

Does ownership matter? A comparison of foreign-owned and domestic firms in transition countries

Daniela Maggioni

Università Politecnica delle Marche

MOTIVATION

Using firm level data for Transition Countries this paper tests whether foreign-owned firms are more productive than domestic firms.

In particular I try to identify the relevant factors that affect the productivity and which have a significant relationship with foreign ownership.

THEORETICAL LITERATURE

Differences in productivity across firms can be related to differences in firm-specific advantages (Hymer ,1960; Vernon, 1966; Dunning, 1993; Markusen and Venables, 1995)

PREVIOUS EMPIRICAL EVIDENCE

CROSS-SECTION

These papers compare performance of domestic firms and foreign-owned firms (Globerman et al., 1994; Oulton, 1998; Blomstrom e Sjöholm, 1999;; Rejie et al., 2003; Dimelis and Louri, 2004)

PANEL

These papers try to identify a causal relationship between foreign ownership and productivity (Baldwin and Dhaliwal, 2000; Djankov and Hoekman, 2000; Konings, 2000; Angelucci et al., 2001; Girma et al., 2001; Griffith and Simpson, 2002, 2003; Liu, et al., 2002; Benfratello and Sembenelli, 2002; Harris e Robinson, 2002; Lutz e Talavera, 2004)

PANEL Dynamic Models

These studies investigate if there are consequences on productivity when firms experience a change in ownership nationality (from domestic to foreign, and from foreign to domestic), due a takeover or merger (Sembenelli and Siotis, 2002; Piscitello e Rabbiosi, 2005)

DATA

- The Business Environment and Enterprise Performance Survey (BEEPS) developed jointly by the World Bank and the EBRD for 25 countries of Central and Eastern Europe and the former Soviet Union
- The Database consists of face-to-face interviews with firm managers and owners
- The BEEPS has been carried out in three rounds in 1999, 2002, and 2005. I use only the Cross-section for the year 2004 (2005 round)
- Manufacturing + Services
- 6657 firms (742 of them foreign-owned)

The main variables used are:

labour productivity (total sales/number of employees), total tangible assets K (used as proxy of capital), material inputs M , age, size.

ESTIMATED MODEL:

$$\ln(Y/N) = \alpha + \beta \text{ Foreign ownership} + \psi \text{ Explanatory Variables} + \sigma \text{ Industry Dummies} + \delta \text{ Country Dummies} + \epsilon$$

Explanatory Variables:

- Firm-specific characteristics (age, size) and input intensity (K/N e M/N);
- Investment activity (R&D, Machinery and equipment, Advertising and marketing);
- Integration in international trade networks (export, import, vertical linkages with multinationals);
- Human capital (skill e education levels of the workforce).

ESTIMATION METHOD:

➤ OLS

FIRM CHARACTERISTICS and INPUTS

Dependent Variable: $\ln(Y/N)$

Independent variables	1	2	3	4
Foreign ownership Dummy	0,2769228*** (0,000)	0,2827129*** (0,000)	0,0637016*** (0,000)	0,0647237*** (0,000)
Age		-0,0004227 (0,458)		0,0001899 (0,542)
Size		-0,0000842 (0,254)		-0,0000139 (0,679)
$\ln(K/N)$			0,0323929*** (0,000)	0,032144*** (0,000)
$\ln(M/N)$			0,6851602*** (0,000)	0,6852778*** (0,000)
R^2	0,5862	0,5868	0,9099	0,9099
R^2 adjusted	0.5834	0,5839	0,9089	0,9088
N° of observations	6657	6651	4131	4126
F-test	261,00 (0,0000)	249,14 (0,0000)	899,45 (0,0000)	910,50 (0,0000)
Country Dummies	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes

*, **, *** mean 5%, 1% and 0,1% significance level. P-values in round brackets

The null hypothesis that each coefficient is equal zero is tested using robust standard errors.

INVESTMENT ACTIVITY

Dependent Variable: ln (Y/N)

Independent Variables	5	6	7	8
Foreign Ownership Dummy	0,0330026* (0,033)	0,0455087** (0,003)	0,0514549** (0,001)	0,0221214 (0,199)
Age	-0,0003126 (0,388)	-0,0003894 (0,234)	0,0000121 (0,974)	-0,0007097* (0,049)
Size	-0,0000873 (0,144)	9,04e-06 (0,697)	-0,0000871 (0,193)	-0,0000407 (0,156)
ln (K/N)	0,0359232*** (0,000)	0,028398*** (0,000)	0,0329662*** (0,000)	0,03158769*** (0,000)
ln (M/N)	0,6741807*** (0,000)	0,675432*** (0,000)	0,6749422*** (0,000)	0,66713161*** (0,000)
Advertising and marketing	0,0300156*** (0,000)			0,02271041*** (0,000)
Buildings, machinery and equipment		0,0142161*** (0,000)		0,00123154 (0,767)
R&D			0,0226249*** (0,000)	0,01032438** (0,005)
R²	0,9174	0,9147	0,9103	0,9213
R² adjusted	0,9161	0,9134	0,9090	0,9198
N° Observations	3441	3382	3435	2839
F-test	778,14 (0,0000)	759,03 (0,0000)	742,28 (0,0000)	626,77 (0,0000)

INTEGRATION IN INTERNATIONAL TRADE NETWORKS

Dependent variable: $\ln(Y/N)$

Independent Variables	9	10	11	12
Foreign Ownership Dummy	0,06119711*** (0,000)	0,05518682*** (0,000)	0,04745415** (0,002)	0,04250404 (0,087)
Age	0,00015838 (0,617)	0,00016478 (0,596)	0,00027062 (0,417)	0,00019301 (0,573)
Size	-0,00001274 (0,728)	-0,00001825 (0,590)	-0,00002478 (0,573)	-0,00002727 (0,580)
Ln (K/N)	0,03310382*** (0,000)	0,03239597*** (0,000)	0,03064306*** (0,000)	0,03198715*** (0,000)
Ln (M/N)	0,68364155*** (0,000)	0,68475926*** (0,000)	0,68862489*** (0,000)	0,68622089*** (0,000)
% of Sales to multinationals	0,0010403** (0,001)			0,00075832* (0,025)
% of Exports on total sales		0,00046578** (0,006)		0,00049775* (0,032)
% of Imports on total supplies			0,00056129*** (0,000)	0,0005583*** (0,000)
Foreign Ownership * % of Sales to multinationals				-0,00026471 (0,707)
Foreign Ownership * Exports				0,00007521 (0,853)
Foreign Ownership * Imports				-0,0005298 (0,882)
R ² adjusted	0,9089	0,9092	0,9110	0,9109
N° of Observations	3985	4119	4047	3912
F-test	865,87 (0,0000)	896,70 (0,0000)	906,09 (0,0000)	807,97 (0,0000)

HUMAN CAPITAL: SKILL LEVELS

Independent Variables	13	14	15	16
Foreign Ownership Dummy	0,06249807*** (0,000)	0,06252934*** (0,000)	0,06419142*** (0,000)	-0,03588764 (0,466)
Age	0,00019595 (0,527)	0,00020215 (0,514)	0,00021873 (0,482)	0,00018934 (0,542)
Size	-0,0000118 (0,732)	-0,00001162 (0,736)	-0,0000118 (0,727)	-0,00001038 (0,765)
Ln (K/N)	0,03265023*** (0,000)	0,03273767*** (0,000)	0,0331852*** (0,000)	0,03282908*** (0,000)
Ln (M/N)	0,68499379*** (0,000)	0,68520262*** (0,000)	0,68602799*** (0,000)	0,6842302*** (0,000)
% Managers	0,00041501 (0,267)	0,00040555 (0,277)		0,00005271 (0,892)
% Professionals	0,00131968*** (0,000)	0,00131162*** (0,000)		0,00126136*** (0,001)
% Skilled workers (production)	0,00050469* (0,045)			0,00040746 (0,138)
% Non-production workers (sales, administration)	0,00072441 (0,069)			0,00042748 (0,313)
% Skilled workers (production+ non-production)		0,00052239* (0,037)		
% workers with high skill level			0,00065144** (0,007)	
Foreign Ownership * % Managers				0,00328156** (0,004)
Foreign Ownership * % Professionals				0,00037519 (0,653)
Foreign Ownership * % Non-production workers				0,0028748** (0,009)
Foreign Ownership * % Skilled workers (production)				0,00055431 (0,355)
N° of Observations	4063	4063	4063	4063
F-test	830,63 (0,0000)	845,52 (0,0000)	880,24 (0,0000)	766,23 (0,0000)

Dependent Variable:
ln (Y/N)

% Unskilled workers: term of comparison

HUMAN CAPITAL: EDUCATION LEVELS

Independent Variables	17	18	19
Foreign Ownership Dummy	0,0594119*** (0,000)	0,0619843*** (0,000)	0,0613636*** (0,000)
Age	0,00024374 (0,470)	0,0002212 (0,513)	0,0002312 (0,493)
Size	-8,806e-06 (0,849)	-0,0000108 (0,813)	-8,975e-06 (0,846)
Ln (K/N)	0,0327278*** (0,000)	0,0331480*** (0,000)	0,0342513*** (0,000)
Ln (M/N)	0,6855199*** (0,000)	0,6865158*** (0,000)	0,6871657*** (0,000)
% workers with university education or higher	0,0011205** (0,001)		
% workers with secondary school qualification	0,0006034 (0,055)		
% workers with vocational qualification	0,0004942 (0,119)		
% workers with high education level		0,0003462* (0,028)	0,0003346* (0,018)
% workers with high skill level			0,0005753* (0,034)
R ²	0,9112	0,9110	0,9114
R ² Adjusted	0,9100	0,9099	0,9103
N° of Observations	4073	4073	4018
F-test	865,35 (0,0000)	894,84 (0,0000)	868,20 (0,0000)

Dependent Variable:
ln (Y/N)

% of workers with education level up to primary school: term of comparion

A COMPREHENSIVE ANALYSIS

Dependent Variable: ln (Y/N)

Independent Variables	20	21	22
Foreign Ownership Dummy	0,0362177* (0,013)	-0,0004077 (0,982)	0,0126249 (0,485)
Age	0,0002252 (0,508)	-0,0004778 (0,194)	-0,0003305 (0,373)
Size	-0,0000220 (0,663)	-0,0000446 (0,107)	-0,0000142 (0,587)
Ln (K/N)	0,0346261***	0,0348981***	0,0321743*** (0,000)
Ln (M/N)	0,68811273*** (0,000)	0,6741881*** (0,000)	0,6696768*** (0,000)
Advertising and marketing	(0,000)	0,0222604*** (0,000)	
R&D		0,0076180*	0,0133282** (0,001)
Buildings, machinery and equipment		0,0008099 (0,842) (0,849)	0,0090232* (0,025)
% of Sales to multinationals	0,0006633* (0,040)	0,0008680* (0,027)	0,0007760 (0,058)
% of Exports on total sales	0,0005488**	0,0001484 (0,546)	0,0002655 (0,288)
% of Imports on total supplies	0,0005185*** (0,007)	0,0003755* (0,024)	0,0004265* (0,014)
% workers with high skill level	0,0006367* (0,000)	0,0007750** (0,009)	0,0007741** (0,008)
% workers with high education level	0,0003065 (0,011)	0,0002768 (0,127)	0,0003025 (0,123)
	(0,059)		
R ²	0,9137	0,9263	0,9175
R ² adjusted	0,9124	0,9247	0,9157
N° of Observations	3829	2642	2680
F-test	819,49 (0,0000)	602,50 (0,0000)	593,09 (0,0000)

*, **, *** mean 5%, 1% and 0,1% significance level. P-values in round brackets

The null hypothesis that each coefficient is equal zero is tested using robust standard errors.

SUMMARY OF THE RESULTS

- Foreign-owned firms show higher productivity per worker than their domestic counterparts
- These differences disappear once I control for factors such as input intensity, human capital, investment activity and integration in international trade networks

In particular the results show a positive and significant relationship between labour productivity and:

- input intensity
- investment activity (R&D, Advertising and Marketing, Machinery and Equipment)
- integration in international trade networks (exports, imports, sales to multinationals)
- human capital

There isn't a significant relationship between labour productivity and:

- age
- size



Foreign firms perform better than their domestic counterparts. The labour productivity advantages of foreign affiliates are in part due to input and capital intensity. Then, when I consider further detailed information on firm characteristics, foreign ownership has no effect on productivity

One question that arise is why foreign affiliates have a workforce with higher education levels, spend more in investment activity and are more integrated in international trade networks than domestic firms. The answer is a subject for further research.