Because of the important role of foreign direct investment (FDI) in the process of globalisation, the impact of inward FDI on domestic economies has attracted much attention from academics and policy makers. The most recent World Investment Report (UNCTAD, 2014, p. 109 ff.) notes that many countries continue to use financial, fiscal and regulatory incentives to attract investment from multinational companies. Job creation is mentioned as the most important reason for attracting investment; technology transfer and linkages with the local economy are other important reasons. Notably, The report also mentions that the effectiveness of these programs is questionable, saying that “such schemes have been criticised for being economically inefficient and leading to misallocations of public funds.”

These policy issues are mirrored in the academic literature on FDI, where the identification and measurement of effects of investment by foreign-owned firms on the local economy is a major question. Many studies find that multinational firms are on average more productive than local firms, and researchers have proposed a number of channels through which this productivity may spill over to local firms. Such positive spillover effects may come about through direct transfer of knowledge, an increase in demand for suppliers of foreign firms that allows local firms to reap economies of scale, or access to better or cheaper intermediate goods. On the other hand, the increase in competitive pressure from FDI may crowd out local firms, leading to negative effects.
Empirically, an extensive literature describes studies that use productivity measures at the level of the firm to analyse whether the presence of FDI has positive spillover effects on domestically-owned firms in the host economy. A related line of research uses more indirect measures as proxies for productivity. Most research here studies the rate of entry of new domestic firms, but some studies also include exit and firm size. Both lines of research are discussed further in Section 1.

The study of entry of new firms has important advantages over studies based on productivity measures; Rosenthal and Strange 2003 argue for the study of firm entry because it obviates the need for input variables; new establishments are relatively unconstrained by previous decisions; and new firms make decisions taking the existing environment as given, diminishing concerns of endogeneity. Besides these more technical advantages, entry and exit measure the extensive margin of any possible spillover effect, whereas productivity and growth capture only the intensive margin. Despite these advantages, the body of research on FDI and entry is much smaller than that using productivity estimates. Moreover, most of these studies focus on single countries, hindering international comparison.

Our research addresses these shortcomings in the literature, as we estimate the effect of FDI on firm entry rates and employment at entry using panel data at the regional level for 25 European countries. An additional contribution of our work is that we consider how regional heterogeneity across Europe interacts with FDI to influence local economies. We think this heterogeneity might provide important explanations for the variability in estimates found in the literature. Thus, the study contributes not only to the literature on the consequences of FDI, but also to work on regional determinants of new firm entry.

This paper documents the following: in Section 1, we review the literature on the effects of FDI on host economies in more detail, focusing mainly on the relation between entry and FDI. Section 2 discusses our estimation methodology and describes the data. The results of the study are in Section 3. Section 4 concludes.

1 Literature

The empirical literature on the effects of foreign investment on domestic firms is extensive. In our review of the literature, we make a distinction between studies that try to measure spillovers directly by estimating effects on productivity; and studies that use indirect indicators such as entry, exit or growth of firms. Given that the latter group is more closely related to our study, the discussion will focus there.
1.1 Direct indicators

Following Aitken and Harrison (1999), a large share of recent studies on the spillover effects of foreign–owned firms on domestic firms try to measure productivity at the firm–level, and test whether domestic firms are more productive if foreign firms are present. Since Javorcik (2004) found that spillover effects for Lithuania were strongest for the suppliers of foreign firms, researchers distinguish within–industry (horizontal) spillovers and spillovers along the supply chain (vertical spillovers). Havránek and Iršová (2011) and Iršová and Havránek (2013) report on extensive meta–analyses of this literature. They find that horizontal spillovers are zero on average, although there is some variance in the spillover effects. For vertical spillovers, Havránek and Iršová do report positive spillover effects, but mainly for firms in supplying sectors, in line with Javorcik’s initial finding. Research has also uncovered mechanisms that mediate spillover effects, such as the absorptive capacity of local firms (Damijan et al. 2013), technology and embeddedness of the foreign firm (Giroud, Jindra and Marek 2012), and timing effects (Merlevede, Schoors and Spatareanu 2014).

1.2 Indirect indicators

Görg and Strobl (2002a,b) study the case of the manufacturing industry in Ireland for respectively 1974–1995 and 1973–1996. In one study, Görg and Strobl aggregate plant–level entry data to construct yearly (net and gross) entry rates for eight broad manufacturing sectors. From a panel model with fixed effects for sectors and years, they conclude that the presence of plants of multinationals indeed stimulates entry of domestic firms. In a follow–up study, the same authors study employment in entering firms. Start–up size is negatively effected by multinational firms, and more so for relatively large entrants. The effect is also more negative for firms in sectors Chemicals, Metal and Engineering, and Other Manufacturing. For the case of Ireland, it seems that FDI stimulates more entry of smaller firms. The net effect of this is not clear. In a third study on Irish manufacturing industries, Barrios, Görg and Strobl (2005) find that the effect of FDI on entry of domestic firms is not monotonous: at low levels of foreign investment, domestic entry is deterred, but the effect increases with the level of FDI and turns positive where the share of foreign firms is above approximately twenty per cent.

De Backer and Sleuwaegen (2003) estimate entry and exit of firms for Belgian manufacturing industries for 1990–1995. FDI hinders entry and stimulates exit, but there is some evidence that the negative effect may be moderated in the long term. De Backer and Sleuwaegen hypothesise that positive effects may take some time due to learning
and the establishment of linkages, but do not have the data to test this.

For manufacturing in Greece, Fotopoulos and Louri (2004) find that spillovers from foreign owned firms affect growth of total assets of domestic firms positively. A more recent study by Kosová (2010) for the case of the Czech Republic (1994–2001) looks at the growth rates of sales. She finds support for a negative short-term effect at entry of a foreign firm, but a positive effect in the long run as the foreign owned firms grow. The same conclusion follows from Kosová’s analysis of survival rates of domestic firms. Another study for the case of the Czech Republic by Ayyagari and Kosová (2010) examines entry rates, and find a positive effect of FDI on domestic entry that is stronger for services than for manufacturing, and for FDI that originates within the EU than for other nationalities. Ayyagari and Kosová (2010) also construct measures of FDI for upstream and downstream sectors, as is commonly done in productivity–based studies; the evidence for vertical spillovers is rather weak. This is surprising, since vertical spillovers are usually stronger for productivity. Finally, the study by Danakol et al. (2013) is the first to look at a sample from many different countries. They use data from the Global Entrepreneurship Survey that is conducted in over 70 countries. In this respect, they differ from the studies mentioned above, that mostly use firm–level accounts to construct data. Also, Danakol et al. look at cross–border mergers as their only source of foreign presence. For the period 2000–2009, they find that entrepreneurial activity is stymied in countries with more cross–border mergers.

2 Estimation methods and data

We view our analysis of the entry of new firms as a problem of location choice for new start–ups. Building on the results by McFadden (1974) and Carlton (1983), location choice models can be derived from a framework of random profit maximization by investors. If investor $i$, active in sector $s$ in region $r$ has profits $\pi_{irs} = \beta'x_{rs} + \epsilon_{irs}$ (where $x_{rs}$ is a vector of regional and sectoral covariates), and $\epsilon_{irs}$ follows an extreme value II distribution, the probability that $i$ will enter in region $r$ can be estimated by conditional logit regression. Guimarães, Figueiredo and Woodward (2003) and Schmidheiny and Brühlhart (2011) show that the conditional logit model is observationally equivalent to a poisson regression, and the parameters can be given the same interpretation. Alternatively, Becker2000 derive the Poisson regression from a model where each region has a certain number of ‘latent entrepreneurs’ that are immobile across regions, and decide to enter the market when the expected profits from doing so are positive. The estimates from a Poisson model are thus compatible with both possible models of entry.
We use dummy variables at the regional and the industry level to control for unobserved region and industry characteristics that affect both FDI and entry of domestic firms. As discussed in Guimarães, Figueiredo and Woodward (2004, notably footnote 10), the time dimension in our panel data requires that we include dummies for all year and industry combinations in the Poisson regressions to sustain compatibility with the conditional logit approach.

A further issue is overdispersion. The Poisson model requires that the conditional mean of the dependent equals its variance. This condition rarely holds. Different methods to deal with this violation of the model assumptions. Our preferred method is to estimate a pseudo–maximum likelihood model. As long as the mean of the model is correctly specified, Estimates from the Poisson model are consistent. In the presence of overdispersion, estimated standard errors underestimate the true standard errors. One can compute robust standard errors that adjust the estimated standard errors and allow for correct inference (see Wooldridge 2010, or Brülhart, Jametti and Schmidheiny 2012 for an application).

2.1 Data

Our data are based on different versions of the Amadeus database that has information at the firm level for a large number of European countries. We use the data for the EU25 countries, excluding Cyprus, Malta and Luxembourg, for the period 2003–2008. We select only firms with unconsolidated accounts. From this data, we can determine the date of incorporation, foreign or domestic ownership percentages, and size of the firm in terms of employment and sales. Also, we know the NUTS3 region where a firm is located, and the 2 digit NACE code for the industry in which it is active. From this firm–level data, we aggregate data on entry and the stock of domestic and foreign firms to the NUTS3 and the NUTS3–NACE level. For robustness checks and other models, we aggregate further to the NUTS2 level. We include firms in all industries when constructing variables at the regional (NUTS2 or NUTS3) level, but we discard agriculture, mining, education, health, financial services and public services sectors from the analysis at the region–industry level. All in all, we have 1225 NUTS3 regions, and 47 sectors (59 in total, of which 12 are discarded). We assume that region–industry combinations that logically exist but are not observed in our data have zero entry and zero firms, and we fill out the data accordingly.

We define a firm as an entrant if the year of incorporation coincides with the year of observation. The Amadeus data does not follow all firms over time, so entry in the data is insufficient to conclude entry in the economy. We cannot measure exit for this
Table 1: Summary statistics

<table>
<thead>
<tr>
<th></th>
<th>Obs.</th>
<th>Mean</th>
<th>St. dev.</th>
<th>Min.</th>
<th>p25</th>
<th>p50</th>
<th>p75</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic entry(_r)</td>
<td>446</td>
<td>890</td>
<td></td>
<td>0</td>
<td>56</td>
<td>169</td>
<td>447</td>
<td>13467</td>
</tr>
<tr>
<td>Domestic firms(_r)</td>
<td>7350</td>
<td>4463</td>
<td>10044</td>
<td>1</td>
<td>706</td>
<td>1712</td>
<td>4141</td>
<td>205069</td>
</tr>
<tr>
<td>Foreign firms(_r)</td>
<td>28</td>
<td>168</td>
<td></td>
<td>0</td>
<td>1</td>
<td>5</td>
<td>15</td>
<td>7220</td>
</tr>
<tr>
<td>Domestic entry(_{ir})</td>
<td>.016</td>
<td>.184</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>Domestic firms(_{ir})</td>
<td>403025</td>
<td>13</td>
<td>137</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>5</td>
<td>33387</td>
</tr>
<tr>
<td>Foreign firms(_{ir})</td>
<td>.245</td>
<td>5</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1610</td>
</tr>
</tbody>
</table>

Index \(_r\) indicates regional variables at the NUTS3 level; index \(_{ir}\) indicates NUTS3–industry level. Columns \(p10, p50\) and \(p90\) give the tenth, fiftieth and ninetieth percentiles, respectively.

reason, as there is little data on the year of exit, and exit from the data is insufficient information. We define a firm as foreign–owned if there is at least one foreign firm that own more than 10 per cent of that firm. This cut–off is common in the literature. Kosová (2010) takes as foreign firms that have a foreign ultimate owner, but this information is of insufficient quality for our data.

Table 1 shows some summary statistics for the most important variables in our analysis, entry of domestic firms (which are the lion’s share of all entry) and the number of foreign and domestic firms. It is clear that the data are skewed for all variables, especially at the region–industry level: many observations have zero counts, and the variables have long right tails.

### 3 Results

Some first and preliminary results are presented in Table 2. We show results for estimations using variables at the NUTS3 level only.

For comparison, we first estimate using OLS with dummy variables for regions and years. The results are in the second column of Table 2. Foreign firms seem to have a positive effect on the number of domestic entrants. However, given the distribution of the dependent variable, these results are biased. The next two columns show results from Poisson regressions. Both models include region and year fixed effects in the specification of the mean, and standard errors are robust. If we include only the number of foreign firms in the regression, there is a negative but very small effect from FDI. Controlling further for domestic firms, the coefficient for FDI turns positive, but is still statistically insignificant and economically small. From these first estimations, we see little evidence for a relationship between FDI and entry of domestic firms.
4 Conclusions and extensions

The possible spillovers from FDI on domestic firms is often estimated using firm–level productivity data. We argue that spillovers through productivity of existing firms is only one channel through such effects may come about. Another channel is through the entry of new firms. We have constructed a data set of regional and sectoral counts of the number of new firms, and aim to relate those counts to the presence of foreign–owned firms. We propose a model based in the location choice literature. Our first results for regional estimations are preliminary, and for now show little evidence for such spillovers.

We will further extend the model by estimating the same models also at the region–sector level. Also, we will construct measures of backward and forward spillovers along the supply chain. Such extensions may show more subtle effects from FDI on the local economy that we have been able to uncover sofar.

References


