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PARALEL AND MULTILAYER ECONOMIC DUALITIES: AN EXAMPLE FROM HUNGARY

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Abstract
Dualities in an economy may emerge for various reasons, but the general stereotype of high-tech foreign firms at odds with underdeveloped local ones seems to be an oversimplification of the problem. Building on a sample of more than 4,600 Hungarian firms, this paper investigates the parallel existence of various economic dualities. The novelty of this paper is that it concludes that not only several different dualities can be identified, but also that several layers of duality exist. For example, both locally and foreign owned entities are very deferent in efficiency when grouped on export intensity and wage level. This phenomenon makes one-size-fits-all business support programs obsolete; instead it points to the need for tailor-made development frameworks for the various subgroups of companies to aid in their catching-up to Western economies. The highly differentiated picture of companies detailed in this paper should also help economic decision makers to promote investments that truly decrease the lag between the Central and East European countries and Western countries.

Keywords: competitiveness, efficiency, development, ownership, firm.

Jel Classification: G32; L53; M21

INTRODUCTION

Business analyses often focus on explaining differences between companies' performance. International literature, clearly influenced by globalisation, has put an emphasis on the level of international integration of firms, particularly in regards to their export performance during the last two decades.

This study examines the links across efficiency, productivity, ownership and exports of a large sample of Hungarian firms between 2008 and 2011. One of the key findings is that in many countries, companies do not seem to form one integrated system; rather, separate groups co-exist with limited co-operation, creating dualities. This paper aims to find whether ownership differences really explain most of deviation in business performance, as is generally assumed to be the case in the Central and East European

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(CEE) region. Identifying dualities within the economy should help to improve national development policies so that they can influence local economies more efficiently.

1. DRIVERS BEHIND DUALITY, INTEGRATION, INTERNATIALIZATION, AND EFFICIENCY

Although possible drivers behind the dual-economy phenomenon are heterogeneous, very often a simplified view of economic structure can be experienced in the CEE: many believe that foreign- owned, export-oriented and top-technology firms with high value-added form one market, while less advanced, locally-owned companies focus on domestic markets. But is it really that simple?

Economic duality is considered to emerge in a given country once at least two clearly separated groups of firms operate in quasi-detached markets with minimal or no business links between each other (Boeke 1953). These dualities may emerge for several reasons (McMillan and Rodrik 2011): (1) If one group of firms uses far more advanced technology (usually on account of foreign owners); then opportunities for cooperation with other firms in the country may become very limited. (2) Companies moving a part of their operation into a country predominantly to exploit arbitrage possibilities, such as a cheap local workforce or natural resources; they also have limited intentions to work together with local entities. (3) Firms focusing on a special (e.g. export) market may become less and less dependent on their original environment and may lose their domestic associations. (4) Economies of scale might also hinder co-operation: large manufacturers may require a quality and quantity that can only be fulfilled by large suppliers, while small-medium enterprises (SMEs) may prefer a technology more profitable at lower volumes - and lose the motivation and ability for co-operation with larger firms. (5) There could also be a number of other reasons (e.g. urban-rural economy, economies of remote islands or artificially closed cities) creating two groups of firms with limited business links.

Economic policy often aims to enhance the export orientation of local firms in order to boost gross domestic product (GDP). Export-focused growth policy is supported by at least two arguments: (1) historically, more open economies have performed better; and (2) a strong, positive, statistically-significant correlation has been identified between an increase in foreign trade and GDP growth.

In addition, while higher productivity of exporting firms has been proven both for developed and emerging countries by various researchers (Alvarez and Lopez 2005; Andersson, Loof and Johansson 2008; Bernard and Jensen 2004; Hansson and Lundin 2004), it is not clear whether it is the exporting that causes the productivity advantage, or rather self-selection (Arnold and Hussinger 2005, Greenaway and Kneller 2005) pushes better-performing firms to the export markets.

Some experts (Andersson, Loof and Johansson 2008; Bernard and Jensen 2004, Silva, Afonso and Africano 2010) also point out the significance of importing, emphasising that it is the integration into the international economy that causes most of the increase in productivity, which is also obtainable by importing. A study (Temouri, Driffield and Higon 2008) on German firms from 39 different industries showed that, contrary to the common view in CEE countries, it is not foreign ownership but rather internationalisation that is linked to higher efficiency in Germany. Although it is true that companies with a foreign-majority ownership are more efficient (as compared to

locally-owned ones), companies with transnational operations are almost at the same level of efficiency, regardless of their ownership.

The importance of the unique characteristics of firms is underlined in another paper (Navaretti et al. 2011) covering 7 countries and 15,000 business entities. The paper examined Austrian, French, German, Hungarian, Italian, and UK firms, and concluded they all had similar export performances regardless of industry. These suggest that the corporate culture or the managers' individual abilities seemed to determine the firms' level of success.

Whilst the higher productivity of exporters is clearly identifiable, no clear evidence that exporting is actually *improving* firms' efficiency or resulting in faster growth could be found in research on American (Bernard at al. 2007) or German (Arnold and Hussinger 2005) firms. However, a paper on Swedish companies (Hansson and Lundin 2004) found an ever-increasing gap between exporters and locally-market focused firms.

When examining the efficiency of exporters, several authors (e.g. Pusnik 2010, Trofimenko 2008) claim that exporting firms are bigger in size, and more capital-intensive, which may contribute to their increased productivity. It is clear that separating productivity from the effects of capital intensity is still an area that deserves further investigation.

Size and export intensity are often linked to ownership, too. This connection appears through two different mechanisms. On the one hand, it is clearly the larger firms that are aided by foreign investments. An analysis of firms involved in both exports and foreign direct investment (FDI) from Germany, France, the UK, Italy, Norway, Belgium, and Hungary shows (Mayer and Ottaviano 2008) that internationalised companies are rare, and are typically larger than average size, with higher added value, wage levels, and invested capital per employee. In addition, their workforces are better trained and more productive.

Furthermore, foreign-owned exporters exhibited better performance than nationally-based exporters, while nationally-owned exporters fared better than non-exporters. These effects appear in countries those are receivers of FDI, where bigger, foreign-owned firms provide the outstanding share of total exports. For instance, in China, 55% of exports originate with international companies (Bloningen and Ma 2007, Sun and Hong 2011). Similar results were found in Chile (Marin, Schymik, and Tscheke 2015), Estonia and Slovenia (Rojec, Damijan, and Majcen 2004), where it was found that exporters were bigger, more productive, and primarily foreign-owned, too. When examining Spain (Salomon and Jin 2010, Shaver 2011), findings were similar, and the local affiliates of foreign companies were significantly different in size, growth and profitability; but it was also found that export intensity played a role in realising the advantages offered by access to foreign markets.

At the same time, market orientation is also important. In the Czech Republic, foreign- majority-owned firms, on average, were more efficient than locally-owned ones; but when considering only companies focusing on the domestic market, locally-owned entities showed better performance than those in foreign hands. (Hanousek, Kocenda, and Masika 2012)

So, the picture is diverse. In particular, in emerging and less developed countries (e.g. new European Union-member (EU) states), the outstanding performance of exporters very often goes hand-in-hand with differences in ownership. It is appropriate to raise the question whether foreign ownership clearly results in superior performance, or whether

such performance is more linked to their export-oriented functioning. As for locally-owned firms, it needs to be clarified whether exporting can explain differences in performance.

2. METHODOLOGY AND SAMPLE

To examine the links across efficiency, productivity, ownership and exporting, the publicly available annual reports of Hungarian firms from the period 2008–2011 were collected. Information on ownership and employment has also been added. Our sample includes non-financial firms that employed at least twenty people in 2010, declared clear ownership information (no off-shore firms) and published full annual reports according to Hungarian Accounting Standards (smaller firms may publish less detailed, simplified reports).

Only companies with continuous operations and positive equity throughout the whole analysis period were included in the sample; state-owned companies and those going through legal transformation (e.g. due to mergers and acquisitions) were excluded. Due to these restrictions, our sample is very likely to significantly over-perform the average of the corporate sector. After the above exclusions, 4,641 companies remained in the sample, of which 1,875 were foreign-owned.

Firms in our sample play a very important role in the Hungarian economy. They covered 39.6% of employment in the competitive sector and 52.9% of employment in the industrial sector in 2010. During the period studied, these firms provided 70.9%-72.9% of Hungarian exports. The structure of the sample is summarized in Table 1.

Table 1. Operating business entities in Hungary in 2010 and the sample

Number of employees	Number of companies		Proportion
	Economy	Sample	
20-49	8,613	1,889	21.90%
50-249	4,640	2,222	47.90%
Over 250	872	530	60.80%

Capital efficiency was measured by return on invested capital (ROIC), defined here as earnings before interest, taxes, depreciation and amortization (EBITDA), divided by invested capital (IC), where invested capital stands for the end of year sum of equity and interest bearing liabilities, where

$$ROIC=EBITDA/IC \quad (1)$$

Productivity was measured by added value per employee (AV/e), where AV equals EBITDA plus labour expenses. For all statistical tests, 5% significance level has been used.

3. DUALITIES IN THE HUNGARIAN ECONOMY

First, the sample was tested for significant differences in key performance measures for variables linked to potential dualities. Variables used included: size (above 250 employees), ownership (foreign or domestic), exports (export sales above zero), intensity

of exports (above 25% of sales), headquarter location (in or out of Budapest), and wage level (compared to industry average).

A number of significant differences were found in each case. Our findings are summarised in Table 2, where relative differences in median values were marked for variables where the averages showed statistically significant differences. For example, the median export proportion in sales of firms above 250 employees was more than 200% higher than that of the smaller firms, so the row "Export/Sales" for the column "Big/Small" is marked "+++."

Table 2. Dualities in the Hungarian economy*

Performance ratios	Big/ Small	Foreign/ Local	Exporting/ Non-exporting**	Export intensive/ domestic focused**	In capital/ outside	High/ low wage
Debt/IC		---			-	-
Export/Sales	+++	+			-	++
ROIC	+	+	+	+	+	+
ROE***				+	+	+
Sales/IC		+			+	+
EBIT***/Sales	-					
AV/Sales			-	+		+
Sales/employee		+	+		+	++
AV/employee		+				++
Invested assets/capita						+
Wage/employee	+	+	+	+	+	++

Note: *Relative differences in medians for 2011 for variables where averages differed significantly: +/- denotes 0-99%; ++/-- denotes 100-199%; +++/--- denotes over 200%; **For non-exporting and domestic firms median export/sales value was zero; *** ROE=return on equity, EBIT=earnings before interests and taxes

Results suggest that Hungary faces not only several dualities, but more importantly, duality groups do not perfectly overlap. So the common stereotype of duality between the high-wage, high value-added, export-intensive, huge foreign firms against the low-wage, less developed, and domestic-market focused, small local companies does not hold true.

When comparing firms according to foreign/local ownership, (Table 2, second column) results are similar to international experiences, even though our sample includes larger firms (twenty or more employees (other studies use ten employees (Andersson, Loof and Johansson 2008) or fifty employee (Leitner and Stehrer 2014) thresholds)). Companies in foreign hands have significantly higher sales revenues, employ more people (local average: 92-94, foreign: 240–255), and have higher export intensity (local: 15.77%, foreign: 43.3%).

Behind these averages, though, there are huge standard deviations in both foreign and local ownership groups. This calls for a more differentiated clustering of the companies. Simple separation of the quartiles could not lead to a meaningful result as many firms moved from one quartile to the other in the individual years. So, to include information on development across time each year of the 2008-2011 period has to be considered individually. This could be either done by clustering or panel analysis. To keep methods at the least complex level the former was selected.

Thus, to better understand the factors leading to outstanding performance, clusters were created based on ROIC in each of the four years (Table 3). Then the connections across cluster membership and variables impacting duality were tested.

Table 3. Clusters based on ROIC*

Clusters	Firms		ROIC %			
	Number	%	2008	2009	2010	2011
Champions	918	22.6	40.3	34.5	37.1	36.4
Forerunners	175	4.3	88.5	88.3	87.3	75.0
Laggers	729	17.9	3.4	-2.7	-0.6	-3.5
Middling	2245	55.2	17.3	15.0	14.8	15.4
Total/average	*4067*	*100.0*	*23.1*	*19.4*	*20.2*	*19.3*

Note: * Four clusters can be identified based on ROIC, those were named as follows: Forerunners, Champions, Middling, and Laggers.

For geographic duality there was no significant link between cluster membership and geographic region (urban-rural duality); only the capital, Budapest showed unique characteristics due to the high concentration of some specific industries (IT, scientific research, engineering and administrative supporting activities). (This could be also an explanation for the differences in Table 2, column 5.)

Considering foreign-local/ownership duality little evidence was found for foreign-local duality (i.e. that foreign-owned firms perform far better than local ones). In the top two clusters, based on financial performance (ROIC), foreign-owned companies outnumbered local firms by only 1%.

Examining market-focus (export) duality average export intensity followed the exact order of efficiency through the clusters and confirmed market-focus duality, albeit with low statistical significance. One of the reasons behind this could be that the export intensity of Hungarian companies within the same sector exhibited huge standard deviation.

In case of productivity duality, the highest difference across the clusters was found in productivity. Added value per capita (employee) for locally-owned entities was dramatically lower than that of the foreign companies – except in case of the Forerunners. (Figure 1)

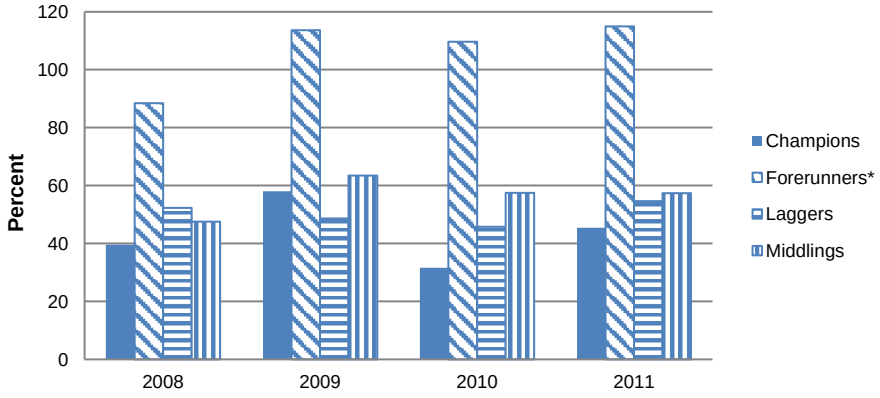

Figure 1. Productivity of Hungarian firms relative to foreign companies (2008–2011) (Added value/employee, average value for foreign companies in the given cluster = 100%)
Note: *Differences for Forerunners are not statistically significant.

Productivity differences do not move only with foreign/local ownership. To control for any duality due to different levels of technology used, the average wage level of the firm was compared to that of the given sub-industry average. Our results show that even within same ownership group, significant differences exist between high-wage (most likely highly trained, high-tech) and low-wage companies. On the other hand, differences in average AV/capita for high-wage Hungarian (9.86 million HUF) vs. high-wage foreign (11.77 million) firms was only 16 percent, while in the low wage category the difference was only 10 percent (local average: 4.59 million, foreign: 5.05 million HUF). This suggests that factors other than foreign vs. local ownership are even more strongly correlated to productivity.

4. OWNERSHIP CLUSTERS

During the analysis of the ROIC clusters a significant difference between foreign and locally owned firms was again revealed. To further investigate this issue, the sample was clustered also based on ownership as also shown in Table 2. Based on the literature, it is more the connection to international markets (eg. intensive importing and exporting) that may explain the different development levels of companies within a country. But the internationalisation may also happen through ownership. So while in case the level of exporting could offer a good base for separation among the locally owned companies, for foreign firms this method can not catch the key differences after our consulting experience: a company belonging to an international group may be extremely internationalised while only selling to another group member in the same country.

Thus, we focused on the processes performed by the given entity. Once a firms is not much more than a workshop with legal entity for which most of the decisions are taken by a remote international centre, average wages would be below the industry average, while foreign owned companies with local R&D, marking and financial centres are expected to pay an average salary well above the country wide industrial average.

So, to control for multi-level dualities, foreign companies were divided into subgroups based on wage level compared to Hungarian industrial average. In the case of locally-owned firms, export orientation seemed to be somewhat more important than wages; so to maximise differences across subgroups, those were formed based on whether a given business entity realised at least 25% of its sales on the export markets or not. The four clusters created this way show indeed substantial differences (Table 4).

Table 4. Double-duality clusters*, averages for 2011

Firms	VA/capita ('000HUF)	Average wage ('000HUF)	Invested assets/capita ('000HUF)	ROIC (%)	Average number of employees
High wage foreign	13,798	409	24,203	22.4	229
Low wage foreign	4,932	163	7,730	20.1	363
Export intensive local	6,312	183	8,253	20.3	126
Domestic-market focused local	5,690	164	10,505	17.3	87

Note: * In 2011, the yearly average exchange rate was 279 HUF = 1 EUR.

High-wage foreign companies are first not only in productivity and capital intensity, but also in wage level and ROIC. The low-wage foreign firms operate with high numbers of employees, low wages, and huge export intensity (average: 53%, median 67%), but

their productivity and capital intensity are even lower than that of the locally owned firms, both export intensive and domestic-focused.

Export intensive local firms outperformed the domestic-market focused local companies and even the low waged foreign firms.

As the post 2008 crisis period is examined, further investigation is needed to confirm the permanence of these findings. It is also questionable whether co-operation among Developed and other groups would be possible at all, once the Developed firms have productivity that is more than the double of the rest of the firms.

As for the Low Skilled and Exporter firms, a sectoral bias was identified. Fully 53% of them operated in the processing industry, while only 25.4% of the whole sample came from that branch. Both groups have above 50% export intensity; considering both groups' dependence on foreign markets and their relatively low wage levels, it is fair to say that their international competitiveness is driven by a cheap workforce.

5. MACROECONOMIC PERSPECTIVES

For countries just recently joining the globalizing markets, their late start could be a serious drawback. It can not be seen clearly yet how they might counterbalance this handicap. Eastern European countries are profiting from globalization and international capital flows, but the same is true for Western European countries so the differences might not necessary decrease over time.

An analysis of the dynamic increase in Germany's exports to China (Marin, Schymik, and Tscheke 2015) showed that it did not rely on cheap suppliers, but rather on the increasing Chinese demand for the goods Germany produces with comparative advantages. At the same time, some German firms were extending their cost-competitiveness by relocating their manufacturing rather than serving foreign markets form their home country; outsourcing/relocation for these firms did not aim at entering new markets, but rather just served as a method of cost reduction. This phenomenon is assumed to be experienced not only in Hungary, but also in the whole CEE region due the low local wage level.

The biggest challenge the economic policymakers face in our region is raised by the duality of foreign firms. The companies that move in only for cheap, low-skilled labour may improve the employment situation; but this may be only temporary, as they remain there only while the country stays at the periphery of the global economy. By taking advantage of low local wages, they gain global competitiveness at the moment; but because of this quickly evaporating advantage, they are the most vulnerable and impermanent investors, too.

As vertical integration increases, the new EU member states are faced with continuously decreasing growth rates of their added value. (Leitner and Stehrer 2014) This loss is most explicit in the high-tech industries. At the same time, while the EU-15 countries are faced with decreasing added value growth at the macro level, their added value growth is increasing in the manufacturing and particularly in the high-tech industries as manufacturing tasks with little added value are moved to low wage countries. So the development difference of added value between these two groups of states is partly explained by the fact that new-member states focus primarily on low value-added assembly tasks, while EU-15 countries retain the high value-added (e.g.

R&D, strategic management) jobs. As a result, the added value content of products at the country level shows little change over time.

Dualism raises challenges for the policy makers not only at the firm level. The wage differences between workers increase inequality; currently, even for similarly qualified blue collar workers, there could be salary differences of up to 200%. The gap in standard of living is widening between areas/countries with low proportions of high value-added (high-wage) foreign companies on the one hand, and areas/countries with high proportions of low value-added companies, on the other hand.

CONCLUSIONS

Our results underscore the coexistence of multiple and multilayer dualities in the Hungarian enterprise sector. Foreign-owned, high-performing firms are different not only from local firms but also from other low-performing foreign companies. Export intensive businesses were also identified, which profit from the low level of local wages; they primarily operate in the processing industry and depend heavily on export connections. Hungarian firms that serve the domestic market form another group entirely, due to their lagging performance.

These findings imply important consequences not only for Hungary but also for emerging and less developed countries, particularly in Central and Eastern Europe. Economic policy makers should be very careful when aiming to attract and promote foreign investments as they might see low added value task accumulating in the country causing shortage of skilled workforce that hinders the FDI of more advanced technologies. This in the long run may slow down the GDP growth and so FDI may not reduce but increase the gap between more and less developed countries.

While foreign capital could increase employment, the added value (GDP effect) is heavily dependent on the type of firms locating in the country. The number of new workplaces created could be an important factor in underdeveloped areas with high unemployment rates. However, new foreign companies may not be superior to local export-oriented firms; governmental aid for these companies is only justified if they move into economically neglected regions of the country with high unemployment rate.

The most important question to answer is this: how can CEE countries move away from low-skilled production, towards high value-added economic activity? Without such a move, an ever increasing lag could be expected in the long-term. In order to avoid such a situation, CEE national economic policies should become more diversified to adapt to the multi-layer dualities present in these countries. One-size-fits-all development programs, which simultaneously target all investments types and FDIs, without differentiating between local firms and sectors, are destined to be ineffective.

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