

The Impact of Foreign Direct Investment on New Firm Survival: Static v. Dynamic Industries

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Abstract/Executive Summary

The paper examines the impact of Foreign Direct Investment (FDI) on the survival of business start-ups. FDI has potential for both negative displacement/competition effects as well as positive knowledge spillover and linkage effects on new ventures. We find a net positive effect for the whole dataset. However, a major contribution of the paper is to outline and test an argument that this effect is likely to be comprised of a net negative effect in dynamic industries (high churn: firm entry plus exit relative to the stock of firms) alongside a net positive effect in static (low churn) industries. We find evidence to support this view. The results identify new effects of globalisation on enterprise development with associated challenges for industrial policy.

The paper forms part of a wider research project of the Bettany Centre investigating how the performance of new ventures differ in static compared to dynamic markets. Static markets tend to be less innovative with little new firm entry alongside limited exit. Dominant incumbent firms often occupy these markets. By contrast, dynamic markets are more usually associated with turbulence where new firms introduce innovation and compete among themselves as they seek to establish a dominant position. Our joint research with Nottingham Business School so far indicates that the factors affecting new ventures differs significantly between these two types of markets; particularly in terms of the threat faced by competition from large firms and as a consequence the best type of strategies that new ventures should adopt.

The current paper highlights that FDI cannot be generalised into either a good or bad thing for new ventures as it depends on whether the market is dynamic or static. Entrepreneurs should regard FDI as an opportunity in a static market and threat in a dynamic market and adjust their strategy appropriately. The paper has also ramifications for government policy which across the globe has tended to promote FDI. Our research results indicate that this is likely to have contrasting effects in terms of short-medium term impact on the local enterprise base – diminishing it in dynamic markets and boosting it in static markets. Further research is planned and needed to assess the longer term effect on the enterprise base as FDI may later lead to spawning of new ventures by entrepreneurs who formerly worked at multi-nationals and who later leave (with expertise/knowledge) to launch a new venture in a related market or technical field.

JEL classification: F20, L11, L25, M13

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1 Introduction

There has recently been much interest by policy makers into the potential effects of globalisation on developed and developing economies. Of all the drivers of globalisation - trade, migration of workers, and foreign direct investment (FDI) - the last is probably the most visible. It is also likely to be, at the margin, the most important aspect of globalisation in economic terms. For instance, over the last decades global FDI flows have grown at least twice as fast as trade, now well exceeding \$500 billion and resulting in a total stock of more than \$8 trillion (United Nations, 2004). It is, therefore, not surprising that a lot of academic research has been directed towards investigating the potential impact of FDI and multinationals (MNEs) on economic development of host countries.

Much of the academic work has focussed on the question of detecting “productivity spillovers” from multinationals, i.e., whether or not domestic firms increase their productivity through learning and competition from MNEs. Recent examples include Aitken and Harrison (1999) and Girma et al. (2001) who examine spillovers in Venezuela and the United Kingdom, respectively. Related work has examined the macroeconomic link between FDI and growth in cross-country growth regressions (Borensztein et al., 1998; Alfaro et al., 2004) as well as the potential wage effects of multinationals in the domestic economy (Aitken et al., 1996; Lipsey and Sjöholm, 2004).

What has been largely neglected in this literature 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.

The aim of this paper is to examine the effect of inward FDI on the survival expectations of incumbents in the host country. Theoretically, there are a number of

possible effects. On the one hand, if inward FDI leads to technology spillovers then incumbents may learn from multinationals, improve their productivity and subsequently also their survival prospects in the market. FDI may provide linkage opportunities for new ventures to may sell products/services to foreign firms. On the other hand since FDI increases competition in the domestic economy, multinationals may steal business from incumbents and drive these out of the market. In this case, inward FDI will lead to reduced survival probabilities for firms that are competing with multinationals in the host economy. We investigate this issue empirically using data for new plant ventures from the UK Office of National Statistics (ONS) comprising of the population of VAT registered businesses from 1997-2002. This data spans services as well as manufacturing industries.

The empirical evidence on the impact of FDI on firm survival is rather limited. Bernard and Sjöholm (2003) and Görg and Strobl (2003a) examine whether there are differences in survival probabilities between domestic and foreign owned firms and find that affiliates of foreign multinationals are more likely to exit than domestic firms when controlling for a number of plant and industry characteristics. These studies use plant level data for Indonesia and Ireland, respectively.¹ To our knowledge, there is only one paper that investigated in detail the effect of inward FDI on survival of domestic incumbents by Görg and Strobl (2003b). They use Irish plant level data to examine the effect of the presence of multinationals on the survival of domestic plants and find that there are some positive effects on domestic plants, in line with the idea that firms benefit from technology spillovers from MNEs and are, thus, able to increase their survival prospects.

Our paper extends this literature by providing comprehensive evidence for the United Kingdom, one of the major economies in Europe. Compared to the aforementioned study by Görg and Strobl (2003b) which focuses on Ireland, our analysis of the UK not

¹ Bernard and Jensen (2004) undertake a related study investigating differences in survival for domestic plants and US multinationals in the US. They do not consider foreign multinationals in the US, however.

only provides a much larger dataset but also a country with a relatively more developed economy so that FDI might be expected to have greater potential for displacement/competition effects with domestic enterprise in the same industry. By contrast, in Ireland FDI often entailed the creation of new industry sectors in the economy. Our data also have the important advantage that they cover services as well as manufacturing, while the previous literature only used data for manufacturing. This is an important improvement given the increasing importance of services in most industrialised economies. This leads us to the first motivation for writing the paper which is to test for the existence of a dominant influence of FDI on new firm survival.

Hypothesis 1. The net effect of FDI on the survival of new ventures is likely to be comprised of positive knowledge spill over and linkage effects being offset against negative competition effects.

Apart from data differences with earlier work, we also propose and test the possibility that foreign ownership may have a distinctive impact on new venture performance in static *versus* dynamic markets. The question we address is whether the empirical weight of the positive and negative influences of FDI may be expected to vary between dynamic and static industries. FDI usually entails introducing innovation to a recipient economy where the technology has already been commercially successful in the host economy. Dynamic markets are typically characterised by high rates of churn (firm entry plus exit relative to the stock of firms) which tends to be higher at earlier stages of the diffusion of innovation in an industry (Klepper, 1996). In these markets, new ventures are often innovative and have been shown to be an important means through which new technology is introduced (Audretsch, 1995a, and Geroski, 1995). Similarly, in these markets consumer demand and hence competitive advantage, depends much more on differences in product/service characteristics than price (Agarwal and Bayus, 2002). By

contrast lower churn (more static) industries are associated with later stages of innovation diffusion where commoditisation and price competition become more prevalent. Bhide (2000) shows that new ventures are more likely to be imitative in low innovation industries. Therefore, if both new ventures and foreign firms are more likely to be engaging in innovation in dynamic industries, and if at the same time differences in innovation represent the focal point for competition in such industries, then the relationship between foreign ownership and new venture survival is more likely to be competitive – hence, a greater chance of being negative. By contrast in static industries new ventures are more imitative and hence have more scope to benefit from knowledge spillovers from foreign firms.

Hypothesis 2. The net effect of FDI on new venture survival is more likely to be negative in dynamic markets and positive in static markets.

The rest of the paper tests these hypotheses and is structured as follows. The source and nature of the data is described in the next section. This followed in section 3 by a discussion of the econometric methodology and motivation for the control variables. The results are presented in section 4 and the paper then closes with conclusions.

2 Data

Our data is drawn from the Inter-Departmental Business Register (IDBR) database at the UK Office for National Statistics.² This register captures VAT registered businesses and as such comprises about 98 percent of UK business activity.³ The advantage of using data from the register is twofold. Firstly it is highly representative, given that it covers almost the population of UK firms and does not suffer from biases induced by sampling. This latter point is especially important in duration studies, where over-sampling of large

² Access to this data is possible under controlled conditions on site at ONS offices.

³ See Barnes and Martin (2002) for an overview of this data and the ARD data referred to below.

firms in comparison to small firms underestimates the real amount of movement in an economy, since entry and exit is mostly a small firm phenomenon. Secondly, the register identifies businesses at the *local unit* level. Barnes and Martin (2002) define this as the “individual site or workplace (factory, shop etc.) at which activity takes place” (p. 37). This is for most cases the level of the plant. Our data is comprised entirely of single plant firms so exit implies firm as well as plant closure.

However, representativeness and research relevance come at a cost so while the IDBR contains a reasonably exhaustive listing of all firms from all sectors of the UK economy, knowledge about the features of these firms is limited to sectoral and employment information. To remedy this information shortfall, we import information at a *sectoral* level on wages and market structure from the Annual Respondents Database (ARD), which is essentially a subset of establishments in the IBDR. This lets us describe the composition of the sector in which our firms operate and report, inter alia, industry concentration ratios.

Our data extends for a 6 year period, 1997 to 2002. Focussing on this period is due to one important reason: since 1997, the ARD data cover services as well as manufacturing industries in the UK, while before that year only manufacturing data was available. We analyse data from 1997 onwards. However, this translates into a relatively short year survival horizon for the cohort of firms who appear in the data for the first time. Data for 1997 is essentially used as a criterion that allows us to identify new entrants (present in 1998 but not in 1997) and data for 2002 allows us to identify real, uncensored exits (present in 2001 but not in 2002). Accordingly, we limit our duration analysis to a 3 year time window when we have accounted for left- and right-hand side censoring and represented failures that arise in 1998 (entry year) as happening at the beginning of the following year.⁴

⁴ As is customary in survival analyses of this type with ‘simultaneous’ entry and exit.

Fortunately, given the high level of attrition of start-ups in the earliest phases of their operation (almost 50 percent of start-ups exited within these 3 years) even within a relatively short time span we manage to capture a high level of early stage exits.⁵ This pattern most likely arises from our ability to include low quality, under-capitalised, start-ups when using the IDBR data. Given the comprehensive nature of the data, we are confident that this data is representative.

Since our analysis focuses on exit from industry sectors, we first report exit levels for the cohort of UK plants entering in 1998, tracking the number of exits from 1998 until 2001.⁶ Table 1 presents the development of industry level exit rates, calculated as number of exiting firms in industry j relative to the total number of firms in the industry. The average percentage of exits across all firms in the database is about 8 percent per year.⁷ This average is slightly higher in manufacturing than in services sector. Overall, this suggests that only a minority of firms across the broad spectrum of UK industry exits in any year. As such, dynamism at a sectoral level appears to happen at the fringes of industry in general, and an examination of all industry exits suggests a high amount of inertia.

[Table 1. near here]

This inertia seen across UK industry masks the dynamism that arises within cohorts of new ventures, however. Accordingly, we would expect that annual exit rates *within* the grouping of new ventures should be much higher, given the greater financial fragility and unproven track-record of new ventures. **Figure 1** traces the survival rates for our 1998

⁵ Ideally, we would be able to identify the disappearance of a VAT registration number as a genuine closure (failure) or alternatively merger in order to isolate mergers from our sample (See Persson, 2004). Owing to the nature of our data, we opt for the convention of defining exit from the database as closure.

⁶ We cannot calculate the value of exits for 2002 because firm's survival is right censored at this date.

⁷ This compares with an average of 6.5% found by Baldwin and Gorecki (1991) for Canadian manufacturing industries. Dunne and Hughes (1994) report an average death rate of 20.5% in their UK data for 1975-85, however, their data comprises only a sample of 2000 quoted and unquoted companies (mainly large) in the UK financial and non-financial companies.

cohort of UK firms as Kaplan-Meier functions. Attrition is recorded for 3 analysis times and this corresponds to 1999, 2000 and 2001 respectively.⁸ We can see from the survival function that almost 25 percent of entrants have died in the year of entry, culminating in a rate of almost 50 percent for the third year of existence, an exit rate in line with others documented for UK manufacturing industries.⁹ We also see from **Figure 1** that firms entering industries with above average rates of presence of foreign multinationals (*'high_foreign'* = 1) have lower survival probabilities. This variable is based on the percentage of employment in foreign multinationals over total employment in the industry, and *'high_foreign'* is defined as 1 if this ratio exceeds the mean. We should note that the Kaplan-Meier survival function does not take account of the auxiliary role of other covariates in influencing survival and hence is merely illustrative.

[Figure 1 near here]

3 Modelling Plant Survival using a Hazard Function

The aim of this paper is to determine whether the presence of multinationals has an effect on the survival of new firms in the British economy. It has been established in the empirical IO literature that there are many factors that can possibly affect plant survival. In order to properly disentangle the role of plant and industry specific factors from that of the presence of MNCs on the survivability of plants we turn to a semi-parametric modelling of plants' hazard rates. We initially estimate a survival function in a sample comprising all

⁸ A convention in duration analyses of this type is to treat all failures in the year of entry as having occurred at the beginning of the next year. Accordingly all failure times for entry at time t are treated as failures arising in $t+1$.

⁹ Our attrition rate for the 1998 cohort (1st three years), corresponds with other UK exit rates: 42 percent after 2 years cited by Scarpetta (2001) for the early 1990's and 45 percent in Disney et al., (2003) for the period 1986 to 1991. However, note that these studies only relate to manufacturing industries.

industries and then proceed to separate estimates for dynamic (high firm churn) and static (low firm churn) industries.

Following the related empirical literature (for example, Audretsch and Mahmood, 1995, Mata and Portugal, 1994) we utilise a Cox proportional hazard model as our equation to be estimated. The Cox proportional hazard model does not require any restrictive assumptions regarding the baseline hazard, such as for instance a Weibull or lognormal specification. This is appropriate for our purposes, as our main interest is not in the estimation of the underlying baseline hazard but in the effect of the presence of MNCs on plant survival. As pointed out in the literature on survival analysis, the semi-parametric modelling approach of the Cox proportional hazard model is advantageous if the parametric form of the underlying baseline hazard function is not known with certainty.

The Cox proportional hazard model specifies the hazard function $h(t)$ to be the following:

$$h(t) = h_0(t)e^{(Xb)} \quad (1)$$

where $h(t)$ is the rate at which plants exit at time t given that they have survived in $t-1$, h_0 is the baseline hazard function (the parametric form of which is not specified) when all of the covariates are set to zero, and X is a vector of plant and industry characteristics postulated to impact on a plant's hazard rate. The following covariates are included:

Size is the plant's start up size in terms of employment and is included since it can be considered a stylised fact that small plants generally have lower probabilities of survival than large plants (for example, Audretsch and Mahmood, 1995; Mata and Portugal, 1994). The premise is intuitive, larger plants are likely to have greater resources and hence be better able to exploit market opportunities and fend off competition.

The minimum efficient scale of the industry, *MES*, is measured as the log of median employment size in sector j as in Sutton (1991). 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 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; Mata and Portugal, 1994). On the other hand, high MES is often viewed as a barrier to entry as it deters entrants who are resource constrained (usually through lack of finance e.g. Blanchflower and Oswald 1998, and Burke et al 2000) and/or who fear the risk involved in sunk cost investment which is often positively associated with MES (Sutton, 1991). Thus, high MES may boost the post-entry survival of new ventures– who presumably have overcome some of these impediments – by reducing competition from other entrants both at the time of start-up and in subsequent years. If one pays homage to contestable market theory (Baumol et al 1982) then this point may be as much true about avoiding the negative consequences on cash-flow from new ventures deterring entry (through lower pricing or higher costs associated with building a ‘sticky’ customer base) when barriers to entry are low as it is through competition with existing firms.

$C5$ denotes the five firm concentration ratio of sector j , measured in terms of firms’ sales shares. 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 plant’s probability of survival. In industries where firms compete more on innovation than price, the same point may hold true if dominant firms have become X-inefficient (Leibenstein, 1966) and hence slack, complacent or insufficiently vigilant in managing their innovation activities. However, plants in highly concentrated markets may be subject to fierce aggressive behaviour by dominant rivals with monopolistic power which may reduce chances of new venture survival.

Growth is the net sectoral (sales) growth rate. Audretsch (1991) argues that industry growth may elevate the price above the long-run average cost, i.e., increase firms' 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. However, in markets with emerging technologies with underlying economies of scale (for example, network effects) the pressure for business shakeouts only really emerges when the market has grown enough to allow economies of scale effects to kick-in. In such circumstances, a rapidly growing market could have a negative effect on new venture survival. Thus, overall we have ambiguous priors about the actual empirical relationship between industry growth and plant survival.

We furthermore include a measure of production cost, namely the median wage in the industry as an explanatory variable. The expectation is that higher costs, all other things being equal, reduce profitability and, hence survival prospects.

Most importantly from our point of view, *foreign presence* is a proxy for the presence of multinationals in a sector and is defined as the share of employment by MNCs in sector j at time t . This variable is supposed to capture the effects of multinationals on firm survival. If positive spillover or linkage effects occur, the presence of MNCs should have a positive effect on firm survival. If the competition effect is prevalent, we would expect a negative effect on firm survival. We also test to see whether the dominance of either effect varies as we move from a static to a dynamic industry. This is motivated by the aforementioned body of empirical research which indicates key differences between static and dynamic industries in terms of the importance of innovation as the focal point of competition and the extent to which new ventures engage in innovation. Thus, the degree to which net displacement effects (from innovative foreign firms to domestic enterprise) exist or vary between dynamic and static industries is a core motivation in this analysis.

All sector specific variables are calculated at the 3 digit SIC 92 level. Table 2 provides some summary statistics on the included variables. It is worth noting that there is substantial variation in these variables, not only cross-section but also over time. Our key variable measuring the importance of foreign multinationals, *foreign presence*, shows a mean value of about 14%.¹⁰

[Table 2 near here]

4. Results

The results of estimating different variations of the hazard model described in equation (1) using data for the total sample are presented in Table 3. All estimations are stratified by two digit industry, which allows for equal coefficients of the covariates across strata (sectors), but baseline hazards unique to each stratum (sector). As can be seen, the Wald tests provide satisfactory support for our model specifications. In interpreting the results one should recall that our dependent variable is the hazard rate, i.e., a negative coefficient on an independent variable implies that it reduces the rate of hazard, thus increasing chances of survival, all other things equal.

[Table 3 near here]

The significance and sign of the control variables are fairly familiar. Industry growth promotes new venture survival which is consistent with a view that faster growing industries provide better revenue opportunities for new ventures. The 5 firm concentration ratio variable has a significant effect in reducing new firm survival as one would expect if new firms are vulnerable to large incumbents with monopolistic power. The minimum

¹⁰ The appendix includes a correlation table for these variables.

efficient scale (MES) variable is found to have a positive effect which supports the argument that by providing a barrier to entry, high MES helps the survival of new ventures by shielding them to some extent from competition from other new entrants – or indeed having to adopt entry deterring strategies (which are detrimental to cashflow) associated with more contestable markets. We find median wages have an insignificant effect on new venture survival but later in table 4 we find that this may be due to offsetting contrasting effects of wages in dynamic versus static industries rather than a homogenous benign effect.

In terms of the measure of foreign presence, our results suggest that an increase in the importance of foreign owned firms in the sector has a positive effect on firm survival, i.e., lowers the hazard of exiting (column 2). The magnitude of the hazard rate suggests that a 10 percentage point increase in foreign presence (equivalent to one standard deviation, see Table 2) leads to a reduction in the hazard rate by $[(1-0.997) * 10] = 3$ percent reduction in the conditional probability of exiting. This can be compared with, say, the effect of the concentration ratio in terms of the economic significance. For the 5-firm concentration ratio (C5), the hazard rate in column 2 suggests that an increase in C5 by one standard deviation (approx. 8 percent) leads to an increase in the hazard rate by $(0.009 * 8 \Rightarrow) 7.2$ percent. Hence, while the magnitude of the effect is clearly smaller for foreign presence it is by no means economically meaningless.

In column 3 we interact the foreign presence variable with the C5 in order to examine whether the effect of multinationals differs according to the level of industry concentration. The reason we test for this influence is to assess whether the negative competition effect and the positive spillover and linkages effects from foreign ownership vary by industry concentration. FDI is usually undertaken by large foreign firms and hence may be more of a threat to the dominant firms in an industry. In a highly concentrated

industry new ventures are less likely to be peripheral fringe firms and hence more influenced by the dominant form of competition occurring in the market. However, we do not find a statistically significant effect of the interaction terms in this model.

[Table 4 near here]

In table 4 we split the sample into dynamic and static industries. We define a dummy variable equal to one if an industry is dynamic. It is defined as such if entry and exit rates combined equal or exceed 20 percent of the stock of firms. This corresponds to the 75th percentile of the distribution of aggregate entry and exit rates.¹¹

The results highlight some stark differences in terms of the role of foreign ownership in the survival function of new ventures in dynamic and static industries. Foreign ownership exerts a negative influence on new plant survival in dynamic industries and a positive effect in static industries. The finding indicates that the combined positive influence of knowledge spillovers and linkages is outweighed by negative competition effects in dynamic industries. This finding is consistent with a view suggested by the aforementioned evidence in the existing IO empirical literature that in dynamic industries both new ventures and foreign firms are more likely to be direct competitors.

In static industries, we find the opposite result with a net positive effect from foreign ownership on new venture survival. However, this operates through the C5 and foreign ownership interaction variable. This indicates that negative competition effects are more likely to be overpowered by positive spillover and linkages effects when industry concentration is high. This evidence supports the view that FDI is usually undertaken by

¹¹ We tested whether the sample split is appropriate. We interacted the dummy with all independent variables and ran a regression including all interaction terms on the full sample. A Wald test did not allow us to reject the hypothesis of joint statistical significance of all interaction terms and, hence, splitting the sample is appropriate.

large foreign firms and hence may be more a threat to the dominant firms in an industry. Thus, small new ventures do not appear to face the brunt of most of this negative competition effect leaving them to experience more of the positive linkage and spillover effects.

Combining the results of tables 3 and 4, our findings indicate that in general foreign ownership promotes the survival of new ventures – this effect being strongest in highly concentrated static industries – but that in dynamic markets the opposite is true and that foreign ownership has a net negative displacement effect. From a policy perspective, one may be tempted to take the broad conclusion that since the pooled results are positive that in general FDI is a good thing for indigenous enterprise. However, if one distinguishes between the *quantity* and *quality* of entrepreneurship (Burke et al, 2000) then a different possibility emerges. If new ventures are more innovative in dynamic industries and more imitative in static industries then a net negative displacement effect in dynamic industries is concerning because it indicates damage is concentrated on more high *quality* new ventures. Thus, it is possible that a net positive effect on *quantity* – as is apparent from the results in table 3 – may mask a net negative impact on *quality* which seems plausible from the results in table 4. Our data set is not rich enough to progress this line of thought but the results are enough to raise it as an issue for further research. However, we have determined that the interaction between foreign ownership and new ventures survival is markedly different, in fact opposite, between dynamic and static markets. In terms of industrial policy, it implies a common desire to encourage FDI while simultaneously building up a long term supply of indigenous enterprise is more challenging in dynamic markets where a trade-off in terms of these objectives appears to exist – at least in the short run.

In terms of the control variables, we find the negative influence from industry concentration in table 3 appears in table 4 to be confined to static markets. This result is

consistent with a view that new ventures are more imitative in static markets and hence more vulnerable to monopolistic power of dominant incumbents. In dynamic markets, more innovative new ventures are able to differentiate themselves and so to some extent be shielded from this effect. Start-up size has a positive influence on firm survival in static industries but an insignificant effect in dynamic industries. The former result is consistent with the IO literature while the latter may reflect staged financing and the need for flexibility in dynamic, hence more uncertain/risky, industries. Bhide (2000) discusses how new ventures in innovative uncertain/risky industries adopt a pilot (small scale) launch to enable a trial and error deployment of available resources (e.g. staged financing) rather than drawing on all available resources at the time of start-up. This strategy is perfectly rational based on managing risks by hedging bets – in this case drawing down available funding to use in a new venture. In this manner, smaller size start-up may not be a handicap as such firms may be able to draw on more resources (finance) to prolong the venture if the things do not go to plan – unlike a venture who has put all its ‘eggs in one basket’ by backing one single strategy which was decided prior to start-up and before the firm has had real market feedback.

Industry growth has a negative influence on survival in dynamic markets which is consistent with IO theory on business shakeouts – industry growth enables economies of scale effects to kick-in and hence push out smaller new ventures. In line with this thread, static industries would normally have matured beyond the business shakeout phase and so this effect may not be expected to be influential. MES has a positive impact on survival in static industries which may reflect dominant firms becoming lax competitors and/or X-inefficient in stable industries where barriers to entry are high. It may also indicate that firms that can break into such industries are themselves shielded from competition from actual and potential entrants. MES is not significant in dynamic markets and this may be

attributable to the fact that innovative new entrants may not be competing on price as intensely as entrants in a static industry and hence are less sensitive to competitive cost disadvantages driven by high MES. The results in table 4 indicate the insignificance of the median wage variable in table 3 is likely to have been driven by a negative effect in dynamic industries being cancelled out by a positive effect in static industries. The negative effect is intuitive but the positive effect in static industries is surprising to us. A possibility is that a high median wage in a static industry may be associated with X-inefficiency of dominant firms who have allowed wages to creep up in the face of robust profits (associated with dominance in a static market). As Leibenstein (1966) points out X-inefficiency provides an easier competitive environment for other firms to survive. Thus, it may be possible that the high wage rate is picking up this effect.

5. Conclusion.

The paper set out to examine the impact of foreign ownership on the survival of new ventures. The question is interesting because it has yet to be established at an empirical level whether the influence is positive, negative or neutral. In addition, this line of research has relevance to policy given that encouraging FDI and enterprise creation are cornerstones of most industrial policy. Therefore, it is interesting to assess whether these influences complement or counteract each other. Foreign firms are generally viewed as having potential for both negative displacement/competition effect as well as positive knowledge spillover and linkage effects on new ventures. Thus, the paper tests the net effect which it finds to be positive for the whole dataset. This supports hypothesis 1 which indicates the existence of an impact of FDI on new venture survival.

The paper then proposes hypothesis 2 which outlines reasons why this net effect is unlikely to be homogenous across all types of industries. It argues that the direction of

these effects is particularly likely to vary between dynamic and static markets. It then proceeds to separate the data into these two types of industries and separately estimates a new venture survival equation in each case. The direction of the net effect is found to change in line with hypothesis 2 (itself motivated by the current industrial economics literature on new venture survival). We find that negative competition/displacement effects dominate in dynamic markets while positive knowledge spillover and linkage effects dominate in static industries.

The results indicate a challenge for industrial policy in dynamic markets in terms of arriving at the right balance when trading off the direct positive effect of FDI against the negative indirect effect on the survival of new ventures. This trade-off will be influenced by the extent to which policy makers discount future benefits and costs as the negative influence on new firm survival is likely to be small in current economic terms but could be potentially enormous over a longer term horizon if a 'promising start-up' that was otherwise destined for success is snuffed out of its fledgling existence before it had a chance to develop competitive resilience. This raises an issue for further research and this would also need to consider the capacity for employees of foreign owned firms to subsequently leave with high value knowledge gleaned from their former employer and set up their own ventures (Burke and To, 2001). Potentially, this may lead to a future stock of high capability ventures that may perform better than those displaced by FDI.

Apart from the effects of foreign ownership the results also indicated that the influence of industry growth, firm start-up size, barriers to entry and the level of concentration all have different (usually opposite) effects in dynamic compared to static industries. These differences are consistent with the views that the focal point of competition in terms of price versus innovation, and the main adversaries in terms of small v. large or small v. small alongside large v. large, are likely to vary between static and

dynamic markets. Thus, our paper takes a small step for the empirical IO literature to account for a general conclusion emanating from the theoretical IO literature, namely that small differences between industries can lead to large differences in terms of the nature and impact of competition.

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Table 1: Mean Exit Rates by Year (standard deviation in parentheses)

Year	All sectors	Manufacturing	Services
1998	0.078 (0.052)	0.086 (0.057)	0.078 (0.053)
1999	0.088 (0.060)	0.094 (0.057)	0.088 (0.060)
2000	0.088 (0.059)	0.092 (0.059)	0.087 (0.060)
2001	0.081 (0.059)	0.083 (0.052)	0.081 (0.059)

Source: own calculations based on ONS data

Table 2: Descriptive Statistics

	Means	Standard Deviations
C5	4.42	7.77
Foreign presence	14.17	10.43
Industry growth	16.11	122.17
MES	9234.03	14737.90
Median industry wage	227.25	743.45
Start up size	5.74	48.97

Source: own calculations based on ONS data

Table 3: Hazard function for all industries

startup size	0.999706		0.999708		0.999705	
	0.000247		0.000246		0.000248	
C5	1.008652	***	1.009000	***	1.006769	*
	0.001901		0.001936		0.003690	
industry growth	0.999617	**	0.999582	**	0.999574	**
	0.000171		0.000170		0.000173	
median wage	0.999994		0.999993		0.999995	
	0.000016		0.000016		0.000017	
MES	0.999997	*	0.999996	*	0.999996	**
	0.000002		0.000002		0.000002	
foreign presence			0.997660	*	0.996791	***
			0.001216		0.001153	
foreign presence * C5					1.000090	
					0.000133	
foreign presence 2						
sector dummies	yes		yes		yes	
Observations	556113		556008		556008	
Wald test (p-value)	0.00		0.00		0.00	

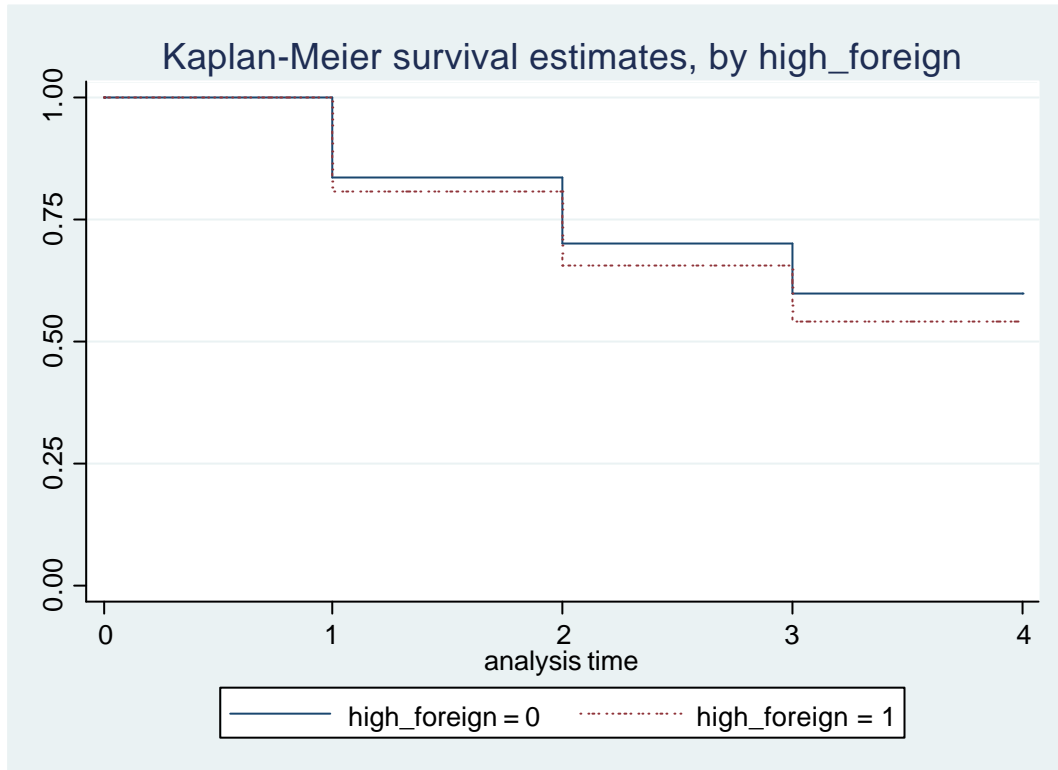
Notes: (a) Heteroskedasticity consistent standard error in parentheses. (b) *** , ** and * imply significant at 1, 5 and 10 per cent level, respectively.

Table 4: Industry dynamism differences

	dynamic industries			static industries				
startup size	0.999843		0.999835		0.999191	**	0.999147	**
	0.000330		0.000335		0.000389		0.000390	
C5	1.002275		0.998437		1.023486	***	1.042210	***
	0.002924		0.004484		0.005960		0.008966	
industry growth	1.001031	***	1.001070	***	0.999921		0.999966	
	0.000287		0.000300		0.000211		0.000218	
median wage	1.000031	**	1.000034	**	0.999872	***	0.999852	***
	0.000016		0.000018		0.000043		0.000043	
MES	0.999996		0.999995		0.999993	**	0.999995	*
	0.000003		0.000004		0.000003		0.000003	
foreign presence	1.004770	***	1.002539		0.998195		1.002106	
	0.001852		0.002436		0.001326		0.001846	
foreign presence * C5			1.000164				0.999120	*
			0.000198				0.000462	
foreign presence 2								
sector dummies	yes		yes		yes		yes	
Observations	149340		149340		406668		406668	
Wald test (p-value)	0.00		0.00		0.00		0.00	

Notes: (a) Heteroskedasticity consistent standard error in parentheses. (b) ***, ** and * imply significant at 1, 5 and 10 per cent level, respectively.

Figure 1:



Appendix: Correlation table

	Startup size	c5	Industry growth	Median wage	MES	Foreign presence	Exit rate
Startup size	1.0000						
c5	0.0959*	1.0000					
Industry growth	-0.0053*	0.0001	1.0000				
Median wage	0.2441*	0.4082*	-0.0234*	1.0000			
MES	-0.0088*	-0.0210*	-0.0043*	-0.0751*	1.0000		
Foreign presence	0.0133*	0.1841*	0.0161*	0.0536*	-0.1689*	1.0000	
Exit rate	0.0489*	0.4734*	-0.0126*	0.2858*	-0.2051*	0.1386*	1.0000