"FOOTLOOSE" MULTINATIONALS?

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Abstract

This paper examines whether multinational companies are more footloose than their domestic counterparts in the host country, using data for the Irish manufacturing sector. First, we investigate whether plant survival rates differ between multinationals and indigenous plants. Second, we analyse whether employment is more unstable in multinationals. As regards to the first aspect we find that multinationals are more likely to exit the market than indigenous plants when controlling for other plant and industry specific characteristics. In terms of employment persistence we find that new jobs generated in MNCs appear to be more persistent than jobs generated in indigenous plants. In contrast, they are not any more or less likely to reverse employment reductions, all other things being equal.

Keywords: multinational companies, employment stability, survival, job persistence

JEL classification: F23, J63

January 2002

* We are grateful to Katharine Wakelin for helpful comments on an earlier draft. All remaining errors are, of course, our own. Financial support through the European Commission Fifth Framework Programme (Grant No. HPSE-CT-1999-00017) and the Leverhulme Trust (Grant No. F114/BF) is gratefully acknowledged.

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1 Introduction

It is frequently argued that multinational companies (MNCs) are inherently footloose, i.e., they can react almost instantaneously to adverse changes in the host country and shift their production facilities or parts thereof to another country if the present environment changes to their disadvantage (see Caves, 1996). This assumption of multinationals being footloose is based on the nature of multinationals, as only production processes that are easily transferable between countries can profitably be located abroad. This makes it easier for MNCs to shift production from one host country to another than it is for the average indigenous firm in the host country to relocate production.

Flamm (1984) provides evidence for the footloose nature of US foreign direct investment in the semiconductor industry. His theoretical and empirical analysis shows that adjustments by US multinationals to changes in the host country environment, in terms of, for example, production costs or risks are “extremely rapid” (p. 232). In discussing multinationals in the UK, Hood and Young (1997) argue that multinational companies may be more footloose than UK-owned firms due to having only shallow roots with the host country economy. Cowling and Sugden (1999) also point to potential problems for host country development due to the footloose nature of multinationals’ investment. Such multinationals may introduce an unstable element in the host economy by transferring production and/or production facilities out of the host country easily.

In this paper we analyse empirical evidence to investigate whether multinational companies located in the Republic of Ireland also show signs of being highly "footloose". Ireland is a particularly interesting case study given that its manufacturing industry is heavily dependent on foreign MNCs. The importance of MNCs for the Irish economy is now reflected in the fact that, in the manufacturing sector, foreign plants accounted for 47 per cent of employment, 77 per cent of net output produced and 83 per cent of total exports in Ireland in 1995 (Central Statistics Office, 1997).[1] Also, the official statistics show that about half of employment in foreign-owned plants is in US multinationals.

Our paper is somewhat related to an early study by McAleese and Counahan (1979). They analysed whether foreign multinationals in Ireland reduced employment during the recession in the early 1970s to a larger extent than indigenous plants, i.e., whether multinationals were faster to adjust employment levels following an adverse shock than were Irish-owned plants. Their evidence showed that employment adjustment in MNCs during the recession did not appear to have been different from that of indigenous plants, while employment recovery after the recession was actually greater in MNCs than in Irish-owned plants. Our paper investigates this issue further by taking two different angles. Firstly we analyse, using a Cox proportional hazard model, whether survival rates for foreign and Irish-owned plants are different, i.e., whether foreign plants are more likely to exit than are domestic plants once controlling for other plant and industry specific factors. Secondly, using a similar hazard model framework we examine whether jobs generated or destroyed in MNCs are more persistent than jobs generated or destroyed in Irish-owned plants.

The paper is structured as follows. Section 2 describes the data used for the empirical analysis. Section 3 presents empirical results of the analysis of plant survival,

[1] The effects of the large multinational presence on the Irish economy and, in particular, on the development of domestic plants have been analysed by Görg and Strobl (2002a,b) and Barry and Bradley

estimating survival functions as well as a Cox proportional hazard model. Section 4 presents the empirical results of our analysis of differences in the persistence of employment changes between foreign and indigenous plants. Our main results are summarised, and conclusions presented, in Section 5.

2 Description of the Data

In the empirical analysis we use data from the Employment Survey which is carried out annually by Forfás, the policy and advisory board for industrial development in Ireland. The survey has been undertaken since 1973 and data are available to us for the period 1973 to 1996. The main advantages of the survey are that it covers virtually all known active manufacturing companies, and that the response rate is generally over 99 per cent, thus providing a sample of over 15,000 plants. The unit of observation is the individual plant, for which nationality of ownership,[2] sector of location,[3] start-up year and the number of permanent full-time employment, amongst other things is reported. This allows us to calculate annual net changes in employment levels at the level of the plant.

Given the nature of the survey we can interpret a plant's dropping out of the data as an exit. Each plant is identified by a unique plant number which is only changed if there is an actual change of ownership. This implies that we are not able to distinguish births and deaths from take-overs. While this may create some problems in terms of misrepresenting the importance of plant births and deaths, we suspect that, as a whole, take-overs would result in only negligible measurement errors in our calculations. This is because most foreign direct investment in Ireland has been in the form of greenfield

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(1997).

[2] A plant is classified as being foreign-owned if 50 percent or more of its shares are held by foreign owners.

investment, i.e., the setting up of entirely new plants, rather than take-overs of existing domestic plants (see Barry and Bradley, 1997).[4]

Table 1 provides summary measures of the foreign and indigenous sub-sectors of Irish manufacturing for the years 1973, 1984 and 1996. One should note that the foreign multinational sector has steadily increased its share of manufacturing employment from roughly 33 to 45 per cent. The number of foreign multinationals is substantially smaller than that of indigenous plants resulting in a considerably larger average size for foreign plants. Additionally, while there was a notable average age difference at the start of our sample period between indigenous and foreign plants, this has now largely disappeared.

[Table 1]

3 Plant Survival

If multinationals are footloose they can be expected to be more likely to exit the host country following a negative shock than are domestic plants. We therefore examine the probabilities of plant survival, distinguishing foreign and Irish-owned plants in this section. As a first step in examining and comparing plant survival across the two nationality groups we calculate Kaplan-Meier (K-M) survival functions, given by:

$$\hat{S}(t) = \prod_{j \mid t_j \leq t} \left([n_j - d_j] / n_j \right) \qquad (1)$$

where n_t is the population alive and d_t is the number of failures respectively at time t. These are graphed in Figure 1, comparing foreign and indigenous plants. A glance at the functions may suggest that these do not appear to be substantially different, with

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[3] For the purpose of this paper we classify plants into the standard 68 sub-sectors of Irish manufacturing used by the Central Statistics Office over the period.

[4] We are also not able to identify takeovers by other domestic plants. However, consultation with the Irish Development Authority (IDA) leads us to believe that this was not a frequent occurrence in Irish

that of foreign plants lying marginally above that of their indigenous counterparts. However, a log rank test for the equality of survival functions can decisively reject the hypothesis that the two survival functions are equal (the chi-squared test statistic is 8.89, significant at the 1 percent level). Based on this graph we may, therefore, conclude that foreign plants have higher survival rates than domestic plants, which is just the opposite of what we would have expected to find if multinationals were more footloose than their domestic counterparts. We thus find that, in a comparison of all domestic and foreign plants, multinationals do not appear to be more footloose than domestic plants.

[Figure 1 here]

Such an aggregated graph does not, of course, allow us to take into consideration other factors affecting plant survival that may be unequally distributed across foreign and indigenous plants. Therefore, in order to properly disentangle the role of other plant and industry specific factors from nationality on the survivability of plants we turn to a semi-parametric modelling of plants' hazard rates. Following the related empirical literature (for example, Audretsch and Mahmood, 1995, Mata and Portugal, 1994) we utilise a Cox proportional hazard model (Cox, 1972) for the empirical analysis of this issue.

The Cox proportional hazard model specifies the hazard function $h(t)$, which is the rate at which plants exit at time t given that they have survived in t-1, to be

$$h(t) = h_0(t)e^{(\alpha OWN + \beta X + \gamma X * OWN)} \qquad (2)$$

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manufacturing, especially since the IDA provided generous grants for indigenous start-ups but not for takeovers.

where h_0 is the baseline hazard function (the parametric form of which is not specified) when all of the covariates are set to zero. *X* is a vector of covariates assumed to capture the effect of plant and industry characteristics on survival by including a number of variables generally used in the literature and as available from our data set. In order to examine whether foreign plants' survival differs from domestic plants' we include a dummy *OWN* which takes the value of one if the plant is foreign-owned and zero otherwise. If foreign firms are more footloose than domestic firms we would not only expect this dummy to indicate that foreign firms have a higher hazard of exiting than domestic firms but we may also expect that foreign firms are likely to react differently to changes in the other factors affecting plant survival. In order to capture this latter aspect of being footloose we include interaction terms of the ownership dummy with all covariates in *X*. This vector includes the following variables:[5]

SIZE is the plant's size in terms of employment at time *t*. This variable is included as it can now be considered to be a stylised fact that small plants generally have lower probabilities of survival than large plants (see, for example, Audretsch and Mahmood, 1995; Dunne and Hughes, 1994). Also, Mata et al. (1995) find that current plant size is a better predictor of failure than initial size and we, therefore, include size at time *t* in our regression.

The minimum efficient scale of the industry, *MES*, is measured as the log of median employment size in sector *j* as in Sutton (1991).[6] Our a priori expectation as to the sign of the coefficient is ambiguous. On the one hand, one may expect plants entering industries with large minimum efficient scale to have lower probabilities of survival

[5] Equation (2) also includes time dummies to control for year specific macroeconomic effects.
[6] In an alternative specification we defined MES as (the log of) average plant size in the industry. These results, which are not reported here but can be obtained from the authors upon request, yield similar results to the results obtained using average plant size. We are not able to calculate any additional alternative measures of MES due to lack of appropriate data.

than plants entering other industries, as small entrants may find it difficult to attain the efficient level of production unless they experience sufficient growth in their infancy (Audretsch, 1991). On the other hand, as Audretsch (1991) points out, industries with high MES are usually also industries showing high price cost margins, which should increase survival.

HERF denotes the Herfindahl index of sector *j*, which is found to be a significant explanatory variable in the study of plant survival in Portugal undertaken by Mata and Portugal (1994). Again, the expectation of the effect of market concentration on survival is not clear-cut. Higher market concentration may lead to higher price-cost-margins in the industry which, ceteris paribus, should increase a plants' probability of survival. However, plants in highly concentrated markets may be subject to fierce aggressive behaviour by rivals which may reduce chances of survival.

SGROWTH is the net sectoral growth rate measured in terms of employment growth. Audretsch (1991) argues that industry growth may elevate the price above the long-run average cost, i.e., increase plants' price-cost-margin which would, all other things equal, affect survival rates positively. The sectoral growth rate also allows us to control for other sector specific cyclical effects which may impact on plant survival.

Our results for estimating various specifications of equation (2) on our data set are given in Table 2. The log likelihood and Wald tests do not indicate that our estimations suffer from mis-specification. All estimations are stratified by sector, which allows for equal coefficients across strata (sectors) but baseline hazards unique to each stratum (sector).[7] One should note that since the coefficients are those of a hazard model, a positive coefficient indicates that the respective covariate decreases the probability of

[7] In effect, this is comparable to the inclusion of sectoral dummies in a standard OLS regression.

survival (increases the hazard of exiting) while a negative coefficient indicates a positive effect on survival, all other things being equal.

[Table 2 here]

Column (1) presents the results of estimating equation (2) including only the vector of covariates *X* as an initial check to see how plant and industry characteristics affect plant survival in our sample. Plant size turns out to affect survival positively, i.e., small plants face a higher hazard of exit than do large plants. As pointed out above, this is a fairly standard finding in studies of firm survival. Our results also suggest that, the higher the level of concentration in the industry, the less likely a plant is to survive. This may indicate that plants in highly concentrated markets may be subject to fierce aggressive behaviour by rivals which reduces chances of survival. The coefficient of *MES*, another variable picking up industry characteristics, is statistically insignificant in the estimation, although, perhaps, the concentration variable may be capturing the effect of minimum efficient scale. As outlined above, one would expect that concentrated industries sustain higher price-cost margins, however, highly concentrated industries are also likely to be those with a high minimum efficient scale. Not surprisingly, we find that benevolent economic sectoral conditions, as measured by the sectoral growth rate, decrease the hazard of plant exits. In other words, fast growing markets appear to increase plant survival. This finding is in line with Mata and Portugal (1994) who also find that, for Portuguese firms, fast growing markets make survival easier for new entrants.

Given that the main focus of this paper is on differences across nationality of ownership we re-estimated equation (2) including *OWN* and terms interacting *OWN* with all other covariates. The dummy on its own measures whether foreign plants have different survival rates than indigenous plants after controlling for other explanatory factors, while the interaction terms allows for a different impact of the covariates on plant survival for foreign plants. It is first important to note that a likelihood ratio test of the equivalence of the unrestricted (namely, that which allows for different intercept and slope coefficients across ownership type) versus the restricted model provides support for the unrestricted version. Based on the test statistic (75.4) we can reject the equivalence of the two models at the 1 per cent level. Thus, it is important to allow for different coefficients for foreign and indigenous plants when estimating plant survival.

Turning to the detailed results provided in the second column of Table 2, one should note that the coefficient on the ownership dummy is statistically significant and positive, suggesting that foreign plants have a lower rate of survival than domestic plants. In order to be able to interpret the magnitude of this coefficient we can calculate the hazard ratio by calculating the exponentiated coefficient. For the case of a dummy variable covariate, equation (2) shows that calculating the exponential of the coefficient α generates the increase in the hazard ratio for the case when *OWN* equals 1, holding everything else constant. Thus calculating the hazard ratio for the coefficient on *OWN* yields 1.36, indicating that the hazard of exiting is approximately 1.4 times higher for foreign than for domestic plants. Hence, while the Kaplan-Meier survival functions above suggested that foreign plants have higher survival rates our regression results indicate that, once we control for other factors, foreign plants have a higher chance of exiting than their indigenous counterparts. In the context of our discussion in this paper this indicates that foreign plants are more footloose than indigenous plants. This may be due to the fact that, all other things being equal, a foreign multinational company may find it easier to transfer production facilities from one country to another than a comparable indigenous plant.

From the interaction terms we also find that two of the covariates, namely *SIZE* and *SGROWTH* have different effects on the survival of foreign and domestic plants. The statistically significant negative coefficient on *SIZE*OWN* indicates that the size effect (i.e., the increase in survival probability as the plant becomes larger) is less for foreign plants than for their domestic counterparts. Again, this provides evidence that it is easier for foreign plants to move their production facility abroad, irrespective of the size of the plant. On the other hand, the positive effect of a growing sector on plant survival is even stronger for foreign plants than for domestic ones. This implies that foreign plants in a declining industry are more likely to exit than domestic plants in the same industry. We may also interpret this as a sign that foreign firms are more footloose, as they appear more likely to leave if sectoral conditions change adversely.

4 Employment Persistence

Having established that multinationals are more likely to exit than domestic plants, ceteris paribus, we examine whether there are differences between foreign and indigenous plants in the persistence of employment generated or destroyed as a second step in assessing whether MNCs are more footloose than their domestic counterparts. Given that MNCs are more likely to exit than domestic plants one might also expect that employment adjustments in multinationals are less persistent.

However, in forming priors as to whether multinationals are more likely to adjust employment temporarily one could also appeal to human capital theory (as outlined by, for example, Parsons, 1986), which stresses that plants and workers may find it advantageous to invest in the development of plant specific human capital. This is because higher skilled labour provides returns to both the worker (in terms of higher wages) and the plant (in terms of higher productivity). Consequently the rate of separation between employer and employee should be lower for high skilled workers than for low skilled workers, i.e., jobs are more persistent in the case of the former. This, in turn, has implications for employment persistence in multinational companies since MNCs, due to their plant-specific assets (Caves, 1996) can be expected to use a higher level of technology than indigenous plants. Since the use of a higher technology necessitates the presence of more skilled labour, multinationals will find it profitable to make an organisational capital investment in order to provide training for workers to develop their human capital and use it efficiently in the plant. This human capital investment will increase workers' productivity. Hence, there will be lower separation rates, and higher costs of labour adjustment, for multinationals than for indigenous plants (which use lower levels of technology). This implies higher persistence of jobs in multinationals.

To investigate the issue of employment stability empirically we make use of the fact that our dataset allows us to identify net changes in the level of employment in a plant between two years. We can, thus, identify positive and negative net employment changes at the plant level and track whether these adjustments persist over time. In evaluating these we are faced with a number of obstacles, however. Firstly, our data set only allows us to identify the level of employment, but not the underlying job types. Thus even though, for example, an increase in employment of 10 may still persist at some future point, we are unable to identify whether the actual structure of employment has changed, i.e., whether these 10 jobs that persist until $t+s$ are the same as those created at time t. For the purposes here we assume that jobs are homogenous within plants so that changes in the level are equivalent to changes in jobs.

Secondly, in order to evaluate persistence in employment changes analogously to our study of plant survival in the previous section, i.e., in terms of using a hazard model, we need to identify a reversal of an employment adjustment as either occurring or not occurring. A plant, however, may only partially reverse its original employment decision. We thus first treat even a partial reversal as the outcome "reversal of the original decision". In order to check whether this biases our results we subsequently consider only a complete reversal of the original change as a reversal. This provides a more stringent definition of reversal, namely that only if all employment gained (lost) is subsequently re-lost (re-gained), is the original adjustment reversed. For example, if a plant increases employment from 10 to 20 at time *t*, then if at time *t*+1 employment is any less than 20 our approach is to consider the original decision reversed under the first more flexible definition. In contrast, we only consider the original decision reversed if employment at time *t*+1 falls below 10 under the more stringent definition. Finally, given that our plant survival analysis in the previous section already deals with plant entry and subsequent exit, we only consider employment adjustments and their (potential) reversal in continuing plants.[8]

We first calculated simple K-M functions of the persistence of employment creation and destruction in foreign and domestic plants using equation (1) for the case where a partial re-gain (re-loss) is considered a "reversal", i.e., the more flexible definition of reversal. These functions are depicted in Figures 2 and 3, respectively. As can be seen, employment creation persistence is clearly higher for foreign plants one year after the adjustment. The difference increases until about five years after the event and then remains fairly stable although overall the survival rates are decreasing at a decreasing rate. The difference in these survivor functions is also supported by a log rank test of

[8] This means that we do not take account of jobs created due to plant birth and death and also that non-reversed employment adjustments are considered truncated from the sample once a plant exits. As pointed out by Davis and Haltiwanger (1992) for the US, and supported by Strobl (1996) for Ireland, plant exit only comprises a small proportion of total employment loss in any period. Rather, most of the employment adjustment observed at the micro-level is due to continuing plants continuously readjusting

equivalence.[9] In contrast, the difference between the survivor function of employment losses is much smaller, with that of foreign plants being marginally higher. As matter of fact, a log rank test of equivalence does not allow one to conclude that these are significantly different.[10]

[Figures 2 and 3]

In Figures 4 and 5 we also graphed the K-M survival function for the case of the more stringent definition of employment change reversal. As would be expected given the more stringent condition for reversal, here the survival rates are higher for both employment creation and destruction. For employment creation the difference in the series is not as pronounced as in the earlier graph, and only really become apparent after five years and seems to be slowly increasing thereafter. Nevertheless, a log rank test indicates that as with our more relaxed definition, the survivor functions for foreign and domestic plants are not identical.[11] For the case of employment destruction, we now find that the survival rate of employment losses are higher for domestic plants, suggesting that foreign plants are more likely to recover from negative shocks to employment. This is supported by a log rank test of equivalence which rejects the hypothesis that the two functions are identical.[12]

[Figures 4 and 5]

Thus, without controlling for other factors, these graphs suggest that jobs created in foreign firms appear more likely to persist that those created in domestic plants, irrespective of whether we consider total or only partial reversals of job creations. On the other hand, when to consider a reduction in employment as being reversed may be

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their employment level to aggregate, sectoral and idiosyncratic temporary and permanent shocks.

[9] The chi-squared statistic is 129.7, significant at the one per cent level.

[10] The chi-squared statistic is 2.5.

[11] The chi-squared statistic is 18.2, significant at the one per cent level.

important in terms of considering whether foreign plants are more or less likely to recover lost jobs. While there does not appear to be a perceptible difference in the persistence of jobs lost in domestic or foreign plants under the flexible definition (i.e. considering partial reversal) foreign plants seem more likely to recover all or more jobs lost in a previous period. This may suggest that when one considers re-gaining lost employment, foreign plants are more likely to re-gain all jobs lost previously.

As with plant survival, there are, of course, likely to be other factors affecting the persistence of employment changes and it is important to control for these as these may be correlated with the type of ownership of the plant. We thus, analogously to the investigation of differences in plant survival, estimated a Cox proportional hazard model as in equation (2). In estimating equation (2) for employment creation and employment destruction persistence we similarly used the same explanatory variables, except that we also included plant age and *RATE*, a variable defined as the (absolute value) of the employment change relative to level of employment at the time of the adjustment. This latter variable is intended to control for the importance of the employment change undertaken relative to the size of the plant and hence can serve as an indicator of the size of the shock which induced the change and the adjustment costs involved. Plant size and age as well as the sectoral variables described above are included in the estimation since Davis et al. (1996) show that job persistence may differ between firms with different sizes and ages, and between sectors. We, therefore, chose to control for these factors in our analysis also.

Table 3 presents the results of estimating the Cox proportional hazard model for employment creation persistence. In line with the analysis of plant survival we first estimated the model without allowing for ownership differences. These results are

[12] The chi-squared statistic is 10.7, significant at the one per cent level.

given in the columns (i) and (ii) of the table for partial and complete reversals respectively. One should note that the results are very similar, in terms of magnitude and statistical significance, in both estimations. Job gains in larger plants are more likely to persist than in smaller ones. In contrast, the relationship between persistence and age is negative, with older plants being more likely to increase employment only temporarily. The significance on *RATE* shows that it is important to control for the relative importance of the change, and suggests that the larger the adjustment the more likely it is permanent. We also find that plants that are in more concentrated sectors are more likely to undertake temporary employment increases, i.e., are more likely to reverse newly created jobs. Finally, the significant coefficient on *SGROWTH* shows that benevolent sectoral conditions act to make job gains more permanent.

Including the ownership dummy and interacting it with the covariates, as shown in the third and fourth columns of Table 3, does not change any of the aforementioned conclusions. The less restricted models (including *OWN* and interaction terms) are supported by likelihood ratio tests of equivalence of the restricted and unrestricted models which allow us to reject the equivalence of the two models (with test statistics of 121.1 and 109.8 respectively). The results of the unrestricted models show, in line with the K-M survivor functions, that foreign plants are less likely than domestic ones to reverse increases in employment, as indicated by the statistically significant and negative ownership dummy. These coefficients are similar for both the cases of partial and complete reversals of jobs created. Calculating hazard ratios from these coefficients yields 0.91 and 0.88 respectively indicating that the hazard of reversing the employment decision is about 10 percent lower for foreign than for comparable domestic plants.

For both definitions of reversals we also find that the interaction terms indicate that while plant size in general acts to make job gains more permanent, this effect is less so for foreign plants. There is, therefore, less difference between large and small foreign plants in terms of employment creation persistence. Also, the finding that plants in highly concentrated sectors are more likely to reverse employment creation decisions is stronger for foreign firms, as indicated by the sign and statistical significance of the coefficient on the interaction term of *HERF*OWN*.

The impact of the other interaction terms are, however, different for the two definitions of employment decision reversal. Considering partial reversals, we find that larger employment adjustments, as measured by *RATE*, are more likely to lead to persistence of employment creation in foreign plants than in domestic ones. Also, the benevolent effect of locating in a growing sector on persistence has a larger effect on foreign plants. These two factors do, however, not appear to be important when considering complete reversals only. In that case, rather, we find that under the more stringent definition the age effect is more pronounced for foreign plants, i.e., old foreign plants are more likely to reverse completely their employment decisions than their old domestic counterparts. Thus, foreign plants are likely to react differently to changes in some of the determinants of reversing employment decisions than are domestic plants.

[Table 3]

We turn to analysing the persistence of negative employment changes next. The results of the hazard model for employment destruction persistence are reported in Table 4. As in the previous table we distinguish estimations based on the less stringent (i.e., partial) and more stringent (i.e., complete) definition of the employment decision. Results for the restricted hazard model for both definitions are given in the first and second columns of Table 4, respectively. Accordingly, larger and younger plants, and plants with low employment adjustments are more likely to re-gain lost jobs (although the last results only holds when considering complete reversals). In terms of the sectoral variables we find that in more concentrated industries employment losses are more likely to be persistent and that, as would be expected, employment destruction reversal is positively related to sectoral conditions.

Columns (iii) and (iv) of Table 4 depict the results of the unrestricted model, including *OWN* and interaction terms, of employment destruction persistence for the two definitions of reversal. The likelihood ratio tests support in both cases the preference of the unrestricted model. In these estimations we find no statistically significant difference in job destruction persistence for foreign plants irrespective of the definition of the incidence of employment reversal. Thus, in contrast to the K-M survival functions, once we control for other plant and industry specific effects we find no difference in the employment destruction persistence between foreign and domestic plants.

Even though foreign plants are no more likely to recover or maintain a reduction in employment than domestic plants per se, various other factors are more pronounced for foreign plants. Specifically, we find in both cases that there is a different age effect for foreign and for domestic plants with the effect being more pronounced for the former. That is, the positive relationship between plant age and probability of persistence is stronger for foreign plants. For the case of complete reversals we find additionally that the size effect, i.e., that larger plants are more likely to recover lost jobs, is less so for multinational companies. Also, an industry's concentration is less likely to make employment losses persistent for foreign plants.

5 Discussion and Conclusions

This paper investigates the claim that affiliates of multinational companies are more footloose than domestic plants in the host country. We look at two different facets of this issue by examining plant survival as well as the persistence of employment changes (positive or negative) at the level of the plant over time. We address both questions using the framework of a Cox proportional hazard model.

Estimating the determinants of plant survival we find that plants belonging to multinational companies located in Ireland have lower survival rates than indigenous plants, all other things being equal. Also, we find that foreign plants react differently to changes in some of the factors determining survival, such as plant size or sectoral conditions. Taken together we interpret these findings as evidence that MNCs are more footloose than domestic plants, ceteris paribus.

It is a different question, however, as to whether this higher probability of exiting the host country also means that employment in multinationals is more unstable than employment in indigenous plants. Focusing only on continuing plants we analyse the factors determining whether employment changes at the plant level persist over time. Estimating a hazard model for the persistence of new jobs created in foreign and domestic plants we find that jobs created in the former are, ceteris paribus, more likely to persist than those created in the latter. Furthermore, we find no evidence that jobs destroyed in foreign plants are more or less likely to be recovered than those destroyed in domestic plants. These results do not lend support to the claim that employment in multinational companies is more unstable than in indigenous plants due to the footloose nature of multinationals. We do, however, find evidence that some of the determinants of employment persistence differ between foreign and domestic plants, i.e., foreign plants react differently to changes in some of the factors impacting on employment persistence.

As a tentative conclusion, our results may suggest that employment decisions in multinationals are made with a longer time horizon in mind than in domestic plants. Multinationals seem to be more likely to create new jobs only if they expect those jobs to last in the long run while domestic plants base job creation decisions more on a short term basis. This process possibly reflects the fact that multinationals in general are at a disadvantage compared to domestic plants when setting up abroad (Hymer, 1976).[13] On the one hand, these disadvantages may imply that foreign multinationals are more likely to leave the host country if they are unable to overcome these difficulties. On the other hand, however, the existence of such obstacles also suggests that affiliates of multinationals have stronger incentives to plan carefully their investment decisions and expansion strategies, over a long term horizon. Also, it may indicate that multinationals have superior management expertise, allowing them to predict market fluctuations and plan responses well in advance. This seems to be borne out by our findings regarding the persistence of positive employment changes.

[13] Zaheer (1995) provides empirical evidence that affiliates of MNCs indeed face such difficulties.

Tables

Table 1: Descriptive Statistics

ownership		1973	1984	1996
Indigenous	*Employment*	151741	126687	120728
	Plants	4039	6448	5830
	Age	21	17	19
	Size	38	20	21
Foreign	*Employment*	73827	80550	97559
	plants	619	861	837
	age	16	15	20
	size	119	94	117

Table 2: Determinants of Plant Survival

	(i)	(ii)
SIZE	-0.007***	-0.009***
	(0.000)	(0.001)
MES	0.006	0.020
	(0.010)	(0.013)
HERF	0.001***	0.001***
	(0.000)	(0.000)
SGROWTH	-1.144***	-0.940***
	(0.172)	(0.181)
OWN	---	0.231***
		(0.059)
SIZE*OWN	---	0.003***
		(0.001)
MES*OWN	---	-0.025
		(0.017)
HERF*OWN	---	0.000
		(0.001)
SGROWTH*OWN	---	-1.703***
		(0.444)
Observations	144015	144015
LR test (RES vs UNRES)		75.4***
Log Likelihood	-73242.97	-73182.42
Wald Test	1419.22***	1540.31***

Notes: standard errors in parentheses
***, **, *** denotes statistical significance at 10, 5, 1 percent level respectively**

Table 3: Determinants of Employment Creation Persistence

	(i)	(ii)	(iii)	(iv)
	Partial Rev.	**Compl. Rev.**	**Partial Rev.**	**Compl. Rev.**
SIZE	-0.002***	-0.003***	-0.004***	-0.004***
	(0.000)	(0.000)	(0.000)	(0.000)
AGE	0.008***	0.008***	0.009***	0.008***
	(0.000)	(0.000)	(0.000)	(0.000)
RATE	-0.575***	-3.236***	-0.525***	-3.271***
	(0.056)	(0.072)	(0.063)	(0.080)
MES	-0.000	-0.003	0.005	0.003
	(0.005)	(0.005)	(0.007)	(0.006)
HERF	0.686*	0.589*	0.681*	0.544
	(0.353)	(0.351)	(0.358)	(0.357)
SGROWTH	-1.696***	-2.157***	-1.564***	-2.109***
	(0.146)	(0.148)	(0.159)	(0.161)
OWN	---	---	-0.095*	-0.132**
			(0.055)	(0.056)
SIZE*OWN	---	---	0.002***	0.002***
			(0.000)	(0.000)
AGE*OWN	---	---	0.002	0.003**
			(0.001)	(0.001)
RATE*OWN	---	---	-0.530***	-0.200
			(0.145)	(0.190)
MES*OWN	---	---	-0.007	-0.008
			(0.007)	(0.006)
HERF*OWN	---	---	0.693*	0.658*
			(0.365)	(0.348)
SGROWTH*OWN	---	---	-0.602*	-0.166
			(0.308)	(0.302)
Observations	144015	218311	144015	218311
LR test (RES vs UNRES)			121.1***	109.8***
Log Likelihood	-73242.97	-74137.73	-73182.42	-74082.82
Wald Test	1419.22***	4197.55***	1540.31***	4307.36

Notes: standard errors in parentheses

***, **, *** denotes statistical significance at 10, 5, 1 percent level respectively**

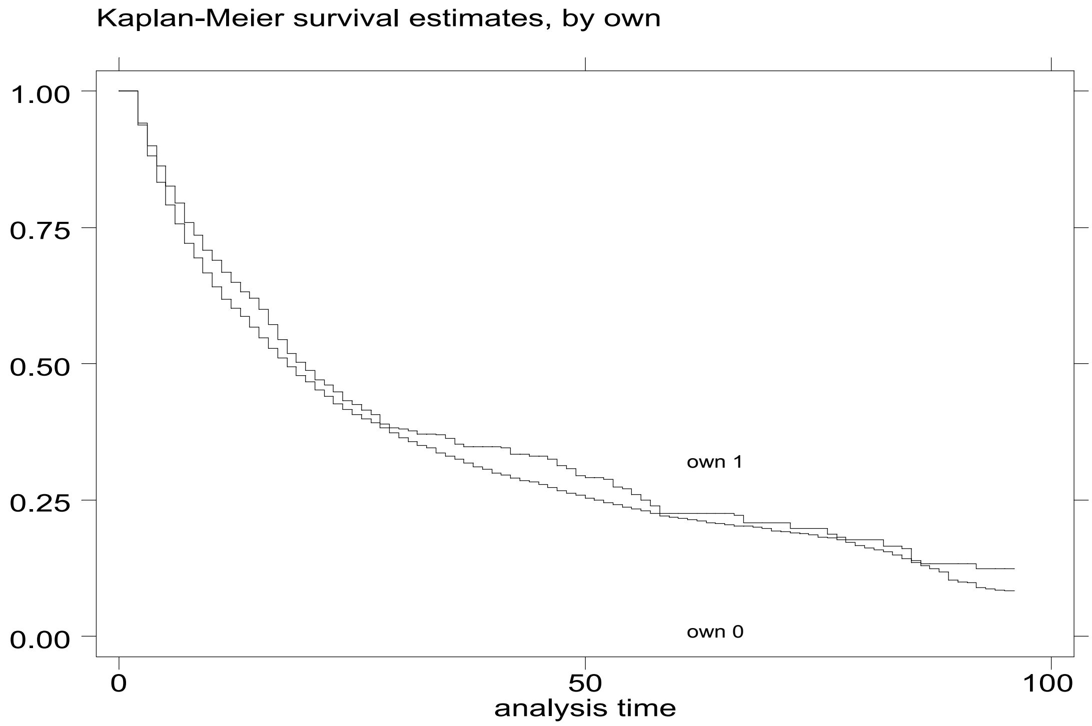
Table 4: Determinants of Employment Destruction Persistence

	(i)	(ii)	(iii)	(iv)
	Partial Rev.	**Compl. Rev.**	**Partial Rev.**	**Compl. Rev.**
SIZE	0.0004***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
AGE	-0.006***	-0.009***	-0.006***	-0.009***
	(0.001)	(0.001)	(0.001)	(0.001)
RATE	0.003	-0.488***	0.003	-0.471***
	(0.003)	(0.032)	(0.003)	(0.033)
MES	0.004	0.005	0.007	0.007
	(0.006)	(0.006)	(0.006)	(0.007)
HERF	-0.622	-0.888*	-0.765*	-1.134**
	(0.442)	(0.464)	(0.453)	(0.481)
SGROWTH	1.626***	1.925***	1.696***	1.991***
	(0.180)	(0.186)	(0.197)	(0.204)
OWN	---	---	-0.003	0.110
			(0.062)	(0.067)
SIZE*OWN	---	---	-0.000	-0.001***
			(0.000)	(0.000)
AGE*OWN	---	---	-0.004**	-0.006***
			(0.002)	(0.002)
RATE*OWN	---	---	0.002	-0.133
			(0.049)	(0.112)
MES*OWN	---	---	-0.005	-0.004
			(0.007)	(0.008)
HERF*OWN	---	---	0.662	0.865*
			(0.437)	(0.446)
SGROWTH*OWN	---	---	-0.373	-0.322
			(0.376)	(0.375)
Observations	109330	170775	109330	170775
LR test (RES vs UNRES)			15.5***	43.2***
Log Likelihood	-44365.44	-44054.00	-44357.67	-44032.39
Wald Test	530.29***	1119.90***	545.83***	1163.13***

Notes: standard errors in parentheses
***, **, *** denotes statistical significance at 10, 5, 1 percent level respectively**

Figures

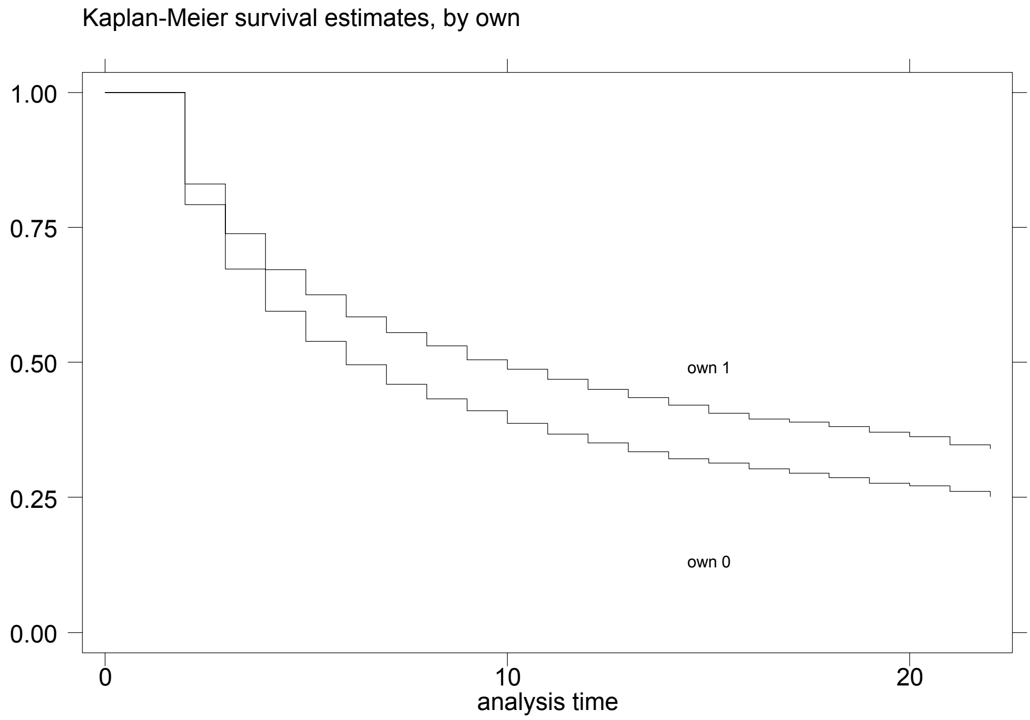
Figure 1: Kaplan-Meier Plant Survival Functions by Nationality of Ownership



Note: own = 1 indicates foreign ownership, 0 indicates Irish ownership

Figure 2: Kaplan-Meier survival functions of Employment Creation Persistence

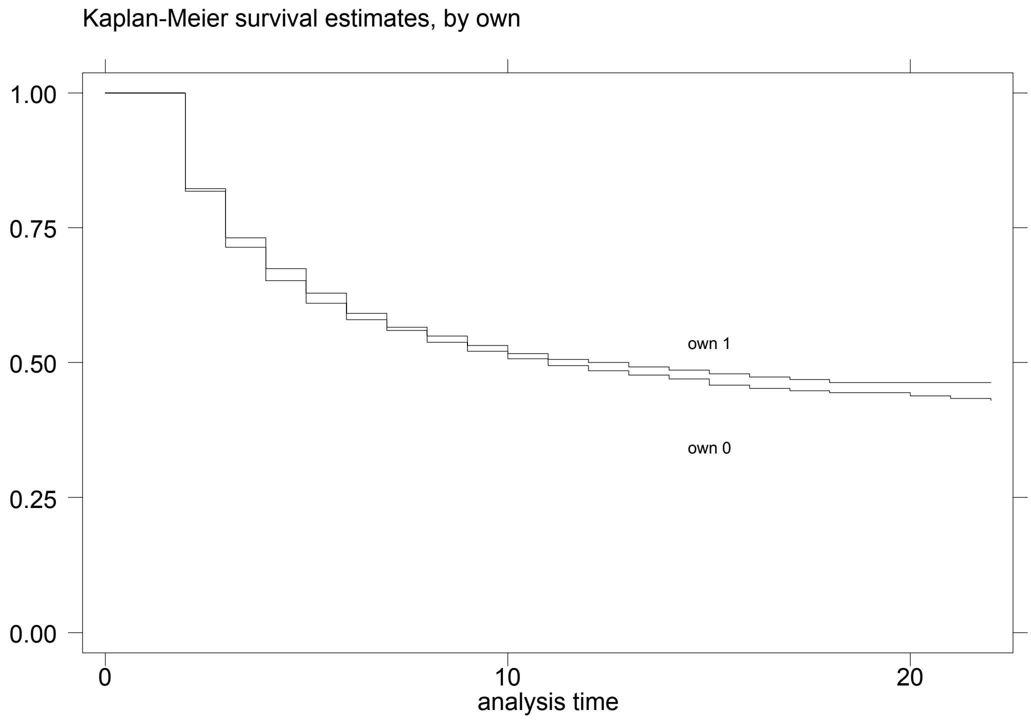
By Nationality of Ownership (Partial Reversal)



Note: own = 1 indicates foreign ownership, 0 indicates Irish ownership

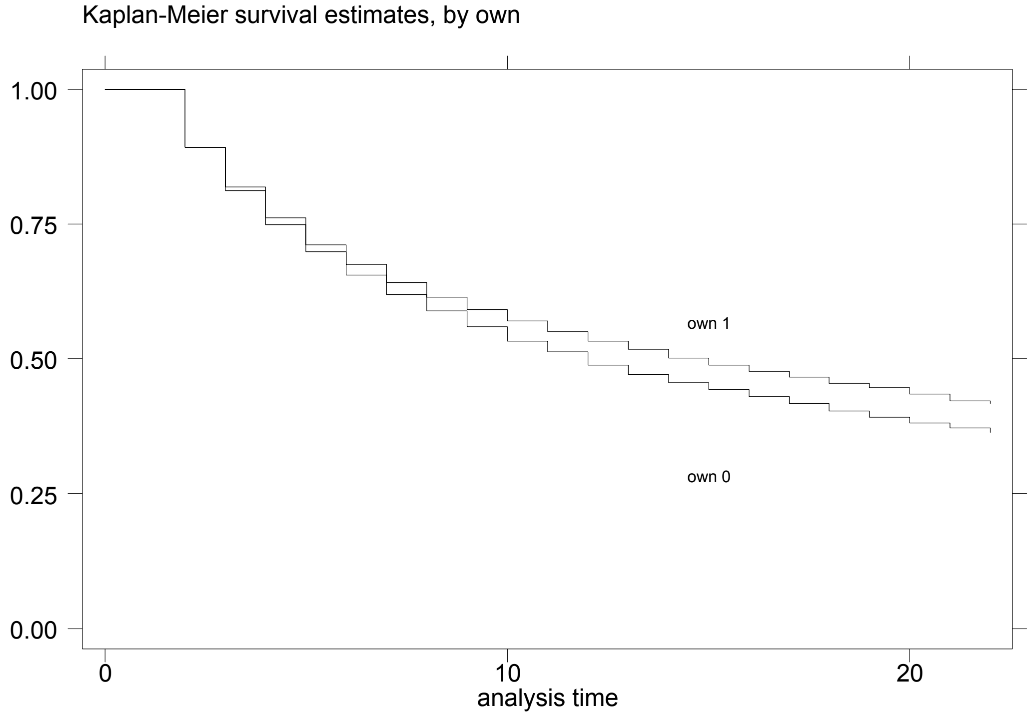
Figure 3: Kaplan-Meier survival functions of Employment Destruction Persistence

By Nationality of Ownership (Partial Reversal)



Note: own = 1 indicates foreign ownership, 0 indicates Irish ownership

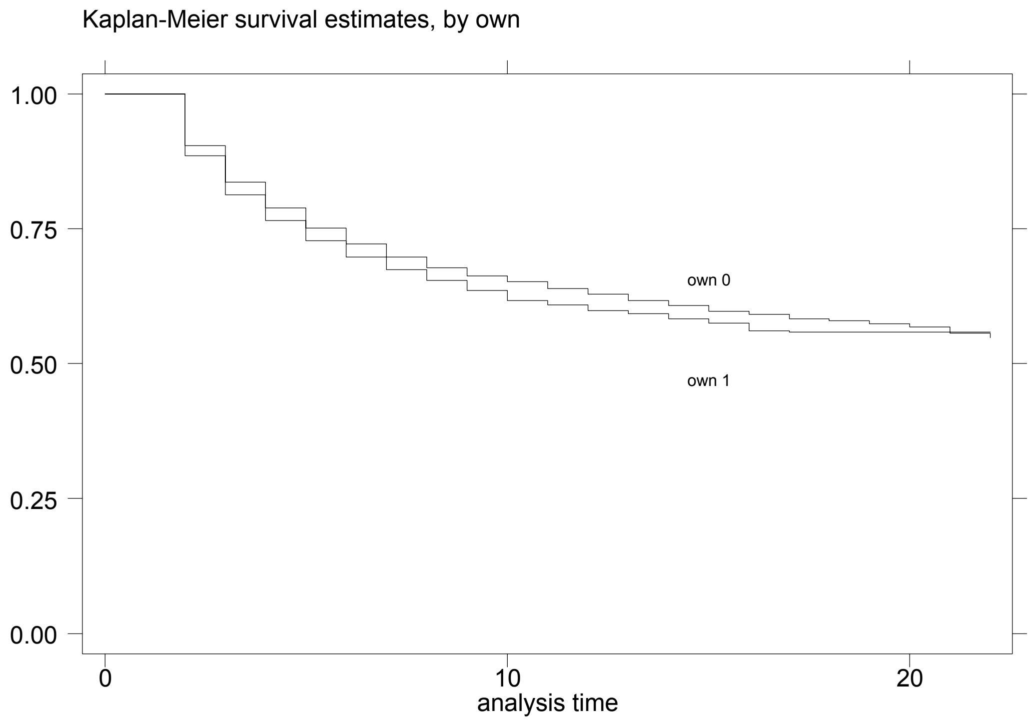
Figure 4: Kaplan-Meier survival functions of Employment Creation Persistence By Nationality of Ownership (Complete Reversal)



Note: own = 1 indicates foreign ownership, 0 indicates Irish ownership

Figure 5: Kaplan-Meier survival functions of Employment Destruction Persistence

By Nationality of Ownership (Complete Reversal)



Note: own = 1 indicates foreign ownership, 0 indicates Irish ownership

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