Is internationalisation beneficial for novice internationalisers? The performance effects of firm-specific advantages, internationalisation degree and firm size revisited

JEL Classification: F23; L21; L22; L25; M16

Keywords: firm internationalization; multinationality; firm performance; Central and Eastern Europe; firm-specific advantages

Abstract

Research background: Research on the performance outcomes of different forms of internationalisation has attracted significant attention due to its theoretical and practical relevance. Still, the related findings have remained conflicting. Scholars have argued that companies need to possess or acquire firm-specific advantages (FSAs) to succeed internationalisation. However, a significant part of International Business (IB) research has treated FSAs as enablers of internationalisation, while some have argued that internationalisation in itself only helps firms translate the possessed resources into performance.

Purpose of the article: The objective of this study, which is based on the resource-based view (RBV), is to explore the moderating effect of internationalisation on the relationship between FSAs and performance, considering internationalisation degree and firm size as boundary conditions for that relationship.

Methods: We carry out statistical analyses on a longitudinal dataset containing 304 novice internationalisers from the post-transition economy of Poland and a total of 1167 firm-year observations. Thereby, we compare SMEs with large firms.
Findings & value added: We find that while FSAs do positively affect firm performance, this relationship becomes weaker for higher levels of internationalisation. However, the negative moderating effect of the internationalisation degree becomes weaker for larger novice internationalisers, which are more able to handle the complexity of managing foreign operations.

Introduction

One of the leading themes in international business (IB) research pertains to the economic performance of firm internationalisation (Bausch & Krist, 2007; Chen et al., 2016; Glaum & Oesterle, 2007; Matysiak & Bausch, 2012; Woodcock et al., 1994). Yet, extant findings have remained inconsistent as the studied relationship is highly contextual (Kirca et al., 2012; Geleilate et al., 2016; López-Morales & Gómez-Casas, 2014; Shin et al., 2017). One of the key contextual variables borrowed from the resource-based view (RBV) and internalisation theory, are firm resources (Kotabe et al., 2002). Scholars have generally found that the possession of superior capabilities by firms enhances the positive effects of internationalisation on performance (Kotabe et al., 2002).

However, as Rugman and Verbeke (2008) argue, the common assumption that internationalisation in itself is able to explain performance, may actually be mistaken in the light of IB theory (Verbeke et al., 2009). In fact, it is firm-specific advantages (FSAs) which affect performance in the first place (Filatotchev & Piesse, 2009). In order to successfully internationalise, a firm must exploit and develop FSAs in different locations (Verbeke & Brugman, 2009). Hence, internationalisation per se appears to be a contextual variable which conditions the deployment of FSAs (Li, 2007; Matysiak & Bausch, 2012).

Another shortcoming of extant research is a frequent assumption that the effect of the internationalisation degree on firm performance is positive, as it allows firms to better exploit their resources (Kotabe et al., 2002). In reality, there is also evidence that firms may find it hard to manage the growing complexity of international activities (Hennart, 2011; Verbeke et al., 2009). In fact, whether a firm can successfully turn internationalisation to its advantage, is determined by its internal capabilities (Peteraf, 1993). Our article aims to enrich the literature by filling this research gap.

Given the above, the goal of this study is to examine the moderating effect that internationalisation has on the relationship between firm-specific advantages (FSAs) and performance by drawing from the resource-based view (RBV). Moreover, the paper sets out to explore the boundary conditions for this moderating effect by introducing a further level of interaction related to firm size as a proxy for managerial capabilities.
We address these objectives by studying novice internationalisers from a post-transition economy of Poland (Hoskisson et al., 2013). As opposed to the distinction between early and late internationalisers (e.g. Schwens & Kabst, 2009), we define novice internationalisers as firms of different sizes, sharing limited experience with internationalisation and expanding to markets at a different level of economic and institutional development because of the late moment of entering the international business environment due to the pre-transition period. An overall feature of these firms is a general lack of international experience, whether they were established before, during, or after the transition period.

This paper is structured as follows. In the first section, the overall nature of the relationship between FSAs and performance is discussed in the light of earlier research. Subsequently, the intermediate role of internationalisation is discussed in order to formulate the moderation hypothesis. In the following section, another level of moderation related to firm size is introduced. Further, the research design is described in detail and followed by a presentation of results. The ensuing part of the paper is devoted to discussion of the obtained findings and their implications.

**Literature review and hypotheses development**

**FSAs and firm performance**

The role of FSAs for firm performance has been addressed from a number of theoretical perspectives. Firstly, the resource-based view (RBV) indicates that firms are bundles of heterogeneously distributed resources (Barney, 1991; Teece et al., 1997). Thus, valuable and rare resources are at the origin of competitive advantage in an international dimension (Peng, 2001; Piercy et al., 1998; Xia et al., 2007). In particular, the technological level of a firm and its innovation capabilities have been considered as relevant resources to attain competitive advantage. More explicitly, Dunning’s OLI framework indicates that firms undertake foreign direct investment only if they possess certain FSAs (Dunning, 2001).

A particular emphasis on the exploitation of unique assets is made by Teece (2006), who regards them as a source of quasi-rents of MNEs. Thereby, he distinguished between factors of production, resources, organisational routines or competences, core competences, dynamic capabilities, and products (Teece et al., 1997). However, authors studying firms from less advanced economies argue that they may not necessarily possess knowledge-based FSAs in such areas as systems integration and coordina-
tion capabilities which can be considered as crucial for managing international structures (Rugman, 2009). Scholars have generally adopted three views with regard to what capabilities such firms actually possess (Hennart, 2012). The first position assumes that emerging market firms do not possess FSAs in the meaning of Western multinational firms (Rugman, 2009).

Secondly, some scholars propose that while firms from emerging markets may not have solid and advanced FSAs, they use international expansion precisely in order to build up their asset base (Mathews, 2006). Thirdly, it has been argued that emerging market firms may possess other types of FSAs. These can embrace process innovations which enable these firms to manufacture sophisticated goods at lower cost (Williamson & Zeng, 2009), or the ability to understand emerging market customers and to operate in countries with poorly developed institutional environments (Cuervo-Cazurra & Genc, 2008).

**FSAs and the performance of novice internationalisers**

Contrary to the findings on new multinationals, particularly Asian ones (e.g. Cui & Jiang, 2010), we suggest that, due to a still relatively low level of internationalisation, there is no necessity for post-transition country firms to invest extensive resources at the first stage of foreign expansion. At the beginning, they may receive only occasional sales orders, which do not require a particular customisation of products and value chains. This is in line with the argument about the relevance of market-seekers among CEE firms, even if other motives are also present in their expansion (Trąpczyński & Gorynia, 2017). Even though they start foreign operations at a larger scale, novice internationalisers frequently seek opportunities in markets showing a similar demand structure to their own, in order to be able to quickly expand their sales (Ramamurti, 2009).

Some scholars claim that these firms face substantial barriers, including the lack of skilled personnel, information, or financing (Svetličič & Jaklič, 2003). They rarely possess FSAs like organisational and management skills (Dunning et al., 2008). Rather, their strength may be seen in production and operational excellence, which can be also related to their latecomer character and the adoption of state-of-the-art business processes (Ramamurti, 2009). Thus, while some firms from post-transition economies may compete based on strong brands or technology (Ramamurti, 2009), or marketing and organisational know-how (Svetličič & Jaklič, 2003), we argue that their capabilities will be on average inferior compared to their advanced country counterparts. To summarise, we propose the following general effect of FSAs on the performance of novice internationalisers:
The FSAs of novice internationalisers from post-transition economies are positively related to their performance.

The negative moderating effect of the internationalisation degree

The literature on firm internationalisation generally posits that international expansion allows firms to transfer "rent-yielding" resources into new foreign markets to reap economies of scale and scope (Hitt et al., 1997; Tallman & Li, 1996), or enhance organisational learning (Bartlett & Ghoshal, 1989; Hitt et al., 1997). Firms with unique FSAs can leverage these resources across national markets (Gande et al., 2009; Filatotchev & Piesse, 2009).

However, expansion into diverse foreign markets increases the costs of managing dispersed operations, particularly for novice internationalisers expanding to highly different cultural and institutional environments (Rugman & Oh, 2011). From a certain threshold, the costs arising from liability of newness, complexity of foreign operations, or product adaptation etc. would outweigh potential benefits of expansion (Matysiak & Bausch, 2012; 2004; Li, 2007). Hence, a portfolio of distinct foreign markets needs to be coordinated (Hennart, 2011; Rugman & Verbeke, 2008). Novice internationalisers will generally not have sufficient capabilities to handle the rising complexity of international operations, contrary to more experienced multinational firms whose international maturity has been found to help them improve economic performance (Ogasavara & Hoshino, 2007; Ogasavara, 2010).

Moreover, it can be expected that the marginal contribution of each subsequent foreign market commitment will be less relevant at this stage of development (Trąpczyński, 2013). Hence, we propose:

H2: The relationship in H1 is negatively moderated by the degree of internationalisation, such that it becomes weaker for higher levels of internationalisation.

The positive moderating effect of firm size (three-way interaction)

Yet, the above relationships cannot be regarded in isolation, as they are co-determined by other organisational factors (Verbeke & Brugman, 2009; Verbeke et al., 2009). Past research connected the development of novel resources with the size growth of the firm (Furlan & Grandinetti, 2011; Phelps et al., 2007). While for some scholars the development or acquisition of new capabilities is a foundation for size growth, Penrose (1959)
argues that the growth of the firm leads to the enhancement of its capabilities (Mitchell et al., 2007).

Organisational capabilities, proxied in earlier research with firm size, involve particularly non-imitable managerial abilities which transform financial and physical resources, via organisational routines, into competencies that can be crucial for the international competitiveness of the firm (Wernerfelt, 1984). Others have pointed out that larger firms tend to be better equipped with technological capabilities and therefore demonstrate higher export intensity (Dhanaraj & Beamish, 2003). Further size-related resources such as production and marketing capabilities have also been found to favour firm internationalisation (Dhanaraj & Beamish, 2003; Majocchi et al., 2005). Not least, larger companies are considered to own more financial and human resources and scale economies (Wagner, 2001).

All these size-related endowments facilitate entry into international markets, as they address different barriers to internationalisation (Majocchi et al., 2005; Mittelstaedt et al., 2003). Larger firms will be able to devote more managerial resources to foreign activities (Aaby & Slater, 1989). Conversely, smaller firms may be more conservative in their approach to risks owing to a lower information processing capacity.

Summing up, we argue that with higher size of novice internationalisers and the resulting operating experience, their ability to coordinate increasingly complex international operations will increase, and so will the ability to deploy FSAs across more markets. In line with this argumentation, as well as earlier evidence that firm size positively interacts with internationalisation (Chiao et al., 2008), we argue that:

H3: The relationship in H2 is positively moderated by the size of the firm, such that it becomes less negative for larger firms.

Figure 1 summarises the logic of the hypotheses in a conceptual framework.

Research methodology

Data collection

Our study is based on a firm-level longitudinal data on 304 Polish listed companies for the period between 2010 and 2013. On the one hand, the selection of data resulted from the availability of data on the degree of internationalisation of Polish companies. On the other hand, the collected
data relate largely to traditional internationalists. In their case, the identified relationships should not undergo significant changes, even in the light of the high dynamics of the analysed phenomena resulting, for example, from digital transformation.

As data on foreign activities are not easily available, we first devised a list of companies listed on the Warsaw Stock Exchange and their financial data from the EMIS database. As information on firm-specific assets was missing, we compiled it from the Amadeus database (Bureau van Dijk). The resulting combined database contained 408 companies, whereof 76 were eliminated due to suspension from the stock market, insolvency or closure. 28 firms were eliminated due to incomplete, unusually extreme or unreliable observations.

In the second stage, data on firm-level degree of internationalisation were collected from manually investigated annual reports, notes to financial statements and management board reports on company’s operations. Data gathered at both stages were merged and as a result a final panel dataset containing 304 firms and 1167 firm-year observations was generated.

**Variables operationalisation**

In our study, we used firm financial performance (PERF) as dependent variable. We operationalised it as return on sales (ROS), computed as earnings before tax to total revenue from sales. For robustness check, we also used sales growth calculated as % change in annual total revenues. Both are accounting-based measures and we acknowledge that they are not fully capable of reflecting a multidimensional nature of firm performance. On the other hand, they are common in internationalisation research due to availability (Glaum & Oesterle, 2007).

Our focal independent variable used in this study are firm-specific advantages (FSAs). We measured them as a ratio of total assets to total revenues. Total assets are an accounting-based measure reflecting tangible and also intangible assets (franchise agreements, copyrights, patents) which are both presented in the firms’ financial statements. We recognise that this measure does not capture all relevant resources a firm may use. However, novice internationalisers are often focused on cost leadership rather than innovations. Hence, they mostly employ physical and financial assets (incl. land, buildings, machinery, equipment and other assets easily convertible into cash) to develop their competitive advantage and increase performance. On the whole, tangible assets represent a significant portion of relevant resources of novice internationalisers. We divided total assets by sales in order to control firm size, consistently with our performance variable.
Our first moderating variable is internationalisation degree, operationalised as the ratio of foreign sales to total sales (FSTS). This measure demonstrates only one dimension of the firms’ internationalisation process and thus it might be presented in a very limited and distorted manner (Verbeke & Brugman, 2009). However, FSTS is a measure of internationalisation commonly used by other scholars (Li, 2007; Bausch & Krist, 2007). Three groups were established (FSTS_3GR). The first one with FSTS below 5%, second with FSTS between 5% and 30% and the third group with FSTS above 30%. Numerical values 0, 1 and 2 for each group were assigned, respectively (variable FSTS_3GR).

The second moderating variable is firm size (see e.g. Bausch & Krist, 2007). A large company was defined as employing over 250 people, with annual revenue exceeding PLN 200 million (ca. EUR 50 million) and total assets exceeding PLN 172 million (ca. EUR 43 million). All other companies analysed in our study fall into the group of medium sized entities. A dummy variable was established and assigned to both groups. Medium-sized firms were a benchmark for the group of large entities.

Finally, with regard to control variables, we controlled for firm age, firm industry, annual real GDP change, and year of observations. Firm age was controlled for by dummy variables (Bausch & Krist, 2007) representing young firms founded after accession of Poland into the EU (equal to or below 12 years), firms established after transformation of Polish economy and the third group of old firms (founded before 1989).

We categorised firms in our sample into five industry groups: construction industry, heavy industry, light industry, IT and advanced technologies, trade and services industries, using the financial sector as a benchmark. The structure of the sample is presented in Table 1.

Finally, we controlled for the overall economic condition which was reflected by real GDP change in the Polish economy. Additionally, to eliminate autocorrelation problems, the last fourth control variable was introduced to reflect the year of observations (YEAR) whereas observations from 2010 were assigned with the value of one, observations from 2011 with value of two and so forth, ending up with 4 for 2013.

**Model specification**

For the purpose of hypotheses testing we used fixed-effects regression analysis according to the equation 1:
PERFi = β1 + β2 \ln \text{FSAs}_i + \beta_3 (\ln \text{FSAs}_i)^2 + \beta_4 \text{FSTS}_3\text{GR}_i + \\
\beta_5 (\text{FSTS}_3\text{GR}_i \times \text{FSAs}_i) + \beta_6 \text{Firm size}_i + \beta_7 (\text{Firm size}_i \times \text{FSAs}_i) + \\
\beta_8 \text{Firm age} + \beta_9 \text{Firm industry}_i + \beta_{10} \text{GDP change}_m + \beta_{11} \text{YEAR}_m 
\tag{1}

whereby PERFi stands for the performance of i company in the sample, FSAsi reflects resources possessed and presented in the statement of financial position of i company, FSTS_3GRi represents the degree of internationalisation of the i company and other variables represent the five control variables defined above.

Prior to the analysis it was verified whether the variables are normally distributed, which was examined with Kolmogorov-Smirnov test. Also, we checked for the presence of heteroskedascity with the analysis of scattergrams of standardised residuals. Moreover, to exclude multicollinearity between independent variables, Pearson’s r correlation and VIF coefficient were computed. No variables exceeded VIF values of 4, except for dummy variables that represent industry (a categorical variable with five categories) which had high VIF values above 10. Yet these variables are not associated with others, thus the multicollinearity has no adverse consequences in this case. Finally, autocorrelation was verified with Durbin-Watson test and also revealed no major issues.

Additionally, to identify outliers the Cook’s distance measure was used whereby values greater than 1.0 were indicated as influential. As the data on resources were significantly skewed, they were transformed using the natural logarithm function to ensure normal distribution.

As we employed panel data set in our study, we considered whether to estimate either fixed effects or random effects model, as they may both lead to different results. One of the major preconditions to use random effects models is that observations should be selected randomly from a given population (Dougherty, 2011). In our study, this assumption was not met, as our initial sample consisted of all firms listed on the Warsaw Stock Exchange and they cannot be considered as a random sample. Thus, we decided to employ the fixed-effects model.

Results

The characteristics of our sample are reported in Table 1. It might be noted that a vast majority of analysed companies is comprised of entities established before Poland transformed into market economy. And almost half of the sample represents traditional, capital-intensive sectors (construction and heavy industry).
Descriptive statistics and correlation coefficients for the full sample of 304 firms are presented in Table 2.

The results of the regression analysis are reported in Table 3. Model 1 includes only the control variables and serves as a baseline model. In model 2 the FSAs, degree of internationalisation and firm size were added. Then, in model 3, we added interaction effects to test for our hypotheses regarding the moderating effect of firm-level internationalisation on the FSAs-performance linkage. In models 4 and 5 we removed the firm size variable and tested our hypotheses separately for subgroups of medium- and large-sized firms.

The results indicate that model 1, containing only control variables, does not fit the data very well and explains only a small fraction of variation in performance (adj. R2 = 4.4%). The values of the adjusted R2 and F are significantly higher in models 2-5 than in the baseline model, which indicates that the inclusion of independent variables and further the interaction term increases the explanatory power of the models.

According to our expectations formulated in hypothesis H1, the FSAs possessed by firms are positively related to their performance measured by return on sales (Model 2). It should also be noted that the FSAs variable is significant at 0.001 in each model. Additionally, as we hypothesised in H2 the relationship is negatively moderated by the degree of internationalisation (Model 3) and indeed in such a way that higher level of internationalisation is associated with weaker financial performance (see Figure 2). Thus, we posit that analysed firms with higher degree of internationalisation find it more difficult to benefit from transferring their FSAs into foreign markets.

Further, we investigated the moderating role of firm size as hypothesised in H3. As we expected, the FSAs-Internationalisation-Performance relationship becomes less negative for larger than medium-sized firms (model 4 and 5). The coefficients for interaction effects were significant in both models, however in model 4 tested on the medium-sized from the sample they were nearly three times higher (β = -0.054) than the coefficient for large firms (β = -0.018). The analysed linkages for both sub-groups are presented graphically in Figure 3. Clearly, the negative moderating effect of internationalisation becomes weaker for larger firms. Thus, H3 was supported.

Finally, the data show that several control variables also proved to have a significant effect, including firm age, industry in which a specific company operates and economic conditions reflected by real change in GDP in Poland.
To check the stability and robustness of our models, we substituted ROS with change in sales revenues as the dependent variable and we noted that similar results were obtained. Finally, we also tested model 2 separately for sub-groups of firms with different levels of internationalisation in order to corroborate the moderation effect in hypothesis 2, obtaining similar results to our model 3.

Discussion

Theoretical implications

Earlier studies have already demonstrated that firm capabilities are positively related to the international commitment of firms (Nadkarni & Perez, 2007; Rundh, 2007). However, while the majority of studies have concentrated on intangible assets as the expression of performance-generating resources, we argue that in the context of novice internationalisers from a transition economy a broader concept of FSAs should be taken into account. We provide support for the performance effect of the total assets of novice internationalisers. In fact, such firms rarely possess significant intangibles, as well as organisational and management skills (Dunning et al., 2008). Rather, their strength may be seen in production and operational excellence, which can be also related to their latecomer character and the adoption of state-of-the-art business processes (Ramamurti, 2009).

We also provide additional hints that internationalisation per se is not directly responsible for higher performance. Instead, it affects the way in which firms use their FSAs. Some IB scholars go as far to argue that there is no reason to assume a specific relationship between internationalisation and performance (Hennart, 2011; Berry & Kaul, 2016). Meanwhile, FSAs have at best been considered as a moderating factor (Gande et al., 2009; Kotabe et al., 2002). Yet, internationalisation per se does not guarantee performance (Hennart, 2011), it should rather be viewed as a dimension of overall firm strategy which affects the ways in which it can leverage its FSAs. We argue that our study is among the few ones to argue for this intermediate role of internationalisation (see e.g. Morck & Yeung, 1991).

Also, an aspect which has been rather overlooked is the role of firm capabilities as a facilitator for the realisation of international strategy (Kotabe et al., 2002). In fact, as it has been argued, the possessed resources can pose a boundary for strategies adopted by firms, such as the internationalisation of the firm (Peteraf, 1993). Our two-step approach, which includes overall assets of the firm as a foundation for performance and then the size-related
capabilities, allows to shed more light on the aforesaid point. In fact, we provide some evidence that while internationalisation can distract novice internationalisers from an effective use of their assets, which shows itself in a reduced performance effect of FSAs, the possession of a higher level of size-related organisational capabilities turns out to be an enabler of international expansion.

Not least, we provide evidence on the behaviour of firms from a post-transition economy, which display different features and patterns than typical emerging market firms. Due to their limited international experience, as well as low endowment in intangible assets, these firms pose a useful context to explore the discussed relationships. Hitherto, the literature on the performance outcomes of different forms of internationalization, as well as the overall internationalisation-performance relationship, has concentrated on advanced countries (Dittfeld, 2017; Rugman & Oh, 2011; Geleilate et al., 2016).

Managerial implications

We argue that managers of novice internationalisers from post-transition economies should not be overly euphoric after earning the first successes on foreign markets. Foreign expansion is not the only way to grow a business, and its advantage for the company depends, among others, on its resource competitiveness. Firms which are strongly equipped in broadly understood assets should consider leveraging them at home first. In particular, the experience gained by previous business contacts and the experience gained in seemingly similar markets may discourage companies from the effort necessary to adjust to further markets. This in turn can negatively affect the final success of expansion. Thus, particularly novice internationalisers need a clear strategy to enter foreign markets, which will be oriented on the one hand to achieve the necessary flexibility and, on the other hand, to reduce the complexity of its foreign operations.

Finally, it is crucial to note that reconciling conflicting pressures from markets with requiring diverse managerial approaches needs significant managerial capabilities (Bartlett & Ghoshal, 1989). In line with the logic of organisational learning, firms require appropriate experience to be able to manage the contradictory challenges related to explorative and exploitative learning and to translate them into performance outcomes (Kim et al., 2015).
Conclusions

Our study sheds some light on the performance outcomes of the international expansion of novice internationalisers. Firstly, we contribute to extant IB research by providing evidence for a positive relationship between firm resources and performance, instead of treating internationalisation as an independent variable. Moreover, we demonstrate that internationalisation as a moderating variable may actually weaken the performance effect of resources due to the increasing complexity of the firms’ growing operations. However, this effect becomes weaker for more experienced firms.

Our findings are subject to a number of limitations. First, our study is based on a sample of Polish firms listed on the Warsaw Stock Exchange which limits the possibility to generalise our results not only to firms from other emerging markets but also to small or unlisted firms with limited access, especially to financial resources. Second, we only analysed resources reflected in the firm’s statements of financial position which means that we did not capture a broad span of other types of resources e.g. network, people, marketing, technology-related ones enabling to develop competitive advantages. These limitations open ground for further complementary studies.

Third, we did not study the geographic structure of internationalisation. This urges for more explicit research into the structure of locations in the portfolios of newly internationalised firms, which can be more and less developed than the home country. CEE-based newly internationalised firm still tend focus on neighbouring markets, less saturated or at a similar level of development, hence the possible diminishing effect of resources. The role of more distant, yet more promising markets, is much lesser and requires further investigation for its performance effects.

References


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Annex

Table 1. Sample description

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<td>Construction sector</td>
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<tr>
<td>Trade and services</td>
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<td>Heavy industry</td>
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<td><strong>Total</strong></td>
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<td>Firms founded in/after 2004</td>
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<td>Firms founded between 1989 and 2004</td>
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<td>Firms founded before 1989</td>
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<tr>
<td><strong>Total</strong></td>
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<tr>
<td>FSTS below 5% (FSTS_3GR = 0)</td>
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<td>FSTS between 5% and 30% (FSTS_3GR = 1)</td>
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<td>Large firms</td>
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Table 2. Descriptive statistics and correlation coefficients

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<td>2</td>
<td>Change in sales revenue</td>
<td>0.29</td>
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<tr>
<td>3</td>
<td>FSAs(^1)</td>
<td>0.10</td>
<td>0.82</td>
<td>0.26**</td>
<td>-0.03</td>
<td>-</td>
<td>-</td>
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<td>4</td>
<td>FSTS_3GR</td>
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<td>0.85</td>
<td>-0.04</td>
<td>-0.01</td>
<td>-0.20**</td>
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<td>Firm size</td>
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<td>-0.01</td>
<td>0.05</td>
<td>-0.26**</td>
<td>0.20**</td>
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<td>Firm age</td>
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<td>0.11**</td>
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<tr>
<td>7</td>
<td>Construction industry</td>
<td>0.20</td>
<td>0.40</td>
<td>0.03</td>
<td>-0.02</td>
<td>0.32**</td>
<td>-0.14**</td>
<td>-0.02</td>
<td>-0.08**</td>
<td>-</td>
<td>-</td>
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<tr>
<td>8</td>
<td>Heavy industry</td>
<td>0.25</td>
<td>0.43</td>
<td>0.07*</td>
<td>-0.03</td>
<td>0.01</td>
<td>0.36**</td>
<td>0.13**</td>
<td>0.19**</td>
<td>-0.29**</td>
<td>-</td>
<td>-</td>
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<tr>
<td>9</td>
<td>Light industry</td>
<td>0.11</td>
<td>0.32</td>
<td>-0.07*</td>
<td>0.09**</td>
<td>-0.06*</td>
<td>0.08**</td>
<td>0.03</td>
<td>0.14**</td>
<td>-0.18**</td>
<td>-0.20**</td>
<td>-</td>
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<tr>
<td>10</td>
<td>High-tech sector</td>
<td>0.18</td>
<td>0.39</td>
<td>0.04</td>
<td>0.00</td>
<td>0.01</td>
<td>-0.15**</td>
<td>-0.21**</td>
<td>-0.07**</td>
<td>-0.23**</td>
<td>-0.27**</td>
<td>-0.17**</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Trade and services</td>
<td>0.25</td>
<td>0.43</td>
<td>-0.08*</td>
<td>-0.02</td>
<td>-0.27</td>
<td>-0.15**</td>
<td>0.06</td>
<td>-0.16**</td>
<td>-0.29**</td>
<td>-0.33**</td>
<td>-0.21**</td>
<td>-0.27**</td>
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<tr>
<td>12</td>
<td>Change in GDP</td>
<td>103.01</td>
<td>1.23</td>
<td>0.08</td>
<td>0.01</td>
<td>0.02</td>
<td>-0.05</td>
<td>-0.01</td>
<td>0.00</td>
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<td>-0.01</td>
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</table>

Note: \(^1\) natural logarithm; ** p < 0.01; * p < 0.05
Table 3. Results of panel regression analysis (gross return on sales)

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Model 1 (full sample)</th>
<th>Model 2 (full sample)</th>
<th>Model 3 (full sample)</th>
<th>Model 4 (medium-sized)</th>
<th>Model 5 (large firms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control variables</td>
<td></td>
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<td></td>
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<tr>
<td>Intercept</td>
<td>-1.347*</td>
<td>-1.587*</td>
<td>-1.558*</td>
<td>-2.231†</td>
<td>-0.906†</td>
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<tr>
<td>Year</td>
<td>0.009</td>
<td>0.010</td>
<td>0.009</td>
<td>0.017</td>
<td>0.002</td>
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<td>Firm Age</td>
<td>-0.029***</td>
<td>-0.023***</td>
<td>-0.020***</td>
<td>-0.036**</td>
<td>-0.002</td>
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<tr>
<td>Firm Size</td>
<td>0.026***</td>
<td>0.024**</td>
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<tr>
<td>Construction industry (1)</td>
<td>-0.020†</td>
<td>-0.041***</td>
<td>-0.043***</td>
<td>-0.046†</td>
<td>-0.040***</td>
</tr>
<tr>
<td>Light industry (1)</td>
<td>-0.040**</td>
<td>-0.032*</td>
<td>-0.031*</td>
<td>-0.040</td>
<td>-0.023*</td>
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<tr>
<td>Advanced technologies industry (1)</td>
<td>-0.019</td>
<td>-0.011</td>
<td>-0.004</td>
<td>0.001</td>
<td>-0.027*</td>
</tr>
<tr>
<td>Trade and services (1)</td>
<td>-0.046***</td>
<td>-0.027*</td>
<td>-0.026*</td>
<td>-0.033</td>
<td>-0.006</td>
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<tr>
<td>Real GDP change in Poland</td>
<td>0.016**</td>
<td>0.016**</td>
<td>0.016**</td>
<td>0.022*</td>
<td>0.010†</td>
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<tr>
<td>Independent variables</td>
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<tr>
<td>FSAs</td>
<td>0.047***</td>
<td>0.061***</td>
<td>0.060***</td>
<td>0.073***</td>
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<tr>
<td>FSTS_3GR</td>
<td>-0.004</td>
<td>-0.002</td>
<td>0.009</td>
<td>-0.008†</td>
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<tr>
<td>FSAs x FSTS</td>
<td>-0.027***</td>
<td>-0.054***</td>
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<tr>
<td>R² adj.</td>
<td>0.04</td>
<td>0.11</td>
<td>0.12</td>
<td>0.09</td>
<td>0.25</td>
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<tr>
<td>F</td>
<td>7.76***</td>
<td>13.55***</td>
<td>14.06***</td>
<td>6.37***</td>
<td>21.62***</td>
</tr>
</tbody>
</table>

Note: Significance levels: ***p<0.001; **p<0.01; *p<0.05; †p<0.1; (1) Benchmark values relates to "Heavy industry"
Figure 1. Conceptual framework

![Conceptual framework diagram]

Figure 2. Relationship between FSAs and performance (ROS) depending upon degree of internationalization

![Relationship between FSAs and performance diagram]
Figure 3. Relationship between FSAs and performance (ROS) depending upon degree of internationalisation (for medium-sized and large firms).