2	2	1	7	Middle
	2007	2	1	2	2	7	Middle
	2016	1	1	1	1	4	Best
Romania	2004	1	1	2	1	5	Best
	2007	1	1	1	1	4	Best
	2016	2	1	1	1	5	Best
Slovak Republic	2004	2	3	1	2	8	Middle
	2007	2	2	1	2	7	Middle
	2016	2	2	1	2	7	Middle
Slovenia	2004	2	2	2	1	7	Middle
	2007	2	3	2	2	9	Worst
	2016	1	1	1	3	6	Middle
Spain	2004	2	3	2	1	8	Middle
	2007	2	3	3	1	9	Worst
	2016	2	2	2	2	8	Middle
Sweden	2004	1	1	1	1	4	Best
	2007	1	1	1	2	5	Best
	2016	1	1	1	2	5	Best
United Kingdom	2004	1	1	1	1	4	Best
	2007	1	1	1	1	4	Best
	2016	1	1	1	1	4	Best

Source: Authors' calculations.

*Germany* was among countries with middle barriers in 2004 and 2007, but in 2016 its relative position changed to be among the countries with the most barriers. During the observed period, this country made only minor changes, mainly reducing the time to establish a company and lowering the required capital, but it did not change the number of procedures. Consequently, compared to other countries, its relative position worsened.

In 2004, *Greece* had the most barriers of all countries, leading all others in the capital required to establish a company; its position in 2007 was still among countries with most barriers. However, in 2016, it minimized the capital required and reduced the costs of establishment; consequently, its position improved to be a country with middle barriers.

*Hungary* also faced middle barriers in all observed years. It mostly improved the number of procedures and time needed to establish a company, but the cost of establishment and required capital remained relatively high compared to other countries.

Both *Ireland* and the *United Kingdom* performed well in all observed years. The requirements of both countries were quite similar, with as few barriers to company establishment possible, placing them in cluster 1 in all indicators and all years.

*Italy* faced middle barriers and relatively worse results for the cost of establishment in 2007 and 2016, although improvements were made in all indicators.

*Latvia* also had low barriers and improved its conditions in all observed years by reducing all indicators to minimize barriers in 2016.

*Lithuania* improved its position from being a country with middle barriers in 2004 and 2007 to a country with the least barriers in 2016, placing it in cluster 1 in all four indicators.

For *Luxembourg*, data were available for 2007 and 2016, when it was among countries with middle barriers, although it performed relatively worse in 2016 than in 2007. It reduced barriers mostly by lowering the costs of establishment.

For *Malta*, data were available only for 2016, when it was among countries with the most barriers. It was categorized in cluster 3 for number of procedures, required time, and costs of establishment but cluster 1 for required capital to establish a company.

The *Netherlands* improved its position from having middle barriers in 2004 and 2007 to having the least barriers in 2016. It mostly improved the required capital, which was minimized in 2016, while all other indicators only moderately improved during the observed period.

*Poland* performed the worst in all observed years. Although it improved indicators, the changes were relatively small compared to other countries. The amount of required capital was among the highest in 2004 and 2007; it was considerably lower in 2016. However, costs of establishment and required time remained relatively high, resulting in Poland being among the countries with most barriers in the EU.

*Portugal* improved its position from facing middle barriers in 2004 and 2007 to having the least barriers in 2016 by improving all four indicators.

*Romania* also had the least barriers in all observed years, yet it still had slightly more barriers than Ireland or the UK.

*Slovak Republic* mostly improved the time required to establish a company and modestly improved the other three indicators. Nevertheless, it remained in the group of countries having middle barriers in all observed years.

Meanwhile, *Slovenia* was among countries with middle barriers in 2004 and 2016 and with the most barriers in 2007. Although it reduced the number of procedures from 2007 to 2016 and significantly shortened the duration of company establishment, the required capital increased from 2004 to 2007 and remained relatively high in 2016, positioning Slovenia in the middle.

*Spain* performed similarly to Slovenia, being categorized among countries with middle barriers in 2004 and 2016 and among countries with the most barriers in 2007. However, *Spain* still performed worse than Slovenia in terms of the number of procedures, required time to establish a company, and costs of establishment; it performed better only in required capital.

*Sweden* ranked among the best countries in all observed years, but it performed slightly worse than the best two countries (i.e., Ireland and the UK).

## Conclusions

Based on the empirical analysis of the EU countries, this paper provides insights into the differences in administrative burdens when establishing companies and into the changes occurring in this field from 2004 to 2007 and 2016. Using the cluster analysis, we formed three clusters among the 28 EU countries and analysed four indicators that measure administrative burdens when establishing a company. The results showed noticeable improvement in all four examined indicators of administrative burdens: a reduced number of procedures, a huge improvement in reducing the duration of establishing a company, fewer required expenses for establishing a company, and less required capital to establish a company. A clear diminishing of administrative burdens was evident from 2004 to 2007 and 2016. Therefore, we can confirm our first hypothesis that EU member countries have reduced their administrative burdens and consequently made better conditions for starting a company during the observed years. However, important differences remain between countries with the lowest and highest burdens to establish a company.

The country-level analysis revealed that the relative performance of some countries worsened even when an absolute reduction of burdens occurred. For example, Austria's and Germany's relative performance worsened during the observed period whereas Ireland and the United Kingdom performed the best in all observed years. Requirements for company establishment in both of the latter two countries are quite similar, with as few barriers as possible. As a result, they performed the best in all segments and in all observed years. The countries with the least barriers in all observed years also included Denmark, Finland, Latvia, Romania, and Sweden. Six countries faced middle barriers in all observed years; they moderately reduced barriers compared to other countries or improved only particular segments of barriers. Poland is the only country to have the most barriers in all three observed years. Although it improved all indicators, the changes were relatively small compared to other countries. Thus, we can conclude that EU countries do not have equal administrative burdens on all segments (processes,

time, costs, and capital) when establishing companies. Furthermore, the analysis of each country showed that some countries changed their position among groups while others did not.

Therefore, the second hypothesis – namely, each observed country does not belong to the same group of countries for each segment (processes, time, costs, and capital) and observed year – can only be partially confirmed. Although the role of the EU is to accelerate changes in minimizing existing and preventing additional administrative burdens at the national level, member states implement changes differently. When observing the conditions and progress in administrative burdens, differences and similarities are evident among countries. National economies have to find an appropriate level of administrative burdens to foster entrepreneurial activity and simultaneously retain a suitable minimum level of administrative procedures and costs to ensure institutional protection and overview.

The results provide important information in several ways. First, although the EU should represent a single market and consequently the conditions for establishing a company should be similar, the differences among the observed countries are remarkable, particularly when it comes to the first phase of the company lifecycle, which has received the most attention at the EU level in previous years. This is an important sign for the European Commission as it indicates which countries and which areas require special attention as well as which countries should introduce additional measures. Second, from entrepreneurs' point of view, this analysis provides a detailed comparison of administrative burdens in different EU countries. It is relevant for potential entrepreneurs and companies which intend to internationalize and are scanning countries for potential residence for a new company. They can compare administrative burdens in different countries according to their preferences for the importance of each measured indicator, thereby helping them make two decisions: whether to establish a company in a particular country based on identified administrative burdens and in which country to establish a company based on a comparison of administrative burdens. Third, from a national policy point of view, which affects the level of administrative burdens, this paper provides a benchmark for each indicator measuring administrative burdens. Based on the results, policymakers can position themselves in a particular place or level for each indicator where they want to position a country and compare themselves with countries with similar conditions for each indicator.

However, further research using various correlation analyses could provide additional evidence, offering better insights into the administrative burdens to establishing companies. One such possibility would be linking administrative

burdens with other measures (e.g., level of companies' entrance, new company establishment levels). Moreover, a similar empirical analysis using a cluster analysis could be useful in companies' later lifecycle stages, such as operating and closing a company. Almost all the countries analysed in the current study implemented most of the initiatives and conditions required to establish a company. However, establishing a company is a one-time act; therefore, administrative burdens for operating companies are just as important because they affect business on a daily basis.

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