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Multinational Firms and Host Country Market Structure: A Review of Empirical Literature

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MULTINATIONAL FIRMS AND HOST COUNTRY MARKET STRUCTURE: A REVIEW OF EMPIRICAL LITERATURE

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Abstract:

The role of multinational firms in the world economy is widely recognized. Multinationals' activities produce various effects in the host countries, particularly in areas such as: economic growth, technology and innovatory capacity, employment, market structure, performance and business practices, among others. In this paper we address the impact of multinationals on host country market structure. Although research in this area started a few decades ago, to our knowledge there is still no literature survey on the subject. So, through reviewing existing empirical literature we intend to shed light on the main limitations of existing studies and highlight possible avenues for future research. Our main conclusion is that the majority of studies focus on samples of manufacturing industries/firms, neglecting the service sector, despite its importance. Therefore, future research should be directed to the service sector. Additionally, future studies should explore the possibility of bidirectional causality between the presence of multinationals and the level of industry concentration. Furthermore, studies concerning the impact of foreign presence on entry, exit and survival of host country firms must use more recent data and taking into account other control variables that may affect the exit rate. Finally, future work should take into account the mode of foreign firm establishment in the host country.

Key-words: Multinational firms; Market structure; Market concentration; Firms survival; Literature review

JEL codes: F23; F61; L11

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1. INTRODUCTION

The importance of multinational firms (MNFs) in the world economy is undeniable. Some numbers concerning the role of foreign affiliates and international production help us understand this importance. According to UNCTAD (2012), in 2011 the exports of foreign affiliates represented about one third of world exports, and the value added (product) represented 10% of world GDP. Additionally, all major indicators of international production (sales, value added, assets, exports and employment by foreign affiliates) gained strength that year, which can be explained, in part, by the continuous increase of foreign direct investment (FDI) stock resulting from new FDI flows during the year, as multinationals increased their internationalization.

Multinationals' activities generate, therefore, various effects in the countries where they operate (host countries). Concerning the economic effects, Dunning and Lundan (2008), highlight the possible impact on the following areas: economic growth; technology and innovatory capacity; employment; balance of payments and the structure of trade; market structure, performance and business practices; linkages, spillovers and clustering. In this paper we address the impact of multinational firms on host country market structure since it is a controversial subject and, to the best of our knowledge there is no literature survey covering this topic. Quoting Scherer (1971), Dunning and Lundan (2008: 531) defines market structure as "…*the extent and character of the rivalry that exists between firms engaging in broadly the same lines of value-added activity, and which pursue similar product and marketing strategies*."

From a theoretical point of view the impact of MNFs' activities on host country industrial structure and competition is a controversial issue since there are two conflicting hypotheses. On the one hand, by entering into existing foreign markets, multinationals may boost competition and reduce concentration. Competitive effects arise from the fact that MNFs tend to enter into industries with high barriers to entry for domestic companies (Blomström and Kokko, 1997). According to Dunning and Lundan (2008), the entry by a foreign firm increases competition which induces improvements in the productivity of the incumbent firms. As reported by Kejžar (2011), multinationals' activities in the host country can generate positive productivity spillovers to indigenous firms which reduce a domestic firm's average production costs expanding its price–cost margin. Thus, in this case we can expect a

greater probability of survival (reduced probability of exit) of domestics firms and increasing market competition.

On the other hand, multinationals may reduce competition and increase industrial concentration. Anti-competitive effects can arise since foreign firms tend to be large multinationals, possessing specific advantages, allowing them to create their own barriers to further competition, acting as a deterrent to new entrants (Dunning and Lundan, 2008). Additionally, as a result of their superior efficiency and aggressive business practices (e.g. predatory conduct, the provision of intra-group services at below marginal cost, the manipulation of transfer prices, among others) MNFs may even create a crowding-out effect, leading to the exit of less efficient competitors from the market (Blomström and Kokko, 1997; Rutkowski, 2006; Dunning and Lundan, 2008; Franco and Gelübcke, 2013). Quoting Aitken and Harrison (1999), foreign firms may capture part of the market share previously held by domestic firms ("market-stealing effect") since the former are more efficient. In other words, MNFs may attract demand away from domestic firms, increasing the probability of exit of domestic firms (or reducing the probability of survival). MNFs may also crowd out less efficient domestic rivals by increasing factor prices in the economy (Görg and Strobl, 2003). It is important to note that, as emphasised by Dunning and Lundan (2008), the strength of each of the two forces (pro or anti-competitive) depends on several factors, in particular the mode of establishment chosen by the multinational enterprise (greenfield investment or acquisitions) and industry or country- specific circumstances.[1]

Several empirical studies have been conducted to assess the impact of FDI/foreign presence on host country market structure and the results are also ambiguous. There are studies that conclude that foreign presence leads to increased industry competition in the host country (e.g. Driffield, 2001a, 2001b; Görg and Strobl, 2003; Burke et al., 2008; Kosová, 2010; Forte and Sarmento, 2012) while other studies have obtained a negative effect (e.g. Lall, 1979; Bourlakis, 1987; Bandick, 2010; Sing, 2011; Franco and Gelübcke, 2013), that is, foreign presence leads to reduced competition. Additionally, there is no consensus regarding the methodology since existing studies follow two distinct approaches. On the one hand, there are studies that focus on the impact of the foreign presence on the level of host country market

[1] If the multinational enters into a foreign market investing in new production facilities (greenfield investments), at least in the short run it is likely that competition increases (there will be an increase in the number of firms operating in the industry) and the concentration ratio will decrease. By contrast, if the foreign entry takes the form of an acquisition the number of firms does not raise and there may be no immediate impact on the concentration ratio and industry competition. Acquisitions might, even, prevent concentration from increasing when takeovers prevent the closure of the acquired firm (UNCTAD, 2000).

concentration (e.g. Lall, 1979; Bourlakis, 1987; Driffield, 2001a; Sing, 2011; Forte and Sarmento, 2012). On the other hand, a second group of studies look at the impact of foreign presence on entry, exit or survival of host country firms (e.g., Görg and Strobl, 2003; Burke et al., 2008; Bandick, 2010; Kosová, 2010; Franco and Gelübcke, 2013). This second type of studies is more recent and focuses on the impact of FDI (foreign presence) on local firms. According to Franco and Gelübcke (2013), these studies started more than a decade ago but initially focused on the impact on productivity. Studies focusing on the impact on exit/survival are relatively scarce. Generally, in the first group of studies the dependent variable is a measure of concentration (the concentration ratio or the Herfindahl-Hirschman Index), while in the second group of studies the dependent variables are usually the entry and the exit rate. Note that an increase (decrease) in the exit rate can be interpreted as a decrease (increase) in the survival rate.

Given the lack of consensus regarding the effects of foreign presence in the host country market structure and the use of different methodologies, it is worthwhile to offer an updated review of what has been accomplished in this research field. In fact, although the first empirical studies of the impact of multinationals firms' on the host country market structure started more than thirty years ago, to the best of our knowledge, a literature review on this topic has not yet been carried out. In this way, the aim of this paper is twofold: first, to provide an updated review and synthesis of the existing empirical literature concerning the effects of foreign presence on host country market competition; and second, to identify weaknesses in the literature where future research efforts should be directed.

This paper is organized as follows: In Section 2 we focus on the first group of studies, presenting a review of the empirical literature on the effects of foreign presence on host country market concentration. In Section 3 we focus on the impact of multinationals on the entry, exit and survival of host country firms. Finally, the last section sets out the main findings and directions for future research.

2. THE IMPACT OF MULTINATIONALS' PRESENCE ON HOST COUNTRY MARKET CONCENTRATION

The first studies on the effects of the presence of multinationals in the host country market structure focused on the impact on the degree of market concentration. Table 1 summarises these studies which are arranged chronologically. Table 1 also focuses on the level of analysis

(manufacturing/services industry), the country analyzed and respective years, the method used, the dependent variable, the proxies used to measure the foreign presence (the main explanatory variable) and the results obtained.

Since this group of studies aim at analyzing the impact of foreign presence on the host country market concentration, almost all studies used the *i*-firm concentration ratio (CR*i*) as dependent variable, that is, the proportion of industry sales (output, employment or value added) accounted for the *i* largest firms (three, four or five largest firms). The exception occurs with Blomström (1986), Sathye (2002), and Amess and Roberts (2005) who resorted to the Herfindahl-Hirschman Index (HHI), and Rutkowski (2006) who used as dependent variable the perceived concentration (PC), defined as a binary variable and also three grades.[2] Rutkowski (2006: 116) considers that "*managers' perceptions are a fairly objective indicator of the industrial structure*". Additionally, some authors (Driffield, 2001a; Driffield, 2001b; Amess and Roberts, 2005) use another variable, focusing on concentration change (changes in the long-run level of concentration) instead of the simple level of concentration. Driffield (2001b) argues that studies that have tested the relationship between foreign presence and market concentration are relatively simple, using a measure of foreign presence as one of the determinants of concentration. However, according to the author, this methodology does not fully address the hypotheses that FDI causes changes in market structure.

Regarding the proxies used to measure foreign presence,[3] almost all authors (9 of 14) consider the foreign share of sales (employment, output, value added, or assets) in each industry. However, there are exceptions like the case of Cho (1990), Yun and Lee (2001), Sathye (2002) and Rutkowski (2006). Since Cho (1990) analyses the commercial banking industry the author uses lendings instead of sales or output. Yun and Lee (2001) and Rutkowski (2006) use data on FDI. Finally, Sathye (2002) measures the effect of ownership using a dummy variable taking the value 1 for foreign banks and the value 0 for domestic banks.

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[2] Rutkowski (2006) also examined the impact of FDI on profitability and concluded with a positive relationship, that is, a rise in inward FDI stock / GDP ratio leads to an increase in the domestic profit/sales ratio. So the author concluded that FDI has strengthened domestic firms rather than removed them from the market.

[3] According to Adam and Khalifah (2012), there is ambiguity as to what constitutes a foreign firm: various studies and institutions use different definitions of foreign ownership. For example, for both the Organization of Economic Cooperation and Development (OECD) and the International Monetary Fund (IMF) a firm is considered as foreign firm, with an effective voice in management, if it has at least 10 per cent of the equity capital owned by foreigners. This seems to be the definition used in most studies (e.g. Willmore, 1989; Yun and Lee, 2001; Sing, 2011; Forte and Sarmento, 2012). However, other authors use a different criteria: for Blomstrom (1986) a plant is classified as foreign if it has 15% or more foreign owners while for Lall (1979) and Bourlakis (1987) firms were defined as foreign (foreign controlled) if at least 50 per cent of the shares are foreign owned.

Table 1: Studies focusing on the impact of FP on host country market concentration

Author (ano)	Level of analysis	Country	Years	Method	Dependent variable	Foreign presence	
						Proxy used	Impact
Lall (1979)	Manufacturing industries	Malaysia	1972	OLS	CR4 (sales)	Foreign share of employment	+
Blomstrom (1986)	Manufacturing industries	Mexico	1970	OLS	HHI ; CR4 (employ-ment)	Foreign share of gross production	+
Bourlakis (1987)	Manufacturing industries	Greece	1975/ 1979	OLS	CR4 (assets)	Share of foreign controlled assets	+
Willmore (1989)	Manufacturing industries	Brazil	1980	OLS	CR4 (output)	Foreign share of gross output	+
Cho (1990)	Comercial banking industry	Indonesia	1974-1983	OLS	CR4 (lendings)	Foreign banks' proportion of total lendings	-
Driffield (2001a)	Manufacturing industries	United Kingdom	1983-1992	Stochastic frontier analysis Simultaneous equations	CR5 (sales); CR5a (trade adjusted) ΔCR5	Foreign share of sales	-
Driffield (2001b)	Manufacturing industries	United Kingdom	1983-1992	GMM	ΔCR5 and ΔCR5a	Foreign share of the industry's capital stock	-
Yun and Lee (2001)	Manufacturing industries	Korea	1991 - 1997	Simultaneous estimation	CR3 (Sales)	Ratio of cumulative FDI to fixed assets	+
Sathye (2002)	Banking market	India	1997-1998	Regression analysis	HHI	Dummy variable	0
Amess and Roberts (2005)	Manufacturing industries	Poland	1989 - 1993	GMM with instrumental variables	HHI	Foreign share of output	0
					ΔHHI		U - shape
					HHI	Proportion of firms foreign-owned	0
					ΔHHI		0
Rutkowski (2006)	Manufacturing industries (firm level data)	13 CEECs	2001	IV Probit and non linear IV Tobit models	PC	Ratio of FDI inward stock to GDP (by sector)	-
Singh (2011)	Manufacturing industries	India	2001/ 2002-2006/ 2007	Pooled and panel models	CR3 (output)	Foreign share of sales	+
Adam and Khalifah (2012)	Manufacturing industries	Malaysia	2001-2004	Pooled and panel models Simultaneous equations	CR4 (value added)	Foreign share of value added / employment / fixed assets	+/+/0
Forte and Sarmento (2012)	Manufacturing industries	Portugal	2006-2009	Pooled and panel models	CR4 (sales)	Foreign share of sales	-

Legend: + positive and statistically significant effect; - negative and statistically significant effect; 0 no statistically significant effect; PC – Perceived concentration; CEECs - Central and East European countries; IV – instrumental variables.
Source: compiled by the author

Concerning the results obtained, Table 1 clearly shows mixed results: seven (50%) of the studies obtained a positive relationship between foreign presence and the concentration ratio which means that the presence of multinationals reduced host country industry competition, five (36%) obtained a negative impact and two (14%) concluded with an effect not statistically significant. Note that the empirical results turn out to be in line with the theoretical arguments since, as mentioned above, there are two conflicting hypotheses about the impact of foreign presence in the host country industry competition.

Concerning the level of analysis, Table 1 shows that almost all authors focus on manufacturing industry. Only Cho (1990) and Sathye (2002) address the services sector, particularly the case of banking. It is also important to note that most studies focus on developing countries.[4] Only four studies (Bourlakis, 1987; Driffield, 2001a; Driffield, 2001b; Forte and Sarmento, 2012) report on developed countries. Additionally, most of the studies were conducted several years ago, with equally old data, and are based on cross section data (e.g. Lall (1979), Blomström (1986), and Bourlakis (1987), among others). However, as Bourlakis (1987) reports, this is not the best way of examining the effect of foreign presence on market concentration, suggesting that an intertemporal analysis is more appropriate. In this way it becomes relevant to perform new analyzes.

With respect to the method used, almost all studies appeal to single equation techniques, that is, most of the studies do not take simultaneity effects into consideration. The exception occurs with Driffield (2001a), Yun and Lee (2001) and Adam and Khalifah (2012) who resort to a simultaneous equations framework. Yun and Lee (2001) adopt the simultaneous estimation technique because they consider that concentration and FDI are likely to affect each other. Also Bourlakis (1987: 731) report "*MNCs (multinational corporations) may affect concentration via a system of causal relationships including international influences and entry barriers. That is to say, instead of relying on single equation techniques, a high priority should be to develop a complete simultaneous equations framework of MNCs' behavior*". Also Rutkowski (2006) emphasizes the possibility of circular causality (endogeneity of FDI) as FDI may be attracted to a particular industry where concentration is high. The author deals with this problem using instrumental variables. Note however, that Adam and Khalifah (2012) using a simultaneous equations approach did not find evidence to support the existence of

[4] The classification of a country into developed or developing follows the classification of UNCTAD (2012).

simultaneity effects between market concentration and foreign presence.[5] This issue of causality needs, therefore, to be explored further.

Still with regard to the method, it is important to report that Amess and Roberts (2005) include quadratic terms for the foreign presence variables (this means that the variables enter linearly and in square) in order to examine whether their impact on industry concentration is non-linear. The results of Amess and Roberts (2005) indicate that while foreign presence is not statistically significant in explain the level of concentration, linear and quadratic foreign-owned firms share of output are significant in explaining changes in industrial concentration and indicate a U-shaped relationship between foreign presence and industrial concentration, suggesting that there is an optimal foreign ownership that minimises industry concentration. Note that the results of Amess and Roberts (2005) are consistent with the theoretical arguments mentioned above that multinationals lead to increased competition in the host country because they are able to overcome barriers to entry for domestic firms due to their superior technology and proprietary assets, and that the presence of foreign firms may also lead to a reduction in industry concentration because they induce a crowding-out effect, forcing inefficient firms to exit the market.

In addition to a measure of presence foreign studies include other determinants which can affect the concentration level (control variables). Table 2 summarises the most frequently used determinants and the results obtained.

In line with the industry concentration literature (Ornstein et al., 1973; Caves and Porter, 1980; Curry and George, 1983; Sutton, 1991), the main control variables used relate to entry barriers, such as scale economies, the industry capital intensity, the advertising intensity in the industry, and the level of R&D expenditures, which are expected to have a positive impact on industry concentration. All studies analysed used a variable related to economies of scale, and the vast majority (nine studies) obtained a positive relationship between the level of economies of scale and the concentration ratio, as expected. The same occurs with the variables related to capital (usually the capital intensity of the industry), with 13 studies using this variable, eight of which have obtained a positive relationship. To measure the level of entry barriers others authors use the advertising intensity (nine studies) or the R&D (four studies). Regarding the advertising intensity, a large number of studies did not obtain a

[5] Nevertheless, using single equation techniques, Adam and Khalifah (2012)'s results show that a higher foreign presence in an industry tends to increase the level of concentration, and that market concentration positively affects the level of foreign ownership of an industry.

statistically significant relationship between this determinant and the concentration ratio, while for R&D three of four studies obtained a positive relationship, as expected.

Table 2: Other determinants of market concentration

Author (year)	Barriers to entry				Market size	Market growth	Exports
	Scale economies	Capital variables	Advertising	Research & Development (R&D)			
Lall (1979)	+	+	+		-	+	
Blomstrom (1986)	+	+	-		+	0	
Bourlakis (1987)	+	+			-	0	+/0
Willmore (1989)	0	+	+		-	0	+
Cho (1990)	-	0			0/-	+	
Driffield (2001a)	+	+	+	+			
Driffield (2001b)	+	+	+	+	-/0	-	
Yun and Lee (2001)	0	0	0			0	
Sathye (2002)	+	-			+		
Amess and Roberts (2005)	+	0			0		
Rutkowski (2006)	0						+
Singh (2011)	0	-	0	+		+	+
Adam and Khalifah (2012)	+	+	0		+	-	
Forte and Sarmento (2012)	+	+	0	0	+	0	
Total number of studies	14	13	9	4	10	10	4

Legend: + positive and statistically significant effect; - negative and statistically significant effect; 0 no statistically significant effect
Source: Own elaboration.

In addition to the barriers to entry, several authors also use variables related to market size and growth (10 studies). According to Bourlakis (1987) we expect a negative impact of market size and market growth on industry concentration as, ceteris paribus, the higher the size and growth of the market the higher the possible number of efficient firms and, consequently, the lower the concentration. However, results regarding these determinants are mixed, highlighting that a significant number of studies yields a result not statistically significant. Finally, there are also four studies that used variables related to exports, particularly industry exports intensity (the ratio of industry exports to total industry sales) obtaining a positive relationship between this variable and industry concentration.

To sum up, this group of studies which focuses on the impact of multinationals' activities on host country market concentration shows clearly ambiguous results, pays little attention to developed countries and relates almost exclusively to manufacturing industries. However, developed countries are important recipients of foreign investment and the service sector absorbs a large percentage of FDI.[6] Thus, future work should fill this gap. Additionally, future works should explore the possibility of bidirectional causality between the presence of multinationals and the level of industry concentration since, as Dunning and Lundan (2008: 531) highlight "*In general, multinational enterprises activities are most pronounced in sectors where market structure is best described as an amalgam of oligopolistic and monopolistic competition. In some sectors (for example, oil, aluminium, rubber tyres and reinsurance) the output is largely in the hands of a few large firms*".

3. THE IMPACT OF MULTINATIONALS' PRESENCE ON ENTRY, EXIT AND SURVIVAL OF HOST COUNTRY FIRMS

According to Franco and Gelübcke (2013), studies focusing on the impact of foreign presence (or FDI) on local firms started more than a decade ago focusing on the effects of FDI on the productivity of local firms. As reported by Burke et al. (2008), much of the academic work has focused on the impact of FDI on the productivity of local firms, i.e., has analyzed the extent to which multinationals generate "productivity spillovers" to domestic firms, as is the case of Aitken and Harrison (1999)'s study.[7] Additionally, some recent empirical literature also has been concerned in analysing the extent to which foreign owned firms are more likely to exit the market (less likely to survive) than domestic firms (e.g. Mata and Portugal, 2002; Görg and Strobl, 2003; Alvarez and Görg, 2009; Ferragina et al., 2012).[8] However, as several

[6] According to UNCTAD (2012), in 2011 developed countries reached nearly half of global FDI flows. Regarding the sectoral distribution of FDI, services accounted for about 40%.

[7] In fact a large number of studies have been devoted to the analysis of productivity spillovers arising from multinationals activities, and there are some literature reviews on the topic as in the case of Görg and Strobl (2001) and Iršová and Havránek (2013).

[8] The expected relationship between multinational ownership and firm survival is ambiguous (Ferragina et al., 2012). One the one hand it is expected that MNFs are more likely to exit the market than indigenous firms due to its position within an international production network which allows MNFs to easily relocate production to another country when the business environment in the host country deteriorates. On the other hand, if the effect of sunk entry costs on firm exit is taken into account (the greater the amount of irrecoverable costs, the greater the value of waiting before making an exit decision) then it is expected that MNFs are less likely to exit the market than domestic firms since the sunk costs of investing abroad tend to be higher than those for establishing a purely domestic plant. For instance, Gorg and Strobl (2003) and Ferragina et al. (2012)'s results indicate that foreign-owned plants have higher hazards of exiting than indigenous plants. Alvarez and Görg, 2009 obtain similar results for the period 1995–2000. However, Mata and Portugal (2002) focusing on the case of Portugal have found that foreign MNFs have the same survival chances as domestic firms.

authors highlight (e.g. Burke et al., 2008; Kosová, 2010; Franco and Gelübcke, 2013), empirical studies addressing the effects of foreign presence on the survival of domestic firms are very scarce, that is, the analysis of the relationship between the presence of multinationals and the survival of host country firms has been largely neglected in this literature.

Regarding this type of studies, which address the impact of FDI/foreign presence on domestic firms, particularly on entry and on exit/survival of host country firms, Tables 3 and 4 synthesise these studies, which are ordered chronologically: Table 3 focus on the studies which analyse the impact of foreign presence on entry rate while Table 4 focus on the studies addressing the impact on exit/survival of host country firms. Tables 3 and 4 also present the level of analysis (Manufacturing /service firms), the country analyzed and respective years, the method used, the dependent variable, the proxy used to measure foreign presence (the main explanatory variable) and the result obtained.

Table 3: Studies addressing the impact of foreign presence on entry of host country firms

Author (year)	Level of analysis	Country	Years	Method	Dependent variable	Foreign presence	
						Proxy used	Impact
Backer and Sleuwaegen (2003)	Manufacturing firms	Belgium	1990-95	OLS	Domestic entry rate	Relative number of foreign firms	+
Barrios et al. (2005)	Manufacturing plants	Ireland	1972-2000	OLS	Domestic net entry rate	Foreign-owned plants share of employment	+
Ayyagari and Kosová (2010)	Manufacturing and services firms	Czech Republic	1994-2000	Panel regressions	Domestic entry rate	Foreign firms share of industry's sales	+
Anwar and Sun (2012)	Manufacturing sector	China	2003-2007	Panel regressions	Entry rate	Share of FDI invested firms' output	0/+

Legend: + positive and statistically significant effect; - negative and statistically significant effect; 0 no statistically significant effect.

Source: compiled by authors

Observing Tables 3 and 4 the main conclusion we can draw is that a larger number of studies (11 of 13) analyze the impact of foreign presence on the exit/survival of indigenous firms, using the domestic exit rate or the probability of exit as the dependent variable. On the other hand, only four studies focus on domestic entry rate. Note that there are three studies which analyse the impact of foreign presence both on the entry and exit of host country firms. Additionally, Kosová (2010) focuses on the exit rate as well as on the survival time (as reported above, an increase (decrease) in the exit rate means a decrease (increase) in the survival rate).

Table 4: Studies addressing the impact of foreign presence on exit and survival of host country firms

Author (year)	Level of analysis	Country	Years	Method	Dependent variable	Foreign presence	
						Proxy used	Impact
Backer and Sleuwaegen (2003)	Manufacturing firms	Belgium	1990-95	OLS	Domestic exit rate	Relative number of foreign firms	-
Görg and Strobl (2003)	Manufacturing plants	Ireland	1973-1996	CPHM	Exit rate	MNFs share of employment	-
Taymaz and Özler (2007)	Manufacturing plants	Turkey	1983-2001	CPHM	Exit rate	Market share of foreign plants	0
						Growth rate of output produced by foreign plants	0
Burke et al. (2008)	Manufacturing and services plants	United Kingdom	1997-2002	CPHM	Exit rate	MNFs share of employment in the sector	-
Alvarez and Görg (2009)	Manufacturing plants	Chile	1990-2000	Probit model	Probability of exit	MNFs share of employment	0/-
Bandick (2010)	Manufacturing plants	Sweden	1993-2002	Discrete time version of CPHM	Exit rate	Employment share of foreign MNFs in industry	0/+
Kosová (2010)	Manufacturing and services firms	Czech Republic	1994-2001	CPHM	Exit rate	Foreign employment share per industry-year	-
				Pooled probit	Probability of exit		-
				Log-normal model	Survival time		+
Kejžar (2011)	Manufacturing firms	Slovenia	1994-2003	Pooled probit, RE probit and maximum likelihood *cloglog*	Probability of exit	Regional intra-industry foreign firm concentration	-
						FDI concentration in backwardly and forwardly linked industries	0/-
Anwar and Sun (2012)	Manufacturing sector	China	2003-2007	Panel regressions	Exit rate	Share of FDI invested firms' output	+/0
Ferragina et al. (2012)	Manufacturing and services firms	Italy	2004-2008	CPHM	Exit rate	MNFs share of employment in the industry	0/-
Franco and Gelübcke (2013)	Manufacturing firms	Germany	2007	Probit model	Probability of exit	Share of foreign employment/sales	+/+
						Ratio of foreign firms to the total firms per sector	+

Legend: + positive and statistically significant effect; - negative and statistically significant effect; 0 no statistically significant effect; CPHM - Cox Proportional Hazard Model; RE - random-effects; *cloglog* - complementary log–log model

Source: compiled by authors

Regarding the dependent variable, studies focusing on the impact of foreign presence on entry of host country firms (see Table 3) usually resort to the entry rate. Backer and Sleuwaegen, (2003), Ayyagari and Kosová (2010), and Anwar and Sun (2012) define the entry rate in a relatively similar way: the number of new domestic firms (the ones that are one year old or less) in year t divided by the total number of domestic firms in the industry in year $t - 1$.

Barrios et al. (2003) used the domestic net entry rate (instead of entry rate) defined as the number of indigenous plant entries minus exits over the period t to $t + 1$ divided by the total number of plants at time t in the industry.[9]

Relative to the studies focusing on the effects of foreign presence on the exit/survival of local firms (see Table 4), almost all use the exit rate as the dependent variable.[10] Several authors (e.g. Görg and Strobl, 2003; Taymaz and Özler, 2007; Burke et al., 2008; Ferragina et al., 2012) specify the hazard function $h(t)$ which is the rate at which plants exit at particular time t given that they have survived in t-1, that is until that time period. As reported by Kosová (2010) and Ferragina et al. (2012), a hazard rate lower (higher) than one is associated, ceteris paribus, with a decrease (increase) in the probability of exit or increase (decrease) in the probability of survival. Note that for Görg and Strobl (2003) and Burke et al. (2008) the interpretation of the coefficients is somewhat different: a negative coefficient of the explanatory variable implies that it reduces the rate of hazard or, in other words, increased foreign presence increases the chance of survival. Backer and Sleuwaegen (2003), for their part, define domestic exit rate as the number of domestic exiters in year t divided by the total number of firms in the industry in year $t - 1$. Finally, other authors resort to the probability of exit. Kejžar (2011) defines the probability of exit as a binomial variable taking the value of 1 in the year of a firm's exit and 0 for all previous years.

Regarding the proxies used to measure foreign presence, the main explanatory variable, authors usually use the share of industry's sales (employment or output) captured by foreign firms, similar to what happened with the studies analyzed in the previous Section.[11] The exception occurs with Backer and Sleuwaegen (2003) and Kejžar (2011). Backer and Sleuwaegen (2003) resort to the relative number of foreign firms while Kejžar (2011) opts for the regional intra-industry foreign firm concentration in terms of employment shares and for

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[9] Siegfried and Evans (1994), who developed a survey on empirical studies on entry and exit, report that earlier empirical work used net entry. Since this measure treats exits as negative entries, it imposes the structural determinants of entry to be identical to the structural determinants of exit. According to the authors this symmetry may not be true. On the other hand, gross entry documents entry alone. However this measure is not exempt from problems: if entering firms simply displace other firms, a gross entry measure does not reflect the relevant entry for the purpose of competition. In this way, some care is needed in interpreting the results.

[10] Kosová (2010) also analysed the impact of foreign presence on the growth of domestic firms and concluded that foreign growth rate always has a positive and significant impact on domestic firm growth rates. The author considers that this result allows the rejection of dynamic crowding-out effects.

[11] Note that, similarly to what happened with the studies discussed in the previous section, there is no consensus about the criteria used to classify a firm as foreign owned. For instance, while Görg and Strobl (2003) classify a plant as foreign owned if 50 % or more of its shares are held by foreign owners, Kejžar (2011) classifies a firm as foreign if foreign owners have at least a 10% equity share.

the concentration of FDI in backwardly and forwardly linked industries. Foreign presence is a proxy for the presence of multinationals in a given sector and, as reported by Burke et al. (2008) is supposed to capture the effects of multinationals on firm survival. Therefore, a positive effect on firm survival (a negative effect on the exit rate) is expected if positive spillovers occur.

With respect to the results obtained, based on Table 3 we can conclude that the four studies that focus on the entry rate found a positive relationship between foreign presence and domestic entry rate. According to Backer and Sleuwaegen (2003), the positive coefficient for foreign presence indicates that more new domestic firms are formed in industries characterized by a high foreign presence, indicating an important role for demonstration, networking and spillover effects. Also Ayyagari and Kosová (2010) found that foreign presence has a strong positive impact on domestic entry via intra-industry (horizontal) and inter-industry (vertical) spillovers. Note that we can consider that this positive impact of foreign presence on domestic firm entry tends to generate a more competitive market structure as it accommodates a larger number of firms.

In respect to studies focusing on the impact of foreign presence on exit/survival of host country firms (Table 4) we can conclude that results are ambiguous: there are authors who obtained a positive relationship (e.g. Anwar and Sun, 2012; Franco and Gelübcke, 2013), that is, higher foreign presence increases the exit rate, while other authors found a negative relationship (e.g. Backer and Sleuwaegen, 2003; Görg and Strobl, 2003; Burke et al., 2008; Kejžar, 2011) which means that higher foreign presence decreases the exit rate and, consequently, generates a more competitive market structure. There are also studies whose results are not statistically significant (e.g. Taymaz and Özler, 2007).

Anwar and Sun (2012) obtained a positive effect of foreign presence on the domestic exit rate in the case of FDI from Hong Kong Macau and Taiwan (and an impact not statistically significant in the case of FDI from all countries except Hong Kong, Macau and Taiwan). For its part, Franco and Gelübcke, (2013) also conclude that in most cases German firms suffer from higher competition introduced by foreign firms. The exception occurs when firms have greater absorptive capacity (being part of a high-R&D region or a high-tech sector) taking advantage of possible spillover effects.

On the other hand, according to Görg and Strobl (2003), a greater presence of multinationals tends to increase the survival of plants (reduce exit), but this effect is only significant for

plants that operate in high-tech sectors, which suggests that there exist technology spillovers from multinationals to other plants in the same sector. Also for Burke et al. (2008) their results suggest that an increase in the importance of foreign owned firms in the sector lowers the hazard of exiting. Additionally, Alvarez and Görg (2009)'s results indicate that the presence of multinationals decreases plants' probabilities of exit (positive effect on plant survival) in the early 1990s but when the authors control for total factor productivity this effect is fully captured by productivity improvements and the authors do not find any further impact of multinational presence on a plant's probability of exit. Kosová (2010)'s results show evidence of both technology spillovers and a crowding-out effect, although crowding-out effect seems to be a short-term or static phenomenon. In fact, according to the author, initial foreign entry increases the exit rates of domestic firms but afterward the growth of foreign sales has a positive effect on the survival of domestic firms, that is, domestic firms benefit from foreign presence. In this way, as Kosová (2010) reports, her results are consistent with the conclusion by Aitken and Harrison (1999): the negative competitive effect of FDI should be temporary, and in the long run positive FDI spillovers should dominate. Finally, Kejžar (2011) obtained a negative effect of a foreign presence on the probability of local firms exiting through forward linkages, although concerning backward linkages the results obtained are not statistically significant.

Note that in addition to the foreign presence some authors (e. g. Backer and Sleuwaegen, 2003; Kejžar, 2011) also use other explanatory variables related to FDI or multinationals, such as foreign entry and foreign exit. Backer and Sleuwaegen (2003) concluded that foreign entry has a negative effect on the entry of domestic entrepreneurs, eventually due to a stronger competition in the product market and attraction of the best workers. On the other hand, the impact of foreign entry on domestic exit supports the crowding out effect of domestic firms by foreign firms: the positive (and statistically significant) coefficient obtained demonstrates that the inflow of FDI induces domestic firms to exit. Additionally, foreign exit has no statistically significant impact. Kejžar (2011) results point to a positive impact of a foreign firm's entry via FDI on the probability of incumbent firms exiting within a particular industry. The author also distinguishes between greenfield entry and foreign firm entry through acquisition, concluding that although the impact of both two types of FDI on exit probability is positive, only the coefficient of the greenfield entry is confirmed as significant. Note that the greater crowding out being associated with greenfield entry is in line with the expected.

Concerning the level of analysis, Tables 3 and 4 show that almost all authors focused on manufacturing industries, and only two studies, Ayyagari and Kosová (2010) and Ferragina et al. (2012), also include the services sector. Note that most of the studies are plant or firm-level studies unlike those focusing on the impact of foreign presence on market concentration analysed in the previous section which are essentially industry-level. The exception occurs with Anwar and Sun (2012) who use firm level data to construct industry level variables. These authors consider the impact of foreign presence on entry and exit rates in aggregate.

It is also important to mention that of the 13 studies analysed, about half (six studies) focus on developing countries while seven studies address developed countries. In addition, studies are more recent than those focusing on the impact of foreign presence on industry concentration. It is, therefore, a more recent literature. However, although these studies are more recent than those analysed in the previous section (the oldest was published in 2003 and the latest in 2013), the data used is more than a decade old, excepting the case of Anwar and Sun (2012), Ferragina et al. (2012) and Franco and Gelübcke (2013).

Regarding the method used, studies focusing on the impact of foreign presence on entry rate resort to OLS estimates (two studies) or to panel regressions (two studies). Note that Barrios et al. (2005) use OLS with linear and non-linear specification and, also, a semiparametric methodology using the Kernel regression estimator. From the 11 studies that address the impact on exit/survival, over half (six studies) resort to the Cox proportional hazard model. Additionally, three studies use a Probit model and there is also one study using OLS and another resorting to panel regressions.

In addition to a measure of foreign presence studies also include other determinants which can affect the exit/survival of domestic firms. Table 5 summarises the most frequently used determinants and the results obtained regarding the impact of the respective variable on the exit rate (negative impact on exit means a positive impact on survival). Taking into account the studies surveyed the most frequently used determinants relate to plant/firm and industry characteristics. Note, however, that some authors use only variables related to the firm (e.g. Kosová, 2010) while others use only variables related to the industry (e.g. Backer and Sleuwaegen, 2003).[12]

[12] Regarding the studies who analyse the impact of foreign presence on entry rate they also resort to control variables. Backer and Sleuwaegen (2003) use physical capital intensity and the scale intensity of industries expecting that these variables hinder entry. Barrios et al. (2005) resort to the sectoral growth rate, industry size and minimum efficient scale.

Table 5: Other determinants of firms' exit

Author (year)	Firm/Plant characteristics			Industry characteristics		
	Size	Age	Productivity	Minimum efficient scale	Concentration	Sector growth
Backer and Sleuwaegen (2003)				0		-
Görg and Strobl (2003)	-			0	+	-
Taymaz and Özler (2007)	-			-	+	0
Burke et al. (2008)	0				+	-
Alvarez and Görg (2009)	-	-	-	0	0	-
Bandick (2010)	-	-	-		-	-
Kosová (2010)	-	+				
Kejžar (2011)	-	-	-		0	
Anwar and Sun (2012)					0/-	
Ferragina et al. (2012)	0/-	-	-	+	+	
Franco and Gelübcke (2013)	-	-	0		-	
Total number of studies	9	6	5	5	9	6

Legend: + positive and statistically significant effect; - negative and statistically significant effect; 0 no statistically significant effect
Source: Compiled by the author

Regarding plant/firm characteristics that affect a firm's exit decision, as Kejžar (2011) reports size, age and productivity are the principal characteristics postulated by existing theories. As reported by Burke et al. (2008, p.400), "*it can be considered a stylised fact that small plants generally have lower probabilities of survival than large plants*", since large firms have more resources being better able to exploit market opportunities and face competition. Alvarez and Görg (2009) also emphasize that larger, older and more productive firms are generally expected to have lower exit (or higher survival) probabilities. The results of various authors (e.g. Alvarez and Görg (2009); Bandick (2010); Kejžar (2011)) are in line with these predictions: they obtain a negative sign for these variables which means that larger, older and more productive firms are found to have a lower risk of exit than smaller, younger and less productive firms. For Ferragina et al. (2012) firm size has a positive effect on firm survival (in other words, small firms face a higher hazard of exit compared with large firms) only in the service sectors; in the manufacturing sector the effect is not statistically significant. Taymaz and Özler (2007) and Ferragina et al. (2012) also include a variable related to firm capital

intensity, having obtained a negative effect on exit rate. In terms of plant characteristics Alvarez and Görg (2009) also include a dummy variable to indicate whether a plant is an exporter, however the authors obtained a statistically insignificant result.

In respect to industry specific characteristics that are expected to impact on plant exit or survival, the frequently mentioned characteristics are: minimum efficient scale, market concentration, and sector growth.[13]

As Görg and Strobl (2003) report, the expected effect of minimum efficient scale is ambiguous: on the one hand, it is expected that firms that enter industries with high minimum efficient scale have a lower probability of survival (higher probability of exit) than firms entering other industries, because small firms entering in the industry may have difficulty in reaching the efficient level of production. On the other hand, a higher probability of survival is expected as industries with high minimum efficient scale industries tend to present higher price-cost margins. Regarding this determinant, most studies did not obtain conclusive results. However, Ferragina et al. (2012)'s results show that firms in industries with a higher minimum efficient scale level have a higher probability of exit.

The expectations regarding the effect of market concentration on survival are also ambiguous (Görg and Strobl, 2003; Alvarez and Görg (2009). Industries characterized by high concentration may register higher price-cost margins which should increase the likelihood of survival (reduce the exit probabilities). However, firms in highly concentrated industries may be subject to very aggressive behavior by rivals, thereby reducing the chance of survival (Görg and Strobl, 2003; Alvarez and Görg, 2009). Empirical evidence on this subject is mixed, although most have obtained a positive relationship between the level of industry concentration and the probability of firm exit. This positive relationship suggests "*that firms in highly concentrated sectors are subject to stronger competition, which increases their likelihood of exit*" (Ferragina et al., 2012: 368).

Six studies (e.g. Görg and Strobl (2003); Burke et al. (2008); Alvarez and Görg (2009)) also include the a variable related to sector growth as additional covariate, to allow for the possibility that plant exit is lower in fast growing industries and this relationship was confirmed by five studies.

[13] Backer and Sleuwaegen (2003) also include capital intensity (an entry barrier, similarly to minimum efficient scale) since according to the authors a barrier to entry can also act as exit barrier. The authors obtained a negative effect, as expected.

To sum up, this group of studies which focuses on the impact of multinationals' presence on entry and exit/survival of host country firms, although they are distributed almost equally between developed and developing countries, are still small in number and relate almost exclusively to manufacturing industries. However, as mentioned above, the service sector absorbs a large percentage of FDI so future work in the area should not forget this sector.

4. CONCLUSIONS AND FUTURE RESEARCH DIRECTIONS

It is widely recognized that multinational firms play a crucial role in the global economy and that their activities cause many different effects on the host country in areas such as economic growth, technology and innovatory capacity, employment, market structure, among others.

Several empirical studies have been conducted to assess the impact of multinationals' activities on the host country. This study focused on the impact on market structure because it is a controversial topic both from a theoretical and empirical standpoint, and although the first empirical studies are more than thirty years old, to the best of our knowledge there is still no review of literature on the subject. In this way, this study provides valuable information that can contribute to the advancement of the field.

The review of 27 empirical studies published since 1979 allows us to identify two types of approaches. On the one hand, there are authors that focus on the impact of foreign presence in the level of host country industry concentration. On the other hand, more recently the authors have turned to the analysis of the effects of foreign presence in host country local firms, particularly on the entry, exit or survival of domestic firms. Both approaches allow for assessing whether or not foreign presence contributes to more industry competition in the host country.

Regarding the first group of studies we realize that they have been concentrated on developing countries and samples used have been almost exclusively of manufacturing industries, with relatively few studies examining the service sector, despite its importance (it accounted for about 40% of FDI flows in 2011). The few studies that deal with developed countries focus on the United Kingdom, Greece or Portugal. Additionally, we can confirm that empirical results are mixed. We also note that the level of statistical sophistication has improved (early studies used cross section data and relied almost exclusively on OLS estimation while the most recent studies resort to estimation methods of panel data). For the second group of studies our main conclusions indicate once again the focus on manufacturing

industry and, while being more recent, the data used in most studies is more than a decade old. Additionally, there is no consensus on the dependent variable to use because some authors focus on the exit rate (using a Cox proportional hazard model), while others opt for the probability of exit (resorting to a probit model). Furthermore, almost all studies do not take into account the mode of establishment chosen by the multinational firms (greenfield investment or acquisitions) to enter the host country, although it is a factor likely to affect the level of competition.

Given the weaknesses of the existing literature identified in this review future research efforts are needed in order to fill these gaps. Specifically, our findings indicate that: (1) More studies need to be elaborated regarding the impact of foreign presence on host country market concentration, focusing particularly in the service sector, covering a large number of countries (especially developed countries), and exploring the possibility of bidirectional causality between the presence of multinationals and the level of industry concentration. (2) More studies concerning the impact of foreign presence on entry, exit and survival of host country firms are needed, focusing also on the service sector, using more recent data and taking into account more control variables (note that some authors have used only variables related to the firm while others use only variables related to the industry). (3) Future studies should distinguish the foreign presence resulting from acquisitions and greenfield investments.

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