“Corporate performance of firms operating in Slovakia: does ownership matter?”

AUTHORS	Aneta Bobenič Hintošová Daniela Kerbčárová Zuzana Kubíková

ARTICLE INFO	Aneta Bobenič Hintošová, Daniela Kerbčárová and Zuzana Kubíková (2015). Corporate performance of firms operating in Slovakia: does ownership matter?. *Investment Management and Financial Innovations*, *12*(4-si), 134-142
RELEASED ON	Thursday, 24 December 2015
JOURNAL	"Investment Management and Financial Innovations"
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES **0**

NUMBER OF FIGURES **0**

NUMBER OF TABLES **0**

© The author(s) 2026. This publication is an open access article.

Aneta Bobenič Hintošová (Slovakia), Daniela Kerbčárová (Slovakia), Zuzana Kubíková (Slovakia)

Corporate performance of firms operating in Slovakia: does ownership matter?

Abstract

The large number of studies have investigated the relationship between corporate performance and foreign ownership with ambiguous findings. However, despite the attractiveness of Central and Eastern European countries for allocation of foreign direct investments, there exists only limited number of studies dealing with performance – ownership relationship in these countries. The aim of this paper is to analyze the impact of foreign ownership and other explanatory variables on corporate performance of firms operating in industrial sectors of Slovakia. The authors worked with a panel data set of foreign and domestic-owned firms over the period 2004-2013 using OLS method and quantile regression analysis. As the measures of corporate performance, several indicators were used: profitability, represented by return on sales, was used as the dependent variable, and other indicators such as value added, wages, net working capital intensity, leverage, R&D personnel and gross R&D expenditures formed explanatory variables. In addition, as key explanatory variable in our model, foreign ownership as a dummy variable was used. The results show negative statistically significant impact of foreign ownership on performance. Thus, financial performance of foreign firms, measured by return on sales, is worse than in case of domestic-owned firms, what is rather in contrast with present literature in other countries of Central and Eastern Europe.

Keywords: corporate performance, profitability, foreign direct investment, foreign ownership.
JEL Classification: F21, F23, G32, M16.

Introduction

A large number of studies have investigated the relationship between foreign ownership and firms' performance. The hypothesis considered in the most of the empirical studies is that foreign firms outperform domestic-owned firms (e.g. Temouri, Driffiels, Higón, 2008; Gelübcke, 2013). The difference in performance between foreign and domestic-owned firms was revealed empirically in areas like productivity, profitability, wages, value added, R&D, capital intensity etc. (Bellak, 2004). However, Barbosa and Louri (2005) found that this difference based on foreign ownership may be country-specific. Furthermore, dissimilar evidence can be found, when focusing on developed and developing countries.

In the focus of our interest is to analyze the impact of foreign ownership and other explanatory variables on corporate performance of firms operating in transitional economy in the one of the Central and Eastern European countries (CEECs). Despite the effort of authors to describe a general state of affairs within these countries, the scope of research in Slovakia is notwithstanding limited. The contribution of this paper is that it works with a panel data set covering foreign and domestic-owned firms operating in industrial sectors in Slovakia over the period 2004-2013, while it uses correlation and regression analysis, within which OLS and quantile regression estimation techniques are employed to reach results.

The paper is structured as follows. The first part is devoted to a presentation of previous empirical findings achieved firstly in developed countries all over the world as well as in BRIC countries, followed by results achieved in developed countries in Europe, and specifically, in transitional countries in Central and Eastern Europe. The second part presents data set, definitions of variables, and the research methodology. The third part shows the results obtained by OLS and quantile regression estimation of coefficients of variables in case of Slovakia. The final part brings conclusions of our research in the light of key outcomes from other previous empirical researches.

1. Previous empirical findings

The findings regarding relationship between corporate performance and ownership were firstly studied in conditions of developed countries in America. The study of firms operating in the United States found that foreign ones do not appear to have better performance measured by profitability of firms than randomly selected domestic-owned ones (Kim, Lyn, 1990). In line with these results, Mataloni (2000) identified lower performance of foreign firms in the U.S. On the other hand, when focused on productivity, foreign-owned firms in the U.S. outperformed domestic firms, according to the study of Doms and Jensen (1998). In case of Canadian firms, Globerman, Ries and Vertinsky

© Aneta Bobenič Hintošová, Daniela Kerbčárová, Zuzana Kubíková, 2015.
Aneta Bobenič Hintošová, Ph.D., Associate Professor, Department of Management, Faculty of Business Economy with seat in Košice, University of Economics in Bratislava, Slovakia.
Daniela Kerbčárová, Ph.D. Student, Department of Management, Faculty of Business Economy with seat in Košice, University of Economics in Bratislava, Slovakia.
Zuzana Kubíková, Ph.D. Student, Department of Management, Faculty of Business Economy with seat in Košice, University of Economics in Bratislava, Slovakia.

(1994) showed that foreign firms enjoy higher value added per worker, and pay higher wages. Moreover, according to Shapiro (1983), foreign firms in Canada are more profitable than domestic-owned firms are.

Interesting findings have been found regarding BRIC countries as future potential drivers of world economy. Willmore (1986) found that the financial performance of foreign firms in the case of Brazil is better than the one of domestic-owned firms, and argued that the performance difference caused by ownership should not be surprising, because foreign firms form a part of a much larger organization, and have an access to larger resources. The hypothesis that foreign firms outperform domestic ones was confirmed also in Russia, namely by Sabirianova, Švejnar, Terrell (2012), and from impact on production point of view, also by Brown, Earle, Telegdy (2006). In conditions of Asia, we can encounter the new great emerging global players, such as India, China, and Japan (Dominese, 2007). The investigation of performance at firm level in India implied that firms, in which foreign ownership exists, do outperform domestic-owned firms (Majumdar, 1997; Chhibber, Majumdar, 1999). These findings were confirmed by Petkova (2008), who conducted a study using Indian firm level data, as well as by Kuntluru, Muppani and Ali Khan (2008), who found that financial performance of foreign firms is better than domestic-owned firms. Strong evidence was found that foreign firms in China outperform comparable domestic-owned firms, especially when the foreign firm acquired target firm with higher absorptive capacity or with modernized ownership structure (Chang, Chung, Moon, 2013). In addition, Greenaway, Guariglia and Yu (2014) found that joint-ventures in China perform better than wholly foreign or purely domestic-owned firms, which suggests that some domestic ownership is necessary to ensure optimal performance.

Further, when we move our attention to European developed countries, in case of Germany, Bellak and Pfaffermayr (2002) concluded that domestic-owned firms outperformed foreign-owned firms, contrary to general expectations. Goethals and Ooghe (1997) investigated the performance between domestic-owned and foreign firms in Belgium, and concluded that the foreign ones performed better than the domestic-owned firms. According to Barbosa and Louri (2005), ownership did not make a significant difference in Portugal firms, and in Greek firms, foreign owned firms were found more profitable than domestic ones, only if a specific measure of profitability was taken into account and higher-profitable firms were compared. In Italy, the empirical evidence does not support the hypothesis that foreign firms outperform domestic-owned in term of productivity, as well (Grasseni, 2010). Although in terms of economic and innovative performance, Italian firms with the highest international involvement exhibited better than domestic firms did (Castellani, Zanfei, 2006). A study of productivity in the United Kingdom showed that domestic-owned multinationals were less productive than foreign affiliates, but only when focused on foreign owners originating from the U.S. (Criscuolo, Martin, 2005). A series of papers from Girma et al. (Girma, 2005; Girma, Goerg, 2007; Girma, Kneller, Pisu, 2007) documented growing performance of affiliates acquired by foreign firms.

All above-mentioned studies were conducted in conditions of developed countries; however, according to focus of our paper, it is desirable to concentrate our attention on developing countries or countries after successful transition process in Europe. The Central and Eastern European countries entered their transition process during the same period of time (Lengyel, Cadil, 2009). The transition process into market economies of many CEECs is generally considered successful also owing to foreign direct investment (FDI) inflows. It is widely believed that FDI made major contributions to the economic development of these countries (Kostevc, Redek, Sušjan, 2007; Alfaro, Areendam, Kelemli-Ozcan, Sayek, 2004; Neuhaus, 2006). Since economic development should lead to better performance of firms, it is interesting to investigate the influence of FDI and foreign ownership on the firms' performance. CEECs have witnessed an increase of FDI inflows since the collapse of communism and the EU accession. The leading recipients of FDI among CEECs are Poland, Czech Republic, Hungary and Slovakia, which were the first ones to reform their economies and joined the EU in 2004 (Lokar, Bajzikova, 2008). The hypothesis on better performing foreign firms in comparison to domestic-owned firms in European transition countries was confirmed by several authors. Sabirianova, Švejnar, Terrell (2012) demonstrated that foreign firms consistently outperform domestic-owned firms in the Czech Republic. Jurajda and Stančík (2012) investigated three performance indicators, and concluded that foreign ownership led to improvements in performance in manufacturing industries. Brown, Earle, Telegdy (2006) provided some evidence that when it comes to privatization of firms, foreign ownership had bigger impact on production in Hungary, Romania and Ukraine than domestic ownership. No similar researches have been performed, according to our knowledge, in case of Slovakia. Thus, the ambition of the authors is to fill in this gap regarding analysis of performance – ownership relationship in Slovakia.

2. Data and methodology

As the primary source of data for the paper, Industry Yearbooks and Yearbooks of Science and Technology published by the Statistical Office of the Slovak Republic were used. We conducted a correlation and regression analysis of variables referring to firms operating in industrial sectors for the period 2004-2013. Given that the yearbooks contain the results of the processing of corporate annual reports submitted by firms with 20 or more employees and with main activity in industry, as well as firms with up to 19 employees, but reaching yearly turnover of more than 5 million Euros, only those firms were included in the research.

The data were classified according to the kind of ownership of the firm. We divided investigated firms operating in industry according to the kind of their ownership into two groups − domestic and foreign firms. The group of domestic firms consists of private inland firms and contains on average 1380 firms in each year for the observed period. Firms characterized by only foreign capital involved as well as firms, where ownership in terms of capital is mixed, represent the group of foreign firms. In each year of the observed period, this group contains on average 838 firms.

Before discussing the variables included in the analysis, we should briefly address the question of performance measurement. Performance is usually examined using the tools of financial analysis, mainly ratios (Suchánek, Špalek, 2012). Thus, the performance of firm can be measured by various variables relating to e.g. productivity, profitability, or growth. These measurements tend to be related, as firms with greater productivity have greater profitability and experience higher rates of growth (Barbosa, Louri, 2005). In the paper, we used not only variable relating to profitability to measure the performance of firms, but also variables with regard to wages, leverage, net working capital intensity, value added, R&D personnel and R&D expenditures. These indicators are according to Tangen (2003) easy to calculate and their definitions are well known and used in the international business literature to measure the success of firms.

In the industrial organization and management literature, profitability is often measured through return on sales (Cowling, Waterson, 1976; Capon, Farley, Hoenig, 1990), accordingly we used return on sales (ROS) as the dependent variable. This is measured as profit/loss before taxation over turnover for own products and services, and turnover for own performances and goods. Table 1 presents a summary of the descriptive and testing statistics of the dependent variable. The descriptive statistics show that average profitability of domestic firms in our sample is lower than of foreign firms. Standard deviation implies that there is not a large spread of profitability around the mean, but it is larger for foreign firms. Differences in accounting practices in foreign firms may partially explain such discrepancies.

Table 1. Descriptive and testing statistics of the dependent variables

ROS	All firms	Domestic	Foreign
Mean	0.02429	0.02025	0.02632
Median	0.02239	0.02008	0.03026
Minimum	0.00490	0.01224	0.00490
Maximum	0.04358	0.03106	0.04358
S.D.	0.00956	0.00584	0.01051
Skewness	0.04659	0.37676	-0.37220
Excess kurtosis	-0.95710	-0.55980	-0.97480
Shapiro-Wilk test*	0.95662	0.94951	0.93040
	(0.2533)	(0.6627)	(0.1572)
t-test for equality of means*	-1.69130		
	(0.1019)		

Note: * The value in parentheses is the *p*-value for the tests.

The coefficient for skewness indicates that the distribution of profitability is skewed to the right in case of domestic firms, as compared to the normal distribution, while in case of foreign firms the distribution of profitability is skewed to the left; however, in both cases the skewness is negligible. For all cases, the coefficient of excess kurtosis provides evidence that the distribution of firms' profitability is platykurtic and has a lower, wider peak around the mean and thinner tails, as compared to the normal distribution, but the kurtosis is also negligible. The distribution of profitability seems to stem from normal distribution. This finding is further supported by the Shapiro-Wilk test for the normality assumption of the distribution of firms' profitability which is accepted, when *p*-value is at $p = 0.05$ and higher level.

The OLS methodology would be the appropriate econometric treatment to deal with normal distribution. We will use results from OLS as benchmark values. In addition, to test the robustness of results, we will perform quantile regression. Quantile regression models provide a robust characterization of the distribution that does not rest on strong distributional assumptions. Many authors (Barbosa, Louri, 2005; Dimelis, Louri, 2002; Grasseni, 2010; Kosteas, 2008) preferred using quantile regression to deal with the distribution of firms' performance.

The *t*-test for equality of means shows that there are no considerable differences between domestic and foreign firms with regard to profitability. This result suggests that after controlling for other characteristics

that are likely to be related to firms' performance, there would not be expected any significant difference in profitability that can be attributed to foreignness.

The following explanatory variables were used in the empirical analysis: wages, net working capital intensity, leverage, value added, R&D personnel measured in absolute numbers of employees and in Full Time Equivalent (FTE), and R&D expenditures.

WAGES are represented by average monthly wage per employee in EUR, and according to the performed correlation analysis (see Table 2), they are supposed to have positive effect on return on sales. Net working capital intensity (NWC intensity) shows stock, trade receivables and rendered advances less trade payables, per employee, and it also should have positive effect on return on sales. LEVERAGE is measured as trade payables over basic capital, and the correlation analysis showed negative effect of leverage on return on sales. VALUE ADDED is measured as operation sales less production costs in Euro, and we suppose it has positive effect on return on sales. The correlation analysis showed negative effect of R&D variables on return on sales. In this paper, these variables are R&D personnel, which are represented by persons directly engaged in R&D as well as employees rendering direct services to R&D, who carried out R&D activity or direct service in scope of at least 200 hours during the year. R&D personnel are reported, except for physical persons (R&D PERSONNEL), in head counts as of 31 December as well as according to the FTE in man-years (R&D in FTE). Another R&D variable is gross R&D expenditures (GERD) that include total expenditures on R&D activities within organization, i.e. domestic expenditures. The last explanatory variable is ownership (OWNERSHIP), which should have, according to correlation analysis, positive effect on return on sales. The ownership takes the value 1 if foreign investors own the whole or part of firm equity, or the value 0 otherwise. Such use of a dummy variable for capturing foreign ownership is consistent with previous studies (Dimelis, Louri, 2002; Gelübcke, 2013; Roy, Yasar, 2013; Schoors, Tol, 2002). This variable allows us to evaluate differences in profitability due to foreignness, and it is supposed that the foreign ownership has positive effect on return on sales. Results of correlation analysis, in which values of dependent variable return on sales in particular period were correlated with values of explanatory variables in previous period, are reported in Table 2.

Table 2. Pearson correlation coefficient matrix

Variables	Value added	Wage	NWC intensity	Lev.	R&D Pers.	R&D in FTE	GERD	Own.
ROS	0.396**	0.0246	0.0782	-0.0883	-0.2119	-0.2461	-0.0983	0.58***
	(0.041)	(0.9029)	(0.6981)	(0.6614)	(0.2888)	(0.2160)	(0.6259)	(0.0014)
Value added	1.000							
Wage	0.80***	1.000						
	(0.0000)							
NWC intensity	0.68***	0.65***	1.000					
	(0.0000)	(0.0002)						
Leverage	0.2645	0.1742	0.2042	1.000				
	(0.1824)	(0.3849)	(0.3070)					
R&D personnel	0.2372	0.60***	0.2393	-0.0618	1.000			
	(0.2335)	(0.0009)	(0.2292)	(0.7592)				
R&D in FTE	0.3672*	0.69***	0.3557*	0.1204	0.94***	1.000		
	(0.0596)	(0.0000)	(0.0687)	(0.5497)	(0.0000)			
GERD	0.67***	0.82***	0.39**	0.2647	0.68***	0.80***	1.000	
	(0.0002)	(0.0000)	(0.0441)	(0.1821)	(0.0000)	(0.0000)		
Own.	0.87***	0.62***	0.70***	0.58***	-0.0238	0.1908	0.54***	1.000
	(0.0000)	(0.0005)	(0.0000)	(0.0014)	(0.9063)	(0.3404)	(0.0035)	

Note: The value in parentheses is the *p*-value. Based on *p*-values, *, ** and *** mean that coefficients are statistically significant at 10%, 5%, and 1% significance level, respectively.

The descriptive statistics of the variables reported in Table 3, show that foreign firms operate in industries with a higher value added than domestic firms do. The same was found in case of Canadian firms by Globerman, Ries and Vertinsky (1994). As value added is equivalent to operating sales less production costs, it indicates that foreign firms may have lower production costs compared to domestic firms. This finding is in line with literature, that foreign firms have advantages arising from the ability to exploit economies of scale (Dunning, 1993).

Table 3. Descriptive statistics of the explanatory variables by type of ownership

Variables	Firms			
	Domestic		Foreign	
	Mean	S.D.	Mean	S.D.
Value added	1 996 990*	189 396	8 844 350	2 166 470
Leverage	0.5080*	0.1298	0.7607	0.1733
Wage	674*	98	880	144
NWC intensity	9 594*	1643	17 148	4551
R&D personnel	5.6625	11.9193	1.7211	0.5918
R&D in FTE	1.2075	0.2282	1.3846	0.4311
GERD	42 525 900*	12 093 200	106 788 000	59 855 000

Note: * indicates that the hypothesis of equality of means of explanatory variables between domestic and foreign firms is rejected at $p = 0.05$.

We find that the difference in the means of leverage is significant, as indicated by the t-ratio that leads us to reject the hypothesis of equality of means between foreign and domestic firms at p-value of 0.05. Domestic firms are less indebted than foreign firms, which suggest that foreign firms may borrow more, based on their higher creditworthiness. Moreover, foreign firms pay higher wages to their employees, what is in line with results of study of Grasseni (2010), who concluded that foreign firms in Italy pay higher wages than domestic firms pay, and study of Globerman, Ries and Vertinsky (1994), who proofed the same in Canada. The average net working capital intensity of domestic firms is smaller than the average net working capital intensity of foreign firms, and this difference is statistically significant. It can be explained by the fact that foreign firms are represented by large multinational companies, and Grasseni (2010) found out in her research in Italian firms that larger firms are more capital intense.

Based on the t-tests performed to assess the hypothesis of equality of means between foreign and domestic firms, we found that there are no significant differences in the means of the variables R&D in FTE, and R&D personnel. Conversely, the statistics reported in Table 3 show that, on average, gross expenditures on R&D of foreign firms significantly exceed the respective means of domestic firms.

In order to estimate the parameters of each explanatory variable, OLS regression and quantile regression have been performed. In an attempt to identify potential differences between foreign and domestic firms, we estimate a regression in the general form:

$$Y_{it} = \alpha\ const + \beta X_{i(t-1)} + \gamma OWNERSHIP + \varepsilon_{it}. \quad (1)$$

Where i and t are firms and time subscripts; the dependent variable Y_{it} refers to the vector of performance indicators measured by return on sales (ROS) in time t. $X_{i(t\text{-}1)}$ is the vector of variables discussed above in previous period (t-1). *OWNERSHIP* is the vector of a dummy variable that takes value 1 if the firm is foreign owned. ε_{it} is the error term; and α, β, γ represents vectors of the parameters to be estimated, and in particular, γ denotes the differences between the performance of foreign and domestic firms. In ordinary least squares (OLS) estimation, the fitted values:

$$\hat{Y}_{it} = \hat{\alpha}\ const + \hat{\beta} X_{i(t-1)} + \hat{\gamma}\ OWNERSHIP + \varepsilon_{it}, \quad (2)$$

represent the conditional mean of the dependent variable Y_{it}. In the quantile regression introduced by Koenker and Bassett (1978), the parameters of (1) are estimated at various quantiles of the conditional distribution of Y_{it}, which gives us a more complete picture of the way, how return on sales is affected by the independent variables. The quantile regression model is defined as:

$$Y_{it} = \alpha_{(q)}\ const + \beta_{(q)} X_{i(t-1)} + \gamma_{(q)}\ OWNERSHIP + \varepsilon_{it} \quad (3)$$

$$= Q_q(Y_{it}) + \varepsilon_{it},\ 0 < q < 1,$$

where $\alpha_{(q)}$, $\beta_{(q)}$, $\gamma_{(q)}$, are the vectors of parameters to be estimated for a given value of the distribution's quantile q in (0;1); $Q_q(Y_{it})$ denotes the qth quantile of the conditional distribution of Y_{it} given the known vector of regressors $X_{i(t\text{-}1)}$, ownership and constant.

3. Empirical results

Empirical results for selected quantiles, namely 0.05; 0.25; 0.5; 0.75 and 0.95; from estimating the quantile regression model are given in Table 4. Overall, the statistical significance and the values of the coefficients differ across quantiles. For comparison purposes, we provide the estimates obtained from the OLS analyses that are also reported in Table 4.

Table 4. OLS and quantile regression estimates of firms' performance

Variables	OLS estimates	Quantile regression estimates				
		0.05	0.25	0.50	0.75	0.95
Constant	0.037**	0.034***	0.032	0.047***	0.037***	0.051***
	(2.559)	(12131400)	(1.289)	(133992)	(886905)	(188)
Value added	5.3E-09***	4.1E-09***	4.1E-09	6.0E-09***	4.5E-09***	5.8E-09***
	(3.122)	(12758200)	(1.427)	(146984)	(924551)	(185)
Leverage	0.010	-0.012***	0.0001	0.011***	0.005***	0.024***
	(0.635)	(-3793590)	(0.004)	(27159)	(106158)	(79)
Wage	-0.00004	-0.00002***	-0.00001	-0.00007***	-0.00005***	-0.00010***
	(-1.536)	(-337731)	(-0.280)	(-105118)	(-670689)	(-205)
NWC intensity	-1.1E-07	-1.6E-06***	-1.2E-06	2.6E-08***	-2.5E-08***	3.2E-07***
	(-0.177)	(-13767500)	(-1.12)	(1735)	(-13913)	(27)
R&D personnel	0.0016	0.018***	-0.0009	0.012	0.014***	0.027***
	(0.107)	(6418340)	(-0.0375)	(33937)	(329915)	(96)
R&D in FTE	-0.004	-0.019***	-0.0003	-0.015***	-0.009***	-0.026***
	(-0.254)	(-5864680)	(-0.009)	(-35270)	(-183725)	(-81)
GERD	-6.8E-08	-1.1E-07***	-9.0E-08	-7.9E-08***	-1.3E-07***	-8.3E-08***
	(-0.731)	(-635332)	(-0.572)	(-35197)	(-495316)	(-47)
Ownership	-0.020	0.003***	-0.005	-0.018***	-0.007***	-0.011***
	(-1.087)	(903906)	(-0.170)	(-41503)	(-134637)	(-32)
R-squared	0.590					
F (8, 18)	3.239					
p-value (F)	0.018					

Note: *t*-ratios in parenthesis. Based on t-ratios, *, ** and *** mean that coefficients are statistically significant at 10%, 5%, and 1% significance level, respectively.

The OLS results show that our empirical model of profitability explains almost 60% of the observed variability in return on sales. The F-test of statistical significance of model applied to the OLS estimation confirmed that more explanatory variables have statistically significant impact on dependent variable (ROS). It should be noted that the effects of variables estimated by OLS, remain almost unchanged compared to the quantile regression.

Based on t-ratios, only value added (except from constant) has statistically significant positive impact on return on sales according to OLS estimation. In accordance with correlation analysis, it has positive, but very small impact on dependent variable. On the contrary, in case of wages and leverage, we are not able to confirm the findings from previous correlation analysis. The OLS estimated negative impact of wages on return on sales; however, the impact is also very small, and not statistically significant. The impact of leverage on dependent variable is small and positive, however, statistically insignificant. As the correlation analysis showed negative impact of R&D variables on the dependent variable, also the OLS estimation provides the same results. The exception is variable R&D personnel, which shows opposite sign in OLS estimation, compared to previous correlation analysis. Interestingly, we found positive impact of ownership on the dependent variable in correlation analysis, but OLS results differ − the independent variable ownership has negative, but statistically insignificant impact on return on sales according to OLS.

The results from quantile regression reported in Table 4 indicate that the effects of significant variables differ among the selected quantiles, reinforcing the adoption of the quantile regression methodology. In particular, the coefficient of our main variable (OWNERSHIP) varies in terms of size, as we move among the selected quantiles of the profitability distribution. In all quantiles except from 0.25, there is statistically significant evidence of profitability differentials attributed to foreign ownership. We find evidence that does not support our a priori expectation with respect to the relationship between foreign ownership and profitability, casting doubts on the hypothesis that foreign firms perform better than domestic firms. If there is any difference, it appears to favor domestic firms, which seem to perform better than foreign firms do. This relatively better performance is evident, when we concentrate our attention on firms that are at the middle and at the highest quantiles (0.5 and 0.95). Thus, the impact of foreignness on profitability is strengthened towards the right tail of the distribution. This may suggest that domestic firms with higher profits benefit from better knowledge of domestic market, in comparison to the high-profitable foreign firms, mostly represented by large multinationals, which perform global

strategies and do not adjust to local conditions of the countries. In case of firms with the lowest profits, which are often firms in starting phase of their life cycle, we can state that foreign ownership leads to increase in profitability, because the sign of coefficient is positive in the lowest quantile 0.05 of profitability. One explanation may be the fact that foreign investors, which establish new division in host country, are often multinationals with more capital than domestic new firms, which have only limited access to capital in starting phase.

In case of the variable value added, the quantile regression results are in line with the OLS result. The impact of value added on profitability is statistically significant at 1% significance level, except from 0.25 quantile, positive, but very small. Nevertheless, the impact is a bit stronger for firms with middle and higher profits, but remains close to zero.

The results for leverage are, in contrast to OLS estimation results, statistically significant in case of firms with lowest return on sale and firms in middle and upper quantiles. We can also observe that the impact changes from negative to positive with increasing firms' profitability. It means that in case of low-profitable firms, indebtedness results in lower profits, but in case of firms with higher profits loans help to increase performance.

As the OLS results already showed, wages have according to quantile regression negative impact on return on sales in contrast to our previous findings from correlation analysis. This can be explained with fact that higher wages, which firms pay, are associated with higher costs, which reduce their profits. However, the impact of wages on dependent variable is relatively small, but increasing (irrespective of the sign) with higher quantiles. This variable is statistically significant in case of the lowest, and middle and upper quantiles as it was in case of leverage.

Similarly, the same evidence is found in case of NWC intensity, R&D personnel, and GERD. The impact of NWC intensity changes from negative to positive with increasing profits of firms (with exception of 0.75 quantile), even though it remains close to zero. The low-profitable firms seem to be less net working capital intense than high-profitable ones. The impact of R&D personnel is relatively small and positive, and taking into account the absolute value of the impact, it is U-shaped. It indicates that employing R&D workers may be especially beneficial for small firms in starting phase of life cycle, which should introduce new products to achieve position in the market, as well as for large, longer established firms, which need to innovate in order to stay in the market. The negative impact found in the case of R&D in FTE suggests that firms earn less profit, when they employ more research and development employees. This may be explained in the same way as the negative impact of wages. Thus, the more R&D employees the firm has, the more money it must pay for wages, and that reduces profits. The impact of the variable GERD is negative in all quantiles, but close to zero. These findings suggest that if firm spends more on R&D activities, these costs lead to small reduction in profits. It may be explained by return of innovation expenditures, which is rather long-term, and initially causes higher costs, and after longer time period may increase the profits.

Conclusion

In this paper, we tried to identify variables influencing the firms' performance measured by profitability, and we focused primarily on examination of relationship between corporate performance measured by profitability and ownership. We investigated whether foreign ownership has any impact on return on sales of sample of firms operating in industrial sectors in Slovakia for a period of ten years from 2004 to 2013, by using OLS and quantile regression analysis. We compared the performance of foreign firms to domestic-owned firms, not only in terms of return on sales, but also value added, wages, net working capital intensity, leverage, R&D personnel and gross expenditures on R&D activities.

The results of OLS analysis showed that foreign ownership had negative impact on return on sales, which was also confirmed by quantile regression analysis. The hypothesis that foreign firms outperform domestic-owned ones was rejected, because foreign ownership was found to have negative impact on return on sales of the firms in Slovakia. Thus, it is found that financial performance, measured in the form of ROS, of foreign firms is worse than of domestic-owned firms. This finding is in contrast with findings in other transition countries in Central and Eastern Europe found by Sabirianova, Švejnar, Terrell (2012), Jurajda and Stančík (2012), Brown, Earle, Telegdy (2006). Hence, we can confirm the hypothesis of Barbosa and Louri (2005) that the performance relativity to foreign ownership differs among countries.

The negative impact of foreignness on profitability was higher, when we analyzed firms with the middle and the highest profitability. We can conclude that domestic firms in Slovakia may outperform foreign firms, mainly because of their well-applied local strategy, which emphasize the importance of

domestic market. This suggests that pursuing of global strategy of large foreign firms may lead to lower profitability in host country. It is partially in line with the suggestion of Greenaway, Guariglia and Yu (2014), who concluded that some domestic ownership enhanced the performance of firms.

When we move our attention to other measures of performance, the foreign firms outperform domestic-owned firms in terms of value added, leverage, and R&D personnel. The same findings, in case of higher value added of foreign firms, were found by Globerman, Ries and Vertinsky (1994) in Canada. Better innovative performance was also confirmed in foreign firms by Castellani and Zanfei (2006), who investigated firms in Italy. This paper had effort to contribute to research of performance differences due to foreignness in the Eastern and Central European and transition countries. However, generalization of our conclusions must await similar investigations of studies on firm level in Slovakia.

Acknowledgements

The paper presents partial results of the research project VEGA No. 1/0328/13 "Modelling of causal relations of innovations in small and medium enterprises".

References

1. Alfaro, L., Areendam, C., Kalemli-Ozcan, S., Sayek, S. (2004). FDI and Economic Growth: The Role of the Financial Markets, *Journal of International Economics*, 64 (1), pp. 89-112.
2. Barbosa, N. and Louri, H. (2005). Corporate Performance: Does Ownership Matter? A Comparison of Foreign- and Domestic-Owned Firms in Greece and Portugal, *Review of Industial Organization*, 27 (1), pp. 73-102.
3. Bellak, C. and Pfaffermayr, M. (2002). Why Foreign-Owned Firms Are Different: A Conceptual Framework and Empirical Evidence for Austria, Jungnickel, R. ed. *Foreign-Owned Firms: Are They Different?* Basingstoke.
4. Bellak, C. (2004). How performance gaps between domestic firms and foreign affiliates matter for economic policy, *Transnational Corporations*, 13 (2), pp. 29-56.
5. Brown, J.D., Earle, J.S., Telegdy, Á. (2006). The Productivity Effects of Privatization: Longitudinal Estimates from Hungary, Romania, Russia, and Ukraine, *Journal of Political Economy*, 114 (1), pp. 61-99.
6. Capon, N., Farley, J.U., Hoenig, S. (1990). Determinants of Financial Performance: A Meta Analysis, *Management Science*, 36 (10), pp. 1143-1159.
7. Castellani, D. and Zanfei, A. (2006). *Multinational Firms, Innovation and Productivity*, Elgar: Cheltenham, U.K. and Northampton, Mass.
8. Chang, S-J., Chung, J., Moon, J.J. (2013). When do foreign subsidiaries outperform local firms? *Journal of International Business Studies*, 44 (8), pp. 853-860.
9. Chhibber, P.K. and Majumdar, S.K. (1999). Foreign ownership and profitability: property rights, control and the performance of firms in Indian Industry, *Journal of Law and Economics*, 46 (1), pp. 209-238.
10. Cowling, K. and Waterson, M. (1976). Price-Cost Margins and Market Structure, *Economica*, 43 (171), pp. 267-274.
11. Criscuolo, C. and Martin, R. (2005). *Multinationals and US Productivity Leadership: Evidence from Great Britain*, London: Centre for Economic Performance.
12. Dimelis, S. and Louri, H. (2002). Foreign Ownership and Productivity Efficiency: A Quantile Regression Analysis, *Oxford Economic Papers*, 54 (3), pp. 449-469.
13. Doms, M.E. and Jensen, J.B. (1998). *Comparing Wages, Skills, and Productivity between Domestically and Foreign-Owned Manufacturing Establishments in the United States*, Chicago and London: University of Chicago Press, 1998.
14. Dominese, G. (2007). Foreign Investments as the Main Determinant Growth Factor in Asian Countries and Regions, *Transition Studies Review*, 14 (1), pp. 57-77.
15. Dunning, J.H. (1993). *Multinational Enterprises and the Global Economy.* Harlow: Addison-Wesley Publication Company, 1993.
16. Gelübcke, J.P.W. (2013). The performance of foreign affiliates in German manufacturing: evidence from a new database, *Review of World Economics*, 149 (1), pp. 151-182.
17. Girma, S. (2005). Technology transfer from acquisition FDI and the absorptive capacity of domestic firms: An empirical investigation, *Open Economics Review*, 16 (2), pp. 175-187.
18. Girma, S. and Goerg, H. (2007). Evaluating foreign ownership wage premium using a difference-indifferences matching approach, *Journal of International Economics*, 72 (1), pp. 97-112.
19. Girma, S., Kneller, R., Pisu, M. (2007). Do exporters have anything to learn from foreign multinationals? *European Economics Review*, 51 (4), pp. 981-998.
20. Globerman, S., Ries, J.C., Vertinsky, I. (1994). The Economic Performance of Foreign Affiliates in Canada, *Canadian Journal of Economics*, 27 (1), pp. 143-156.
21. Goethals, J. and Ooghe, H. (1997). The performance of foreign and national take-overs in Belgium, *European Business Review*, 37 (1), pp. 24-37.
22. Grasseni, M. (2010). Domestic Multinationals and Foreign-Owned Firms in Italy: Evidence from Quantile Regression, *The European Journal of Comparative Economics*, 7 (1), pp. 61-86.

23. Greenaway, D., Guariglia, A., Yu, Z. (2014). The more the better? Foreign ownership and corporate performance in China, *The European Journal of Finance*, 20 (7-9), pp. 681-702.
24. Jurajda, Š. and Stančík, J. (2012). Foreign Ownership and Corporate Performance: The Czech Republic at EU Entry, *Czech Journal of Economics and Finance*, 62 (4), pp. 306-324.
25. Kim, W.S. and Lyn, E.O. (1990). FDI Theories and the Performance of Foreign Multinationals Operating in the U.S., *Journal of International Business Studies*, 21 (1), pp. 41-54.
26. Koenker, R. and Bassett, G. (1978). Regression quantiles, *Econometrica*, 46 (1), pp. 33-50.
27. Kosteas, V.D. (2008). Foreign Direct Investment and Productivity Spillovers: A Quantile Analyses, *International Economic Journal*, 22 (1), pp. 25-41.
28. Kostevc, Č., Redek, T., Sušjan, A. (2007). Foreign Direct Investment and Institutional Environment in Transition Economies, *Transition Studies Review*, 14 (1), pp. 40-54.
29. Kuntluru, S., Muppani, V.R., Ali Khan, M.A. (2008). Financial Performance of Foreign and Domestic Owned Companies in India, *Journal of Asia-Pacific Business*, 9 (1), pp. 28-54.
30. Lengyel, B. and Cadil, V. (2009). Innovation Policy Challenges in Transition Countries: Foreign Business R&D in the Czech Republic and Hungary, *Transition Study Review*, 16 (1), pp. 174-188.
31. Lokar, A. and Bajzikova, L. (2008). FDI Contribution to Transition Development: Slovakia versus Slovenia, *Transition Study Review*, 15 (2), pp. 251-264.
32. Majumdar, S.K. (1997). The Impact of Size and Age on Firm-Level Performance: Some Evidence from India, *Review of Industrial Organization*, 12 (2), pp. 231-241.
33. Mataloni, R.J. (2000). An examination of the low rates of return of foreign-owned U.S. companies, *Survey of Current Business*, 80 (3), pp. 55-73.
34. Neuhaus, M. (2006). *The Impact of FDI on Economic Growth: An Analysis for the Transition Countries of Central and Eastern Europe*. Heidelberg: Physica Verlag, 2006.
35. Petkova, N. (2008). *Does Foreign Ownership Lead to Higher Firm Productivity?* Michigan: the University of Michigan, 2008.
36. Roy, J. and Yasar, M. (2013). Foreign direct investment and productivity spillovers: Evidence from plant-level data, *Journal of Current Issues in Globalization*, 6 (3), pp. 483-492.
37. Sabirianova, K., Švejnar, J., Terrell, K. (2012). Foreign Investment, Corporate Ownership, and Development: Are Firms in Emerging Markets Catching Up to the World Standard? *Review of Economics & Statistics*, 94 (4), pp. 981-999.
38. Schoors, K. and Van der Tol, B. (2002). The productivity effect of foreign ownership on domestic firms in Hungary, *EAE Conference in Philadelphia*, 1 (1), pp. 1-23.
39. Shapiro, D.M. (1983). The comparative profitability of Canadian-and foreign-controlled firms, *Managerial and Decision Economics*, 4 (2), pp. 97-106.
40. Suchánek, P. and Špalek, J. (2012). Quality and performance of the company in the Czech Republic, *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, 60 (4), pp. 351-362.
41. Tangen, S. (2003). An Overview of Frequently Used Performance Measures, *International Journal of Productivity and Performance Management*, 52 (7), pp. 347-354.
42. Temouri, Y., Driffield, N.L., Higón, D.A. (2008). Analysis of Productivity Differences among Foreign and Domestic Firms: Evidence from Germany, *Review of World Economics*, 144 (1), pp. 32-54.
43. Willmore, L.N. (1986). The comparative performance of foreign and domestic firms in Brazil, *World Development*, 14 (4), pp. 489-502.