



UW Faculty of Management

Working Paper Series

No 2/ April 2014

**THE INTERNATIONALIZATION OF POLISH FIRMS:
AN EMPIRICAL INVESTIGATION OF THE M-P
RELATIONSHIP**

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JEL classification: M160, L250, F230, L210

*Keywords: – international business, company internationalization, company performance,
emerging markets, Poland*

Faculty of Management Working Paper Series 2/ 2014

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Publisher: University of Warsaw, Faculty of Management Press

Address:

Str.: Szturmowa 1/3; 02-678 Warsaw, Poland

Telephone: +48 22 55 34 164

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ISSN 2300-4371 (ONLINE)

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ABSTRACT

The purpose of this paper was to determine the nature of the relationship between multinationality and performance (M-P relationship) among Polish companies. It is based on a sample of over 300 Polish companies listed on Warsaw Stock Exchange, studied over two years (625 observations were used for statistical processing). Multiple regression and t-statistic analyses were applied to test three hypotheses. The dependent variable was company performance and the independent variable was the degree of company internationalization. A number of control variables were also incorporated in the regression models. The statistically significant results of the multiple regression analyses show that Polish companies experience a negative linear relationship between their degree of internationalization and performance for two variants of the dependent variable, and a non-linear, U-shaped relationship for one dependent variable. The results also show that companies operating on international markets achieve lower market-valuation results than their domestic counterparts, and companies with lower levels of multinationality perform better than those with higher levels of multinationality.

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INTRODUCTION

The historical politico-social changes taking place 25 years ago in Central and Eastern Europe ushered in a period of transition towards a free market system of many economies of the world. As a result of the opening up of those economies, now called emerging markets, many companies from this “new free world” started to turn to international markets for growth and profit opportunities. And today, many of these beginning, inexperienced internationalists are emerging as a new breed of the multinational enterprise, called emerging multinational enterprises (EMNEs), which increasingly challenge the position of established, developed countries’ multinationals in world markets.

Poland is a case in point. Previously almost autarchic economy, it has opened its borders to both exporters and investors from abroad and removed all the restrictions on its companies willing to go international. What has ensued is a large number of Polish companies now operating internationally as exporters, licensors, foreign direct investors, and through other forms of international expansion. Such widespread presence of Polish companies in international markets poses a question re: their performance as internationalists.

Although there has been a substantial amount of studies in the international business (IB) literature on the international expansion of companies and its effects on performance, the vast majority of them concern developed countries’ companies, notably MNEs. Only relatively recently have researchers turned their attention to emerging market companies’ performance in international markets. This study adds to the growing volume of studies of the multinationality-performance (M-P) relationship focused on emerging market companies. This is the second study of the relationship conducted for Poland and, to the best of our knowledge, only the third in Central and Eastern Europe.

The following three research questions are addressed in this paper:

- What is the relationship between the degree of Polish firms’ internationalization and their financial performance?
- Do firms that have internationalized show better financial results than those operating only on the Polish market?
- Do firms that are more advanced in internationalization show better financial outcomes than those with less commitment to international markets?

When addressing the above-listed research questions, we present the following sections of the paper. The starting point is a comprehensive and systematic literature review focused on emerging market studies, empirically investigating the M-P relationship. In the subsequent section, we develop hypotheses, draw a research design (variables studied, their operationalization and methods of hypotheses testing), outline data collection procedures and present the results of statistical analysis. This is followed by a discussion of the results. The last three sections are devoted to limitations, conclusions and managerial implications of our study.

MULTINATIONALITY AND PERFORMANCE OF FIRMS FROM EMERGING MARKETS – LITERATURE REVIEW

The relationship between multinationality (or internationalization) and firm performance is the topic that has been studied extensively over the past three decades or so. Despite the large number of studies, the relationship remains one of the most elusive issues in international business research (Wu et al., 2012).

First of all, the assumptions based on theoretical considerations vary considerably. The only consensus is that the relationship should be positive, the conviction based on the theory of internationalization and recognition of the benefits of internationalization that outweigh its costs, at least in a long run (otherwise, why firms would internationalize?). And, indeed, for many years in the past (particularly in the 70s) scholars hypothesized a positive linear relationship between multinationality and performance (Bausch & Krist, 2007). However, the linear relationship is difficult to justify conceptually, given the dynamic interplay of benefits and costs that evolve in the course of internationalization. Therefore, over the last two decades many scholars have come to believe that the relationship is non-linear (Li, 2007). Some believe that in accordance with the Uppsala model, firms would benefit more from initial internationalization due to expansion into familiar, proximate markets, while incurring escalating costs when expanding into more distant and unfamiliar territories - “Eventually the marginal costs of international expansion will exceed the marginal benefits and compromise firms’ performance” (Li, 2007, p. 121). In this case, the M-P relationship will take on an inverted U-shaped curve. Other scholars, also using the stages internationalization model as a point of departure, argue the opposite: The initial costs related to the lack of knowledge and experience in international expansion can result in negative performance during the early

stages. However, as firms learn to operate in foreign environments and develop strategies to overcome the challenges of increased internationalization, their performance improves (see, e.g., the arguments presented by Thomas, 2006). In this case, the relationship can be best described by a regular U-shaped curve. Finally, some other authors, notably Contractor et al. (2003) and Lu & Beamish (2004), suggest that the effects of internationalization on performance have a sigmoid curve form. The effects are negative in early stages of firms' internationalization, they become positive when the degree of internationalization passes a certain threshold, and later on, when internationalization becomes excessive, the effects become negative again. This relationship resembles a horizontal S- shaped curve for all three stages.

Perhaps not surprisingly, given the diversity of theoretical perspectives, the ample empirical research findings concerning the M-P relationship among developed-country firms are reported to have been largely inconsistent, if not conflicting (see e.g., Annavarjula & Beldona, 2000; Contractor et al., 2003; Lu & Beamish, 2004; Wagner & Ruigrok, 2004; Thomas & Eden, 2004; and Li, 2007).

In more recent years, a growing number of studies have focused on the M-P relationship with respect to firms from emerging markets. This is a relatively new research area, which seems to be gaining momentum, due to both theoretical and practical reasons. Whether emerging-market international companies perform differently from their developed-country counterparts is not only an academic question, but it is also of great importance to managers of those companies.

The M-P relationship has been studied with respect to a fairly large number of emerging markets, mostly from Asia and Latin America. In our literature review, we identified 20 plus such studies, published between 1998 and 2012, a summary of which is presented in Table 1.

Table1 Studies of the M-P relationship: Emerging markets

Author(s) and year of publication	Type of data and analytical technique	Country(s), companies and period covered, and sample size	Internationalization variables	Performance variables	Control and moderating variables	Results
Wan (1998)	Secondary data Comparative (t-test) Regression	Country: Hong Kong Large companies Many industries (manufacturing and service) Period covered: 1990-1991 Sample size: 81	Sales-based entropy index	Accounting-based financial indicators: ROE, instability of ROE (standard deviation) Operational indicators: sales growth	Firm size Product diversification Industrial effects	ANOVA - not significant Nonlinear (square) inverted U-shaped M-P relationship - not significant
Aulakh, Kotabe, Teegan (2000)	Primary data (mail survey) Regression	Countries: Brazil, Chile, Mexico Small, medium and large companies Many industries (manufacturing and service) Period covered: 1996-1997 Sample size: 196	Export diversification: Sales-based entropy index	Composite index: role of exports in the firm's sales growth, role of exports in the firm's market share, role of exports in the firm's competitive position, profitability of export sales	Firm size Cost leadership Differentiation advantage Foreign operation (marketing standardization, international experience) Industrial effects Country effects	Nonlinear (square) inverted U-shaped M-P relationship (export diversification-export performance) - significant
Nachum (2004)	Secondary data Regression	Countries: Asia (China, India, Sri-Lanka, Turkey), South-East Asia (Hong Kong, Indonesia, Korea, Malaysia, Philippines, Taiwan, Thailand), Africa (South Africa, Zimbabwe) Latin America (Argentina, Brazil, Chile, Colombia, Mexico, Peru, Venezuela) Large companies Many industries (manufacturing and service)	Sales-based entropy index	Accounting-based financial indicator: ROS	Firm size Firm growth rate Product diversification Industrial effects	Linear M-P relationship – positive (significant) – Asia, Africa

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		Period covered: 1997 Sample size: 345				
Chiang , Yu (2005)	Secondary data Regression	Country: Taiwan Large companies Many industries (manufacturing and service) Period covered: 1998-2002 Sample size: 119	Assets-based: FATA	Accounting-based financial indicator: ROE	Firm size Foreign operation (geographic region) Industrial effects	Nonlinear (square) inverted U-shaped M- P relationship (significant) Nonlinear (cubic) inverted S-shaped (significant)
Tongli, Ping, Chiu (2005)	Secondary data Regression Comparative (MANOVA test)	Country: Singapore Large and medium companies Many industries (manufacturing and service) Period covered: 1995-1999 Sample size: 625	Sales-based entropy index	Accounting-based financial indicator: ROA Market-based financial indicator: Tobin's Q, Share Price (change)	Firm size Firm age Product diversification Financial leverage Industrial effects Country effects (GNP)	Linear M-P relationship – positive (significant): ROA, Tobin's Q, Share Price High level M better P (with different levels of product diversification)
Chiao, Yang, Yu (2006)	Secondary data Regression	Country: Taiwan Small and medium companies Two industries (manufacturing: electronics, textile) Period covered: N/A Sample size: 1419	Sales-based: ESTS (export sales to total sales)	Accounting-based financial indicators: ROS	Firm size R&D intensity Marketing intensity Financial leverage	Nonlinear (square) inverted U-shaped M-P relationship (significant) – electronics, textile
Elango (2006)	Secondary data Regression	Countries: many (emerging economies) Large companies Many industries (manufacturing and service) Period covered: 1996-2000 Sample size: 719	Sales-based: FSTS	Accounting-based financial indicator: ROS	Firm size Firm growth rate Financial leverage Economic considerations (governance, growth GDP)	Linear M-P relationship – positive (significant) for service firms Nonlinear (square) inverted U-shaped M- P relationship (significant) for manufacturing firms

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Thomas (2006)	Secondary data Regression	Country: Mexico Large companies Many industries (manufacturing and service) Period covered: 1994-2001 Sample size: 386	Sales-based: FSTS	Accounting-based financial indicator: ROS	Firm size Ownership structure (foreign ownership, independent firms) R&D intensity Foreign operation (geographic distance) Industrial effects	Nonlinear (square) U- shaped M-P relationship (significant)
Chang (2007)	Secondary data Regression	Countries: Hong Kong/China, South Korea, Taiwan, Singapore Large companies Many industries (manufacturing and service) Period covered: 1998-2002 Sample size: 115	Composite index (sales and assets-based), FSTS+FATA	Accounting-based financial indicators: ROS	Firm size Product diversification R&D intensity Financial leverage Foreign operation (expansion speed, geographic scope) Industrial effects	Nonlinear (square) U- shaped MP relationship (significant) – global Nonlinear (square) U- shaped M-P relationship (significant) – extra regional Nonlinear (cubic) horizontal S-shaped (significant) – Asia- Pacific region
Contractor, Kumar, Kundu (2007)	Secondary data Regression analysis based on pooled cross- section/time series observations	Country: India Indigenous firms representing two sectors (manufacturing and services) Period covered: 1997-2001 Sample size: 269	Sales-based: FSTS	Accounting-based financial indicators: ROA, ROE, ROS	Firm size and age (other exploratory variables) Dummy variables for industry subsectors	Positive linear M-P relationship for service sector Non-linear (square) U- shaped relationship for manufacturing firms
Zhou, Wu, Luo (2007)	Primary data (face to face interviews) Structural equation analysis	Country: China Medium and small companies Many industries (manufacturing) Period covered: 2003 Sample size: 129	Inward internationalization Outward internationalization	Accounting-based financial indicator: profitability growth Operational indicators: sales growth, ESTS growth	Firm age Firm ownership Competition intensity Market uncertainty Technology complexity Social networks (Guanxi)	Positive relationship: Inward internationalization – performance (profitability growth - significant) Positive relationship: Outward internationalization – performance (ESTS growth - significant) Guanxi networks mediate the

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						performance impact to inward internationalization (ESTS growth) Guanxi networks mediate the performance impact to outward internationalization (ESTS growth, profitability growth)
Chiao, Yu, Li, Chen (2008)	Secondary data Regression	Country: Taiwan Small, medium, large companies Many industries (manufacturing) Period covered: 2000 Sample size: 920 (subsidiary in China)	Inward internationalization (cost-based: import/total cost) Outward internationalization (Sales-based: FSTS)	Accounting-based financial indicator: ROS (declaration)	Firm size Product diversification Industrial effects	Linear M-P relationship – positive (significant): outward internationalization Linear M-P relationship –not significant: inward internationalization
Doryń, Stachera (2008)	Secondary data Regression	Country: Poland Large companies Many industries (manufacturing) Period covered: 2005-2006 Sample size: 79	Sales-based: ESTS	Accounting-based financial indicator: ROA	Firm size Industrial effects	Nonlinear (square) U-shaped M-P relationship (significant)
Hsu, Liu (2008)	Secondary data Regression	Country: Taiwan Small, medium Large companies Few industries (manufacturing - hardware) Period covered: 1997-2002 Sample size: 124	Sales-based entropy index	Accounting-based financial indicator: ROIC (return on invested capital)	Firm size R&D intensity Product diversification Financial leverage Company operation (degree of value-added, contractual manufacturing model) Customer diversity Industrial effects	Linear M-P relationship – negative (significant)
Pangarkar (2008)	Primary data (mail survey) Regression	Country: Singapore Small and medium size companies	Composite index sales-based: FSTS and geographical distance	Composite index: ROS, ROA, FPTP, growth of profits, growth of sales,	Firm size Host country attractiveness	Linear M-P relationship – positive (significant)

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		Many industries (manufacturing and service) Period covered: 2005 Sample size: 94	Pangarkar index	foreign experience	Capabilities	
Johnson, Yin, Tsai (2009)	Secondary data Regression	Country: Singapore Large companies Many industries (manufacturing) Period covered: 2003 Sample size: 110	Assets-based: FATA	Accounting-based financial indicator: ROA	Firm size Firm age Managerial experience Learning capacity Industrial effects	Nonlinear (cubic) horizontal S-shaped M-P relationship (significant)
Pattnaik, Elango (2009)	Secondary data Regression	Country: India Large companies Many industries (manufacturing) Period covered: 2000-2003 Sample size: 787	Sales-based: FSTS	Accounting based financial indicator: ROE	Firm size Firm age Product diversification R&D intensity Marketing intensity Industrial effects Industry considerations	Nonlinear (square) inverted U-shaped M-P relationship (significant)
Väättänen, Podmetina, Pillania (2009)	Secondary data Regression	Country: Russia Large companies Many industries (manufacturing and service) Period covered: 1994-2006 Sample size: 659	Sales-based: FSTS	Accounting-based financial indicators: ROS Market-based financial indicator: market capitalization growth Operational indicators: sales growth, labor productivity	Ownership structure	Linear M-P relationship – positive (significant): ROS, labor productivity Linear M-P relationship – (not significant) market capitalization growth, sales growth
Lee (2010)	Secondary data Regression	Country: Korea Small size companies Many industries (manufacturing and service) Period covered: 2002 Sample size: 2236	Sales-based: FSTS	Accounting-based financial indicators: ROA, ROS	Firm size Firm age Product diversification R&D intensity Marketing intensity Financial leverage Foreign operation (entry modes) Industrial effects	Nonlinear (cubic) horizontal inverted S- shaped M-P relationship (significant)

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Loncan, Nique (2010)	Secondary data Regression	Country: Brazil Large companies Many industries (manufacturing) Period covered: 2000-2007 Sample size: 6	Sales-based: FSTS	Accounting-based financial indicator: ROA Market-based financial indicators: Tobin's Q	None	Linear M-P relationship – positive (significant) – ROA, Tobin's Q
Chang (2011)	Secondary data Regression	Countries: Hong Kong, Korea, Singapore, Taiwan Large companies Many industries (manufacturing and service) Period covered: 2003-2006 Sample size: 115	Composite index: FSTS + FATA Intra-region (USA) Extra- region (outside USA)	Accounting based financial indicator: ROS	Firm size R&D intensity Financial leverage Industrial effect	Linear M-P relationship – positive (significant): intra-region Linear M-P relationship – negative (significant): extra-region
Wu, Wu, Zhou (2012)	Secondary data Regression	Country: China Large and medium companies Many industries (manufacturing) Period covered: 1999-2008 Sample size: 318	Sales-based entropy index	Accounting-based financial indicator: ROA	Firm size Financial leverage Innovation intensity (patents) Ownership structure Strategic acquisitions and asset sales	Nonlinear (cubic) horizontal S-shaped M-P relationship (significant) – whole sample Nonlinear (cubic) horizontal S-shaped (significant) relationship – low levels of product diversification Nonlinear (square) U-shaped M-P relationship (significant) – medium level of product diversification Linear M-P relationship – positive (not significant) – high level of product diversification

Most of the studies reviewed concentrate on one country firms. Such one country is most often located in East or South-east Asia. Two single-country studies concern firms from post-communist, transitional economies – those of Poland and Russia. Multi-country studies range from a few to several dozens, spanning three continents. Samples of firms are usually drawn from secondary data sources (e.g. government-compiled databases) and range from 6 (!) to more than two thousand, but most of the samples are in the range between 100 and 1000. In all studies but one, various multiple regression models are applied and tested in order to determine the nature of the relationship between the variables analyzed.

A range of firm-sizes were studied – from large multinationals to SMCs. They came from a variety of sectors and industries, but are typically divided into manufacturing and service firms, and for each group a separate analysis is often conducted.

The dependent variable, firm performance, is typically operationalized by accounting-based financial indicators: return on equity (ROE), return on assets (ROA), and return on sales (ROS). However, other measures are also used, such as sales growth, labor productivity and return on invested capital (ROIC).

Multinationality (often called the degree of internationalization - DOI), as an independent variable, is usually operationalized using sales-based measures, such as foreign sales to total sales (FSTS) and entropy indices, or assets-based measure of foreign assets to total assets (FATA); however, two studies used composite indices, combining sales-based and assets-based measures.

Some authors also analyze the effects of other independent (exploratory) variables on firm performance, typically as moderating or mediating variables. However, sometimes these other independent variables, e.g. industrial or product diversification, are analyzed on an equal footing with multinationality. Moderating variables include such factors, as advertising and R&D expenditures, the quality of governance, and the role of social networks. A somewhat atypical for this review study of Aulakh et al. (2000) examines the impact of three marketing variables (cost leadership vs. differentiation, the degree of marketing program standardization, and the degree of export diversification) on export performance of firms from three emerging markets.

In investigating the relationship between internationalization and performance, it is important to control for the other variables (not analyzed as key independent variables) that are likely to have an impact on firm performance. The typical control variables used in the reviewed studies include: firm size, firm age, firm growth industry effects, financial leverage, risk, market growth, firm ownership, and technological or innovation intensity.

Similarly to the studies of developed-country firms, the reviewed empirical research produces mixed results, although perhaps less incongruent. One study (Wan, 1998) did not find any statistically significant relationship between international diversification and profitability (a hypothesis about U-shaped relationship was rejected). Moreover, this study found that MNCs do not perform better than domestic firms. At the same time, internationalization was found to have positive influence on stability of profitability and sales growth. The largest number of authors (Nachum, 2004; Tongli et al., 2005; Elango, 2006; Contractor et al., 2007;¹ Ciao et al., 2008; Pangarkar, 2008; Vääänen et al., 2009; Loncan & Nique, 2010; and Chiang, 2011²) found positive linear relationship between multinationality and performance. Only two studies (Hsu & Liu, 2008; and Chang, 2011³) reported evidence of negative linear relationship. A non-linear (square) U-shaped curve was found to best fit the M-P relationship in the studies of Tomas (2006), Contractor et al. (2007)⁴, Chang (2007), Doryń & Stachera (2008), and Wu et al. (2012); the latter only for firms with medium levels of product diversification. An inverted U-shaped curve was reported by Aulakh et al (2000), Chiang & Yu (2005), Chiao et al. (2006), Elango (2006), and Pattnaik & Elnago (2009). Non-linear (cubic) horizontal S-shaped curve best illustrated the M-P relationship in Chang (2007), Johnson et al. (2009), Lee (2010), and Wu et al. (2012). Finally, Chiang & Yu (2007), in addition to obtaining significant results for an inverted U-shaped relationship, argued for an inverted S-shaped M-P relationship. In a different methodology approach (using structural equation analysis), Zhou et al. (2007) found positive relationships between inward and outward internationalization and performance, while also finding support for the mediating role of guanxi-related social networks in the relationships.

HYPOTHESES, RESEARCH DESIGN, DATA COLLECTION, AND ANALYSIS

As the literature review of the preceding section indicated, the largest number of studies of emerging-market firms found positive linear relationship between multinationality and performance. In accordance with this finding, we state our first and main hypothesis as:

¹ For the service sector

² For intra-region internationalization

³ For extra-region internationalization

⁴ For the manufacturing sector

H1: The relationship between the degree of internationalization and financial performance of Polish firms is positive and has a linear form.

Although the linearity of the relationship can be questioned based on the traditional economic principle of diminishing returns and the fact that firm performance is a result of combined and dynamic effects of both the benefits and costs of internationalization (Li, 2007), the relatively short period of Polish firms' internationalization studied for this paper seems to justify this assumption. By the same token, the fact that there were so many studies of emerging-market firms providing evidence of the linear relationship can be explained by similarly short periods of those firms' rapid internationalization.

Only one of the studies reviewed in the preceding section has investigated the difference in performance between domestic and multinational firms, and found that internationally diversified firms did not perform better than domestic firms, although not worse either (Wan, 1998). Our second hypothesis is therefore based on a deductive premise: if benefits of internationalization outweigh costs associated with that internationalization (as is argued in extant literature; see e.g., Bausch & Krist, 2007), international firms should perform better than their domestic counterparts (this assumption is also consistent with hypothesis H1). This leads us to the formulation of the second hypothesis:

H2: Polish firms that have entered foreign markets show better financial results than those operating solely on the domestic market.

Finally, in accordance with Hypothesis H1, we expect firms with higher degrees of international-market involvement to perform better than those with lower degrees of internationalization. Hence the following hypothesis:

H3: Firms that are more advanced in internationalization show better financial results than those with lower commitment to international markets.

To test the above hypotheses, we drew a large judgment sample from the companies listed on Warsaw Stock Exchange, operationalized the relevant variables and applied appropriate statistical analyses.

The sample of companies includes 313 from the year 2009 and 312 from the year 2010. Combining the two years allowed us to obtain 625 observations for statistical processing, of which 519 observations were used for analyzing companies with international activity. 75% of the sample companies sell their products on international markets. However, the largest group of them shows a low level of multinationality as measured by the FSTS ratio (the

average is 19.1%, the median is 7.9%, and 28% of companies' FSTS ratio is less than 10%). The companies included into the sample represent several sectors and about two dozen individual industries within those sectors (for sectorial breakdown, see Table 2). They also represent different company sizes (Table 3). A predominance of mid-sized and large companies is noteworthy, which does not reflect the total population of companies, dominated by small companies. The needed data were derived from annual reports, prospectuses and other published documents concerning the sample companies.

Table2

Sample Breakdown by Economic Sector

Sector	No. of observations	% share in total
Services	238	38.08
Trade and catering	109	17.44
Manufacturing	278	44.48
Total	625	100

Table3

Sample Breakdown by Company Size

Company size	Assets		Sales revenues	
	No. of observations	% share of total	No. of observation	% share of total
Small	94	15.04%	99	15.84%
Medium	244	39.04%	257	41.12%
Large	287	45.92%	269	43.04%
Total	625	100%	625	100%

Note: Company sizes are delineated according to Polish law: Small companies

The variables studied can be grouped into three categories, namely: financial results (dependent variable); indicators of the degree of internationalization (independent variable); and company characteristics used as control variables.

The financial variables included: two variants of return on sales (ROS – operating profit and ROS – net profit), two variants of return on assets (ROA – operating profit and ROA – net profit), and two variants of return on equity (ROE – operating profit and ROE net profit). In this category we also included the excess value (EV), which is defined as the difference between market value of common equity and net worth, normalized by sales (Errunza and Senbet, 1981, p. 412). In accordance with the previous empirical studies, most of which used this approach, the degree of internationalization was operationalized by the FSTS indicator (foreign sales to total sales).

The control variables included: company size, financial risk, company growth path, industry effect, type of customer, and the participation of a foreign investor in the company. These variables were operationalized in the following way:

- Company size (C1): the natural logarithm of total sales ($SC = \ln S$)
- Financial risk (C2): calculated according to the formula, $FR = \left(\frac{L}{A}\right) \times 100\%$; where FR=financial risk, L=total liabilities, and A=total assets
- Company growth path (C3): a distinction between organic growth and growth through acquisitions, captured by the formula, $GC = \frac{G}{A} \times 100\%$; where G=Goodwill, and A=total assets
- Industry effect (C4): divided into (1) services; (2) trade and catering; and (3) manufacturing
- Type of client (C5): B2C (1); and B2B (2)
- Participation of a foreign investor in the company (C6): no dominant foreign investor (1); and dominant foreign investor (2).

To test H1, we applied multiple regression analyses. Three specifications were tried: linear, quadratic, and cubic. The dependent variables were financial outcomes, as indicated above, and the independent variables were the degree of internationalization (FSTS) and the six control variables. Out of 21 regression functions run, only three met the adjusted R-square cut-off value of 8%, while being statistically significant (see Table 4, where these three models are highlighted). They were:

- Linear regression function for the dependent variable ROS – operating profit
- Linear regression function for the dependent variable ROS – net profit
- Quadratic regression function for the dependent variable ROA – net profit

In analyzing the first linear function results (see Table 5), we found the regression coefficient to be negative, which means that the more internationalized the company is the less profitable it is in terms of its return on sales (measured with operating profit). At the same time, the highest impact on the dependent variable had the size of the company, followed by the financial risk variable. In other words, the larger the company, the more profitable it is, but the more indebted it is, the less profitable it is.

The linear regression results for the dependent variable ROS-net profit are presented in Table 6. These results are similar to those of dependent variable ROS-operating profit. The regression

coefficient is also negative, indicating negative relationship between the degree of internationalization and net profit to sales. However, this time the biggest impact on performance among control variables had financial risk followed by the company size.

Table4

Types of regression models and dependent variable results for Hypothesis H1

Type of regression model	Dependent variable	Degree of significance of independent variable	Adjusted R-square coefficient
Linear	ROS - operating profit	FSTS – significant at $p < 0.05$	9.6%
Linear	ROE - operating profit	FSTS – not significant	2.8%
Linear	ROA - operating profit	FSTS – significant at $p < 0.1$)	5.7%
Linear	ROS - net profit	FSTS - significant at $p < 0.05$)	9.0%
Linear	ROE - net profit	FSTS – not significant	3.9%
Linear	ROA – net profit	FSTS – significant at $p < 0.1$	7.9%
Linear	EV	FSTS – not significant	5.7%
Quadratic	ROS – operating profit	FSTS - significant at $p < 0.1$ FSTS ² – not significant	9.6%
Quadratic	ROE – operating profit	FSTS – not significant FSTS ² – not significant	2.6%
Quadratic	ROA – operating profit	FSTS - significant at $p < 0.05$ FSTS ² - significant at $p < 0.1$)	6.1%
Quadratic	ROS – net profit	FSTS - significant at $p < 0.1$) FSTS ² – not significant	9.0%
Quadratic	ROE – net profit	FSTS – not significant FSTS ² – not significant	3.8%
Quadratic	ROA – net profit	FSTS - significant at $p < 0.05$ FSTS ² - significant at $p < 0.05$	8.6%

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Quadratic	EV	FSTS – not significant FSTS ² – not significant	5.8%
Cubic	ROS - operating profit	FSTS – not significant FSTS ² – not significant FSTS ³ – not significant	9.4%
Cubic	ROE - operating profit	FSTS – not significant FSTS ² – not significant FSTS ³ – not significant	2.5%
Cubic	ROA - operating profit	FSTS – not significant FSTS ² – not significant FSTS ³ – not significant	6.0%
Cubic	ROS - net profit	FSTS – not significant FSTS ² – not significant FSTS ³ – not significant	8.8%
Cubic	ROE - net profit	FSTS - significant at p<0.1 FSTS ² – not significant FSTS ³ – not significant	3.9%
Cubic	ROA - net profit	FSTS – not significant FSTS ² – not significant FSTS ³ – not significant	8.4%
Cubic	EV	FSTS – not significant FSTS ² – not significant FSTS ³ – not significant	5.6%

Table5

Linear regression function – dependent variable: ROS –operating profit; independent variable: degree of internationalization (FSTS) – Hypothesis H1

Dependent variable: ROS – operating profit	N	R	R-square	Adjusted R-square
	500	0.332	11.0%	9.6%
Predictors:	B	Beta	P (significance)	Relative importance of independent variables
Constant	-21.626		0.000	
Internationalization (FSTS)	-0.095	-0.126	0.011	8.0%
Company size (C1)	3.077	0.280	0.000	49.2%
Financial risk (C2)	-0.253	-0.250	0.000	35.5%
Company growth path (C3)	0.087	0.042	0.356	1.8%
Industry: Trade and catering (C4=2)	-3.078	-0.064	0.212	1.5%
Industry: Manufacturing (C4=3)	-0.628	-0.017	0.761	0.3%
Client type: B2C (C5=1)	-0.558	-0.015	0.743	0.1%
Foreign investor participation (C6=2)	2.679	0.048	0.275	3.6%

Note: Significance levels of $p < 0.05$ are marked by shaded areas. N (500) includes only those firms that conducted business activity abroad, minus outliers (firms whose ROS – operating profit, FSTS, C1, C2 and C3 were considerably different from respective averages).

The third regression function, that was also significant, was a quadratic specification, with the dependent variable of net profit to total assets (Table 7). Here the relationship between internationalization and performance is U-shaped. In the first stage, an increased internationalization results in a diminishing ROA. In the second stage, which begins at the bottom of the U-shaped curve, progressing internationalization leads to a steadily improving ROA. We found that the minimum ROA, whose value in our study was 0.9, is reached at an FSTS of 45%. The value of ROA-net profit at the two extreme points of the curve are 4.9 (FSTS=0) and 7.0 (FSTS=100%), respectively.

Table6

Linear regression function – dependent variable: ROS –net profit; independent variable: degree of internationalization (FSTS) – Hypothesis H1

Dependent variable: ROS net profit	N	R	R-square	Adjusted R-square
	499	0.323	10.4%	9.0%
Predictors:	B	Beta	P (significance)	Relative importance of independent variables
Constant	-20.091		0.001	
Internationalization (FSTS)	-0.088	-0.118	0.017	6.5%
Company size (C1)	2.873	0.265	0.000	44.1%
Financial risk (C2)	-0.266	-0.266	0.000	45.3%
Company growth path (C3)	0.069	0.034	0.455	1.0%
Industry: trade and catering (C4=2)	-1.696	-0.036	0.487	0.8%
Industry: manufacturing (C4=3)	0.248	0.007	0.903	0.0%
Client type: B2C (C5=1)	-1.041	-0.028	0.537	0.6%
Foreign ownership (C6=2)	1.680	0.031	0.489	1.8%

Note: Significance levels of $p < 0.05$ are marked by shaded areas. N (499) includes only those firms that conducted business activity abroad, minus outliers (firms whose ROS – net profit, FSTS, C1, C2 and C3 were distant from other observations).

The results of H1 testing clearly show that the relationship between internationalization and performance in the case of two variants of the dependent variable (ROS-operating profit and ROS-net profit) is negative and has a linear form. One variant of that dependent variable (ROA-net profit) is related to internationalization in a way that can be best described as a U-shaped curve. Thus, Hypothesis H1 is rejected.

Table7

Quadratic regression function – dependent variable: ROA –net profit; independent variable: degree of internationalization (FSTS) – Hypothesis H1

Dependent variable: ROA net profit	N	R	R-square	Adjusted R-square
	500	0.319	10.2%	8.6%
Predictors:	B	Beta	P (significance)	Relative importance of independent variables
Constant	-6.878		0.070	
Internationalization (FSTS)	-0.179	-0.374	0.011	17.6%
Internationalization - square (FSTS x FSTS)	0.002	0.289	0.035	6.2%
Company size (C1)	1.590	0.229	0.000	24.5%
Financial risk (C2)	-0.180	-0.282	0.000	49.6%
Company growth path (C3)	-0.014	-0.010	0.818	0.0%
Industry: trade and catering (C4=2)	-0.588	-0.019	0.708	0.1%
Industry: manufacturing (C4=3)	-0.093	-0.004	0.946	0.1%
Type of client: B2C (C5=1)	0.486	0.020	0.653	0.3%
Foreign ownership (C6=2)	1.068	0.030	0.494	1.6%

Note: Significance levels of $p < 0.05$ are marked by darker shaded areas; significance level of $p < 0.1$ is marked by lighter shaded area. N (5000) includes firms that conducted business activity abroad, minus outliers (firms whose ROA – net profit, FSTS, C1, C2 and C3 were distant from other observations).

Another research question that we address in this paper is, whether internationalization leads to better financial results as compared to focusing on the domestic market. Moreover, we noted substantial differences in the degree of commitment to international markets among those companies that had internationalized and posed another question: Is it financially beneficial for companies to deepen their engagement in international markets? In reference to these two research questions, we formulated Hypotheses H2 and H3 in the preceding section. For testing these two hypotheses, we divided all sample companies into three groups:

- Companies that only operate on the domestic market
- Companies with a relatively low level of international-markets engagement (with an FSTS indicator below the median for all international companies)
- Companies with a relatively high level of internationalization (an FSTS indicator above the median)

In testing the two hypotheses, the *t*-statistic was applied to analyze the means of two populations of companies. In the first case, financial results of domestic vs. international companies were compared. Table 8 shows the results of this comparison. Only the EV indicator is statistically significant. It indicates that companies operating solely on the domestic market achieve better results than those that are involved in international activities. In other words, companies operating on the domestic market are more valued by investors than their internationalized counterparts. Therefore, Hypothesis H2 has to be rejected. Table 9, in turn, contains the results of the comparison between companies with a relatively low degree of internationalization (below the median) with those of relatively high level of involvement in international markets (above the median). Here, several performance indicators are statistically significant and they all point to better performance of companies with low levels of internationalization. Thus, there's no support for Hypothesis H3 either.

DISCUSSION OF RESULTS

The negative relationship between internationalization and the two measures of performance we found among Polish companies listed on Warsaw Stock Exchange is unexpected. Only two previous studies of emerging-market firms (Hsu & Liu 2008; and Chang 2011) obtained similar (i.e. in terms of the linear form of the negative relationship) results, and one of them (Chang 2011) - only for extra-region internationalization. The U-shaped relationship for ROA-net profit, on the other hand, corroborates a half a dozen earlier studies on the M-P relationship in emerging-market studies, including the only Polish study (Doryń & Stachera, 2008). The U-shaped curve relationship is more in line with theoretical reasoning. Indeed, emerging-market firms that enter international markets rapidly and without the benefit of long-term experience and strong competitive advantages to exploit abroad that their developed-countries counterparts possess, may be vulnerable to internationalization risks and high costs of initial internationalization. As they gain more experience and capture benefits of

internationalization to a larger extent, they may move along the U-shaped curve and, after reaching the point of inflection (in the case of ROA – net profit, the point of infection is when foreign sales represent 45% of total sales), their performance increases with progressing internationalization.

Table8

Comparison of domestic and international companies performance (t-test for independent samples) – Hypothesis H2

Performance indicators	Companies operating solely on the domestic market		Companies with presence on international markets		Results of <i>t</i> -test for independent samples			
	Mean	N	mean	N	difference	t	Df	P
ROS-op	-1.18	102	2.36	519	-3.54	-0.645	106	0.520
ROE-op	11.53	105	7.79	515	3.74	1.287	618	0.199
ROA-op	3.53	106	3.53	519	0.00	0.002	623	0.999
ROS-np	-0.87	100	1.27	518	-2.14	-0.408	104	0.684
ROE-np.	6.51	105	4.71	516	1.79	0.615	619	0.539
ROA-np.	3.57	106	2.14	519	1.43	1.057	623	0.291
EV	3.04	90	0.33	474	2.71	2.200	89	0.030

Notes: op=operating profit; np=net profit. The shaded area indicates the significance level of $p < 0.05$.

N is lower than actual samples due to the elimination of outliers. Due to a substantial difference in the size of the two samples, results of the *t*-test should be treated with caution.

The *t*-test results indicate that H2 should be rejected. Companies that operate on international markets achieve lower market-valuation results (measured by the EV indicator, which was the only dependent variable statistically significant in this case) than their domestic counterparts. Likewise, H3 cannot be accepted either. In this case the statistically significant performance variables were ROE-operating profit, ROE-net profit, and EV, and they were better for companies with a lower level of multinationality than those with a higher level of multinationality. This finding confirms the negative linear relationship between the two studied variables – multinationality and performance. Not only do international companies show less favorable performance results than their domestic counterparts, but the more they

are engaged in international operations, the worse these results become! There are several possible explanations of this apparent “paradox”.

Table 9

Comparison of performance between companies with low and high degree of internationalization (t-test for independent samples) – Hypothesis H3

Performance indicators	Low FSTS		High FSTS		Results of <i>t</i> -test for two independent samples			
	Mean	N	mean	N	difference	t	Df	P
ROS-op	3.63	261	1.26	263	2.37	1.387	522	0.166
ROE-op	10.01	261	5.95	261	4.06	1.708	520	0.088
ROA-op	4.30	263	3.06	263	1.24	1.093	524	0.275
ROS-np	2.25	261	0,40	262	1.86	1.107	521	0.269
ROE-np.	7.31	262	2.62	261	4.69	1.993	521	0.047
ROA-np.	2.97	263	1.79	263	1.18	1.102	524	0.271
EV	0.83	237	0.23	244	0.60	1.890	248	0.060

Notes: op=operating profit; np=net profit. The dark shaded area indicates the significance level of $p < 0.05$; the light shaded area indicates the significance level of $p < 0.1$. N is lower than actual samples due to the elimination of outliers.

First and foremost, the Polish companies in our sample show on average low degrees of internationalization as measured by the FSTS ratio (19.1%) and thus are subject to greater liability of foreignness and newness. In fact, for the vast majority of the sample companies the DOI is below the 45% mark, which was earlier determined as a point of inflection in the regression results of the quadratic function. In other words, the majority of the studied companies have not passed the bottom of the U-shaped curve. They seem to have a long way to go to gain the requisite international experience and build their ownership advantages to be profitably exploited in international markets. Although we believe that they will eventually follow the U-shaped curve, they are at the moment moving along the downward sloping part of that curve. This would explain why companies with higher (but not high!) degrees of internationalization perform financially worse than those with lower degrees of internationalization. Those with higher degrees of internationalization are further down on the

downward sloping U-shaped (or linear for that matter) curve than those with relatively low degrees of internationalization. This would also explain why our results differ from those of the only other study of the M-P relationship conducted for Poland (Doryń & Stachera, 2008). In their study, Doryń & Stachera (2008) used a sample of companies drawn from the list of 500 largest companies operating in Poland, including subsidiaries of large MNCs. These were only manufacturing companies with the DOI much higher than in the present study (their average FSTS was 48.7%). Evidently, many of their sample companies were already moving along the upward-sloping part of the U-shaped curve. Hence their results firmly confirmed the U-shaped curve hypothesis with respect to the only dependent variable included into the regression model – ROA, while the linear and cubic relationships were rejected. In our opinion, our sample, although still not fully representative of all companies in Poland, better reflects the diversity of the company population in terms of size and sectoral distribution.

Another possible explanation of the unexpected results of our study is that Polish companies, again typically in the early stages of their internationalization, rely on exports, as opposed to other, and potentially more profitable, forms of foreign-market involvement. Moreover, they compete in the markets where they have difficulty exploiting other than price advantages (it is noteworthy that the largest number of Polish international companies operates on the German market). For example, they typically do not possess strong brands and eagerly sell to foreign partners under the latter brand names. Relying on price competition can only erode their financial profitability.⁵

LIMITATIONS

This study is based on a sample of companies listed on Warsaw Stock Exchange, with data gathered for two years of these companies' activities. The nature of the sample and the period studied represent the biggest limitation, making the results of our study somewhat tentative. Other limitations concern the nature of analysis applied and the operationalization of variables.

The sample used in this study is skewed towards larger and better capitalized companies, and is underrepresented by SMEs. Second, only a cross-section analysis is applied and two years of company activity are covered. Longitudinal research, involving longer periods,

⁵ More on the weaknesses of Polish companies' strategies in international markets can be found in Karasiewicz, 2013.

would have been more appropriate. Third, deferred effects of internationalization initiatives on firm performance were not captured. It is possible that many initiatives were treated by the internationalizing companies as a long term investment in international market development. Fourth, the financial outcomes considered are by nature short-term and are applied to the whole business of a company without separating the outcomes of the international activities. Fifth, the FSTS indicator captures only one aspect of multinationality; aside are left other important dimensions, such as the number of countries entered, number of foreign subsidiaries or top management's international orientation. Sixth, the control variables do not include important company-internal determinants (e.g. product diversification or international knowledge and skills of managers), and external factors, such as industry competitive intensity. Therefore, further research should attempt to overcome, at least some of, the above-mentioned limitations. It is particularly advisable to conduct a longitudinal study of the M-P relationship over a period of at least 5 years and use more robust indicators of multinationality.

CONCLUSIONS

Out of 21 multiple regression models tried, only three met the R-square and significance criteria. Based on these three models, we can conclude that in spite of the limitations of our methodology, there is a high probability of a negative relationship between multinationality and performance among Polish companies. For two dependent variables (ROS-operating profit and ROS-net profit) the negative relationship is linear. In one of the performance measures (ROA-net profit), the M-P relationship resembles a U-shaped curve. In the first stage, an increased internationalization results in a diminishing ROA. In the second stage, which begins at the bottom of the U-shaped curve (with the degree of internationalization equaling 45%), progressing internationalization leads to a steadily improving ROA. The negative linear relationship found in this study largely contradicts the earlier studies of emerging-market companies M-P relationship, reviewed in this paper.

We also compared financial results of domestic and international companies. Measured by the EV (excess value) indicator, performance of domestic companies was found to be superior to those that entered international markets. Likewise, we compared companies with a relatively low degree of internationalization with those of a relatively high degree of

internationalization and found four statistically significant results indicating that companies with lower involvement in international markets outperform those with higher involvement.

Our results are largely inconsistent with the earlier studies of emerging markets (including the only previous study for Poland) and are puzzling. However, we attempted to explain the results on both theoretical and empirical grounds. Among other things, one can attribute this rather unusual pattern of the M-P relationship to the fact that Polish international companies tend to be in the early stages of their internationalization and have to first overcome the risks and steep costs of internationalization before reaping its benefits. By and large, their international experience is limited, many of them lack ownership advantages, such as strong brands, are predominantly only exporters, and tend to excessively focus on price in building their competitiveness on international markets that are very competitive. It should therefore come as no surprise that their financial results are worse than those of solely domestic companies. Moreover, the deeper they engage in internationalization, the worse their financial results become. Nevertheless, not all is bad news. Some of our results indicate that Polish internationalizing companies may be eventually moving along a U-shaped curve and, after passing the inflection point at the bottom of that curve, the benefits of internationalization will grow faster than the costs, and the companies will start improving their financial performance. It should also be noted that internationalization is one of the factors determining performance. Our study indicates that such factors as company size and financial leverage may play an important role as well.

MANAGERIAL IMPLICATIONS

Apparently, it is not easy for Polish firms to undertake profitable internationalization at this stage. Should we then advise Polish managers to avoid internationalization and focus on the domestic market? Not at all! Many studies indicate that emerging market-firms can benefit from internationalization. As pointed out earlier, it is plausible that falling profitability as internationalization increases observed among Polish firms in this study is part of the downward sloping U-shaped curve. After reaching the bottom of the curve, financial performance should start improving. Therefore, Polish managers should take a long-term view of internationalization and be patient. They should avoid expectation that internationalization will quickly bring improvement to their companies' financial situation. On the contrary, a lot of sacrifices and outlays are needed before benefits of internationalization will have a full effect. Meanwhile, the internationalizing companies will need strong financial standing to

overcome the challenges and risks associated with internationalization. Although this does not directly follow from the present study, it would be advisable for Polish internationalists to carefully proceed with international expansion to avoid over-exposure to financial and other risks, choose modes of entry that guarantee better profitability and learning opportunities (e.g., substitute indirect exporting for direct exporting), build international competitiveness on product uniqueness, quality and service rather than price, and build their own brands.

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