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Entrepreneurship and performance around MNC affiliates

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Abstract

The aim of this study is the analysis of the influence of a multinational company (MNC) on its local supplier's network within the host territory. We have particularly focused on how the MNC influences the performance of supplier as well as non-supplier local companies. Our study has shown the how the existence of knowledge transfer influences productivity through the productive linkage established with local suppliers and their hiring of MNC former managers. Direct local suppliers have been shown to experience higher productivity than do local suppliers from lower levels of the supply chain. Similarly, local suppliers hiring MNC former managers have shown higher productivity than those who have hired only local managers. In addition, no significant differences in productivity have been found between strategic and non-strategic suppliers.

Keywords: Small Business, productivity, multinational corporations, knowledge transfer, technology transfer, commercial dependency

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1. Introduction

Governments compete to attract foreign investment, particularly from those companies with the capacity to generate positive effects on local companies (Olsen and Odmundsen, 2001). In this sense, policymakers expect FDI flows to bring along new technology and know-how to their countries, and this can help increase productivity and competitiveness of local companies (Smarzynska, 2002).

This trend shows a change of attitude concerning MNCs, since they are now considered an important element for the implementation of development strategies in any country (Rodríguez-Clare, 1996).

The presence of multinational companies may influence the productivity of local companies and particularly that of local suppliers. MNCs show broad knowledge and development in production technology and management (Markusen, 1995) which they can transfer during productive and commercial exchange, yielding large profits for local companies (Lall, 1980; Rodríguez-Clare, 1996).

The aim of this paper is to examine in-depth the knowledge of positive externalities derived from MNC affiliates within the host territory. Accordingly, we have tried to bridge the gap existing in literature regarding the effect caused by the presence of MNCs on the performance of local suppliers networks. This analysis has focused on the influence of MNCs on the development of small and medium enterprises comprising a local suppliers network.

The relationship between local suppliers' performance and the nature of their links with the MNC is also analysed in this paper. We have proposed evaluating whether

significant differences in productivity are evidenced in relation with the kind of link established between the local supplier company and the MNC.

Our findings reveal that companies maintaining a direct productive link with the MNC show higher productivity than those local companies from lower levels of the supply chain, and consequently they maintain an indirect relationship as suppliers to the MNC. Significant differences in productivity have been found between local companies hiring MNC former managers and those that have hired local managers.

Finally, we have observed that, at least for this particular case, there is no direct relationship between productivity increase and ownership of the local company. Consequently no significant differences in productivity exist between local companies set up by MNC former personnel and those established by local entrepreneurs. The same results were observed between strategic and non-strategic suppliers.

The present paper is organized into 4 sections. Section 1 describes the conceptual framework and the hypotheses proposed. Section 2 details the methodology and data employed. Then, Sections 3 and 4 present the results of our research work and the main conclusions drawn.

2. Conceptual framework and Hypotheses

The idea that the presence of a MNC may influence productivity of local companies in host countries has been extensively studied. In this respect,, publications like those of Caves (1974), Globerman (1979), Blomstrom & Persson (1983), Blomstrom (1986, 1989), Kokko (1992), and Dunning (1993, 1994) show findings supporting this concept.

However, some research studies using panel data have not found any relationship between the presence of FDI and productivity improvement of local companies. The work published by Haddad and Harrison (1993) is outstanding? among them.

Most of these studies analyse the effect of FDI on productivity of the national economy as a whole, or on productivity of specific fields. In this sense, we must cite the relevant work carried out by Behrman and Wallender (1976), Blomstrom and Persson (1983), Blomstrom (1986, 1989), Coe and Helpman (1995), Aitken and Harrison (1999), Kathuria (2000) and Feinber and Majumdar (2001). Girma et al. (2001) demonstrating the existence of significant differences in productivity observed between foreign and national companies in the UK. On the other hand, Haskel et al. (2002) show positive results for FDI spillovers in the UK.

Nevertheless, up to now, it is possible that the generation of spillovers has been looked for in the wrong place (Smarzynska, 2002). As Görg and Strobl (2002) suggest, part of MNCs knowledge is industry specific and cannot be transferred to firms from other industries. This concept supports the need for "the further study of knowledge transfer within the MNC local suppliers' network.

Available literature does not provide enough data from studies performed at the firm level. Similarly, there is a significant lack of publications analysing the generation of productivity spillovers into the local suppliers network at the firm level within the host countries.

According to Blomstrom and Kokko (1998), productivity spillovers are generated when local companies increase their productivity by imitating or adopting the technology employed by the foreign company.

Thus, local SMEs may benefit from a MNC through different channels. The first one is related to workers' mobility. Local companies may be recipients of the MNC knowledge and skills when they hire MNC workers or when MNC workers decide to set up their own company. They incorporate the knowledge and skills acquired during their stay at the MNC into the local company (Sousa, 2001; Fosfuri et al., 2001; Glass & Saggi, 2001; Görg & Strobl, 2002).

Second, backward linkages may generate productive and technological knowledge transfer. That is, local managers may acquire advanced skills during their productive linkage with the MNC, either because the MNC is interested in the improvement of its supplier or because the MNC suggests this improvement for the productive process of its supplier in view of the fact that its market gaining capacity will help the MNC in the design and development of new products. Finally, due to the demonstration effect caused by the presence of the MNC, it may sometimes make local companies adopt imitation strategies (Görg & Strobl, 2002).

This paper will focus on the productivity spillovers generated into the local suppliers' network through the three channels mentioned before. For these three cases, since the nature of the relationship between SMEs and the MNC is quite different, the level of knowledge transfer will be consequently different according to which of the three cases we consider. Following we will analyse in detail the first two channels. The purpose of the present work is to contribute to bridging this gap.

Knowledge transfer through workers' mobility

Spillovers generated by workers mobility have scarcely been studied. Some authors like Fosfuri et al. (2001) and Glass and Saggi (2001) have carried out theoretical research work. However, there are not many studies performed at the empirical level, though Görg and Strobl (2002) have published a detailed analysis at the empirical level with Ghanaian manufacturing firms.

SMEs included in the local suppliers network may incorporate advanced technological knowledge about the productive process either when workers are hired by local companies (Fosfuri et al., 2001) or when workers start their own companies (Görg & Strobl, 2002).

MNC workers and managers transfer the knowledge and skills they acquired during their stay at the MNC when they are incorporated into local companies. Gorg and Strobl (2002) demonstrate that companies set up by former MNC workers show quite a high increase in productivity when compared with the rest of the local companies. Though companies analysed belong to the same industrial field as the MNC, they are not direct suppliers to the MNC in which their founders worked and acquired their knowledge and skills.

At this point, we now wonder whether the same thing happens inside the supply network. Are local supplier companies more productive when they are started by MNC former workers/managers? This reasoning leads us to state our first hypothesis:

H1: Supplier companies started by MNC former workers show higher productivity than those set up by local entrepreneurs.

Following the previous argument, companies started by MNC former workers will have higher knowledge and skills in production and management than those established by local entrepreneurs. Thus, local companies with MNC former staff will yield a better performance than those with local workers/managers.

This statement lets us assume that knowledge and skills transfer derived from workers' mobility will be higher than that acquired by the effect of imitation or demonstration. Therefore, we can state a second hypothesis:

H2: Local companies hiring MNC former managers will show higher productivity than those with local staff.

Knowledge transfer through backward linkages

MNCs are encouraged to prevent the flow of information that may enhance the performance of their local competitors. However, at the same time, the MNC might be interested in transferring its knowledge to its local suppliers (Smarzynska, 2002) since the absence of externalities could bring about significant disparities in productivity between foreign and local companies (Kathuria, 2000).

The implementation of the network model of organization has increased the number of links between the MNC and its suppliers, allowing the permeability of frontiers (Saxenian, 1994) and favouring knowledge transfer to suppliers.

The high level of interdependence between the MNC and its local suppliers turns the local suppliers network into a business ecosystem (Moore, 1993; Finegold, 1999) in

which its members co-improve their knowledge, capacities, and skills (Moore, 1996; Van den Bosch et al., 1999; Helfat & Raubitschek, 2000; Van der Berg & Stagl, 2003), providing each other with the skills they have best developed. Therefore, the supplier turns into a '*strategic*' partner. Companies may obtain important benefits when they include suppliers into the product development process (Wynstra et al., 2001).

Cooperation with suppliers allows the company to increase efficiency in the process of product development (Clark, 1989); considerably reducing production costs and development time (Wynstra et al., 2001).

Consequently, the unit of competence is no more (nothing more or no longer?) the company but the network of companies involved in the design, development, production, and distribution of the product. Thus, the local suppliers' network must reach a homogeneous level of productivity, similar to the one of the MNC affiliate. Therefore, the management of subcontracting links turns out to be a determining factor of high strategic value for the company.

The MNC, now interested in the development of its supplier system, will establish close cooperation links based on mutual trust (Bordenave & Lung, 1996; Sadler, 1994; Saxenian, 1994) allowing both parties to evolve within an increasingly dynamic frame (Koza & Lewin, 1999; Zollo & Winter, 2002). This will result in the organization of a cooperative network based on reliability (Bordenave & Lung, 1996; Sadler, 1994; Saxenian, 1994), mutual openness, and long term relationship.

The MNC will be decisive in the improvement of the competitive advantage of its suppliers by providing technological support and supervising its suppliers' improvement. In order to reach this goal, different assessment methods are set up,

including various items related to quality, costs, delivery, development (design capacity), and management (Sadler, 1994). In 1969, Katz already described how MNCs established in Argentina forced their suppliers to adopt the productive processes and techniques used by suppliers to their main headquarters in the country of origin.

Accordingly, it seems mandatory to assume that those companies keeping a direct productive relationship with the MNC will be exposed to a greater volume of information than those which, even belonging to the same local suppliers' network, are situated in lower levels of the supply chain and maintain an indirect relationship with it through other first tier suppliers. In consequence, we could make the following hypothesis:

H3: First tier suppliers will show higher productivity than second and third tier suppliers.

Similarly, since the competence unit is no more? longer ?the company but the value system, the competitiveness of the final product will thus depend on the competitiveness of each of the parties in the process. From this we can assume that the MNC will try to achieve that all its direct suppliers, either strategic (those with a high degree of involvement on product development and production process) or non-strategic (those with a low degree of involvement), maintain the same level of productivity. Suppliers are considered strategic when they are part of the daily process of the MNC and cooperate with it from the initial steps of design and development of the product. Therefore, we can now state a new hypothesis:

H4: Productivity of strategic suppliers will be similar to the one of non-strategic suppliers.

3. Methodology

Characteristics of the sample

A local productive network (LPN) was selected from Martos (Jaén), which is located in the region of Andalusia in the south of Spain. This LPN, involved in the production of lighting systems for automobiles (main and auxiliary headlamps and rear lighting), is made up of small and medium sized companies and led by a single multinational corporation which contracts out to the local industry. This analysis includes both suppliers (first tier suppliers) to the MNC as well as non-suppliers (second and third tier suppliers).

The questionnaire was sent to all auxiliary companies which made up the LPN, used as sample of the population (61), both industrial and non-industrial companies. The questionnaire was to be answered by the highest-ranking executive in the company.

Variables analysed

In order to test the hypotheses, a set of variables relating to the nature of the links binding the auxiliary companies with the MNC was used. Thus, the independent variables used were those relating to local executives' perception about the MNC influence on the development of their local firm, their perception about the MNC support, and the relationship of the firm owner or part of its board of directors with the MNC. For the dependent variable, the labour productivity was considered, calculated with the quotient obtained by dividing the volume of turnover by the number of workers, as used in the work of Görg and Strobl (2002).

Before testing the hypotheses, we computed the Cronbach Alpha as a measure of internal consistency of variables used. Results relating to the reliability analysis proved to be amply acceptable, with a Cronbach Alpha of 0.8492. The scale used is presented in Table 1.

[INSERT TABLE 1]

4. Results

First, we have performed a factorial analysis trying to group information available into the variables explaining the type of linkage between local companies and the MNC. The Barlett test of sphericity was used to test the hypothesis stating that the correlation matrix is an identity matrix. Since one of the goals of the factor analysis was to obtain factors that help explain these correlations, the items had to be related to each other for the factor model to be appropriate.

The Barlett test index confirmed the adequacy of the model. The analysis showed a Kaiser-Meyer-Olkin sampling adjustment of 0.581, higher than the 0.5 needed to validate, and a level of significance equal to 0.001. The variables used were grouped into two factors which have an accumulated percentage of the total explained variance of 82.849. The results are shown in Table 2.

[INSERT TABLE 2]

In factor number two we found the group of variables explaining the previous labour relationship of the company's founder and/or part of its board with the MNC. Thus, one of the ways through which the MNC has influenced the development of local companies in the host territory is the mobility of former managers and workers who decided to set up their own company or to work in a local company.

This has been the transfer channel of management and production knowledge and skills, while founders and/or part of the local company staff incorporated into it those skills and experience learnt during their stay at the MNC. This factor was called *Spillovers through workers mobility*. This group of variables explains the 41.614 per cent of the variance.

Factor number one groups variables related to the perception of local managers about the direct influence of the MNC on the development process of local companies. This means those related with the effect caused by the MNC support during the development process of the supplier or by the very presence of the foreign company on the development of local suppliers. This factor was called *Spillovers through backward linkages*.

We then employed a cluster analysis to detect the presence of different groups of companies according to the nature of their linkage with the MNC (if the founder or part of the board of directors have previously worked for the MNC), and the influence perceived by MNC local managers on the establishment of companies in the host territory. Results are shown in Table 3.

[INSERT TABLE 3]

Cluster number one is formed by those companies founded by local entrepreneurs with no previous labour linkage with the MNC. However, these companies consider very significant the influence of the presence of the MNC as well as its support on the establishment and development of the company. In this case, the MNC support consists of the assessment offered by its engineering teams for the improvement of the productive process.

Most of the companies constituting this cluster are not considered by the multinational company as strategic suppliers. This cluster was identified as *Suppliers without MNC former labour links*.

Opposite this cluster is cluster number three. It presents the highest values for all of the variables. It consists of a group of companies founded by MNC former workers and some of its managers that have also worked for the MNC. Thus, managers of these companies express that they have received direct support from the MNC and that the presence of the MNC in the territory and their relationship with it have helped improve the development of local companies.

Companies included in this group comprise different fields within the productive process of the SPL (plastic injection, building and repair of molds and matrixes, stamping and ironing, among others). Four out of the five strategic local suppliers to the MNC belong to this group. We called this cluster *Suppliers with MNC former labour links*.

Finally, cluster number two comprises the only company founded by a former worker to the MNC but with no support from the MNC for its establishment and development. Its founder expresses that the presence of the MNC has not contributed to the development of his company.

In order to contrast hypothesis 1, we used a T-test for independent samples to be able to compare the means of clusters 1 and 3. In this respect, results for the Levene test obtained for F were equal to 0,136, with a level of significance of 0.719. Thus, we can assert that there are not significant differences between both groups with respect to productivity. Results are shown in Table 4.

[INSERT TABLE 4]

Therefore, we have proved that, though cluster number three is formed by companies set up by former MNC managers and workers, these companies do not show higher productivity than those established by local entrepreneurs. Findings make us reject hypothesis 1.

This confirms the interest of the MNC in co-evolving with its local suppliers. The foreign company will get involved in the development of its local suppliers who are integrated to the daily process of the company, closely collaborate in the design and development of the products, and are permanently supervised by MNC engineering teams. In this way, the foreign company transfers significant knowledge through backward linkages in order to level the productivity of its local suppliers.

We will now deal with the existence of productivity differentials in local companies established by local entrepreneurs, with the purpose of checking whether there is technological and management knowledge transfer to local companies through managers and workers mobility.

For this analysis, we used a Ttest for independent samples in order to compare means, but now considering whether at least part of the managers hired by local suppliers have previously worked for the MNC or, on the contrary, if no manager has maintained previous labour linkage with the MNC.

In this respect, results obtained with the Levene test for F were equal to 6,478, with a level of significance of 0.024. Thus, we can state that there are significant differences between both groups with respect to productivity level. This is, local entrepreneurs who

have hired local managers from the MNC show a higher level of productivity than those that have hired only local personnel. Then, hypothesis 2 is validated.

We then performed a new cluster analysis in order to group local supplier companies according to their direct or indirect linkage with the MNC and to the kind of relationship of their founders and managers with the foreign company. Results for this analysis are detailed in Table 5.

[INSERT TABLE 5]

Cluster number two shows the highest values for all variables included. This group is comprised by companies established by MNC former workers, keeping a direct linkage of supply with the foreign company, and part of their board having formerly worked for the MNC.

This is the largest cluster. Companies integrating this group cover different fields of the productive process of the SPL (plastic injection, building and repair of molds and matrixes, stamping and ironing, among others) and represent 61.9% of companies conforming the local suppliers' network.

On the other hand, cluster number three includes companies set up by local entrepreneurs from lower levels of the supply chain, which maintain no direct linkage with the MNC. These companies are usually dedicated to intensive low-qualified labour.

Their founders are local entrepreneurs who have envisioned a market opportunity associated to the presence of a foreign company. They are mainly suppliers to MNC suppliers and belong to the second level of the local supply chain.

Finally, cluster number one is the smallest group of the local supply chain and is formed by those companies that have been set up by local entrepreneurs and maintain a direct subcontracting linkage with the MNC.

In order to contrast hypothesis 3, we carried out two T-tests for independent samples to be able to compare, first, the means of clusters 1 and 3, and second, the means of clusters 2 and 3, about productivity. In this respect, when comparing clusters 1-3, results obtained after the Levene test for F were equal to 11,468, with a level of significance of 0.020. Thus, we can assert that there are significant differences between both groups with respect to productivity. Our findings are shown in Table 6.

[INSERT TABLE 6]

Comparing clusters 1-3 for the Levene test, results obtained for F were equal to 4,859, with a level of significance of 0.050. Thus, we can state that there are too many significant differences between both groups with respect to productivity.

The statistical analysis has shown how direct suppliers (clusters 1 and 2) present a higher level of productivity than indirect suppliers (cluster 3), no matter if companies keeping a direct linkage were established by former workers or managers from the foreign company or if they have hired managers qualified during their stay at the MNC.

After the analysis of means for clusters 1 and 2 for the Levene test, results obtained for F were equal to 0,800, with a level of significance of 0.397. Thus, we can confirm that there are not significant differences between both groups with respect to productivity. These findings reinforce the conclusions drawn after the analyses performed in order to contrast hypothesis 1. This second analysis shows that the influence of *Backward linkages* is stronger than *Workers mobility*.

As previously mentioned, in order to level the productivity of all its suppliers the MNC supervises them in different ways. Engineering teams are assigned to analyse the productive processes of supplier companies and to make suggestions for their continuous improvement. Within the technical and technological support for productivity improvement, the team offers expert advice for improving the productive process, costs structure, and management.

In order to contrast hypothesis 4, we used a T-test for independent samples to be able to compare means of strategic and non-strategic suppliers groups. In this respect, for the Levene test, results obtained for F were equal to 0,435, with a level of significance of 0.521. Thus, we can state that there are not significant differences between both groups with respect to productivity, and, therefore, hypothesis four is supported. Results are shown in Table 6.

5. Conclusions

This research paper studies the influence of a MNC on the productivity of local companies integrating its local supplier's network. Particularly, we have analysed the relationship between local suppliers' productivity and the nature of their linkage with the MNC. We have tried to check whether there exist significant differences in productivity according to the type of linkage between the local supplier company and the MNC.

Our findings show that those companies maintaining a direct productive linkage with the MNC present higher productivity than those from lower levels of the supply chain (second level and the next) which maintain an indirect supply linkage with the MNC.

Thus, among direct suppliers, significant differences in productivity have been found for local companies hiring MNC former managers when compared to those which have hired local managers.

At least for this specific case, we have found no significant differences in productivity between local companies founded by MNC former workers and those established by local entrepreneurs. This is due to the interest of the MNC in co-evolving with its suppliers, which makes it become involved in their development and generates a continuous flow of technological and production knowledge transfer from the MNC to them.

This fact influences all direct suppliers in the same way. Our analysis has shown the lack of significant differences in productivity between strategic and non-strategic suppliers.

One of the limitations of this paper is the size of the population studied. Since this paper focuses on one local supplier's network, the size of the population studied is relatively small. The number of local companies studied is not sufficient for global inferences. It only shows a very local experience and analyzes how the forces work in this case.

Another limitation is the difficulty in measuring the intensity of every channel of knowledge transfer. In this respect, in the case of direct suppliers, it is very difficult to separate the effects of the knowledge transfer derived from the productive link and the effects derived from workers mobility.

On the other hand, this paper analyses the generation of externalities from the MNC to the local suppliers' network, but does not consider the networking effects of knowledge transfer among local suppliers.

For the future, it would be very interesting to make a broader study comparing several cases of local suppliers' networks from different countries. It would be also interesting to analyze the existence of significant differences in the information transfer process among different organizational models in order to study the effect of the organizational permeability.

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ANNEX

Table 1: Set of Variables used

Variables	Items used	
Direct Supplier	1	Yes
	0	No
Strategic Supplier	1	Yes
	0	No
Influence of MNC presence	1	Positive
	0	Not influence
MNC support	1	Support
	0	No support
MNC relationship influence	1	Yes
	0	No
Former Labour links with firm owner	1	Owner is a MNC former executive or worker
	0	Owner is not a MNC former executive or worker
Former Labour links with executives	1	At least one local firm executive is a former MNC executive
	0	None local firm executive is a former MNC executive
Other variables	Items used	
	Volume	
	Output per worker	
Productivity	1	0<x=10
	2	10<x=20
	3	=20
Turnover	Million euros	
Employment	Number of workers	

Table 2: Factor Analysis

Factor	Labour links with firm owner	Labour links with executives	MNC presence influence	MNC support	MNC relationship influence	Sum of square saturations of rotation		
						Total	Percentage of variance	Accumulated percentage
1	-0,099	-0,169	0,399	0,354	0,520	2,081	41,614	41,614
2	0,496	0,542	-0,063	0,066	-0,224	2,062	41,235	82,849
Bartlett test	χ^2		Degree of freedom		Significance	Kaiser-Meyer-Olkin		
	57,433		10		0,000	0,581		

Table 3: Typology of companies according to the MNC influence

Cluster	Labour links with firm owner	Labour links with executives	MNC presence influence	MNC support	MNC relationship influence	Percentage of companies
1	0	0	1	1	0	36,84
2	1	1	0	0	0	5,26
3	1	1	1	1	1	57,90
ANOVA	Squared mean	2,211	1,624	0,722	0,722	1,433
A	Degree of freedom	2	2	2	2	2
	Significance	0,000	0,000	0,008	0,008	0,000

Table 4: T-test for means comparison results

Variables	Productivity			
	Levene test		T-test	
	F	Significance	t	Degree of freedom
Influence Cluster (1-3)	0.136	0.719	0.370	13
Labour links with executives	6.478	0.024	1.140	13

Table 5: Typology of companies according to the relationship with the MNC

Cluster	Direct supplier	Labour links with firm owner	Labour links with executives	Percentage of companies
1	1	0	0	14,28
2	1	1	1	61,90
3	0	0	0	23,80
ANOVA	Squared mean	1,322	2,476	2,000
	Degree of freedom	2	2	2
	Significance	0,001	0,000	0,000

Table 6: T-test for means comparison results

Variables		Productivity			
		Levene test		T-test	
		F	Significance	t	Degree of freedom
Suppliers Cluster	Clusters 1 and 3	11.468	0.020	1.278	5
	Clusters 2 and 3	4.859	0.050	1.275	11
	Clusters 1 and 2	0.800	0.397	0.327	8
Strategic and Non-strategic suppliers		0.435	0.521	2.255	13