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Multinationals and plant exit: Evidence from Chile

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ABSTRACT

This paper investigates three main questions: are affiliates of foreign multinationals more likely to exit than domestic firms? Does the exit probability of multinationals depend on its export orientation?, and Does the presence of multinationals affect the survival of other firms in the economy? Our results show that foreign plants are more likely to exit the economy, controlling for other firm and industry characteristics, only during the late 1990s, a period when the Chilean economy experience a massive slowdown. Our data also suggest that only domestic market oriented multinationals responded to this negative shock by being more "footloose". We also find that the presence of multinationals has a positive effect on plant survival in the early 1990s. This positive effect, however, is fully captured by productivity, once controlling for TFP in our exit regressions we do not find any further impact of multinational presence on a plant's probability of exit.

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1. Introduction

The potential impact of foreign direct investment (FDI) and multinationals (MNEs) on economic development of host countries has been prominent on the research agenda of trade and development economists in recent years. Much of the academic work has focussed on the question of detecting "productivity spillovers", the potential labour market effects of multinationals, as well as macroeconomic growth effects of FDI (see, for example, Görg & Greenaway, 2004; Barba Navaretti & Venables, 2004 for reviews of this literature).

What has been largely neglected is an analysis of the link between multinational enterprises and the survival of plants or firms in the host country. This is an important topic, however, not only because plant survival shapes the competitive landscape of the economy, but also because the persistence of jobs is linked to the survival of plants. Both of these issues can be expected to impact on welfare in the economy. We therefore attempt to investigate three questions in this paper. First, are affiliates of foreign multinationals more or less likely to exit than domestic firms? Second, is the exit probability of multinationals different according to their export orientation? Third, does the presence of multinationals affect the survival of other firms in the domestic economy?

As regards the first and second questions, there are a number of reasons why we may expect foreign affiliates to behave differently from domestic firms. One argument emphasizes the notion of multinationals being more footloose, i.e., more likely to leave an economy than domestic firms if the economy experiences a negative shock (e.g, Flamm, 1984).[1] This may be due to multinationals being part of an international production network in which production can be easily shifted between locations, and because they are likely to be less linked into the local economy through vertical or horizontal linkages. On the contrary, one may also argue that foreign affiliates are less likely to exit because investing abroad involves substantial sunk costs which are likely to be higher than for setting up a purely domestic plant in the host country. Hence, they may be reluctant to leave if the shock is only temporary.

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[1] Flamm's theoretical argument is based on optimal portfolio theory. When there are negative changes in the economy, foreign investors readjust their optimal portfolio (which depends on country risk) and may therefore leave the economy.

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Table 1
Plant distributions by nationality types

	1990		1995		2000	
	Plants	%	Plants	%	Plants	%
Domestic	4395	95.9	4812	94.1	4262	94.0
Non-exporter	3744	81.7	3839	75.1	3524	77.7
Exporter	651	14.2	973	19.0	738	16.3
Multinational	190	4.2	300	5.9	273	6.1
Non-exporter	81	1.8	139	2.7	111	2.5
Exporter	109	2.4	161	3.2	162	3.6
Total	4585	100.0	5112	100.0	4535	100.0

Source: authors' own calculations based on ENIA.

As regards the role of exporting the expectation is again ambiguous. On the one hand, exporting multinationals are less reliant on the domestic product market and may therefore, in the presence of a negative shock in the domestic market, be better able to cushion the adverse impact and stay in the host country. On the other hand, exporters are even more likely to be involved in international production networks and therefore less likely to be linked into the domestic economy.

Moving on to the third question–does the presence of multinationals in an industry affect plant survival?–one may again expect two opposite effects. On the one hand, the entry and presence of multinationals increases competition in the host country and therefore may lead to the exit of domestic firms that are unable to cope with the increased competitive pressure. On the other hand, the presence of multinationals may generate spillovers, which allow domestic firms to learn and improve their productivity and efficiency. As the survival of firms is positively linked to efficiency (Audretsch, 1995) this would be expected to have positive effects on the survival of firms.

This paper provides a number of contributions to the literature. Firstly, we investigate in detail the three questions about the link between multinationals and plant exit simultaneously. Using plant level data for manufacturing industries in Chile we examine the determinants of exit probabilities of plants, paying particular attention to the role of the nationality of the plant as well as the presence of foreign multinationals in the industry. Analysing these issues at the same time is a novelty of our paper, as the small number of previous papers focused on either the role of nationality, or the impact of the presence of multinationals, in isolation.[2] Also, in contrast to previous empirical evidence, in the data we are also able to distinguish exporting and non-exporting multinationals, and we investigate whether exporting activity by MNEs matters for their probability of exit.

Chile in particular is an interesting case as the economy experienced a major slowdown in the late 1990s which provides us with a natural experiment to identify directly the "footloose nature" of multinationals. If multinationals are indeed more "footloose" they may be expected to be more likely to leave the country especially during that period when it was hit by a negative shock (Flamm, 1984). Previous literature did not analyze directly this issue but examined generally whether multinationals are more likely to exit than domestic firms. We are the first to investigate this issue using data for a Latin American country, a region where inward FDI has increased substantially over the last twenty years or so. Chile has undergone phases of substantial trade and investment liberalisations imposing domestic plants to international competition, since the mid 1970s. A number of papers have looked at the effects of these phases of trade liberalisation on employment and plant productivity (Pavcnik, 2002; Levinsohn, 1999). However, to the best of our knowledge, the link between multinationals and plant exit has not been investigated thus far.

The remainder of the paper is structured as follows. Section 2 describes the dataset used and presents some preliminary empirics. The empirical model is presented in Section 3 while Section 4 discusses the estimation results and robustness checks. Section 5 concludes.

2. Data and preliminary empirics

The empirical analysis is based on the Annual National Industrial Survey (ENIA) carried out by the National Institute of Statistics of Chile (INE). This plant level survey is representative of the universe of Chilean manufacturing plants with 10 or more workers. The dataset is available for the period 1979 to 2000, but exports and foreign ownership are only collected since 1990. Given that we are interested in studying the relationship between plant survival and multinationals, we use information for the period 1990 through 2000. A significant percentage of plants in the survey are actually single-plant firms. The INE updates the survey annually by incorporating plants that started operating during the year and excluding those plants that stopped operating for any reason.

Each plant has a unique identification number which allow us to identify entry and exit. For each plant and year, ENIA collects data on production, value added, sales, employment and wages (production and non-production), exports, investment, depreciation, energy usage, foreign licenses, and other plant characteristics. Plant ownership is identified by the percentage of capital owned by foreigners. We define a foreign plant as one with any foreign ownership. Most plants, however, have majority foreign ownership.[3] In addition, plants are classified according to the International Standard Industrial Classification (ISIC) rev 2.

[2] Görg and Strobl (2003a), Bernard and Sjöholm (2003) look at differences in survival probabilities for foreign owned and domestic firms in Ireland and Indonesia, respectively. Bernard and Jensen (2007) investigate differences in survival for domestic plants and US multinationals (not foreign-owned) in the US. Görg and Strobl (2003b) analyse the effect of the presence of foreign multinationals on survival of domestic firms in Ireland.

[3] In 1990 (1995), the median and mean of foreign capital participation is 99% (100%) and 74.5% (82.3%), respectively.

Table 2
Exit rates

	1990–1995		1995–2000	
	# Plants	Percentage	# Plants	Percentage
No exit	3604	78.6	2872	56.2
Exit	981	21.4	2240	43.8
Total	4585	100.00	5112	100.00

Source: authors' own calculations based on ENIA.

Using 4-digit industry level price deflators, all financial variables were converted to constant 1985 pesos. Plants do not report information on capital stock, thus it was necessary to construct this variable using the perpetual inventory method for each plant.

Table 1 presents the distribution of plants according to ownership and export orientation. In 1990, foreign plants only represented 4.2% of total plants in the manufacturing industry. Their participation increased to 5.9 and 6.1% in 1995 and 2000, respectively. The majority of domestic plants are non-exporters, while a slightly larger share of multinationals are exporters. Also, in general the importance of exporters has increased in domestic and multinational plants between 1990 and 2000.[4]

Another noteworthy point is that the total number of plants increased substantially between 1990 and 1995 but was back at its initial level in 2000. This suggests a substantial number of exits over the period. We investigate this further in Table 2 which shows that the exit rate increased from 21.4% in the 1990–1995 period to almost 44% during 1995 to 2000. This increase in exit rates is consistent with a slowdown of the Chilean economy after 1998. Between 1986 and 1997 the growth rate of the Chilean economy was about 7% per annum, one of the highest around the world. In 1998, however, the economy expanded at a lower rate of 3.2%, and 1999 experienced its first recession in two decades (−0.8% of GDP growth). This experience is arguably reflected in the increased exit rates in the latter 1990s.

One of the main issues of this paper is the question as to whether exit probabilities are different between domestic and foreign plants. In order to get a first impression of this, Table 3 divides the sample between foreign and domestic plants, and according to their export orientation. We are particularly interested in analyzing if there are statistically significant differences in the (unconditional) exit probability for different types of plants and time periods. Note firstly that, similar to the general sample, we find that for all types of plants exit rates increase in the period 1995–2000 compared to the early 1990s.

Panel A of Table 3 compares domestic and foreign-owned plants. The data show that between 1990 and 1995 foreign multinationals have a statistically significantly lower exit rate than domestic plants; a result that is in line with Görg and Strobl (2003a,b) and Bernard and Sjöholm (2003) who both find that in a simple comparison of unconditional exit rates, plants being part of a foreign multinational have lower rates than domestic plants. Our results also show that exit rates for both types of plants increased considerably in the 1995–2000 interval, and that we now fail to find any statistically significant difference between the two. This suggests that the negative effects of the slowdown of the economy hit both types of plants in terms of increasing their average exit probabilities. All in all, these unconditional summary statistics indicate that, while exit rates increased in the period of a negative shock hitting the economy, multinationals do not appear to be more footloose than domestic plants.

As exporters are generally more efficient than non-exporters (see Alvarez & Lopez, 2005, for Chilean evidence) we also distinguish exit rates for plants by export orientation. For domestic plants there is evidence that non-exporters are significantly more likely to exit than exporters (panel B). However, for multinationals, we do not find evidence of significant differences according to plant export orientation (panel C) and, hence, in the further preliminary empirics we treat foreign multinationals as a homogeneous group. By contrasting multinationals with domestic exporters and non-exporters we find mixed results. Panel D shows that exit rate was significantly larger for foreign multinationals than for domestic exporters in the period 1995–2000 while there are no differences in the earlier period. By contrast, the data in panel E show similar exit rates for multinationals and domestic non-exporters in the latter period, but lower rates for multinationals between 1990 and 1995.

3. Econometric methodology

The descriptive statistics in the last section suggested that the exit rate for multinationals was lower, at least in the early 1990s, than that for domestic plants. However, these are unconditional averages, which may merely reflect the effects of other plant or industry characteristics that are different for foreign and domestic plants. For example, large and more productive plants are generally expected to have higher survival (or, equivalently, lower exit) probabilities—and foreign multinationals are generally found to be larger and more productive than domestic plants (Lipsey, 2002). In fact, both Görg and Strobl (2003a) and Bernard and Sjöholm (2003) find that, once controlling for size and other covariates, foreign multinationals are more likely to exit than comparable domestic plants. In order to disentangle the effects of other covariates from the effect of ownership on plant exit, we therefore turn to an econometric modelling of the determinants of plant exit.

[4] Although multinationals are relatively less important in terms of plant numbers they represent a large and growing share of employment, value-added, and exports. Alvarez and Görg (2007) show that in 2000, multinationals accounted for about 15% of manufacturing employment and more than 30% of manufacturing exports and value-added.

Table 3
Mean tests for probability of exit

	A. Domestic versus multinational			
	Domestic	Multinationals	Difference	*t*-test
1990–1995	21.8	13.2	8.6	2.8*
1995–2000	43.7	46.0	−2.3	−0.8
	B. Domestic and export orientation			
	Non-exporters	Exporters	Difference	*t*-test
1990–1995	22.8	15.9	6.9	4.2*
1995–2000	45.0	38.4	6.6	3.6*
	C. Multinationals and export orientation			
	Non-exporters	Exporters	Difference	*t*-test
1990–1995	14.8	11.9	2.9	0.6
1995–2000	51.1	41.6	9.5	1.6
	D. Domestic exporters and multinationals			
	Domestic exporters	Multinationals	Difference	*t*-test
1990–1995	15.5	13.2	2.3	0.8
1995–2000	38.4	46.0	−7.6	−2.3*
	E. Domestic non-exporters and multinationals			
	Domestic non-exporters	Multinationals	Difference	*t*-test
1990–1995	22.8	13.2	9.6	3.1*
1995–2000	45.0	46.0	−1.0	−0.3

Source: authors' own calculations based on ENIA. * denotes significance at 5% level.

Our empirical approach is based on discrete model for the probability of exit, given by

$$\Pr(\text{Exit}_{ij\Delta t}) = f(\alpha + \beta \mathbf{X}_{it} + \gamma \mathbf{Z}_{jt} + \mathbf{d}_j + \mathbf{d}_{\Delta t} + \varepsilon_{ij\Delta t}) \tag{1}$$

where Δt is the time interval over which exit is defined. We estimate this model using a Probit. Exit is defined as the case of a plant observed at the beginning of the interval, but not observed at the end of this interval. **X** is vector of plant characteristics, **Z** is a vector of industry characteristics, and $\mathbf{d}_j$ and $\mathbf{d}_{\Delta t}$ are industry and period specific effects.

One potential advantage of our dataset is that we are able to identify plant exits for each year. Thus, our interval Δt may be a one-year period in principle. In such a case, we could follow some of the previous literature in estimating a Cox proportional hazard model (e.g., Audretsch & Mahmood, 1995; Mata & Portugal, 1994). However, as evidenced by Benavente and Ferrada (2003) for this dataset, plant exit and entry may be due to reasons different than plant birth or death.[5] Using year-to-year fluctuations increases the measurement error in our dependent variable. Moreover, year-to-year fluctuations in multinational shares may be negligible making difficult to identify some effect on plant survival. Third, plants shutdowns may take time to materialize given that agents do not immediately internalize changes in profitability in their decisions. Hence, we allow for an adjustment lag in plant exit.

Based on these considerations, we use a five-year period to define plant death. A plant death is defined as the case of a plant which exists in year t but not in $t+5$. This implies that we have at most two observations per plant: one covering 1990–1995, and one for 1995–2000.

To check the robustness of our results to the definition of this variable and time period, we also re-estimated the model for plant exit measured over a 3-year period. In both cases, all explanatory variables are measured at the beginning of the period.

X includes a number of covariates which have commonly been found to be important for explaining plant exit. In terms of plant characteristics the model includes size, age, productivity, as well as dummy variables to indicate whether a plant is an exporter, and whether it is foreign-owned. Size and age have been found in a number of studies to be important determinants of plant survival; in general, older and larger plants have lower probabilities of exiting (e.g., Dunne et al., 1989; Salvanes & Tveteras, 2004).

As plant survival can be expected to be positively related to plant efficiency, we include a measure of (log) total factor productivity in the estimation. TFP is calculated as the residual from a Cobb–Douglas production function, which is estimated separately for each 3-digit industry using plant level data and the method proposed by Levinsohn and Petrin (2003) for dealing with endogeneity of inputs. Furthermore, as the recent literature has highlighted the fact that exporters are generally more

[5] Benavente and Ferrada (2003) discuss how false entries and exits may be associated with plants that reach employment levels above or below the threshold of 10 workers. In addition, "deaths" may also be the result of plants that were not located at the time of the survey; did not have movement of capital; had their operations paralyzed; were under investigation by the Internal Tax Service (SII); or had merged with another plant.

Table 4
Probit results with interactive terms (marginal changes)

	(1)	(2)	(3)
Multinational	0.042	0.042	−0.038
	(1.68)	(1.68)	(1.06)
TFP	−0.043	−0.043	−0.042
	(6.11)**	(6.06)**	(5.88)**
Age	−0.059	−0.059	−0.059
	(6.30)**	(6.30)**	(6.37)**
Size	−0.055	−0.055	−0.055
	(7.31)**	(7.31)**	(7.26)**
Exporter	0.008	0.008	−0.012
	(0.24)	(0.24)	(0.23)
MES	0.000	−0.000	0.001
	(0.00)	(0.00)	(0.02)
Herfindahl	−0.800	−0.802	−0.721
	(1.50)	(1.54)	(1.42)
Multinational share	–	−0.020	−0.037
	–	(0.07)	(0.13)
Growth	−0.151	−0.150	−0.158
	(2.16)*	(2.11)*	(2.11)*
1995–2000 (D95-00)	0.196	0.196	0.183
	(7.74)**	(7.54)**	(5.90)**
Multinational*D95-00	–	–	0.121
	–	–	(2.93)**
Exporter*D95-00	–	–	0.031
	–	–	(0.78)
Observations	8603	8603	8603

Robust *z* statistics in parentheses, *significant at 5%; **significant at 1%. Standard errors are clustered at three-digit industry level. Test results for H_0: all interactive terms are zero. (3): $chi^2(2)=13.61$, $Prob>chi^2=0.0011$, and (4): $chi^2(9)=42.32$, $Prob>chi^2=0.0000$.

productive than non-exporters (e.g., Clerides, Sofronis, Saul, & Tyboutet, 1998; Alvarez & Lopez, 2005), we also control for the export status of the plant using a dummy equal to one if the plant exports, zero if not.

We also include a number of industry characteristics (calculated at the 3-digit level) that are expected to impact on plant survival. A measure of industry minimum efficient scale, and the Herfindahl index are used in the model in order to control for different survival probabilities depending on the level of competition in the industry.[6] The expectation is not clear-cut, however. On the one hand, highly concentrated industries sustain high price cost margins, which should reduce the exit probabilities (Audretsch, 1995). On the other hand, however, the competitive pressure in highly concentrated industries may increase the probability of exit. To allow also for the possibility that plant exit is lower in fast growing industries (Audretsch, 1995) we include the net sectoral employment growth rate as additional covariate.

The main variables of interest to us are those that are expected to capture the relationship between multinationals and plant exit. Firstly, we include a dummy variable which is equal to one if a plant is foreign-owned. This variable thus indicates whether or not exit probabilities of plants are different depending on whether they are foreign or domestic owned. In case foreign multinationals are more footloose than domestic plants we expect a positive relationship between this dummy and the probability of exit, in particular in the late 1990s when the economy was undergoing a negative shock.

Secondly, we include a measure of multinational presence in the 3-digit industry (multinational share) in the estimation. This variable captures the effect of multinationals in the industry on the exit rates of plants. As argued in the introduction, the expected effect is positive if there are positive spillovers from multinationals to other plants in the industry, or negative if an adverse competition effect outweighs any potential spillover benefits. Following the literature on productivity spillovers we calculate the variable as employment in multinationals divided by total employment in the industry, to give an indication of the importance of multinationals in the sector.

4. Empirical results

Table 4 presents the results of the baseline estimations of the probit model. Note that the regressions also include a dummy variable for the period 1995–2000 to allow for the considerable increase in the average exit ratio in that period compared to the early 1990s. From column (1), which excludes the multinational share variable, we find that total factor productivity, age and size have the predicted signs–they all reduce the exit probability–and are highly statistically significant. Also, industry growth is associated with lower exit probabilities (again as expected), while the 95-00 dummy is positive, reflecting the findings in the summary statistics. Note that none of the other plant or industry characteristics–including the foreign ownership dummy–exert any statistically significant impact on plant survival in our regressions.

[6] Minimum efficient scale is calculated as the median plant size (in terms of employment) in the industry (see Sutton, 1991). The Herfindahl index is defined in terms of plants' sales shares.

Column (2) adds the multinational share in industry employment into the regression. This variable also turns out to be statistically insignificant and the inclusion of it does not change any of the other coefficients in the previous estimation. These results imply that, on average, there is no relationship between foreign ownership and plant exit over the analysed period. Controlling for other plant and industry characteristics we do not find evidence that foreign plants are more footloose than domestic plants, and we also fail to detect any impact of the presence of multinationals on the probability of exit in the same 3-digit industry.

When discussing the "footloose" nature of multinationals one generally has in mind that they are more likely to respond to negative shocks to the economy than domestic plants, and that this response is greater volatility in investment (Flamm, 1984). In our case, we would therefore expect that foreign owned plants are more likely to exit if there are adverse changes in the economy. Above we discussed the decline in the Chilean economy in the late 1990s, and we would therefore conjecture that the footloose nature of multinationals should be reflected in them being more likely to exit in the latter period of the 1990s in particular. The summary statistics presented in Table 3 suggested that exit rates of foreign-owned plants increased considerably in the 1995 to 2000 period, which would be in line with this argument. To investigate this issue in more detail we interact the foreign ownership dummy with the dummy for the 1995–2000 period. The result of this estimation is reported in column 3. We indeed find that the probability of exiting in the 1995–2000 period is statistically significantly higher for foreign-owned plants. This evidence is consistent with the argument that multinationals are more likely to readjust their investment decisions and exit if the economy is hit by a negative shock.

We carried out a number of robustness checks, which are not reported here to save space. Firstly, we estimated the equation in column (3) using random effects probit and logit and fixed effects logit. Secondly, rather than defining the interaction term only for the foreign-ownership dummy we interacted all variables; and in a further estimation split the sample into two, for 1990–1995 and 1995–2000. Thirdly, rather than defining exit over a five year period we define it over a three year period. Our results are robust to these alterations.

All regressions thus far included a dummy variable to identify exporters, however, this variable has consistently turned out to be statistically insignificant. This dummy variable, of course, is defined over domestic and foreign-owned plants, treating these two groups of plants as homogeneous. This may be a strong assumption and in order to relax this we define four different types of plants: domestic non-exporters, domestic exporters, multinational non- exporters and multinational exporters. In order to allow for different effects in the two time periods we split the sample into two: 1990–1995 and 1995–2000.

Probit regressions including these four types of plants (with domestic non-exporters as the base group) are reported in Table 5. Columns (1) and (3) show that we only find that multinational non-exporters are more footloose than domestic non-exporters; the same is not true for multinational exporters. This suggests that export-oriented multinationals are not as susceptible to adverse changes in the economy as domestic market oriented multinationals. The former may be substituting exports for domestic output and are hence able to fend off negative effects and are therefore able to sustain their operations in Chile. This may not be true for non- exporters, once the domestic economy is hit by a negative shock they are more likely to stop operating than are multinational exporters or domestic plants.

Our results thus far imply that the presence of multinationals in an industry does not have any relationship on plants' probabilities of exiting. As pointed out above, one may expect a negative effect if multinationals crowd out other competitors, or a positive relationship if there are spillovers. In the case of the latter, we would expect firms to improve their TFP following an increase in the

Table 5
Probit results with export status (marginal changes)

	1990–1995		1995–2000	
	(1)	(2)	(3)	(4)
Domestic and exporter	0.009	0.005	0.005	0.002
	(0.27)	(0.14)	(0.14)	(0.07)
MNC and non-exporter	−0.020	−0.017	0.095	0.093
	(0.52)	(0.46)	(2.21)*	(2.14)*
MNC and exporter	−0.038	−0.043	0.050	0.048
	(0.66)	(0.77)	(0.85)	(0.84)
TFP	−0.011	–	−0.011	–
	(2.69)**	–	(1.26)	–
Age	−0.068	−0.069	−0.054	−0.054
	(7.56)**	(8.01)**	(4.52)**	(4.50)**
Size	−0.060	−0.061	−0.047	−0.048
	(8.19)**	(9.23)**	(5.10)**	(5.12)**
MES	−0.002	0.015	0.013	0.014
	(0.06)	(0.82)	(0.30)	(0.39)
Herfindahl	−0.068	−0.052	−0.120	−0.109
	(0.37)	(0.33)	(0.73)	(0.75)
Growth	−0.202	−0.203	−0.138	−0.236
	(4.44)**	(5.02)**	(0.98)	(2.89)**
Multinational share	−0.118	−0.188	−0.077	−0.046
	(1.03)	(2.17)*	(0.26)	(0.19)
Observations	4060	4060	4543	4543

Robust z statistics in parentheses, *significant at 5%; **significant at 1%. Standard errors are clustered at three-digit industry level.

presence of multinationals. Such an effect would, hence, be absorbed by the TFP variable in our regression. In order to check that we re-estimate our empirical without controlling for TFP, the results are in Columns (2) and (4). While the coefficients on other covariates remain essentially unchanged, we now find a statistically significantly negative coefficient on multinational share for the 1990–1995 period only. We do not observe such effects for the period of economic slowdown in the late 1990s, however.

5. Conclusion

This paper examines the link between multinational enterprises and plant exit in Chilean manufacturing industries. We investigate three related questions: are affiliates of foreign multinationals more or less likely to exit than domestic firms? Does the exit probability of multinationals depend on its export orientation? Does the presence of multinationals affect the survival of other firms in the domestic economy? The first question has been debated in the literature since plants of foreign multinationals may be quicker to leave the economy in the presence of negative shocks. Chile is arguably a good case study to analyse this issue as it provides us with a natural experiment, given the recession in the economy in the late 1990s.

Our results show that foreign plants are indeed more likely to exit the economy, controlling for other firm and industry characteristics, than domestic plants. However, this result only holds for the late 1990s, the period when the Chilean economy experienced a massive slowdown. Our data also suggest that only domestic market oriented multinationals responded to this negative shock by being more likely to exit than domestic plants, this is not true for multinational exporters. This suggests that the latter type of plant is better able to absorb the negative shock and remain in the host country—a finding that we aim to investigate further in future research.

The second research question examines whether or not there are “spillovers” from multinationals on plants. We find that the presence of multinationals has indeed a positive effect on plant survival in the early 1990s. This positive effect, however, is fully captured by productivity improvements, once controlling for TFP in our exit regressions we do not find any further impact of multinational presence on a plant's probability of exit.

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