



# Article Internationalization of Large Companies from Central and Eastern Europe or the Birth of New Stars

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Abstract: With rapid globalization, firm internationalization has become an important corporate strategy as well as the necessity for the survival and growth of the business. In the last decade, there has been a growth in literature that studies this field, especially in emerging countries. However, there exists a gap in the literature in CEE countries. This study aims to fill that gap by conducting an analysis and providing insight regarding the factors that lead to an increase in firm internationalization in this region. This research paper studies the main determinants that have an impact on the firm internationalization of large companies in CEE countries using panel data empirical methods, such as the random effect model and generalized method of moments (GMM) model for a panel of 50 firms from 11 CEE countries and a time duration of 14 years. This study determines the main factors that positively influence firm internationalization in selected countries. These countries have experienced a radical transition from centrally planned economies to market economies, and although they have experienced economic growth and a rise in productivity, they are still facing several challenges. Therefore, it is important to know what facilitates and helps firms to expand in international markets. The main findings derived from this study show that firm characteristics, such as age, size and corporate performance, have a positive effect on the internationalization process. An increase in age, size and firm performance leads to higher levels of internationalization. Larger and relatively older firms have access to more resources and are more experienced in dealing with the environmental difficulties characteristic of these countries.

**Keywords:** firm internationalization; international business; CEE countries; GMM model; random effect model

# 1. Introduction

Firm-specific and environmental factors' impact on company internationalization have become highly interesting to study, especially in emerging and transition countries where the institutional and economic context is quite different from developed economies [1,2]. In these countries, the internationalization of firms provides opportunities, but also challenges, especially for early internationalizing companies [3–5]. Firm internationalization is a very broad and complex concept and includes a range of activities, such as importing and exporting of products, foreign direct investment (FDI) in host countries through mergers and acquisitions or greenfield investment, outsourcing, marketing, and research and development [6].

Currently, as the world becomes more globalized and countries become more economically integrated with each other, the amount of trade and investment between them increases. Living in the age of international competition, it has become increasingly important for firms to adapt to this relatively new environment and expand their operations



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**Copyright:** © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https:// creativecommons.org/licenses/by/ 4.0/). beyond their place of origin [7–15]. CEE countries were considered a "fascinating research laboratory" by [16] in their study. They are still a testing laboratory, and there are many unanswered questions related to them. The most important among them is whether their economies will catch up with Western European countries [17]. Some of them have made enormous steps, but differences still exist. Sustainable economic growth is the most important element that eradicates these differences, and firm internationalization is one factor that contributes highly to this. Therefore, supporting and motivating business from this perspective is the right policy to be followed by the government. Sustainable economic development requires sustainable business growth for large and small enterprises. Internationalization contributes to sustainable business growth and makes these businesses more aware and responsible about the local and international environment. Business organizations, particularly large organizations, are considered very important stakeholders with large potential to contribute to sustainable development [18]. According to [19], businesses have large responsibility towards the goal of global sustainability. According to him, business sustainability requires businesses to continue their activities without damaging the environment and contributing to the common good through positive value creation. Currently, an increasing number of businesses have acknowledged their responsibility in global sustainability and have become aware of their negative impact on the environment and society.

There is an incredible amount of interest in the activities of firms from emerging and transition countries expanding abroad [20,21]. As a result of the companies' efforts to internationalize their activities, we are witnessing the change of the position occupied by some countries, which, from net FDI recipients, turn into foreign capital providers, going through the stages identified by Dunning and exposed in the theory of investment development path [22–24].

Recently, this trend of firm internationalization has also been facilitated by several factors, such as the Internet or other sources of technological communication such as digital platforms [25–28]. These factors have changed the way companies conduct business. Companies, to survive this increased international competition, have searched for ways to expand their operations and profit from economies of scale in pursuit of competitive advantages.

Internationalization has been studied mostly in advanced economies, and recently, there has been a growth in the literature in emerging countries [29-32]. However, there seems to be a gap in the literature regarding emerging and transitioning countries despite the growing literature [33]. The process of internationalization is seen as a major dimension for growth and development. In general, Central and Eastern European (CEE) countries have small domestic markets. Therefore, globalization and internationalization are seen as options to offer larger opportunities for firms in these countries to grow, and this might be crucial for them [34]. In this area of globalization, going international is inevitable for sustainable growth and development [35–37]. Therefore, with increasing globalization, the process of internationalization has become significant not only for large firms, but also for small and medium enterprises. The CEE region is less globalized than Western Europe, which makes it an excellent candidate for study in the area of globalization processes [38]. Central and Eastern European countries are net recipients of FDI, being at an early stage in the path of investment development proposed by John Dunning [23,39]. In CEE countries, firms do not record a long history of private markets and internationalization. During the last decade, they have experienced privatization of state-owned enterprises, restructuring of these companies to adjust to the market economy and birth of new private entities [40]. During this period, these firms were also struggling with weak institutions and an economic environment not very suitable for growth. However, they have experienced changes quite quickly facilitated by membership in World Trade Organization and integration in European Union [21,41–43]. The EU membership of CEE countries is a factor that favors the internationalization of companies from this region that thus have access to a regional market of considerable size on which they can operate in a somewhat easy way given the existence of European regulations.

Many of the largest companies from CEE countries are subsidiaries of companies headquartered in other parts of the world [44], and as a result, strategic decisions are made outside the CEE [45]. In contrast, the share of large companies headquartered in the CEE with subsidiaries outside the CEE is very small, with only a few [46].

Motives of internationalization of firms from emerging and transition countries differ from firms of developed economies [47]. Although there is an increasing interest of scholars in the internationalization of emerging and transition economies, there are only a few studies concentrating on firms from CEE countries [21]. This work focuses on firm activities in foreign countries that involve their effort to obtain revenues from their exporting or FDI investment in these host markets. This study's aim is to fill the literature gap and develop more evidence regarding the process of internationalization for firms in CEE countries. Based on these arguments, it is important to see what the main determinants of large firms' internationalization are in these countries. Therefore, the main research question is the identification of the main factors that lead to the higher international performance of large firms in the CEE region. What is the impact of the main factors, such as firm performance, age, size foreign ownership, intangible assets, etc., studied largely by the literature in advanced economies, in the countries of CEE?

## 2. Literature Review

The emergence and development of multinational companies and foreign direct investment flows are explained by various theories, such as the theory of monopoly advantage, product life cycle theory, eclectic theory or internationalization theory [48,49]. The theory of internalization of production is closely linked to the theory of the firm because the company and the market are considered to be two alternative ways of organizing the same transactions [50]. According to [51], multinational corporations replace external markets with internal flows of factors of production, goods and services when the costs of these flows are lower than the costs of organizing markets. A firm tends to grow until the cost of an additional transaction, through it, equals the cost of that transaction through the market or by another firm. Internalization, seen primarily as a way to create an internal market for intermediate products, has its own costs related to the increased flow of information, administrative costs for the organization of the internal market, and costs that must be lower than additional income obtained by internalization. This theory considers not so much the internalization of a market as the internalization of externalities by creating an internal market in case the external market does not exist or is inefficient. This is the situation for intermediate goods. Activities, such as research, development, staff training and marketing, are independent activities, but are linked by flows of intermediate products consisting of knowledge and expertise [48].

Companies' advantages (in the field of production and marketing) are the basis of the decision to invest if intrafirm transfers involve lower costs than transactions on the market. This company-specific advantage is not a good that could be acquired, and it is not a single patent or invention; it must be seen as a "transfer of the ability to invent". Another researcher [52], points out that technology transfer has no or almost zero cost. This process involves the transfer of models and drawings, but also a cost of transmission and absorption of knowledge that are not incorporated in the drawings, but that conditions the correct application of projects.

Williamson [50] believes that FDI and multinational companies' expansion are not designed to strengthen the monopoly or oligopoly position but to ensure the most efficient transfer of knowledge abroad. Compared to the classic option—licensing, under certain conditions—multinational companies prefer the transfer of technology through FDI. This is also confirmed by practice—the concentration of FDI in industries with significant technology transfers is noticed. Rugman [53] considers that all existing theories about FDI are variants of the theory of internalization, internalization being an answer for any type of externality (for example: market distortions—tariff and nontariff barriers). This is also supported by the study of [54].

The two most important theories in this field of firm internationalization are the Uppsala theory of incremental internationalization and resource-based view (RBV) theory [55–57]. The Uppsala model of incremental internationalization has its roots in the Scandinavian school of research in this field, with some of the most cited works from authors such as [58–61]. These two authors, [62], developed the Uppsala theory, and according to this model, the process of internationalization of firms is an incremental process. In this model, firms tend to increase their internationalization and their commitment to foreign markets as their experience improves. The international process prescribed by this theory starts with small steps. In the beginning, firms choose markets that are near in terms of physical distance.

This theory includes two main stages of internationalization. First, enterprises select new overseas destinations for expansions based on their physical proximity to the host country, and later, firms expand farther to more distant markets once they gain experience in each host country. Therefore, according to this theory, firms start their international activity by a low commitment in markets that are physically close and gradually increase their activity. The Uppsala theory of firm internationalization was developed by observing Swedish firms' internationalization, and these firms were located in advanced economies. In addition, the external environment the firms are operating currently is different compared to the period in which this theory was first born. With facilities such as the internet or other information technology advantages, this incremental process has developed and shortened. Therefore, later changes and updates of this theory occurred. Johanson and Vahlne [60] revised this theory by including networks of relationships.

RBV theory predicts that the success of firms in foreign markets depends on their ability to develop distinguishing characteristics compared to other firms. According to this theory, tangible and intangible resources create competitive advantages for a firm [63]. RBV theory highlights that the competitive advantages a firm has can generate profit above normal [64]. RBV has its roots in strategic management, [63] and specifically in the work of [64]. According to him, firm resources include "all assets, capabilities, organizational processes, firm attributes, information, knowledge" that a firm possesses. A firm needs to have sustainable competitive advantages, which are associated with resources that are valuable, rare, inimitable or irreplaceable. This theory predicts that internal resources and characteristics are the real drivers of firm internationalization.

# 2.1. Firm Performance

The relationship between performance and internationalization is one of the most discussed topics in this field. In the literature, numerous studies that have explored this relationship have arrived at contradictory results. There are three different relationships identified in the literature. Some studies, such as [65,66], have concluded that there exists a positive relationship between internationalization and performance, while other studies, such as [67], have concluded that this relationship is negative. Later studies, such as [68,69], proposed a U-shaped relationship and S-shaped relationship [70,71].

The scientific literature on this topic has been mostly concentrated on multinational firms from developed countries. The performance of the firm is a very important element, and the companies need to be profitable enough in the domestic market to be able to move to international markets. Most of the studies mentioned above study the impact of internationalization on firm performance. There are only a few papers that analyze the impact of performance on firm internationalization. Ruigrok et al. [72] explore the impact of performance on internationalization from a behavioral perspective.

From an RBV perspective, performance has a positive impact on firm internationalization. A firm with positive performance possesses intangible and tangible resources to engage in international market activities. Nevertheless, there is also another counterargument that considers that highly profitable companies are less likely to engage in risky behaviors, such as internationalization. Therefore, the impact of performance on internationalization might be negative. The literature in this aspect is not in the same line, as poor performance might affect the strategic decisions in a company by pushing them to look for new ways in an international environment to improve their condition. In contrast, insufficient resources because of poorer performance limits firms to engage in international markets [73].

The firms operating in emerging and transition countries are considered escapeoriented types of companies, which are in search of international markets to escape from their home environment. These types of firms tend to be in their initial stages of the internationalization process. Companies from CEE countries do not have a long history of operating in international markets. Therefore, considering these arguments, it is expected that an increase in performance would provide these firms with more resources to engage and diversify their risk from home countries in international markets, and an improvement in performance has a positive effect on their degree of internationalization. Therefore, based on this argument, the hypothesis tested is:

**Hypothesis 1 (H1).** *Firm performance has a positive and statistically significant effect on the international performance of large firms in CEE countries.* 

# 2.1.1. Foreign Ownership

Foreign ownership can help these firms overcome their liabilities of foreignness through their relationships and knowledge about foreign markets. Foreign investors monitor managers' activity and influence governance and strategic decision making [74]. Through their networks and knowledge of foreign markets, they can also provide these firms with more resources. Singla et al. [75] find that foreign corporate ownership and foreign institutional ownership are positively related to internationalization, while family, domestic corporate and institutional ownership are negatively related to internationalization.

RBV theory predicts that different types of owners can provide access to different resources for the firm and therefore impact its capability to internationalize [76]. This theory explains how the motivation of owners, which is also the motivation of the firm, and capability influence internationalization. The ownership of foreign individuals, corporations, or institutions has been found to have a positive impact on firm internationalization in transition countries [77]. Based on these findings, the hypothesis formulated is:

**Hypothesis 2 (H2).** Foreign ownership has a positive and statistically significant effect on the international performance of large firms in CEE countries.

## 2.1.2. Firm Age and Size

According to Uppsala theory, firms follow an incremental process during their internationalization; therefore, age and size are very important factors to consider. Successful internationalization is influenced by capabilities and resources [78]. Capabilities and resources are elements that are closely connected to age, with young firms having limited access to resources and fewer capabilities than older firms [79]. In this aspect, we have what are called liabilities of newness. According to liabilities of newness, young firms tend to have higher rates of failure because they possess fewer resources, capabilities and recognition in the market. Firms from CEE countries do not have a long history of operating in foreign markets. They are relatively young, with a large number of them coming into existence after the 1990s. Even for firms that have a longer history, their process of internationalization started with the fall of the communism system [33]. Therefore, age and size are expected to positively affect firm internationalization in these countries. In other words, an increase in the age or size of these firms leads them to have higher international market performance. Based on this discussion, the following hypotheses are formulated:

**Hypothesis 3 (H3).** *Age has a positive and statistically significant effect on the international performance of large firms in CEE countries.* 

**Hypothesis 4 (H4).** *Size has a positive and statistically significant effect on the international performance of large firms in CEE countries.* 

## 2.1.3. Growth of Intangible Assets

Intangible assets are important elements when considering firm internationalization. Intangible assets facilitate firm internationalization because they help these firms overcome liabilities of foreignness [80]. The framework of resource-based view theory states that firms that have distinguishable capabilities are able to generate more profit and use these capabilities to expand in foreign markets. In RBV theory, capabilities and knowledge, such as trademarks, copyrights, goodwill, franchises and secret processes, play a very important role. They are difficult to imitate and create competitive advantage for firms. Firms have difficulties surviving in international market competition only by relying on their own resources and capabilities [81]. In particular, firms from transition and emerging countries, which face difficulties distinct from these countries, rely upon the networks and technologies that are absorbed and used from international markets, mostly from developed markets. The intangible resource growth of these firms displays higher opportunities for them to expand even more in foreign markets. Therefore, intangible asset growth means an increase in the competitive advantages of these firms, which motivates them to expand abroad. With respect to this argument, the growth of intangible assets positively affects internationalization. Based on the above arguments, the following hypothesis is formulated:

**Hypothesis 5 (H5).** *Intangible resource growth has a positive and statistically significant effect on the international performance of large firms in CEE countries.* 

## 2.1.4. Capital Investment

Firm internationalization is a strategic decision in nature. Vithessonthi [82] argues that firms with large capital investments, which means that high fixed costs, are more likely to expand into foreign markets. These companies are looking for ways to internationalize because they want to diversify their risk and use their assets more efficiently. Therefore, in this case, capital investments have a positive effect on internationalization. Conversely, if firms are at risk, they are less likely to expand into foreign markets. In this case, the impact of capital investments in internationalization is negative or nonexistent [83]. Based on the literature above, hypothesis six is formulated as follows:

**Hypothesis 6 (H6).** *Capital investment has a positive and statistically significant effect on the international performance of large firms in CEE countries.* 

## 2.1.5. Industry Dummy Variables

The type of industry the firm operates in has an undeniable impact on its internationalization. Different industries have different characteristics, and the environment these industries create for their firms influences a firm's strategy and approach towards internationalization. Industry classifies firms based on common activity and characteristics. Andersson [84] shows that firms operating in different industries have different internationalization patterns. Javalgi et al. [85] conclude that firm characteristics' impact and significance in export propensity varies according to the industry.

Reis [86] argues that external characteristics, mostly represented by industry characteristics, influence firm behavior and export intensity. Firms are influenced by the exporting behavior of other firms in the industry and tend to follow them. In addition, other exporting firms can create information spillover. Firms operating in different industries also have different product characteristics and therefore different probabilities of engaging in international activities. For instance, firms operating in manufacturing are more likely to export than firms operating in the service sector. Innovation and technology in the industry are also important factors that differentiate firms [87,88]. Innovation gives firms competitive advantages and increases their survival in international markets. Love and Roper [89] argue that innovative small and medium firms are more likely to export non-innovative firms. In addition, [90] concluded that firms that operate in sectors with high levels of R&D expenditure are more likely to export. Following the above literature, the hypothesis is formulated as follows:

**Hypothesis 7 (H7).** *Operating in the manufacturing industry has a negative and statistically significant effect on the international performance of large firms in CEE countries.* 

## 2.1.6. Leverage

Leverage is another element that has an impact on firm internationalization. It is expected that the effect of leverage on internationalization will be negative [91,92]. Jung [72] define it as "potential slack resources" and find a negative impact of them on firm internationalization. Formally:

**Hypothesis 8 (H8).** Leverage has a negative and statistically significant effect on the international performance of large firms in CEE countries.

## 2.1.7. Domestic Market Growth Rate

Firm internationalization is also influenced by the domestic country market. Firms located in markets that are growing tend to behave differently than firms that operate in large and mature markets [93]. Firms in growing markets have fewer motives to expand internationally if there is a growing demand in the domestic market. Therefore, a growing domestic market is expected to have a negative impact on firm internationalization. Based on this the hypothesis formed is:

**Hypothesis 9 (H9).** *The domestic market growth rate has a negative and statistically significant effect on the international performance of large firms in CEE countries.* 

## 3. Materials and Methods

# 3.1. Sample

The sample for this analysis was constructed by collecting data on firms that generate revenues outside the country of their origin. Data were collected for 14 years on 50 firms that had their headquarters in one of the CEE countries and were listed on the stock exchange. Two databases were used to collect the data, Thomson Reuters Eikon and Bureau van Dijk Orbis data. On the Eikon database, all the data regarding financial variables and the dependent variables were collected, while from the Orbis database, we extracted data regarding ownership structure during the period from 2005 to 2018. With these data, panel data with 50 firms from 2005 to 2018 were constructed. The firms included in this database are from 11 countries of CEE, specifically, Poland, Hungary, Slovakia, Romania, Slovenia, Bulgaria, Lithuania, Croatia, Czech Republic, Serbia, and Latvia.

## 3.2. Specification of Variables

The dependent variable is the degree of internationalization measured as the percentage of foreign revenue to total revenue of the firm, which is also one of the most commonly used measures [94]. Data on this variable were collected from the Thomson Reuters Eikon database. Our first intention was to collect data regarding firm foreign exports and foreign assets separately, but data regarding exports were not reported separately in the Eikon database, and very few firms had data regarding their foreign assets Therefore, since there was a large amount of missing data, only data on their foreign revenues were extracted. Data on foreign revenues were reported according to the firm's business segments. Data on revenues belonging to their domestic markets were not taken into consideration when calculating foreign revenues. The graph in Figure 1 provides a graphical representation of both the mean of % foreign revenue to total revenue and the mean of exports as % of GDP from 2005 to 2018. From this graphical representation, the increasing trend from 2005 to 2018 in the mean values of degree internationalization can easily be seen. To see if the data collected for these companies were a good representation of the firms in this region, macrolevel data, such as export % of GDP, were collected to make a comparative analysis. Data on exports were collected from the World Bank World Development Indicator (WDI). Looking closely at the data also presented in Tables 1 and 2, this sample of the data is a very good representative of the companies operating in this region. The mean % of foreign revenues to total revenues follows the same trend as exports % of GDP, and the percentage values are very close. An explanation of this can also be the fact that the sample is composed of large and very large firms. These firms' share in total exports of each country is relatively high and important. A slight decrease is seen in the amount of foreign revenues to total revenues in 2009, and this can be attributed to the financial crisis in 2008.



**Figure 1.** Mean of % of foreign revenue to total revenue and mean of exports as % of GDP. Source: World Bank.

Year	Poland	Slovakia	Romania	Slovenia	Bulgaria	Hungary	Lithuania	Latvia	Croatia	Czech Republic	Serbia
2005	16.32	72.56		36.56	49.06	43.16	57.29	87.61	10.31	26.93	
2006	18.61	68.00		48.86	33.30	47.97	51.68	89.93	25.55	29.72	4.57
2007	17.64	72.18	59.31	51.45	25.20	51.56	54.60	98.95	24.93	25.68	6.44
2008	21.11	79.39	47.61	54.12	23.15	55.74	56.62	91.21	23.25	21.90	4.71
2009	23.07	78.97	44.13	44.81	24.44	57.44	57.60	92.63	23.98	23.11	12.84
2010	24.05	77.77	44.87	48.22	31.56	59.24	51.29	94.86	26.49	26.87	10.06
2011	23.83	70.35	46.05	49.56	28.31	59.84	51.43	93.16	39.98	25.85	10.60
2012	24.47	72.69	46.31	54.65	31.00	60.22	54.43	87.23	40.83	25.94	10.94
2013	23.38	82.65	47.86	56.27	31.57	60.26	54.33	83.77	40.99	23.99	17.59
2014	24.16	72.51	48.56	57.14	29.93	59.48	51.25	78.71	39.86	26.80	21.50
2015	24.19	62.52	47.63	60.54	29.08	59.03	63.40	67.16	39.60	29.04	21.15
2016	24.30	69.58	47.20	62.64	27.05	44.29	98.88	67.20	38.87	27.10	26.29
2017	24.82	74.91	49.60	61.40	32.10	58.52	98.99	73.15	42.46	29.39	28.95
2018	24.68	75.46	47.74	62.24	35.89	58.29	97.13	79.59	41.52	27.74	26.38
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Source World Bank.

Year	Poland	Slovakia	Romania	Slovenia	Bulgaria	Hungary	Lithuania	Latvia	Croatia	Czech Republic	Serbia
2005	34.61	72.05	24.71	59.58	42.86	62.55	53.84	43.20	39.36	62.18	27.96
2006	37.86	81.03	26.16	64.70	47.32	73.98	55.62	39.90	39.70	65.19	29.44
2007	38.56	83.28	26.02	67.60	52.38	77.94	50.36	38.45	38.98	66.41	27.29
2008	37.86	80.05	32.40	66.11	52.54	79.29	57.14	39.47	38.47	63.23	28.44
2009	37.18	67.61	37.03	57.24	42.33	74.41	51.94	42.47	34.48	58.68	26.35
2010	40.06	76.34	37.41	64.29	50.18	81.83	65.34	53.57	37.61	66.03	32.26
2011	42.56	85.05	39.87	70.37	59.07	86.75	75.00	57.77	40.30	71.31	33.00
2012	44.44	91.43	41.16	73.12	60.80	86.41	81.62	61.19	41.53	76.17	35.84
2013	46.32	93.82	41.02	74.52	64.89	85.66	84.06	60.26	42.74	76.87	39.85
2014	47.57	91.85	41.19	75.84	64.92	87.67	81.10	61.20	45.27	82.55	42.08
2015	49.50	92.31	41.53	76.94	64.10	88.97	75.82	60.72	48.14	81.05	45.27
2016	52.19	93.50	41.64	77.77	63.98	89.73	74.10	60.40	48.74	79.56	48.62
2017	54.34	96.89		82.88	67.37	88.25	80.90	62.12	51.09	79.73	50.54
2018	55.31	97.25		85.21	64.49	86.53	82.29	61.30	51.23	78.39	50.91

Table 2. Exports of goods and services as % of GDP.

Source World Bank.

CEE countries have increased their presence in international markets in the last two decades, and this trend has had a steady increase over the years [95]. After the fall of the communist system in this region, these countries started to integrate into foreign markets, which also helped from their geographical location in Europe. After the fall of communism, their increase in presence in international markets was also helped by large foreign direct investment. The proximity of these countries to other large European markets helped in this situation. Most of their exports are towards other European countries [42,49,96]. Therefore, their exports were mostly concentrated in manufacturing goods and the European market. Table A1 in the Appendix A gives a better view regarding the main destinations of these countries' exports in 2018. In this table, it is observed that the top five main export destinations for these countries belong to European countries. Of course, proximity to these markets plays an important role in this regard. Table A1 shows that Germany is the number one destination of exports for most of these countries.

Table 3 gives a summary of the variables, their measurement expected impact and hypotheses. Firm performance was measured using the variable of return on assets (ROA). In measuring firm performance, ROA is an accounting-based measure and is the most widely used measurement type of performance. According to [97], when measuring firm performance, ROA is the most commonly used measure of performance among account-based measures, with 46% of researchers using it when studying its relationship with corporate governance. In this study, we also used ROA as the measure of performance. Data for this variable were extracted from the firm's annual financial reports, and the time series for each firm included in this study were obtained from the Thomson Reuters Eikon database. ROA in this database represents the return on assets before taxes. It is calculated as income before tax for the fiscal year divided by the average total assets for the same period and is expressed as a percentage.

Foreign ownership was measured as the percentage of shares owned directly by private foreign companies, institutions or individuals. Shares owned directly by foreign public authorities or foreign governments were not included. Data on this variable were collected in the Orbis database. Size in this study was measured by the natural logarithm of the number of permanent employees. The number of permanent employees was also extracted from the firm's annual financial reports. It represents the number of full-time employees and full-time equivalents of part-time employees as reported at the end of the fiscal year. This number does not include part-time employees if the company differentiates between these two and reports them separately and seasonal employees unless reported as full-time by the company. Age was measured as a natural logarithm of the number of years of operation since the inception of the company. This variable was calculated as the actual year minus the year of firm inception. Data regarding firm inception and its history were collected from Orbis and checked in Eikon.

Variables	Description	Expected Impact	Hypothesis
Degree of internationalization	Foreign revenue to total revenue		
ROA	Net profit to total assets	+	H1
Foreign ownership	% of shared owned directly by foreign firms, institutions, individuals, etc.	+	H2
Size	Natural logarithm of number of permanent employees	+	H3
Age	Natural logarithm of the number of years of operation since inception	±	H4
Intangible resources growth	Annual growth rate of intangible assets	+	H5
Capital investment	Capital expenditure to one period lagged total assets	±	H6
Manufacturing industry dummy	1 of the firm is affiliated to manufacturing industry	±	H7
Leverage	% of total debt to total assets	_	H8
Domestic market growth rate	Gross domestic product (GDP) growth	-	H9

Table 3. Measurement of variables.

We collected data from Orbis regarding the firm inception year because Orbis gives a detailed history for each company, especially in case merges and acquisitions occurred or there was a change in the name of the company. Leverage was measured as a percentage of total debt divided by total assets. Intangible resource growth was measured as the annual growth of intangible assets. Intangible assets consist of patents, copyrights, franchises, goodwill, trademarks, trade names, secret processes and organization costs. Capital investment was measured as capital expenditures divided by one period lagged total assets. Capital expenditures were the purchase of fixed assets, purchase of intangibles and software development costs. As a proxy for the domestic market growth rate, the real annual growth of gross domestic production (GDP) of each country in which the firm has its headquarters was used. Data on this variable were extracted from the WDI of the World Bank. GDP represents the production capacity of an economy, and its growth means a growing economy and larger markets.

## 3.3. Model Specification

Considering that the data are panel data, panel data econometric methods were used. First, a graphical and statistical analysis was conducted. The fixed-effect approach was excluded because some of the variables were time-invariant variables, such as industry dummies that controlled for the effect of industry. Running an OLS model for this type of data would result in biased estimates because of the likely autocorrelation and heteroscedasticity problems. The random effect model uses a generalized least square estimator (GLS), which corrects for these serial correlations and heteroscedasticity. Therefore, a random effect model is used as the first step. In addition, to account for the problem of endogeneity bias and produce robust results, a generalized method of moments (GMM) is used as the final step.

## 4. Results

## Summary of Descriptive Statistics and Model Description

Table 4 presents a correlation matrix and descriptive statistics of the variables included in the model. Observing the results of the table multicollinearity does not appear to be a problem in this sample. In general, the correlation of the variables is low. To ensure the problem of multicollinearity in the data, we checked the variance inflation factor (VIF). The VIF appears to be 1.23, which is smaller than the critical value of 5.0. Therefore, it is concluded that there is no problem of multicollinearity that should be taken into consideration before running the regression.

Table 5 shows the results of the random effect and the GMM models. Model one is the baseline model with all the main variables (size, age, ROAt-1, foreign ownership, capital investment, leverage and intangible resource growth) without including the dummy variables and domestic market growth rate. A one-year lag was applied to ROA since decisions to enter and expand further in foreign markets require time and are taken based on the firm's previous performance.

Table 4. Descriptive statistics and correlation matrix.

	Std. Dev.	Mean	Degree of Internationalization	Size	Ln Age	ROA	Foreign Ownership	Capital Investment	Intangible Resources growth	Leverage	Baltic GDP	Central GDP	Southeast GDP
Degree of internationalization	0.289	0.426	1										
Size	1.2	8.634	-0.084	1									
Ln age	0.656	3.361	0.316	-0.079	1								
ROĀ	0.073	0.046	0.046	0.033	-0.05	1							
Foreign ownership	0.309	0.449	0.033	-0.11	0.15	0.01	1						
Capital investment	0.047	0.067	-0.034	0.342	-0.172	0.299	0.058	1					
Intangible resources growth	2.646	0.395	-0.017	0.003	-0.047	0.065	-0.091	0.045	1				
Leverage	0.154	0.212	0.164	-0.187	0.07	-0.181	0.008	-0.082	-0.048	1			
Baltic GDP growth rate	0.012	0	0.035	-0.071	-0.002	0.042	-0.021	0.077	0.012	0.095	1		
Central GDP growth rate	0.023	0.024	-0.049	0.024	-0.056	0.013	0.033	-0.014	0.02	-0.166	-0.04	1	
Southeast GDP growth rate	0.012	0.002	0.001	-0.031	0.092	0.013	0.082	0.015	-0.015	0.001	-0.007	-0.178	1

In the second model, we included three interaction variables (Baltic GDP growth rate, Southeast GDP growth rate and Central GDP growth rate). The whole region of the CEE was divided into three subregions: the Baltic subregion (Lithuania and Latvia), the southeastern subregion (Bulgaria, Croatia, Romania and Serbia), and the central subregion (Poland, Czech Republic, Hungry and Slovakia). Based on these three subregions, three dummies were created, and the central region was kept as a base category. Variable Baltic takes value 1 if the country belongs to Baltic subregion and 0 otherwise; variable Southeast takes value 1 if the country belongs to Southeast subregion and 0 otherwise; and variable Central take value 1 if the country belongs to Central subregion and 0 otherwise. These dummy variables are multiplied by the domestic market growth rate or real GDP growth rate, and Baltic GDP growth rate, Southeast GDP growth rate and Central GDP growth rate variables are formed. In the second model, we included the Baltic GDP growth rate, Southeast GDP growth rate and Central GDP growth rate, which represent the domestic market growth rate for each subregion, and two dummy variables of Baltic and Southeast to control for the effect of these subregions. We created dummy variables for each industry based on the broad industry categories of the Standard Industrial Classification (SIC) to control for industry effects since the firms included in this study belong to different industries. Differences in technology, innovation, demand, and government regulation influence differences in industry internationalization [98]. Industry classification for each firm was made based on the firm's main activity, and data for these dummy variables were obtained from the Obis database. Seven industry dummies were created based on the main SIC division group: (1) manufacturing; (2) mining; (3) transportation, communications, electric, gas, and sanitary services; (4) construction; (5) services; (6) wholesale trade; and (7) retail trade. However, in the end, considering that 52% of the firms in the sample belonged

to manufacturing (see Table 5), only two dummy variables were created, manufacturing, a dummy variable that takes value 1 if the firm is from manufacturing industry and 0 otherwise; and other industries, a dummy variable that takes value 1 if the firm belongs to six other industries and 0 otherwise. Other industry variables were kept as the base category, and manufacturing was included in the third model. Therefore, in the third model, all variables are included.

 Table 5. Results of Random effect and GMM models.

	1	2	3	4	
Variables	Degree of International- ization	Degree of International- ization	Degree of International- ization	Degree of International- ization	
Size	0.0592 **	0.0626 **	0.0724 **	0.2422 ***	
	(-0.0298)	(-0.03)	(-0.0298)	(-0.0872)	
Ln age	0.112 **	0.105 **	0.0980 **	0.1155 **	
	(-0.0452)	(-0.0463)	(-0.0432)	(-0.0559)	
ROA <sub>t-1</sub>	0.153 ***	0.156 ***	0.156 ***	0.4275 *	
	(-0.0527)	(-0.0529)	(-0.0525)	(-0.2324)	
Foreign ownership	0.0550 **	0.0532 **	0.0506 **	0.1071	
	(-0.0271)	(-0.0252)	(-0.0248)	(-0.1174)	
Capital investment	-0.172 *	-0.160 *	-0.161 *	0.1527	
_	(-0.0895)	(-0.091)	(-0.0926)	(-0.2799)	
Leverage	-0.0452	-0.0331	-0.0364	0.034	
	(-0.0561)	(-0.0565)	(-0.0543)	(-0.2862)	
Intangible resources growth	0.0016	0.0016	0.00163	0.0021	
0	(-0.00135)	(-0.00137)	(-0.00135)	(-0.0018)	
Baltic GDP growth rate		-0.355 ***	-0.344 ***	-0.4467	
-		(-0.0818)	(-0.0832)	(-0.5798)	
Southeast GDP growth rate		0.322	0.363	1.0957	
U U		(-0.3)	(-0.296)	(-1.2045)	
Central GDP growth rate		0.206	0.217	-0.0518	
-		(-0.204)	(-0.201)	(-0.6137)	
Baltic		0.326	0.348	0.7347 ***	
		(-0.337)	(-0.218)	(-0.2063)	
Southeast		-0.0579	-0.0854	-0.1556	
		(-0.112)	(-0.087)	(-0.1671)	
Manufacturing			0.342 ***	0.527 ***	
			(-0.0659)	0.1291	
Constant	-0.478	-0.498	-0.733 **	-2.4379 ***	
	(-0.378)	(-0.383)	(-0.366)	(-0.8185)	
Observations	475	475	475	475	
Number of id	50	50	50	50	
Overall R-sq	0.03	0.07	0.38	-	
Hansen	-	-	-	0.26	
Method	RE	RE	RE	GMM	
) - h	1 *** 0.01	**			

Robust standard errors in parentheses \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

In the fourth model, a generalized method of moments (GMM) for panel data is applied. The reason behind this model application is to account for the possible endogeneity problem and to compare the results with the random effect model. Endogeneity is a problem that arises when one of the explanatory variables is correlated with the error term or when the error terms are correlated in structural equations. There are three reasons for the endogeneity problem: omitted variables, measurement errors and simultaneity. Simultaneity occurs when one of the explanatory variables is jointly determined with the dependent variable [99].

What is most important and the reason why researchers pay attention to this problem is that endogeneity bias causes inconsistency in the estimators, which means that as your sample of data grows (as n moves towards infinity), your estimation of the parameters does not approach the true values. Endogeneity can also cause changes in the signs of the parameters and therefore lead to incorrect interpretation of the results and confusing conclusions [100]. In this study, we used a two-step system GMM since this type of estimator is more efficient than a one-step first-differenced transformation. First-differenced transformation can cause loss of data. The Stata command used for two-step system GMM was xtabond2.

## 5. Discussions

This study performs a random effect and GMM model to examine the impact of several variables on firms' degree of internationalization using panel data for 11 CEE countries and a time duration of 14 years. Companies taken into consideration are large firms. Table 5 outlines the model's results. Some of the main variables, such as  $ROA_{t-1}$ , size, age, and manufacturing, do not show any changes in the sign and significance level between the random effect models and GMM. Size has a significant and positive impact in the random effect models. This significance increases in the GMM model from the 5% to 1% level of significance. The impact of this variable is as hypothesized in the literature section. Large firms have the necessary resources to support the cost of internationalization and overcome liabilities of foreignness and liabilities of newness [101]. Age also has a positive and significant impact in both models. The significance level of this variable does not change, and the impact is in line with what was hypothesized in H<sub>4</sub>. In the random effect model, we see a high impact of  $ROA_{t-1}$  on the degree of internationalization [102]. This variable impact is positive and significant, as hypothesized. Considering that international sales are part of total firm sales, does this means that successful firms in the region are the ones who are at least as successful in foreign markets, as they are on the domestic market? This is interesting, because this implies the key to their success of their internationalization. However, this variable becomes less significant in the GMM model, but the sign remains positive, as predicted in the literature. Foreign ownership also has a positive sign, but this variable becomes statistically insignificant in the GMM model. The signing of this variable is as hypothesized; however, it was expected that its impact would be highly significant. The impact of capital investment, leverage and intangible resource growth rate variables appears to be almost insignificant in all three models. In other words, our empirical results do not show any significant impact of these three variables on the degree of internationalization. The GDP growth rate or the domestic market growth rate of Baltic countries show a negative and highly significant impact in the random effect model; however, this variable becomes insignificant in the GMM model. We see the opposite effect for the Baltic dummy variable. Being in one of the Baltic countries appears to positively affect the degree of internationalization. This positive effect is also seen in the case of the manufacturing dummy variable. Operating in the manufacturing sector appears to have a positive effect on internationalization. This effect in the same as hypothesis H7. Therefore, based on these results, it is concluded that factors, such as size, age, firm performance, foreign ownership or industry, are very important factors in the degree of internationalization, but capital investment, leverage, intangible resource growth and domestic market growth rate do not have a statistically significant effect on the degree of internationalization. In addition, based on the results of GMM, we fail to reject the null hypotheses  $H_1$ ,  $H_3$ ,  $H_4$  and  $H_7$ . In other words, we fail to reject the null hypothesis for variables size, age and  $ROA_{t-1}$  since these variables are statistically significant and have a positive impact as hypothesized. However, we reject null hypotheses H<sub>2</sub>, H<sub>5</sub>, H<sub>6</sub>, H<sub>8</sub> and H<sub>9</sub>. For variables of capital investment, foreign ownership, intangible resource growth rate, leverage and domestic market growth rate, the results of GMM show their impact to be statistically insignificant.

One important contribution of the results of this paper is the identification of the problem of endogeneity and usage of the GMM model. The impact of endogeneity on the results appears in the discrepancies between the test results of GLS and GMM estimators. Variables of capital investment and leverage appear to be the source of endogeneity. Their sign changes from a random effect model to a GMM model. Vithessonthi [82] also identifies the problem of endogeneity of capital investment and uses the IV method to account for it.

# 6. Conclusions

Using panel data of 14 years and 50 firms from CEE countries, this study's objective was to investigate determinants of firm internationalization in CEE countries. This study contributes to the literature by extending it and adding more research and insight into firm internationalization topics in CEE countries. The literature for the CEE countries has started to grow only recently. However, most of this literature studies the internationalization of firms from only one country, such as the firm internationalization in Poland, Slovenia, Hungary, Estonia and Czech Republic, countries that are the most researched in this field. However, other countries of the region remain under-researched. Therefore, there is a lack of more comprehensive studies that include all countries and analyze the whole region. Adding research for firm internationalization in the context of these countries helps to better understand the foreign expansion of firms' from transition countries.

Despite the limitations, it is believed that this study offers the same insightful contributions. First, firm-level characteristics, such as performance, age, size and industry, are important for firm expansion in international markets. They have a positive effect; the better the previous performance of the firm is, the more motivated these firms are to engage in costly processes of internationalization. This is very insightful as it provides evidence that firms need to experience growth in their domestic markets and their success in domestic markets contribute to their success in international markets. Therefore, there is an important theoretical contribution of this paper in this regard, which needs to be highlighted and that is the importance of pre-entry performance improvement of firms in their domestic markets. Pre-entry period of firms in international markets is very under-researched in the literature and this paper highlights the importance of pre-entry and continues success in domestic performance of firms. Based on this future research need to be channeled in this direction. Expansion in foreign markets is costly and requires resources and capabilities and financial and managerial resources to support it to overcome the liabilities of foreignness and newness. That is why large and relatively experienced firms perform better. These large and experienced firms, in addition to financial and managerial resources, have constructed relationships and networks that help them to explore new opportunities or gain additional resources that cannot be accessed in domestic markets. Firms in CEE countries face a more difficult domestic environment than those in advanced economies; there are weak legal institutions and a high level of corruption in the public sector. Therefore, we believe this might be a reason why size and age are highly significant, large and relatively old firms are more experienced dealing with this environment and these kinds of issues. They know the environment better, and they have informal networks [103] and financial resources to deal with problems faster than small new ventures.

Another result that supports this argument is the Baltic dummy, which takes a value of 1 for firms that have their headquarters in Latvia or Lithuania and has a positive sign. These two countries are very geographically close to advanced economies, such as Sweden and Finland, and they are influenced by these countries. Estonia, Lithuania, and Latvia, for instance, are considered by the World Bank to be the top countries by ease of doing business, on the 16th, 14th and 19th, respectively [104]. They are small open economies and quite exposed to international development.

The internationalization capacity of companies in Central and Eastern Europe was fueled by the liberalization of capital movements after the fall of communism. Extensive flows of foreign direct investment, especially through the privatization process, have led to the emergence of externalities, such as technology transfer, know-how and expertise that have benefited by local companies. The intensification of the competition in these countries as a result of the pressure generated by the presence of the companies with foreign capital, but also the accession of the former communist countries to the EU generated (for the domestic companies) the necessity but also the possibility of regional expansion. Access to an unrestricted regional market that affects financial and material flows has accelerated the process of internationalization of companies in this region. The migration process that dramatically affected these countries has also contributed to the intensification of the

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internationalization process of some local companies that have benefited not only from financial capital, but also from the expertise of former migrants.

Multinational companies in the CEE often have regional involvement in the sense that they have invested in countries in the area, fueled by geographical proximity, the tradition of economic relations since the communist period and the existence of similar economic, social and political systems. The existence of companies with the majority foreign capital in these countries appeared, most of the time as a result of the privatization process, considerably fuels the internationalization process in the region, the companies having the main assets to ensure the success of such a complex process. State-owned companies from certain countries, such as Poland, Slovenia or Croatia, are also important players in the regional landscape, thus joining the global trend regarding state involvement in the phenomenon of internationalization of companies. In the end, it is concluded that firm characteristics, such as age, size and performance, are important contributors to the higher international performance of large firms from CEE countries. However, more research is required with regard to other factors, such as foreign ownership, capital investment, leverage, intangible resource growth and domestic market growth rate.

# 7. Limitations

Several limitations of this study are acknowledged. Although there is a large dimension of time in the data, there is a small number of firms included in the sample. In addition, not all CEE countries are included. This limitation comes due to the lack of panel data for a large number of firms in this region. Second, we measured firm internationalization as the amount of foreign revenue to total revenue, excluding in this way other dimensions of it such as breadth, depth and speed, which are very important to gain a better view of this phenomenon in CEE countries. Internationalization is a very dimensional phenomenon, and measuring other aspects gives a clearer picture and robust results. However, this limitation of this study is linked with the lack of data. Moreover, there is also a lack of comparison of experienced large firms with rapidly internationalizing small new ventures, which are gaining much attention in the recent literature due to their small size and early internationalization. As future research directions, we will consider a study aimed at the phenomenon of internationalization of companies from CEE countries that are part of the non-Euro area given the common characteristics of these companies, namely, belonging to the former communist bloc, EU membership and the efforts made to meet the convergence criteria that give a certain specificity. Additionally, as a future research direction, we will consider the analysis of the internationalization-sustainability relationship for the countries of Central and Eastern Europe, considering the involvement of transnational companies in promoting the principles of sustainable development through various mechanisms and tools, such as corporate social responsibility programs. An increasing number of companies are pursuing the improvement of nonfinancial performance considering the interest of stakeholders in the social and environmental impact of corporations.

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# Appendix A

	Country	5 Top Partners of Exports for Each Country in 2018
1	Estonia	Finland, Sweden, Russian Federation, Latvia, USA
2	Latvia	Lithuania, Estonia, Russian Federation, Sweden, Germany
3	Lithuania	Russian Federation, Latvia, Poland, Germany, USA
4	Poland	Germany, Czech Republic, United Kingdom, France, Italy
5	Czech Republic	Germany, Slovakia, Poland, France, United Kingdom
6	Slovakia	Germany, Czech Republic, Poland, France, Italy
7	Hungry	Germany, Slovakia, Italy, Romania, Austria
8	Romania	Germany, Italy, France, Hungary, United Kingdom
9	Bulgaria	Germany, Italy, Romania, Turkey, Greece
10	Slovenia	Germany, Italy, Croatia, Austria, France
11	Croatia	Italy, Germany, Slovenia, Bosnia and Herzegovina, Austria,
12	Albania	Italy, Spain, Greece, Serbia, Germany
13	Montenegro	Serbia, Hungary, Bosnia and Herzegovina, Slovenia, Poland,
14	Serbia	Italy, Germany, Bosnia and Herzegovina, Romania, Russian Federation
15	North Macedonia	Germany, Serbia, Bulgaria, Belgium, Greece
16	Bosnia and Herzegovina	Germany, Croatia, Italy Slovenia, Serbia

Table A1. Main export destination for CEE countries.

Source: UNCTADSTAT.

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