

Patterns of Entry, Post-Entry Growth and Survival

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ABSTRACT. This study compares the patterns of entry, survival and growth of domestic and foreign owned firms. We show that the post-entry behavior of foreign owned firms is quite different from that of their domestic counterparts. Among foreign entrants, we were able to distinguish between those which proceed by creating a new firm and those that acquire an already existing business. Our evidence reveals that the choice of the mode of entry in foreign markets exerts an impact upon the performance of firms that persists long after the moment of entry. As a consequence, our work clearly indicates that there is much to be gained in the understanding of the process of entry in foreign markets by studying the behavior of entrants over their first years in these markets.

1. Introduction

Economists have long been interested in the entry of new firms. Over the last few years, however, this interest seems to have shifted from the moment of entry itself to the period subsequent to entry (Audretsch and Mata, 1995). In general, studies that have addressed the patterns of survival of newly founded firms found exit to be a very likely event among new firms (Audretsch et al., 1999; Almus and Nerlinger, 2000; Goddard et al., 2002). Furthermore, studies on post-entry performance revealed that firms which manage to survive usually grow in the period subsequent to entry (Dunne et al., 1989; Mata, 1994; Barron et al., 1994; Audretsch, 1995). This literature has

compared the patterns of post entry evolution of different types of entrants (e.g. entry by new firms vs. diversifying firms (Dunne et al., 1989; Mata et al., 1995), but has not distinguished between foreign and domestic firms.

This is somewhat surprising, since entry in foreign markets is a topic that has been extensively analyzed in the International Business literature, as documented by the inclusion of chapters on entry in two of the major books on multinationals (Dunning, 1993; Caves, 1996). Also, although this literature has traditionally focused on the moment of entry and on the initial decisions of firms, a more recent shift towards the analysis of the post entry performance of firms is also apparent (Li, 1995; Chen and Wu, 1996; Mitchell et al., 1994; Yamawaki, 1997). However, very few studies (Li and Guisinger, 1991; Mata and Portugal, 2002) have compared failure rates for foreign and domestic companies, and virtually none provided a comprehensive comparison of the entry and post-entry process by foreign and domestic firms.

This study provides a detailed account of the patterns of entry, survival and post-entry growth of foreign owned firms which have entered the Portuguese economy during the period 1983–1989. We consider two alternative forms under which foreign entry may occur: greenfield entry, and acquisition of ongoing firms. We were able to accompany these firms during their first years after entry, with the goal of observing their patterns of survival and post-entry evolution. Besides comparing the characteristics of these two groups of firms with each other, we also make a comparison with a sample of newly created firms owned by domestic investors.

The theory of the multinational enterprise (MNE) suggests a number of reasons why foreign firms entering under different entry modes may differ, and why they should differ from domestic

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companies. This theory and its implications for the post-entry performance of firms is reviewed in Section 2. Section 3 presents the data source. The empirical analysis comes in Section 4, the patterns of entry, survival and growth being consecutively presented in subsections 4.1 to 4.3. The most important findings are then summarized and put into perspective in Section 5, which concludes the article.

2. Entry, survival and growth: Foreign affiliates and domestic firms

2.1. Entry

Early writers on the theory of the multinational enterprise (MNE) were concerned with explaining why it is that some firms engage in transnational operations, despite having an inherent disadvantage in operating in foreign markets *vis à vis* local firms. This disadvantage stems from the far greater knowledge that domestic firms possess regarding their local markets and from the extra costs MNEs must incur in coordinating plants across different geographical locations (Hymer, 1976). For MNEs to be able to compensate for this disadvantage, they must possess intrinsic capabilities which give them some sort of competitive advantage over their domestic rivals. These advantages are usually related to the possession of particular assets which, once developed in one particular location, can be employed in other locations at no cost or, at least, at a cost which is lower than the cost of developing it locally. That is, MNEs typically enjoy some degree of economies of scale in the utilization of these assets, which make them competitive in foreign markets. These advantages may include financial advantages, product differentiation and marketing advantages, and advantages accruing from economies of common governance or from the ability to exploit economies of scale at the plant level (Dunning, 1993, pp. 162–163).

Because not all industries present the same opportunities for exploiting these advantages, MNEs are not evenly distributed across industries. Summarizing stylized facts about multinationals, Mark Casson (1987, p. 132) states that they “predominate in industries with high R&D/sales ratios and high advertising/sales ratios [. . .] in industries with high ratios of salaried/weekly paid

staff, and of administrative staff/production workers, and with high five-firm concentration ratios in the host country. [. . .] Within an industry, MNEs appear to have the characteristics typical of the industry, *only more so*. They undertake more R&D, have a relatively high proportion of administrative staff, and [. . .] pay higher wages”. Although we know that new firms are not exact replicas of their older counterparts, we expect the same observed differences between foreign and domestic firms to hold between foreign and domestic entrants.

A fair number of the variables identified in the quotation above are commonly associated with entry barriers. Indeed, studies on entry by domestic and foreign firms have found that foreign firms are less responsive to entry barriers than domestic firms (Gorecki, 1976; Shapiro, 1983), and Baldwin and Gorecki (1987) found that foreign entrants are even attracted to industries with high entry barriers. This has been interpreted as an indication that, as a consequence of their stronger competitive position, foreign entrants are more able to overcome the barriers to entry than are domestic ones. Our first hypothesis is, therefore, that

Hypothesis 1. Entry barriers are higher in industries entered by foreign firms than in those entered by domestic firms.

To the extent that multinationals derive their competitive advantage from the possession of assets for which the economies of scale are not exhausted within their home country, we may expect that they should not be exhausted in a small economy such as that of Portugal, either. Accordingly, we expect foreign entrants to be relatively large. Reasoning along these lines for Canada, Baldwin (1995, chapter 11) derives the hypothesis that acquisition should be the preferred method of entry by foreign firms, since in this way the foreign firm does not add capacity to the market. Consequently, he hypothesizes that acquisition entrants should be larger than foreign greenfield entrants and these, in turn, should be larger than domestic greenfield entrants.

By the same token, among foreign entrants, acquisition entry is likely to be more frequent relative to greenfield entry in industries where capacity expansion endangers the position of

already established competitors and attracts aggressive responses. Significant damages to the position of incumbents occur with greater probability in industries where economies of scale are important and where greenfield entry involves a large addition to market capacity. Furthermore, aggressive reactions from incumbents are more likely to occur in concentrated markets, where coordination among incumbents is easier. Therefore, we hypothesize that

Hypothesis 2. Foreign acquisition entry is more frequent relative to foreign greenfield entry in industries where economies of scale are more important, and in those having higher concentration ratios.

Hypothesis 3. Foreign acquisition entrants are larger than foreign greenfield entrants, and foreign greenfield entrants are larger than domestic greenfield entrants.

A key point of the theory of the MNE is that the firm-specific assets that give rise to the advantages of MNEs must be difficult both to imitate and to trade. The difficulty in imitating protects firm's rents against competitors and preserves its competitive advantage. The difficulty in selling creates barriers to licensing and forces the firm to engage in transnational operations. The reason why these advantages are difficult to replicate is because the firm-specific assets in which they are based are largely embodied in the firm's knowledge base, often in the form of tacit knowledge. MNEs tend to perform activities that use knowledge in an intensive manner, namely, by spending heavily in R&D and advertising. All of these activities, which are crucial to the development of the firm's ability to innovate and market its products, are associated with the employment of a better qualified work force and the payment of higher salaries (Feenstra and Hanson, 1997). The quotation of Mark Casson above translates directly into our next hypothesis.

Hypothesis 4. Foreign entrants pay higher wages and use a better educated labor force than do domestic firms.

Most studies that have analyzed the effect of business conditions on domestic entry have found it to be pro-cyclical (Yamawaki, 1991; Wagner, 1994; Mata, 1996). Foreign entry is likely to be

determined by strategic considerations and will not be as responsive to the business cycle as domestic entry is. Moreover, Caves (1996, p. 70) has suggested that foreign entrants should favor acquisition over greenfield entry when the stock market is depressed, as acquiring assets by means of buying existing companies may be cheaper than building new plants from scratch. Thus, we expect acquisitions to follow a counter-cyclical pattern.

Hypothesis 5. Domestic entry is pro-cyclical. Foreign acquisition entry is counter-cyclical.

2.2. Survival

An unanswered question about foreign entry is whether the ownership advantages possessed by foreign firms are sufficient to compensate for the disadvantages of doing business abroad, and to what extent foreign and domestic entrants face different probabilities of survival.

Economic models of industry evolution (Jovanovic, 1982) point out that at the time of entry firms do not know exactly how efficient they will be in the market. Therefore, during their infancy in the market they observe their performance and learn about their ability to compete. Those that discover that they are efficient survive and stay in the market, while those that find they are not efficient exit. As time passes and firms age, their initial uncertainty gradually becomes resolved, and exit grows less likely. Jovanovic's model is sometimes called a model of "passive learning", as firms are endowed with a given efficiency from birth, and just learn about it. Alternative models proposed by Ericson and Pakes (1995) suggest that firms engage in "active learning" by doing R&D, that is, they invest in improving their competitive capabilities (see also Nelson and Winter, 1982). The spirit of this type of learning is not very different from that which scholars in the Organizational Ecology tradition call "legitimation" (Hannan and Carroll, 1992). These scholars have emphasized that new organizations suffer from a liability of newness, which puts them at a competitive disadvantage *vis à vis* their older counterparts, and makes their survival less likely. As organizations age, they develop routines to cope with daily operations and acquire a sense of "taken-for-grantedness", which reflects their increased probability of survival. Empirical

findings strongly support this “liability of newness” hypothesis (Carroll, 1983). This reasoning leads us to hypothesize that

Hypothesis 6. *The probability of exit declines over time.*

In our context, one may be interested in distinguishing two levels at which this process of legitimation (or learning) occurs. In the first level, firms as a whole are the organizations which need to be legitimized. At this level, foreign entrants have already developed the procedures and routines that give rise to legitimation. Because one of the advantages of the MNE is exactly their managerial ability, they enjoy an advantageous position *vis à vis* domestic ones. The second level is a local one, as firms must also develop routines to deal with their local environment. With respect to this level, foreign firms that enter by acquiring an ongoing concern are clearly in a better position than those that start a new firm. Because foreign firms already exist in their home country before entering the foreign market, they have less to learn from being in the new market. While this does not necessarily mean that acquisition entrants will be more profitable than greenfields, the evidence strongly supports the hypothesis that they are less risky (Caves, 1996, p. 70). Moreover, acquisition entrants add to this effect the fact that the acquired firm has already developed the routines that enable it to deal with its local environment and its learning is limited to the matching between the acquired firm and the new owners. Finding a good match is, by no means, trivial. When the problem is the quality of the match, however, there are alternatives other than closing down the firm, namely, the parent firm can sell its subsidiary to a local concern (Mata and Portugal, 2000). In this study, we restrict our attention to the shutdown of productive facilities and hypothesize that

Hypothesis 7. *Domestic firms face higher rates of exit than foreign ones. Among these, greenfield entrants confront higher rates of exit than those entering by acquisition.*

2.3. Growth

Studies on the post-entry period have revealed that surviving firms grow quickly during that period

(Dunne et al., 1989; Mata, 1994; Barron et al., 1994; Audretsch, 1995). There are several reasons that can explain this pattern. The first reason is based on Jovanovic’s (1982) idea that firms start with little knowledge about their true capabilities and use the information recovered from observing their performance in the market to update their expectations of efficiency. Because of this uncertainty, and because of the irreversibility inherent to most investments, it is optimal for firms to start at a small scale and grow only if they find that they performed well in the past (Cabral, 1995). Uncertainty about the number of contemporaneous entrants also suggests that firms should start small. If too much entry occurs profits an attractive market may suddenly become unattractive (Camerer and Lovo, 1999; Cabral, 1997). In the event one of such entry mistakes occur, the lower the scale of entry, the lesser the loss a firm will incur. A third reason why firms may start small and expand afterwards is because their entry size is partially determined by cash constraints. At start-up firms may find it difficult to raise enough money to finance entry at their most preferred scale (Evans and Jovanovic, 1989). This is due to the lack of own funds in a sufficient amount and to the difficulty in convincing banks that the firm will do well. As firms show good performance over time, they accumulate internal funds from which they can finance growth, and earn a reputation with banks, which makes it easier to raise external finance (Brito and Mello, 1995). These two motives for starting small are much more likely to hold in the case of domestic entrants than in the case of foreign ones. As discussed above, foreign firms will suffer less from the liability of newness and will have less restrictive cash constraints. Due to the larger size of their parent companies, foreign firms typically have deeper pockets than their domestic competitors, and will be in a better position to raise funds to finance entry at a large scale (Dunning, 1993, p. 150). Due to their reduced liability of newness, foreign firms (in particular those entering by acquisition) are likely to have better information about their potential performance at birth, and consequently are less likely to grow afterwards.

A third reason for starting small and growing afterwards has been suggested in the strategy literature. By entering at a small scale or in a

market niche and subsequently expanding into other strategic groups, firms may be able to avoid incumbents' aggressive behavior and ease the process of overcoming entry barriers (Caves and Porter, 1977). This strategy is likely to affect the entry decision of entrants which are not bound to be small due to the two aforementioned reasons. Thus, foreign entrants that start small are more likely to have chosen their entry scale based on this type of consideration than domestic entrants. Bogner et al. (1996) analyzed the entry and post-entry penetration of European firms in the U.S. pharmaceutical market. They found that not all foreign firms enter the low entry barriers segment. Those that do enter, however, tend to upgrade their competitive position over time. To the extent that acquisition is a strategy designed to enter at a large scale, acquisition entry will be more likely in those cases in which entrants choose to enter close to their desired long-run positions. Thus, acquisition entrants are less likely to grow quickly than are greenfield entrants. To our knowledge, the only work that has analyzed the effect of the entry mode on the post-entry growth rate, found a (weak) negative effect of acquisition upon post entry growth (Sharma and Kesner, 1996). Within greenfield entrants, while both domestic and foreign are likely to desire to grow after entry, it is likely that both the financial and managerial constraints (Penrose, 1959) will be more active for domestic firms. Therefore, we hypothesize that

Hypothesis 8. Greenfield foreign entrants experience higher rates of growth than do domestic entrants, and these experience higher rates of growth than do foreign firms entering by acquisition.

3. Data

The data used in this paper were obtained from an annual survey which has been conducted by the Portuguese Ministry of Employment since 1982. Unlike most databases employed in the analysis of foreign direct investment, our data are not restricted to the largest companies and include firms of all sizes, as the survey is mandatory for all firms employing paid labor in Portugal. We worked with the original raw data files from 1982 to 1992, which include over 100,000

firms in each year. Among other data, the survey records the share of equity held by non-residents, which allows us to compute estimates of the importance of foreign-owned firms in the Portuguese economy. Moreover, the survey has a longitudinal dimension, i.e. firms are identified by a unique number which allows firms to be followed over time. All of these characteristics make this data set an excellent source for studying entry, growth and survival of foreign firms and for comparing these patterns with those prevailing for domestic companies.

There are also limitations in our database. One such limitation is that we cannot tell mergers and acquisitions from true exits. What typically happens when a movement of this nature occurs is that one of the identifiers of the firms involved in the merger is transmitted to the resulting firm, while the others disappear, and are thus counted as exits in our data. There are no published data on mergers for Portugal. However, one can obtain a crude estimate of the extent to which mergers account for liquidations by using the Firms Register file. This comparison reveals that fewer than 1% of the total number of liquidations are due to merger/acquisition. We therefore maintain that our inability to trace mergers in our data set is not likely to have an impact upon our results.

The longitudinal nature of our data and its identification procedures allow us to easily identify the moments of entry and exit. Identification numbers are assigned to firms sequentially as they first report to the survey. This leads directly to the identification of new firms, by comparison of the firms' numbers with the highest number in the previous year's file. Foreign acquisitions were identified as those pre-existing firms which became foreign participated from one year to the next. Finally, the time of exit is found by identifying the moment when firms cease to report to the survey. Because in such a large data base there are inevitably some coding errors, we performed some data editing on our files before computing our measures of entry and exit.

To identify foreign entrants we first located all firms which held foreign capital in at least one year from 1983 to 1989 and which did not have foreign capital in the previous year. To ensure that these investments warranted some degree of control over the firms' destinies, we imposed the

additional requisite that the foreign participation be greater than 10%. We found 1033 firms in these circumstances. We then searched for the existence of the firm itself in the year prior to entry in order to distinguish greenfield entrants from acquisitions. For doing this, we relied on the information that firms' identifiers are numbers supplied sequentially when firms first report to the survey. Identification of new firms can thus be achieved by comparing firms' identifiers with the highest ID number in the file in the previous year. In 613 cases the firm did not exist prior to the entry of foreign capital, and these firms were identified as being greenfield entrants. In the remaining 420 cases, the recipient firm was already operating under domestic control before they received the foreign investment. These were labelled as acquisition entrants. Applying the same procedure used to identify greenfield entrants to the set of domestically controlled firms, we were able to locate 123,636 domestic entrants. From this group we selected a random sample of 5,938 firms that was used to make comparisons with our foreign entrants. This sample was stratified by year of entry to reflect the different intensities of firm creation over the period under scrutiny.

To compute our measures of survival we identified the time when firms exit by searching the files for the first year the firm ceases to report to the survey. In such a large database there are inevitably coding errors. To be on the safe side in identifying exit, we required that a firm be absent from the file for at least two years in order to be classified as a closure. A temporary exit may occur for a number of reasons other than cessation of activity, a very likely reason being that the survey form was not received in the Ministry of Employment before the date when the recording operations were closed. Accordingly, we edited the status of firms which were temporarily absent from the files for one year. That is, firms that were in the files in years $t - 1$ and $t + 1$ were considered to be active in year t even if they were not actually in the file. The firm's record was amended for that year, employment being imputed as the average of employment in years $t - 1$ and $t + 1$. Therefore, for a closure to be recorded in $t - 1$ a firm has to be absent from the file in t and $t + 1$. For this reason, in our subsequent analysis we use data only until 1990, although our data files go

until 1992. Data from 1992 is used only to check the presence of the firm in 1991 and the last year for which we can identify an exit is 1990.

Because our data ends in 1990 for all firms, irrespective of their starting time, it is clear that the maximum potential age they can reach is quite different. Whereas firms from the 1983 cohort can reach a maximum of eight years of duration, the ones from the 1989 cohort can reach, at most, two years. An obvious consequence to be kept in mind is that, while the exit rates for the first and second years are estimated using data from the seven cohorts, the subsequent rates are estimated using fewer cohorts. In particular, our estimates for the exit rate after seven years is produced solely with data from the 1983 and 1984 cohorts. Because of that, we concentrate upon the evolution until the fifth year of life, which we can estimate using five cohorts of entrants.

Aside from allowing firms to be followed over time, our database permits us to compute a number of variables which we will use to test the hypotheses formulated above. At the industry level, we were able to compute the Herfindhal index of concentration and the measure of the minimum efficient scale (MES) suggested by Lyons (1980), which we will use as proxies for entry barriers. The expected effect of entry barriers is to reduce the flow of entry into the industry. However, for a given level of entry barriers, industries may experience different flows of entry, depending on their attractiveness. For that reason, we also computed a direct measure of entry in each industry, defined as the total employment in entrants divided by the total employment in the industry. Finally, we computed a measure of the foreign presence in the industry, which is likely to proxy the attractiveness of industries from the foreign firms' perspective. This was defined as the share of industry employment in foreign owned companies.

At the firm level, we computed measures proxying their size, their human capital and their internal organization. The most important shortcoming of our database is perhaps that, because it was originally designed to collect data on the labor market, the only reliable measure of the size of firms available is the firms' number of employees. Therefore, firm size is measured here by employment. To proxy the firm's human capital, we

computed the average wage in the firm, and the proportion of highschool and college graduates among the firm's labor force. We were also able to measure two different aspects of the internal organization of firms. The first is their legal form. The second concerns only foreign owned firms. For these firms, we know the share of equity held by foreigners and, based on this information, we classify foreign firms as fully-owned, majority joint-ventures and minority joint-ventures. Although we do not develop specific hypotheses with respect to the internal organization of firms, we will provide a description of our samples with respect to these characteristics.

4. Empirical analysis

4.1. Entry

4.1.1. An overview of entry

Table I summarizes the information on the total amount of domestic and foreign entry in Portugal during the period 1983–1989. The first observation from this table is that foreign entry is by no means negligible. Although foreign firms represent less than 1% of the total number of firms that were started in the economy, they account for about 8.6% of the total employment in these firms. One has to keep in mind that we are not comparing like with like, as foreign firms that entered by acquisition are not included in the total number of firms created, nor is their employment actually created. Nevertheless, it is clear that they are quite important in the overall entry flow.

Foreign entrants are clearly larger than domestic ones. Foreign greenfields employ, on average, 29 workers, whereas foreign acquisitions employ 98 persons. Overall, they employ an average of 57 persons, that is, ten times as much as domestic entrants. This figure may seem quite modest, as foreign direct investment and multinational firms are typically identified with large firms. In fact, Fuita (1995) shows that Small and Medium-Sized Enterprises play only a minor role as foreign direct investors. However, the size of MNEs and the size of their foreign affiliates are two different things. According to the estimates of Dunning (1993, p. 16), while MNEs (that is, firms possessing foreign affiliates) employ on average 2800 persons, the average employment in their foreign affiliates is only about 120 persons.

TABLE I
Entry by domestic and foreign firms

	Domestic	Foreign	
		Greenfield	Acquisition
Firms	123636	613	420
Employment	689920	17582	41171
Firm size	5.6	28.7	98.0

There are also important differences among foreign entrants. In particular, note that although the number of greenfield entrants exceeds that of acquisition entrants, the employment associated with acquisition entrants is more than twice the figure associated with greenfield entrants, which clearly supports our hypothesis that acquisition entrants are larger than foreign greenfields and these are larger than domestic entrants. Moreover, these two types of entrants also display a disparate evolution over the cycle (Table II). The evolution of greenfield entry closely follows that of domestic entry (correlation of 0.55), which displays a procyclical behavior (correlation with GDP growth of 0.48), as further analyzed in Mata (1996). In contrast, acquisition entry reaches its peak during the 1984 downturn, and becomes significantly less important when domestic and foreign greenfield entry increases (correlations are -0.33 and -0.56 , respectively). Due to the low number of time series observations, these correlations are not statistically significant. Nevertheless, the qualitative results lend some support to our hypothesis that acquisition entry occurs more intensively during recessions, to take advantage of the lower price of firms in the capital market.

4.1.2. The entrants

Table III provides more information on the comparison of domestic and foreign entrants. Panel A provides a more detailed comparison of the size of entrants. The contrast between the three types of entrants is very clear. Almost 90% of the domestic entrants employ fewer than 10 persons when they start, and these very small firms account for nearly one half of the total number of jobs created by domestic entrants. At the other extreme, there are almost no domestic entrants employing more than 500 employees. The picture is rather different for foreign entrants. For example,

TABLE II
Time patterns of entry

Year	Domestic		Foreign			
	Firms	Employment	Greenfield		Acquisition	
			Firms	Employment	Firms	Employment
1983	12.6%	15.6%	18.1%	21.4%	4.5%	8.6%
1984	10.7%	11.4%	11.1%	11.4%	25.5%	42.6%
1985	9.8%	11.1%	9.3%	9.8%	24.8%	19.4%
1986	12.7%	11.7%	13.9%	15.4%	3.8%	5.4%
1987	15.2%	14.4%	9.5%	6.1%	11.0%	8.1%
1988	18.3%	18.6%	19.1%	17.4%	11.2%	4.1%
1989	20.8%	17.1%	19.1%	18.6%	19.3%	11.8%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

while more than 60% of the total number of greenfield entrants employ fewer than 10 persons, more than one half of total employment is concentrated in firms employing more than 100 persons. The contrast is also striking for foreign firms entering by acquisition. Although there are some entrants of small size (more than one quarter employ fewer than 10 persons), they have a negligible impact in terms of employment. Three quarters of total employment is accounted for by firms having more than 100 persons and over one third by firms employing more than 500 persons. Statistical tests (allowing for unequal variances), always lead to the rejection of the equality of the mean start-up sizes for all of the three comparisons (absolute values of t statistics are 8.0 for comparing domestic and greenfield, 5.6 for domestic and acquisition, and 4.2 for acquisition and greenfield).

Foreign entrants also pay higher wages (Panel B). The average monthly wage paid by foreign greenfield entrants is about 120% higher than that paid by domestic entrants ($t = 19.7$), and the comparison is also favorable for acquisition entrants, which pay on average 102% more than domestic ones ($t = 18.8$). A great deal of these wage differences is due to the higher education of the people employed by foreign firms. In fact, Panel C shows that the proportion of people with college and high school degrees is remarkably higher in foreign owned firms than in domestic ones. The differences are also statistically significant ($t = 12.9$ and $t = 8.1$, for comparing domestic with greenfields and acquisitions, respectively).

The next two panels describe the the organization of firms. Panel D gives the picture in terms of the legal form adopted by firms. The contrast is very clear between domestic and foreign firms. While most domestic firms adopt an unlimited liability status, this form is clearly less frequent among foreign owned companies. The composition of the samples with respect to the legal structure, was formally compared by means of χ^2 tests. Their computed values ($\chi^2_{(2)} = 1031.3$ and $\chi^2_{(2)} = 907.0$) clearly lead to the rejection of the hypothesis of equality between domestic and foreign greenfields and acquisitions. One might perhaps be surprised by the presence of these unlimited liability firms among foreign owned concerns, as the theories of foreign investment concentrate their attention on MNEs. However, this is not totally surprising, as for the U.S, for example, Li and Guisinger (1991) report that 20% of the foreign owned entries in 1981 were held by foreign individuals, rather than by foreign firms or governments. Moreover, while the preference of greenfield entrants goes to partnerships, acquisition entrants mostly choose corporations as their targets ($\chi^2_{(2)} = 11.3$). Similarly, greenfield entrants are more likely to operate fully-owned business, while acquisitions tend to have a somewhat greater propensity to adopt minority positions (Panel E).

4.1.3. The industries entered

Some of the differences among entrants noted above derive from the fact that they enter different industries. Table IV compares domestic and

TABLE III
Characterization of entrants

	Domestic		Foreign			
	Firms	Employment	Greenfield		Acquisition	
			Firms	Employment	Firms	Employment
<i>Panel A: Size</i>						
1–9	88.6%	47.1%	60.0%	7.9%	26.0%	1.3%
10–49	10.3%	33.0%	28.2%	21.3%	36.7%	9.3%
50–99	0.7%	8.7%	4.2%	10.4%	15.7%	11.4%
100–499	0.3%	9.1%	6.9%	46.5%	19.3%	45.0%
500+	0.0%	2.1%	0.7%	13.9%	2.4%	33.1%
<i>Panel B: Wages</i>						
Average wage	14.1	16.1	31.1	26.6	28.6	29.1
<i>Panel C: Schooling</i>						
College	1.3%	1.4%	13.1%	4.3%	7.5%	3.5%
High school	16.8%	15.1%	43.3%	28.5%	33.3%	24.9%
Basic school or less	81.9%	83.5%	43.6%	67.2%	59.2%	71.6%
<i>Panel D: Legal form</i>						
Unlimited	56.9%	36.7%	7.3%	5.4%	8.6%	4.7%
Partnership	42.3%	57.9%	78.3%	73.4%	21.2%	46.1%
Corporation	0.7%	5.4%	14.4%	21.2%	70.2%	49.2%
Panel E: Foreign control						
Minority			17.9%	17.5%	24.8%	39.5%
Majority			32.6%	24.5%	31.9%	26.4%
Fully-Owned			49.4%	58.0%	43.3%	34.1%

foreign entrants with respect to a number of attributes of the industries they entered. For each type of entrant, the first column displays the sample's average for each variable using each firm as an observation, while the second column displays a weighted average, the weights being firm's employment (all the reported statistical testing was computed using the unweighted averages). It is very clear that foreign firms enter industries where concentration is higher ($t = 7.1$ and $t = 7.7$ for comparing domestic entrants with greenfields and acquisitions, respectively), where the minimum efficient scale is larger ($t = 5.1$ and $t = 5.9$), and where the previous foreign presence is more important ($t = 16.3$ and $t = 13.8$). For all of these variables, the contrast is even greater for acquisition than for greenfield entrants. However, although acquisition entrants clearly enter industries where the intensity of entry is lower ($t = 17.4$), the result is not entirely conclusive for the comparison between domestic and foreign firms

entering by greenfield entry. Domestic firms enter industries where entry rates are higher ($t = 2.7$). However, by computing the averages using employment rather than the number of firms, one is led to the conclusion that industries entered by foreign greenfield entrants are characterized by higher entry rates than those entered by domestic firms ($t = 13.5$). These results arise because greenfield entrants are disproportionately larger than domestic ones in industries with high entry rates.

We have previously seen that our three types of entrants differ widely with respect to a number of characteristics, and we have now seen that these firms enter industries having different characteristics. Now, we move on to analyze the extent to which the observed characteristics of the different types of entrants remain after having controlled for these sectoral patterns of entry. The statistical methodology has to be different, depending on the nature of the variable to be analyzed. For the ratio-scale variables (firm start-up size, and wages),

TABLE IV
Industry characteristics

Industry variables	Domestic		Foreign			
	Entries	Employment	Greenfield		Acquisition	
			Entries	Employment	Entries	Employment
Entry rate	9.59%	9.10%	8.55%	9.99%	5.53%	3.59%
Foreign presence	3.84%	7.14%	14.60%	17.67%	16.39%	27.55%
Concentration	0.012	0.020	0.045	0.055	0.058	0.104
MES	39.45		55.76		66.57	

we employ a conventional regression approach, including 345 dummies for the five-digit industries, plus two additional dummies to discriminate between entry types. When the dependent variable is the proportion of college graduates in the labor force, we employ a logit model with the same independent variables as above. In both cases, we are concerned with the magnitude of the coefficients for the dummies associated with entry type and their statistical significance.

Table V reports the results. The entry type are highly significant, both economically and statistically. Greenfield entrants employ 22 more persons than do domestic entrants, the difference between the average employment in acquisition entrants and domestic entrants being 78.

The probability that a person employed by a foreign firm holds a college degree is also higher than the corresponding probability for individuals employed by a domestic firm. Within foreign entrants, this probability is higher for greenfield entrants. The estimated coefficients do not have a direct interpretation due to the non-linearities of the model, but a useful statistic (the odds ratio) can easily be derived. The odds ratio, that is, the ratio between the probabilities that one individual working for a foreign and for domestic firm holds a college degree, is given by the exponential of the estimated coefficient in the logit model. Our estimates in Table V imply that it is 7 times (4 times) more likely that a person employed by a foreign greenfield (acquisition) entrant holds a college degree than an individual employed in a domestic firm. Finally, the estimates for wages indicate that foreign entrants pay salaries which are much higher than domestic ones. From the estimated coefficients, it is easy to derive esti-

TABLE V
Firm characteristics by type of entrant ($n = 6971$)

START-UP SIZE	Estimates*
Greenfield	21.508 (3.57)
Acquisition	77.837 (4.252)
COLLEGE GRADUATES (logit regression)	
Greenfield	1.922 (0.224)
Acquisition	1.449 (0.279)
LOG WAGES	
Greenfield	0.495 (0.017)
Acquisition	0.458 (0.019)

* Standard errors in parenthesis.

Estimation includes 345 industries dummies, which are jointly significant in all regressions.

mates of the increase in wages paid by foreign greenfield and acquisition entrants relative to domestic entrants, respectively (these are simply the exponential of the coefficient estimates minus one). Without controlling for industry effects, our models estimate that greenfields pay 64% and acquisitions 58% more than do domestic entrants. That is, even after taking into account that foreign and domestic firms enter different industries, there remain substantial differences in firm start-up size, wages and education of the work force in domestic, foreign greenfield and foreign acquisition entrants.

4.2. Survival

A significant number of entrants exit during the first years of life. Table VI presents the survival rates and the hazard rates for the three types of entrants. The survival rate gives the probability that a firm from the initial pool of entrants survives until a given age. The hazard rate gives the probability that a firm that was active in the beginning of a given year exits during the course of that year. The survival rate is useful for analyzing what has happened since entry until a given moment. The hazard rate is useful for analyzing exit during a short period.

Table VI shows that almost one fourth of the domestic entrants exit during the first year of operations, while the corresponding figure for foreign entrants is slightly over 10% and 4% for greenfields and acquisitions, respectively. After five years of life, less than one half of the initial pool of domestic entrants remain active, while more than two thirds and more than four fifths of the foreign greenfield and acquisition entrants are still in operation.

The same ranking as above applies to the hazard rates. Acquisition entrants experience the lowest and domestic entrants the highest probabilities of exit in almost all periods. Moreover, a difference emerges in the comparison between firms that were newly created (domestic and foreign) and acquisition entrants. While the first group of firms experiences a significant decrease in the exit probability from the first to the second year, perhaps owing to some liability of newness,

no such pattern is visible for acquisition entrants. An easy way to compute a formal test on the time pattern of exit and to assess whether the decline in the hazard rates is statistically significant is to regress (by weighted least squares) the log of the hazard rates on a constant and on the log of age (Gehan and Siddiqui, 1973). This procedure amounts to assuming that the longevity of firms follows a Weibull distribution, the coefficient associated with the log of age being an estimate of the Weibull parameter. Negative (positive) values of this parameter indicate negative (positive) duration dependence, that is, they indicate a decreasing (increasing) hazard rate over time. The estimated coefficients, while being negative for all groups, are significantly different from zero at all the conventional levels for domestic entrants ($t = 8.7$), at the 10% level for foreign greenfield entrants ($t = 2.4$), but clearly not significant for acquisition entrants ($t = 0.2$).

Again, one may want to know whether the differences in survival hold after taking into account the fact that firms enter different industries. Table VII displays the results of estimating a logit model, where the dependent variable is 1 if the firm is still operating five years after entry and 0 if it exited. The independent variables are the two dummies discriminating between entry types plus the 345 industry dummies. The estimate of the coefficients associated with the foreign dummies are highly significant, and the relative odds ratio is 2.4 in the case of greenfields and 5.6 in the case of acquisitions.

TABLE VI
Time patterns of survival

Age	Domestic		Foreign			
	Survival rate	Hazard rate	Greenfield		Acquisition	
			Survival rate	Hazard rate	Survival rate	Hazard rate
0	1.000		1.000		1.000	
1	0.787	0.238	0.892	0.108	0.960	0.041
2	0.678	0.139	0.834	0.066	0.915	0.046
3	0.582	0.141	0.776	0.069	0.890	0.027
4	0.516	0.114	0.728	0.063	0.851	0.044
5	0.462	0.104	0.671	0.078	0.831	0.024
6	0.415	0.102	0.635	0.053	0.794	0.045
7	0.372	0.105	0.590	0.071	0.731	0.079

TABLE VII
Survival by type of entrant ($n = 4287$)

	Estimates*
Greenfield	0.885 (0.148)
Acquisition	1.726 (0.210)

* Standard errors in parenthesis.

Estimation includes 345 industries dummies, which are jointly significant.

4.3. Post-entry growth

Those firms that manage to survive grow in the post-entry period, as shown in Table VIII. This table shows the size and growth of firms over the first years of their lives.

Three results emerge from this table. The first is that firms grow over their lives. This holds for all of our entry types. However, a second result that emerges from Table VIII is that foreign greenfield entrants grow much faster than domestic entrants, despite being much larger than them, as we have previously seen. This clearly indicates that they are, indeed, subject to very different dynamics, as we have hypothesized.

Combining the data in Tables VI and VIII we can go one step further, and compare the evolution of total employment for each type of entrant. At the fifth year, for example, total employment in domestic entrants has decreased by 8% of the total number of people employed by the original

set of entrants. In contrast, during the same period the employment in greenfield entrants has increased 100% whereas for acquisition entrants the corresponding figure is 15%. These figures reflect the joint influence of both the survival rate and the rate of expansion of the average firm. Whereas survivability dominates the evolution of employment for domestic entrants, post-entry growth is determinant in the case of foreign entrants and, in particular, for greenfield ones.

In Table VIII only those firms that survive in each year can be included in the computations. Therefore, in each row a different sample is being analyzed, which may render the comparison misleading. This is very clear, for example, with acquisition entrants at the seventh year, when the size of firms increased, despite growth rates of employment being negative. To control for this sample selection effect, and to isolate the growth of survivors, Table IX presents the same statistics computed for a constant sample of firms that survived during the first five years after entry. It is clear from this table, that the previous results were not simply produced by the sample selection mechanism. On average, surviving entrants grow, and this holds for all types of entrants.

Finally, Table X summarizes the process of growth. It is very clear that foreign greenfield entrants are those which experience the highest growth rate. On the contrary, the growth rate of acquisition entrants is estimated to be lower than that of domestic entrants, but the difference is never statistically significant.

TABLE VIII
Time patterns of growth

Age	Domestic		Foreign			
	Size	Growth	Greenfield		Acquisition	
			Size	Growth	Size	Growth
0	5.7		28.7		98.0	
1	6.8	22.5%	40.5	92.9%	109.1	29.3%
2	7.8	15.9%	51.7	36.9%	107.3	6.6%
3	8.6	11.2%	58.8	14.4%	109.9	7.3%
4	9.8	10.8%	70.6	9.8%	122.7	20.1%
5	11.4	7.7%	85.6	21.3%	136.0	5.9%
6	12.3	5.8%	88.9	5.1%	137.7	2.5%
7	13.3	6.7%	79.0	7.7%	139.9	-0.7%

TABLE IX
Time patterns of growth for a sample of five year survivors

Age	Domestic		Foreign			
	Size	Growth	Greenfield		Acquisition	
			Size	Growth	Size	Growth
1	8.5	24.0%	45.0	111.6%	132.9	11.1%
2	9.5	22.5%	63.1	44.8%	124.2	5.3%
3	10.1	16.0%	70.1	20.1%	129.5	9.1%
4	10.8	12.1%	79.1	13.6%	134.1	24.4%
5	11.4	7.7%	85.6	21.3%	136.0	5.9%

5. Discussion and conclusion

During the course of this article, we have made a close examination of the process of entry, survival and post-entry growth of foreign and domestic firms. In the remainder of this final section, we put these results into perspective and highlight some promising avenues for future research, which emerge directly from this work.

Our main conclusion is that entrants differ in a number of important aspects. Domestic entrants are typically much smaller than foreign ones, pay lower wages, employ a less educated labor force, and adopt simpler legal forms. Foreign and domestic firms also have different sectoral entry patterns. In particular, foreign firms enter industries where the previous presence of foreign firms is significantly more important and where entry barriers are higher (larger economies of scale and greater concentration) than in those entered by domestic entrants. All of these results comparing domestic and foreign entrants hold irrespectively of whether foreign entry comes about through the acquisition of an existing firm or through the

formation of a new company. These findings are in accordance with the conventional wisdom provided by the literature on entry that the protection offered by entry barriers is selective, and that the most favored entrants are less likely to be deterred by entry barriers (Geroski, 1995). With respect to the actual flows of entry, however, the contrast seems to be more significant between newly created firms (both foreign and domestic) and acquisition entrants, that is, already existing firms which were acquired by foreign owners. Industries entered by foreign acquisition entrants experience lower actual entry flows than industries entered by both domestic and foreign greenfield entrants.

There are also important differences in the post-entry performance of the different types of entrants. Domestic entrants are much more likely to exit than are foreign ones, both greenfield and acquisition, a result that agrees with the findings of Li and Guisinger (1991). With respect to post-entry growth, however, a mixed pattern emerges. Foreign acquisition entrants grow very little, foreign greenfields grow very quickly, and domestic entrants are in between. These two patterns of exit and growth combine to produce very distinctive patterns for the overall evolution of employment among entrants over time. While the aggregate employment of domestic entrants decreases over time, foreign entrants employ more and more people as they mature. In the case of foreign greenfield entrants, this is particularly significant. In our sample, after five years in the market, they employ twice as many people as they did at start-up. Due to data limitations, we were not able to investigate how these patterns may

TABLE X
Firm growth, by type of entrants ($n = 2283$)

	Estimates*
Greenfield	146.405 (43.659)
Acquisition	-59.024 (46.120)

* Standard errors in parenthesis.

Estimation includes 345 industries dummies, which are jointly significant.

translate into the conquest of market share and profitability, but this definitely remains a point to be pursued in future research.

There are also other sharp differences among foreign entrants. Greenfield entry is more important when macroeconomic conditions are more favorable, while acquisition entry increases during recessions. In many cases, these two modes of foreign market entry are alternatives considered by prospective entrants, and small changes in their relative costs and payoffs may shift the preferred option from one to the other alternative. Our findings show that when the overall macroeconomic conditions worsen and prices fall in the market for firms, acquisition entry becomes more attractive relative to greenfield entry. Moreover, foreign greenfield entrants are more likely to be started in industries where concentration and scale economies are of lesser importance. They are also smaller at start-up, and experience higher failure rates than acquisition entrants. However, as previously mentioned, those foreign greenfield firms that survive grow much faster than the corresponding acquisition entrants. This suggests that greenfield entry is more risky than acquisition, but that it also has higher returns, which conforms well to previous findings. For example, Woodcock et al. (1994) found that the performance of foreign firms entering via the creation of new ventures stabilizes latter in time than that of those firms entering by acquisition. They also found that new ventures experience a higher increase in performance over time than that experienced by acquisition entrants. Previous work examining the post-entry growth of entrants has also found that firms which were newly created grow faster than those which entered by acquiring an already existing business (Sharma and Kesner, 1996). Similarly, establishments created by new firms were found to grow faster than those which were created by ongoing firms (Mata et al., 1995). These findings are, however, somewhat weaker than our own. As these studies did not distinguish between domestic and foreign owned entrants, this seems to indicate that the contrast is even stronger among foreign owned firms than among domestic firms. A possible explanation for this contrast is that foreign owned firms typically have deeper pockets than domestic ones, and thus experience less cash constraints in financing the growth of

their subsidiaries. One of the limitations of our data base is that we do not know the identity of the foreign owners, and we could not pursue this line of investigation. Future work that could match the foreign parents with their subsidiaries, may have an important research question to investigate.

All of these results lend some support to a view that sees the choice of the entry mode as resulting from the balance between conflicting forces. On the one hand, greenfield entry entails greater costs. First of all, new businesses typically have to learn about the environment and develop routines which enable them to deal effectively with it. On the contrary, established organizations have already gone through this period of trial and learning. Second, by creating new productive facilities and adding new capacity to the market, entrants may provoke aggressive responses from incumbents. When economies of scale are large, and entry has to be carried out at large scale, or when concentration is high, and aggressive reactions are more likely, acquisition tends to be the preferred mode of entry. On the other hand, greenfield entry also has greater benefits, as the whole firm can be designed in order to suit the foreign owner. If, for example, the ownership advantages of the parent firm rest on technology, the installed machinery of an already operating firm may have little value for the buyer. If the advantages rest on organizational superiority, part of the routines developed by established organizations may be of very little use to the foreign entrant. It may thus be difficult to find an ongoing firm that is suitable for acquisition, and greenfield entry may be the only viable alternative. This suggests that foreign entrants favor greenfield entry over acquisition when the ownership advantages of the parent company are of the utmost importance. This conclusion is consistent with our findings that greenfield entrants employ a more skilled labor force and are less likely to operate joint-ventures than are acquisition entrants. Employing a more skilled labor force, they are in a better position to exploit the superiority of firm-specific assets. On the other hand, due to the importance of their firm-specific assets, their contribution towards the value of firms increases relative to that of other potential partners. This makes them less likely to be willing to operate joint-ventures and share its profits, as

found by Gatignon and Anderson (1988) and Agarwal and Rammaswami (1992).

Our results clearly indicate that greenfield entrants do not enter at a small scale because they want to remain small in the long run. Rather, they suggest that greenfield and acquisition entry are two alternative entry methods that can be used by foreign firms to avoid bearing all the burden of entry barriers at once. The first one is to acquire (often partially) an ongoing firm and “join the club” of incumbents. The second one is to start a relatively small firm, with the goal of growing and upgrading its position afterwards. This view fits well the findings of Bogner et al. (1996) where European firms that entered the U.S. pharmaceuticals market in the low entry barriers segment have rapidly improved their competitive position.

In summary, entry is only the first step of a process that continues over the first years of the entrants’ lives. Therefore, analyzing the post-entry period is a crucial step in order to gain a more comprehensive view of the entry process. Some recent work has already looked at the patterns of post-entry survival of foreign entrants but neglected other aspects of performance (Li, 1995; Chen and Wu, 1996; Mitchell et al., 1994; Yamawaki, 1997). Other work has focused on comparing financial performance of foreign and domestic entrants, but paid little attention to the issue of selection and survival (Woodcock et al., 1994), and virtually no work has analyzed the growth of foreign subsidiaries.

In this paper, we have given a first account of the process of entry, survival, and growth by foreign firms, but there is much work that remains to be done. In particular, we would benefit from knowing in what manner the post-entry strategies interact with the choice of entry mode, and what the role of post-entry market learning may be in shaping the success of foreign market entry. One important implication of our work is to emphasize that entry and post-entry market penetration are two sides of the same coin, and to highlight the importance of focusing on the post-entry period, rather than on the entry moment alone. Hopefully, future research on foreign market entry will take this perspective into consideration, and will develop a comprehensive framework to analyze entry and post-entry performance.

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