

Employment Protection and FDI Revisited: New Evidence from Micro Data[#]

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Abstract

We use micro data on affiliates to Swedish multinational firms (MNEs) to explore the impact of more stringent employment protection legislation (EPL) on foreign direct investment (FDI). We add to the previous literature by exploring the impact of EPL on the extensive as well as intensive margin, and by distinguishing the impact on different types of affiliates. We find that employment and exports in exporting affiliates decline with EPL, and MNEs establish fewer exporting affiliates. In contrast, employment and sales rise with EPL in purely “horizontal” affiliates. We discuss possible mechanisms explaining this sharp asymmetry.

JEL Classifications F23, J8, C20

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1. Introduction

Many countries attempt to attract foreign direct investments (FDI), since potential host countries recognize that FDI can improve the productive efficiency of the business sector. Not only do multinational firms (MNEs) pay higher wages than indigenous firms, they are also more productive and do more R&D. Increasing globalization and volatility of employment may however also increase the demand for job security. A conflict may then arise between the host country government's ambition to protect employment and its ambition to attract FDI. In this paper, we re-examine how FDI is affected by the stringency of employment protection legislation (EPL) in the host country using affiliate micro data on outward investments by Swedish multinational firms.

Investigating the relationship between EPL and FDI is challenging for at least three reasons: *First*, it seems intuitive that more stringent EPL increases labor costs, e.g., in the form of severance pay, since it becomes costlier to dismiss workers. This effect is reinforced if stronger EPL improves the bargaining position of workers and hence increases their wage demands. However, there are also mechanisms through which stronger EPL can reduce wages. For instance, Lazear (1990) has suggested that more job security may contribute to lower wages, and possibly leave total labor costs unchanged, if employers can shift increased dismissal costs onto workers. Thus, the relationship between more stringent EPL and labor costs—and hence also the relationship between EPL and FDI—is ambiguous a priori.¹ *Second*, the term FDI refers to multiple decisions made by a multinational firm. These may involve investing into a new affiliate or deciding on employment and sales in an existing affiliate, where some sales may be destined to markets outside the host country market as exports. The impact of more stringent EPL on these decisions may not be uniform. *Finally*, FDI may trigger reforms of EPL in host countries and these policies are not decided upon in isolation of other labor market policies, or economic policy in general.

To identify the effect of more stringent EPL on the activities of MNEs, we use a micro dataset on affiliates of Swedish multinational firms for the period 1965–1998. We estimate regression equations for the investment decision of establishing new affiliates (extensive margin), affiliate

¹ If employers incur firing costs in excess of benefits accruing to workers, in the form of red tape and legal costs, these additional costs cannot be undone in wage bargaining and thus contribute to lowering employment (Burda, 1992).

employment, local sales and affiliate export sales (intensive margin). To examine the impact of the stringency of EPL in the host country, we use an index developed by Allard (2005) which is available for the 20 OECD countries we consider for our period of study, but also try an alternative measure (to be explained in more detail later).

An advantage with using micro data is that the impact of EPL can be explored on *both* margins of FDI. Previous studies have either explored the impact of EPL on the intensive margin, using aggregate data which precludes an analysis on the extensive margin, or they have focused on the extensive margin when using firm-level data. The main advantage with our micro data is that the analysis can also be performed at a more detailed level.

On the *intensive* margin, we distinguish between the impact of more stringent EPL on those affiliates that export and those that only sell to the local market. Earlier research (e.g. Olney, 2012) find an asymmetry where MNEs' exports decline in EPL while their local sales are unaffected. While we find that exports and employment in exporting affiliates *decline* when EPL becomes stronger, it remarkably turns out that sales and employment in non-exporting affiliates *increase* when EPL becomes stricter.

On the *extensive* margin, we compare new affiliates which only sell to the local market and those that also export. Previous research (e.g. Javorcik and Spatareanu, 2005) has found that more stringent EPL deters MNEs from investing into new affiliates. We also find that more stringent EPL induces Swedish MNEs to invest in fewer new affiliates, but a closer inspection reveals that the negative impact stems from establishing fewer affiliates that export.

In the working paper version of this paper (Norbäck, Duanmu and Skedinger, 2012), we show how the above asymmetry can be consistent with a heterogeneous Cournot model of FDI, where more stringent EPL increases actual or expected wage costs. Briefly, if an affiliate is more productive than the average firm active in the local market—a condition which is likely to be fulfilled, given the well-known stylized fact that MNEs on average are more productive than indigenous firms—more stringent EPL, which increases general wage costs, can improve the affiliate's relative competitiveness in the host country market. This strategic advantage vis-à-vis indigenous firms can then explain why employment and local sales can increase when the stringency of EPL increases. However, in its export markets the MNE faces overseas rivals not affected by changes in EPL in the host country. Intuitively, if more stringent EPL raises wage costs affiliate exports will then decline.

We are thus able to reproduce the findings in the previous literature, but our study also makes significant contribution by shedding new light on the complex micro activities of MNEs, and consequently, their differential response to the host country's EPL. All our regressions include country fixed effects, which means that we identify the effect of more stringent EPL on our different affiliate-level measures of FDI using the within-country variation in EPL. We control for other labor market policies and in unreported robustness checks, we use numerous controls for globalization, culture, institutions, geography and taxes without changes in results. Moreover, endogeneity of EPL should not be a problem in our study, since we focus on outward FDI from a small country.²

Still, one might suspect that a change in labor market policies (such as more or less stringent EPL) will not take place in isolation of other economic policies. Sweden in the early 1990s is a good example, where—as a response to a deep economic crisis—fundamental reforms were made in the tax system and the regulation of FDI. Sweden also achieved central bank independence and a flexible exchange rate system, as well as new budget rules for the government. This occurred at the same time as the rules concerning temporary employment were made less stringent. The Swedish example suggests that we should control for such omitted policy bias.³ We therefore add regressions with host country time trends to account for omitted variables that may be correlated with country-specific trends in EPL. These results confirm the asymmetric- or heterogeneous effects of EPL on different types of affiliates: Affiliates which are entirely directed toward the local market experience increased employment and sales when EPL increases; exporting affiliates, in contrast, see their exports decline. On the extensive margin, it is again the number of new investments in exporting affiliates which decline with more stringent EPL.

We organize the rest of the paper as follows. In Section 2, we discuss broadly how EPL in general might affect FDI from theory. Section 3 relates this paper to the previous literature. We lay out our empirical strategy in Section 4, where the data source and econometric methods are introduced, and the empirical results are presented. Section 5 concludes the paper.

² Sweden accounted for just 2.8 per cent of all outward FDI flows during the period 1970–1998, according to UNCTAD. We also perform robustness tests by excluding countries that may be more dependent on FDI from the sample.

³ Note in our data Sweden is the home country for the MNEs. To control for omitted home country-specific variables, we use year-specific effects in all regressions.

2. Theoretical framework

In this section, we discuss broadly the mechanisms through which EPL may affect FDI. This will be useful when turning to the empirical analysis.

A likely scenario is that stronger EPL increases firms' actual or expected wage cost. Haaland, Wooton and Faggio (2002) present a model of FDI and EPL, where in a first stage an MNE decides whether to invest in a plant in host country at a fixed cost. In a second stage, it hires labor at a given wage, and in stage 3 the output is produced and sold in the host country. After the investment and hiring decision—but *before* the output decision—a catastrophic shock hits the firm with some exogenous probability in which case the firm will need to close the plant and provide severance pay for fired workers. In their framework, more stringent EPL (i.e. higher severance pay) will lead to lower affiliate employment, lower affiliate sales and a lower incentive to invest into an affiliate. In short, stricter EPL will reduce FDI.

Yet, there are other mechanisms through which stricter EPL can also have a positive effect on affiliate employment and sales. Lazear (1990), for instance, has suggested that bonding may induce workers to accept a lower wage in exchange for secure employment in bad states. Thus, since labor market theory does not unambiguously sign the effect of more stringent EPL on labor costs, this creates an ambiguity on the impact of employment protection on FDI.

Another ambiguity can arise through *strategic interaction*. In our working paper, Norbäck, Duanmu and Skedinger (2012), we illustrate this using a Cournot model with heterogeneous firms. MNEs compete in the product market with indigenous firms as well as with MNEs and exporters from its own home country or from other source countries. If an affiliate is more productive than the average (indigenous) firm in the local market—a condition which fits stylized facts of MNEs (Barba-Navaretti and Venables, 2004)—more stringent EPL which increases general wage costs can improve the affiliate's competitiveness.⁴ In this way, more stringent EPL may lead to an increase in sales, employment and profits from the MNE's activities in the local market.⁵

⁴ This mechanism is also noted in Leahy and Montagna (2000).

⁵ Consider a market with two firms: one with high labor productivity and one with low labor productivity. A general raise in wage costs (i.e. the wage of a worker) will raise the marginal cost more for the low-productivity firm than for the high-productivity firm. The wider wedge in marginal cost then translates into a greater strategic advantage for the high-productivity firm which allows it to commit to being more aggressive in the product

However, even if the MNE can gain an advantage in the host country market from stricter EPL (as weaker competitors push back on their sales), this may still not make it more profitable to invest in the host country. The reason is that most affiliates are also engaged in *export activities*. Higher wage costs in a host country used as an export platform to the MNE's home country or to third countries, now conveys a disadvantage vis-à-vis firms with production in countries with laxer EPL. Since most firms active in export markets will be in the latter category, affiliate export sales will suffer.

3. Relation to the literature

A contribution of our work is to separate the effect of more stringent EPL on the extensive margin of FDI (i.e. the investment decision into an affiliate), from the effect of more stringent EPL on various components of the intensive margin of FDI (i.e. the employment of the affiliate and the decomposition of sales into affiliate exports and local sales). This requires access to data disaggregated into the relevant observation units and dimensions, namely *affiliate-level* data (with information also on the parent company) disaggregated by *activity*.

To the best of our knowledge, all previous econometric studies on the relationship between FDI and EPL use data that are more aggregate than ours in at least one of these respects and in most cases more aggregate in both.

Examples of the latter are Bellak and Leibrecht (2011), Benassy-Quéré, Coupet and Mayer (2007), Dewit, Görg and Montagna (2009), Görg (2005) and Gross and Ryan (2008), who all find that FDI is hampered by more stringent EPL. Bellak and Leibrecht (2011) also find evidence of heterogeneous effects across sectors; stricter EPL discourages FDI mostly in low-skill intensive industries.

Javorcik and Spatareanu (2005) and Lafontaine and Sividasan (2009) use firm-level data as we do, but do not distinguish between the various activities of MNEs. Javorcik and Spatareanu (2005) study the investment decisions of MNEs, covering 19 European countries over the period 1998–2001. They find that more stringent EPL reduces the incentive to invest, but their analysis does not examine the effect on employment. Nor do they examine the impact on the different activities of the affiliate after the investment decision is taken. Lafontaine and

market. The strategic effect can even dominate the negative direct cost-increasing effect of the rise in wage costs. Output and profits for the high-productivity firm will then increase.

Sivadasan (2009) use establishment-level data on a single American fast food company investing in 43 countries over 2000–2003. They find that adjustment of employment is hampered and that entry into a country and expansion of outlets there are delayed because of more stringent EPL. While their paper also uses micro data, they do not study affiliates engaged in international trade with neighboring countries which is an essential feature in our analysis.

Azémar and Desbordes (2010) and Olney (2013) share our approach of disaggregating the sales activities of the MNEs, but the data used are country-level aggregates (for US firms). These papers also find an asymmetry between the effect of more stringent EPL on sales of affiliates to the local market and exports to other markets, where affiliate exports are reduced more than affiliate local sales. However, since Olney (2013) and Azémar and Desbordes (2010) use aggregate data, they cannot identify the effects of more stringent EPL on the extensive margin of FDI. With affiliate level data we can take a step further in this direction by distinguishing affiliates according to their *type*.

With micro data we can distinguish the effect of more stringent EPL on employment and sales in affiliates that *only* sell to the local market from the effect of more stringent EPL in affiliates that are used as export platforms. We can also study if more stringent EPL has a different impact on firms' incentives to establish new affiliates that are used for exports and firms' incentives to establish new affiliates that *only* serve the local market. This cannot be done with the type of aggregate sales data used in Azémar and Desbordes (2010) and Olney (2013) since these data are constructed by aggregating over individual affiliates.

We find that affiliate exports and employment in affiliates that export decline when EPL becomes more stringent, while local sales for this type of affiliate is unaffected by EPL, mimicking results in the previous literature.⁶ However, more stringent EPL increases both employment and sales in affiliates that *only* serve the local market. Turning to the extensive margin, we find that Swedish firms invest in fewer exporting affiliates when they face stronger EPL, while no such effect is detected on investments in affiliates that only serve the local market. Compared to Javorcik and Spatareanu (2005), we trace the negative effect on stronger EPL on the extensive margin to the establishment of exporting affiliates.

⁶ Olney (2013), who uses aggregate data on sales, finds that more stringent EPL has no effect on US firms' sales in the local market.

In sum, by highlighting the impact of more stringent EPL on different types of affiliates, we provide additional evidence on how stronger EPL has heterogeneous effects on the intensive as well as on the extensive margin.

4. Econometric analysis

Our purpose is to estimate the effect of more stringent EPL on FDI in terms of affiliate employment, affiliate local sales, affiliate export sales, and the decision to invest in an affiliate. When estimating the impact on *the intensive margin of FDI*, with the dependent variable y_{at} measuring affiliate employment, affiliate local sales and affiliate export sales, we use the following equation:

$$\begin{aligned}
y_{ajt} = & \beta_0 + \beta_1 \cdot EPL_{jt} + \beta_2 \cdot market_pot_{jt} + \beta_3 \cdot open_{jt} + \beta_4 \cdot gdp_{jt} + \beta_5 \cdot gdp_cap_{jt} \\
& + \beta_6 \cdot size_{it} + \beta_7 \cdot r\&d_{it} + \beta_8 \cdot experience_{ijt} + \beta_9 \cdot age_{at} \\
& + \beta_{10} \cdot sales_aff_{at} + \beta_{11} \cdot EU_{jt} + \beta_{12} \cdot NAFTA_{jt} + \mathbf{X}'_{jt}\boldsymbol{\gamma} + \varepsilon_{ajt}, \quad (1)
\end{aligned}$$

where the index a denotes affiliate identity, i denotes the firm to which affiliate a belongs, j denotes the host country in which affiliate a is located and, finally, t to denotes time.

When estimating the *extensive margin of FDI*, we replace y_{at} with y_{ijt} , which measures the number of affiliates that an MNE has established in a host country, and omit all the affiliate-specific variables in (1), so that we have

$$\begin{aligned}
y_{ijt} = & \varphi_0 + \varphi_1 \cdot EPL_{jt} + \varphi_2 \cdot market_pot_{jt} + \varphi_3 \cdot open_{jt} + \varphi_4 \cdot gdp_{jt} + \varphi_5 \cdot gdp_cap_{jt} \\
& + \varphi_6 \cdot size_{it} + \varphi_7 \cdot r\&d_{it} + \varphi_8 \cdot experience_{ijt} + \varphi_9 \cdot EU_{jt} \\
& + \varphi_{10} \cdot NAFTA_{jt} + \mathbf{X}'_{jt}\boldsymbol{\gamma} + \varepsilon_{ijt}. \quad (2)
\end{aligned}$$

We now describe the dependent and independent variables in more detail.

4.1 Dependent variables

Let us now discuss the data used for estimating (1) and (2). To measure the dependent variables we use data from the Research Institute of Industrial Economics (IFN), which has conducted

eight surveys of the foreign activities of Swedish multinational firms in the years 1965, 1970, 1974, 1978, 1986, 1994, and 1998.⁷ The population consists of firms meeting the following criteria: (i) the firm's main activity should be within the manufacturing sector, (ii) the total number of employees should be at least 50, and (iii) the firm should have at least one producing affiliate abroad and the domicile is located in Sweden. The surveys cover almost all Swedish multinational firms with these characteristics in the manufacturing sector. We will predominantly use survey data for the OECD countries as we are limited to countries for which there are EPL data available. This omission may be less serious because the OECD countries account for the clear majority (85 per cent) of foreign employment in Swedish MNEs. In unreported regressions, we extend the analysis beyond the OECD countries using an alternative dataset on EPL which has recently become available without qualitative changes in results.⁸

The Swedish parent firms provide information on variables such as their size in terms of employment, sales, R&D and the composition of these activities in Sweden and abroad. Firms then submit surveys to all their producing affiliates, which provide data on employment, intra-firm trade, affiliate R&D and give detailed industry classification.

In equation (1), we use the following dependent variables as measures of FDI: The variable $employment_{at}$ measures affiliate employment, including both permanent and temporary workers. More precisely, it gives the logged employment of affiliate a in time t . Figure 1 shows the development of the mean of $employment_{at}$, calculated for each country in each survey year. Average employment is at relatively high levels in Belgium, France, Germany, Italy and Portugal, while some small countries like Norway and Switzerland have attracted less FDI in terms of employment. The fitted trends reveal that there is large variation in affiliate employment across countries over time. Upward trends are discernible for Greece, Ireland, Italy, Spain and the United States, while the opposite trends can be noted for Australia, Finland, France, Japan and New Zealand.

Figure 1 here

⁷ These data have been used in earlier studies, such as Norbäck (2001), Braconier, Norbäck and Urban (2005a, 2005b), Davies, Tekin-Koru and Norbäck (2009), Hakkala, Norbäck and Svaleryd (2008) and Bertrand et al. (2012).

⁸ See footnote 11.

In order to examine if the effect of more stringent EPL on employment differs depending on where output is sold, we will make use of the information on sales flows. We use the information on intra-firm trade to calculate the variables *local sales_{at}* and *exports to 3rd country_{at}*, which are measured as the log value in millions of Swedish kronor (SEK).⁹ For each affiliate, local sales are computed as total value of goods assembled (production) minus total exports. Exports to third countries are then calculated as total exports minus exports to Sweden. To explore further how the direction of sales flows affects how more stringent EPL impacts affiliate employment, we will also split the data into affiliates who only sell to the local market and those who also export.

Figure 2 presents the average of our affiliate local sales and affiliate exports to third countries for each OECD country over time. In general, both variables are trended upward. In some countries, like Canada, Finland, France, Germany, Italy and the United Kingdom, the two variables also follow each other closely. While affiliate local sales are larger in the 1960s and 1970s, export sales to third markets catch up with local sales over the years and in the 1990s export sales are on the same or even higher level. This pattern is consistent with the globalization process. We should finally note that affiliate local sales and affiliate exports to countries other than Sweden make up the lion's share of affiliate total sales. Only about 7 percent of affiliate sales are re-exported to Sweden.

Figure 2 here

To measure the extensive margin, we use the variable *investment_{ijt}*, which measures the number of investments in new affiliates the parent firm *i* has made in a host country *j*, in a period beginning three or four years before the survey and ending in the year of the survey, *t*.¹⁰ Since this variable is a count variable we estimate (2) by means of a negative binomial regression model.¹¹ Again, to learn more how more stringent EPL affects different types of affiliates, we

⁹ We deflate sales to 1998 Swedish kronor using the Swedish consumer price index.

¹⁰ The number of years between surveys differs since they were conducted in 1965, 1970, 1974, 1978, 1986, 1990, 1994 and 1998. When there are four years between surveys, we use a window which starts three years before the survey and ends with the survey. For the surveys in 1970 and 1986, the window starts four years before the survey. We also checked results when starting the window three years before the survey in all survey years, and a window that included affiliates started up to two years before the years a survey was conducted and affiliates started up to two years after a survey was conducted. This did not change results.

¹¹ We do not have information on the regional location of an affiliate in the host country. With multiple investments into affiliates in the same host country, it is then problematic to define a binary investment variable.

also split the number of new affiliates created by a firm into affiliates that only sell to the local market and those who also export.

We now turn to a discussion of the explanatory variables.

4.2 Independent variables

4.2.1. Measuring labor regulations

To measure the stringency of EPL we use the index developed by Allard (2005), who extended the OECD (2004) index for specific countries, covering the period 1998–2003, from 1950 to 2003. This index, labeled EPL_{jt} , where j indicates the host country, is given in a scale from 0 to 6 where a higher number indicates more stringency. Since the index is discrete we do not use it in logs. The Allard index is useful since it is available for a sufficiently long period to cover the long time span in our data and is defined consistently across countries. This index has the additional advantage of being comprehensive, covering legislation regarding regular employment, temporary employment and collective dismissals. Unlike the OECD index, however, Allard’s index excludes two minor components of EPL, namely “delay to start a notice” and “compensation for unfair dismissal”. Alternative EPL indices, with a similarly long time spans, are developed by Blanchard and Wolfers (2000) and Belot and van Ours (2004). Both indices have shortcomings for our purposes.¹² Our preferred EPL index in the estimations is thus Allard’s. Unfortunately, this index does not include the non-OECD countries in our MNE database and it does not distinguish between regulations for regular and temporary contracts, but this is a drawback that the index shares with both alternatives mentioned above.¹³

Figure 3 shows the development of Allard’s EPL index in the 20 OECD host countries that we consider in our main empirical analysis. Not only does the stringency of EPL vary greatly

¹² The index of Blanchard and Wolfers (2000) links together two periods of time covering completely different aspects of EPL, partially from Lazear’s (1990) earlier data regarding notification times and severance pay and partially from the OECD’s later more comprehensive index (see Howell et al., 2007, for a discussion). Belot and van Ours (2004) have launched an index that is less comprehensive than the one developed by Allard and OECD and it is not entirely clear how the index has been constructed.

¹³ In unreported regressions, we also use the index constructed by Campos and Nugent (2012), labeled LAMRIG. This index also includes non-OECD countries, but a drawback for our purposes is that it covers broad areas of labor regulation and not only EPL, such as hours of work, paid leave and wages. However, the correlation with Allard’s index for the OECD countries in our sample is quite high – 0.85 – so we decided to use the Campos and Nugent index as a robustness check of our results on a data set extended to include non-OECD countries, without major changes in our findings.

across countries, there is also considerable variation over time within many countries, thanks to the long observation period. Overall, EPL is more stringent in Southern Europe – Greece, Italy, Portugal and Spain – than in Anglo-Saxon countries – Australia, Canada, Ireland, United Kingdom and the United States. In most countries there is an upward trend in EPL stringency, but some countries, notably Germany, Italy, Portugal and Spain, exhibit inverse U-shapes, with declining stringency toward the end of the period.

Figure 3 here

More stringent EPL may have a direct effect on wage costs but these costs may also be affected by other labor market institutions. To isolate the effect of EPL on wage costs from other labor market institutions we use variables taken from the Nickell database (Nickell, 2006): union coverage and union density, both in percentage terms, an index of bargaining centralization, ranging from 1 to 3, and gross replacement rates in unemployment insurance, as a percentage of average earnings before tax (all variables originating from the OECD). From Nickell's database (2006) we have also included an index for intellectual property rights (originating from Ginarte and Park, 1997).

To account for the wage level for comparable workers in the host country, we make use of a series on the hourly wage costs for a toolmaker, collected by the Swiss bank UBS.¹⁴ We also use a variable, *regulation_{jt}*, to capture the knock-on cost of regulation in non-manufacturing industries, which act as inputs in manufacturing industries, from OECD. OECD studies indicate that industries where regulation costs are high tend to have stronger labor market imperfections.

All our specifications include country fixed effects (i.e. our estimates capture the impact of the within-country variation in the strictness of host country EPL on the intensive and extensive margin of FDI). We also introduce year as well as firm fixed effects or affiliate-industry fixed effects in many, but not all, specifications. Firm fixed effects help to control for selection and adjustments on other margins that may bias estimates of the effects on the intensive margin. A disadvantage, though, is that including firm fixed effects means that any effects are identified from MNEs that invest in multiple countries. The affiliate-industry fixed effects are time-varying as they capture how an affiliate changes product lines over time and are fairly detailed (down to the 5 digit level). Thus, we will use the variation in EPL over time in the host countries

¹⁴ These data are taken from Braconier, Norbäck and Urban (2005a).

to examine the impact on FDI as captured by affiliate local sales, affiliate export sales and the decision to invest.

It may be the case that time-varying concomitant policy reforms, the effects of which take time to materialize, and technological shifts that are correlated with EPL drive our results. If so, our estimates of the impact of EPL will be plagued by omitted variable bias unless country-specific trends are included in the regressions. Finally, endogeneity is a potential problem. Host countries may, for example, reduce the stringency of EPL to attract foreign investment. This is unlikely to hold for Swedish firms given Sweden's small size in the world economy. A larger problem might be that labor market reforms might not take place in isolation.

4.2.2. Other control variables

To control for firm heterogeneity in firm-specific assets, we first use the size of the parent firm i in the survey year t as measured by the log of (world-wide) total sales, $size_{it}$, as well as parent firm's R&D intensity as measured by the log of R&D expenditures divided by total sales, $r\&d_{it}$. To further control for firm-heterogeneity, we add the parent firm's experience in the host country, $experience_{ijt}$, defined as a dummy indicating whether the parent company previously had an affiliate in the host country. We also control for heterogeneity across affiliates and add the age of an affiliate, age_{at} , as well as a dummy variable indicating whether this affiliate was started as a sales affiliate, $sales_aff_{at}$.

To control for host country market size, we use the log of real GDP of the host country, gdp_{jt} , taken from the World Bank. We also include real GDP per capita, gdp_cap_{jt} , again taken from the World Bank. To measure the host countries' potential attractiveness as export destination, we compute a distance weighted real GDP for all countries other than country j , including non-OECD countries, $market_pot_{jt}$, following Harris (1954).¹⁵ For other unobserved country characteristics, we use country fixed effects. We also control for year fixed effects and industry or firm fixed effects.

The variables, *host real GDP* _{jt} , *host real GDP per capita* _{jt} and *market potential (distance weighted)* _{jt} , will also control for the within-country level of competition, as entry will be driven

¹⁵ We also computed distance-weighted real GDP per capita to control for demand and wage. We do not include them here for the lack of space.

by these demand factors. This of course generates an ambiguity in the expected signs of these variables as they will capture both demand and competition effects.

Finally, to control for trade costs, we use the openness of the host country defined as the ratio of exports plus imports to nominal GDP, $open_{jt}$. We also use a set of time-varying dummy variables for host country membership in EU and NAFTA, respectively. These will, to some extent, pick up variation in trade cost but will also control for omitted characteristics associated with membership. We also calculate distance-weighted EPL indices in neighboring countries and examine their impact on affiliate employment, as EPL in neighboring countries may also affect affiliate employment.¹⁶

Tables 1 and 2 present summary statistics for the variables in the empirical analysis, Table 1 for the regressions pertaining to the intensive margin and Table 2 for the extensive margin. There are at most 3,242 observations in the sample for the intensive margin, depending on specification. This number represents the investments made by 320 Swedish mother firms. For these 320 firms, there are 14,646 observations in the sample for the extensive margin.

Table 1 here

Table 2 here

4.3 Results

4.3.1 Affiliate employment

Table 3 reports the results for the log of the number of employees of an affiliate in the host country ($employment_{at}$) as the dependent variable. We start with a baseline specification in column 1, with year and country fixed effects and then add firm and industry fixed effects, in columns 2 and 3, respectively. Both firm and industry fixed effects are included in column 4. The coefficients of the EPL index EPL_{jt} are negative, significant and fairly robust across specifications, indicating a deterring effect of stronger EPL on the employment level of Swedish affiliates. The estimates are in the region -0.118 to -0.176 , suggesting that an increase in the

¹⁶ For instance, if EPL in neighboring countries affects wage costs in foreign firms who export to the host country, neighboring EPL will affect the competition facing the affiliate. But EPL in other locations may also have cost increasing effects if affiliates are linked in value chains.

EPL index by one unit decreases affiliate employment by 11 to 16 percent.¹⁷ These results suggest that more stringent EPL increases actual or expected wage costs.

Table 3 here

Most of the results for the firm-specific variables also yield significant results. For example, employment increases consistently in parent size, with previous experience and in the age of the affiliate. The results for parent R&D intensity are not robust; they come out with a negative sign in the base estimation, lose significance in columns 2 and 3, but are positive and significant in the specification with fixed effects for both firm and industry in the final column. The positive significant effect of parent size on affiliate employment reflects the presence of firm-specific assets: firms which are large globally tend also to have larger affiliates in terms of the number of employees.

Membership in the EU or NAFTA is associated with more employment in the affiliates. We do not get much mileage out of the macroeconomic variables – the coefficients are never significant. An explanation for this may be that these variables capture both demand and competition effects.

We have chosen to cluster the t-statistics (standard errors) on countries in all our tables. We also experimented with clustering on affiliates and industries (at the 2–5 digit level), resulting in only small changes in inference. All four specifications in Table 3 attain adequate model fitness with reasonable R-squares ranging from 37 to 63 per cent.

We now subject our results to robustness checks in Table 4, with more indicators on the host country's labor market regulation and a measure of its wage costs. Other controls from Table 3 are included in the specifications (as well as fixed effects for year, country, industry and firm), but are not shown. The wage cost per hour for a tool-maker, added in the first column, has no significant impact on the employment. The coefficient of EPL remains negative and significant. In column 2, we instead add the knock-on cost of regulation in non-manufacturing industries which act as inputs in manufacturing industries, the coefficient of which is negative but not significant, while the impact of EPL remains robust. When we instead add intellectual property

¹⁷ Note that the affiliate employment is in log form while the EPL index is not, as it is a discrete index. Then, the percentage change in employment is $(e^{\hat{\beta}} - 1) \times 100$, where $\hat{\beta}$ is the estimated coefficient.

rights, in column 3, its coefficient is positive and significant and the coefficient of EPL does not change much. In column 4, which instead adds measures of labor market institutions, none of their coefficients come out significantly, but the effect EPL remains robust. When all variables are included, in column 5, wage costs and bargaining centralization have a significantly negative and positive impact, respectively, on log employment (the latter result consistent with the literature on centralization of wage bargaining, see Driffill, 2006). The coefficients of EPL are quite robust across all specifications in Table 4, ranging from -0.135 to -0.181 , which supports the hypothesis that the employment level of Swedish foreign affiliates is negatively associated with strong EPL of the host country.

Table 4 here

Our unreported experiments with excluding countries with small GDP per capita (Greece, Portugal and Spain) did not produce substantial changes in the results, suggesting that endogeneity in this respect is not a serious problem in the analysis.¹⁸ In other unreported regressions we also add numerous controls for the influence of globalization, culture, institutions, geography and taxes without change in results.

4.3.2 The decomposition of affiliate sales into local sales and exports

The results in Tables 3–4 are consistent with the assumption that more stringent EPL increases wage costs which reduce affiliate total employment. While the estimates tell us that total employment is decreasing in stricter EPL, they do not give information if the negative effect on employment is generated in production for exports or in production for local sales.

In Table 5, we therefore explore the composition of sales, divided into total sales, local sales, total exports and exports to third country. For comparison, column 1 reproduces the results for employment from column 4 in Table 3. In column 2, with total sales as the dependent variable, EPL has a significantly negative effect. This is true also for exports (column 3) and exports to third country (column 4), but not for local sales (column 5). The estimated coefficient for export

¹⁸ The results are available from the authors on request.

to third countries is -0.330 , which corresponds to a 28 per cent decrease in export sales when the EPL index increases by one unit.

Table 5 here

Our estimates thus confirm the previous results (e.g. Olney, 2013) from aggregate data where more stringent EPL is found to have no effect on affiliate local sales, while affiliate exports decline in the stringency of EPL.

Our micro data, however, allows go further in exploring this asymmetry by distinguishing between affiliates which only sell to the local market and those who also export. In Tables 6-9 we explore if the impact of EPL on employment and the composition of sales differs between exporters and non-exporters.

Results for the subsample of affiliates which only sell to the local market, accounting for about 20 per cent of the observations, are shown in Table 6. The coefficient of EPL is now *positive* (but significant only at the 10 per cent level) in the employment regression (column 1). Moreover, total sales (column 2) and local sales (column 3) are also positively affected by EPL, with the latter more sharply estimated.¹⁹ Results for exporting affiliates, in Table 7, are quite close to the estimates for the whole sample of firms in Table 4.

Table 6 here

Table 7 here

Thus, while previous research has shown that local sales appear to be insensitive to EPL, we find that more stringent EPL is associated with larger local sales and larger employment in affiliates who only sell to the local market. Looking at affiliates who also export, however, more stringent EPL again reduces employment and exports, while there is no effect on local sales in these affiliates.

In our working paper (Norbäck, Duannmo and Skedinger, 2012), we suggest how these asymmetries can be consistent with more stringent EPL increasing firms' wage costs. The mechanism is noted by Leahy and Montagna (2000). Intuitively, the reduction in affiliate export sales occurs as the affiliate perceives a cost disadvantage vis-à-vis overseas markets from competitors not subject to stronger EPL. But how can local sales and employment increase if wage costs increase? If more stringent EPL leads to a general increase in wage costs in the host country market—and if the MNE is sufficiently more productive than the average firm active in this market—the MNE's relative competitiveness increases. This increase in competitiveness vis-à-vis indigenous firms provides a strategic advantage for the MNE in the local market, which explains why local sales and employment can increase when EPL becomes stronger.²⁰

4.3.3 Endogeneity

The estimates so far presents a stark asymmetry: more stringent EPL has a positive effect on employment and sales in non-exporting affiliates, while there is a negative effect on employment and exports for exporting affiliates. A concern with these results is endogeneity. From the fact that Sweden is small source country, it is unlikely that the investments of Swedish MNEs should affect employment protection in the host countries in which Swedish firms invest.

A greater concern is perhaps omitted variable bias—changes in EPL may not take place in isolation of other economic policies and labor market developments that also could affect employment, exports and investment. Sweden (as a host country) is a case in point, where broad reforms in the early 1990s involved not only more liberal rules for temporary employment, but also far-reaching changes in taxation, FDI regulation as well as the introduction of central bank independence, a floating currency and new budget rules. Such changes in policy, as well as other difficult-to-observe developments affecting labor demand, could contribute to employment trends varying across countries for reasons unrelated to changes in EPL. Not accounting for host country-specific time trends could then produce a spurious negative relationship between EPL and affiliate activities.

²⁰ The insignificant impact on local sales of more stringent EPL would occur if exporting affiliates meet significant competition from other foreign firms in countries where EPL does not change. The advantage the MNE acquires against indigenous competitors and the disadvantage against foreign rivals then balance each other out.

To address this concern, we add a time trend and country-specific trends (all entered linearly) to the specifications used in Tables 6 and 7 for the employment, total sales and local sales regressions. The results in Table 8, for non-exporters, indicate that the positive impact of EPL survives the inclusion of trends, albeit the loss of significance for the coefficient on local sales. Overall, results for exporting affiliates in Table 9 also remain robust. The impact of EPL on total sales and total exports is still negative and significant, but the coefficient for exports to third country loses significance.

Table 8 here

Table 9 here

Finally, it may also be that the level of employment protection in neighboring countries affects Swedish firms' investment decisions. In unreported specifications we therefore included distance-weighted EPL in neighboring countries among the explanatory variables for employment, total sales and total exports respectively. The effect is always insignificant. Since we do not know which countries affiliates export to or from which countries import competition occurs, our measure may be too imprecise.²¹ We also tried distance-weighted EPL in neighboring countries for exporters and non-exporters, with and without country-specific effects, without finding any statistically significant results.

4.3.4 The extensive margin of FDI

Our findings so far show that in pooled regressions we can confirm earlier results in the literature: stricter EPL reduces affiliate employment and exports, while having no effect on affiliate local sales. However, when we examine heterogeneous effects and split the data into a group of affiliates which only sell to the local market and a group which also export, we find

²¹ Olney (2013) finds that the stringency of EPL in a host country is significantly correlated with a weighted average of EPL in neighboring countries.

some evidence that in the former group stronger EPL increases employment and local sales, while in the latter group of exporters stronger EPL leads to lower employment and export sales.

Our micro data also allows us to explore this asymmetry in terms of firms' incentives to invest into new affiliates. From the results on the intensive margin we would expect that Swedish MNEs should be less inclined to establish new exporting affiliates in host countries which strengthen their EPL legislation, whereas their decisions to establish affiliates which are more directed toward serving the local market should be less affected by more stringent EPL.

In Table 10, we estimate how EPL affects the extensive margin of FDI by examining how the number of investments in new affiliates in a window, starting three or four years before the survey and ending in the survey year, is correlated with the Allard index of EPL. Table 10 shows the result from the negative binomial regression model.²² The table suggests that the number of new affiliates is reduced when EPL becomes more stringent, and that this effect stems from exporting affiliates, as expected. The overdispersion parameter (alpha) indicates that negative binomial regression, and not Poisson, is the appropriate approach to use (except for the new non-exporting, "horizontal" affiliates). Inclusion of a time trend and country-specific trends, in Table 11, produces almost identical coefficients for EPL to those in Table 10.

Table 10 here

Table 11 here

In Table 12 we check robustness by first adding wage costs, the measure of the knock-on costs of regulation and the measure of intellectual property right protection, and then adding the labor market controls. We repeat this for all three measures of the extensive margin. Results are not qualitatively changed: again, the incentive to invest in exporting affiliates decline when EPL becomes more stringent, while purely market seeking investments seem less sensitive to EPL. For the control variables, we note that the level of centralization of wage bargaining increases firms' incentive to invest in exporting affiliates, while higher gross replacement ratio appears to reduce this incentive.

Table 12 here

²² The 14,646 observations in Table 10 again cover the investments by host country over the survey years by 320 mother firms. This is an unbalanced panel as firms exit, are re-organized, or become acquired over the period 1965-1998.

5. Discussion and conclusions

In this paper, we use micro data on Swedish multinational enterprises (MNEs) to investigate how the strictness of employment protection legislation (EPL) impacts foreign direct investment (FDI). Previous literature has used more aggregated data to investigate the impact of EPL on the intensive margin of FDI (e.g. the effect on employment and/or the composition of sales) or has focused on the extensive margin of FDI (e.g. the effect on firms' investment decisions).

We start by reproducing results in the previous literature. We then go on to using micro data that not only allow us to study the impact of EPL on both margins of FDI—the analysis can also be performed at a more detailed level than previous studies.

On the *intensive* margin, we can distinguish between the impact of more stringent EPL on those affiliates that export and those affiliates who only sell to the local market. Previous research (e.g. Olney, 2012) find an asymmetry where MNEs' exports decline in EPL while their local sales are unaffected. While we find that exports and employment in exporting affiliates decline when EPL becomes stronger, remarkably, sales and employment in non-exporting affiliates increase when EPL becomes stricter.

On the *extensive* margin, we can distinguish between new affiliates which only sell to the local market and those who also export. Previous research has found that more stringent EPL deters MNEs from investing into new affiliates. We also find that more stringent EPL induces Swedish MNEs to invest in fewer new affiliates, but when studying composition effects we find that the negative impact stems from establishing fewer affiliates that export.

The ambiguity in our results is well in line with mainstream research on the employment effects in general of EPL (see e.g. Skedinger, 2010, for an extensive survey of empirical findings). The findings in this literature are quite mixed, with some studies suggesting negative effects, some positive effects and others no effect at all. In our working paper (Norbäck, Duanmo and Skedinger, 2012), we suggest a model with strategic interaction that can generate this stark asymmetry: In overseas export markets higher wage costs induced by more stringent EPL imply a disadvantage. But in the host country market higher wage costs induced by more stringent EPL can still provide MNEs with a strategic advantage vis-à-vis less productive indigenous firms.

But does an increase in the stringency of EPL affect actual or expected wage costs? In unreported regressions, we also examined how stronger EPL affected the average affiliate wage. Re-running the benchmark employment regression with the log of the average wage in an affiliate as dependent variable, we found that stronger EPL raised the mean wage in affiliates selling only to the local market. A more rigorous empirical analysis, linking EPL to wages, employment, composition of sales and the decision to invest, would require individual-level data, since worker characteristics affecting wages may differ across firms. We will leave this to future research, using matched employer-employee data.

Table 1: Summary statistics for intensive margin

| VARIABLES | (1) N | (2) Mean | (3) SD | (4) Min | (5) Max |
|---------------------------------------|----------|-------------|-----------|------------|------------|
| Number of employees (log) | 3,242 | 4.983 | 1.419 | 0 | 9.800 |
| Total exports (log) | 2,470 | 3.423 | 2.022 | -4.171 | 9.956 |
| Exports to third countries (log) | 2,236 | 3.250 | 2.136 | -5.080 | 9.288 |
| Local sales (log) | 2,712 | 4.213 | 1.678 | -4.680 | 9.869 |
| Total sales (log) | 3,236 | 5.039 | 1.521 | -0.644 | 9.984 |
| Age of the affiliate | 3,242 | 13.278 | 16.073 | 0 | 103 |
| Gross benefit replacement rate | 3,234 | 41.527 | 19.308 | 0 | 80.3 |
| Bargaining centralization | 3,234 | 1.951 | 0.634 | 1 | 3 |
| Weighted EPL (countries in proximity) | 3,242 | 0.032 | 0.017 | 0.001 | 0.068 |
| EU | 3,242 | 0.594 | 0.491 | 0 | 1 |
| Initial sales affiliate | 3,242 | 0.141 | 0.348 | 0 | 1 |
| EPL | 3,242 | 1.821 | 1.009 | 0 | 4.1 |
| Intellectual property rights | 3,242 | 3.653 | 0.617 | 1.980 | 4.860 |
| Host market access (log) | 3,242 | 8.777 | 0.632 | 6.396 | 9.896 |
| Wage cost toolmaker (log) | 2,742 | 2.870 | 0.422 | 1.274 | 3.658 |
| Parent size (log) | 3,242 | 8.235 | 2.174 | 1.160 | 12.315 |
| Host openness (log) | 3,242 | 3.730 | 0.507 | 2.222 | 5.146 |
| Parent R&D intensity (log) | 3,242 | -4.404 | 1.525 | -9.210 | -1.354 |
| Host real GDP (log) | 3,242 | 20.072 | 1.434 | 17.063 | 22.853 |
| Host real GDP per capita (log) | 3,242 | 9.773 | 0.288 | 8.423 | 10.345 |
| NAFTA | 3,242 | 0.082 | 0.275 | 0 | 1 |
| Experience | 3,242 | 0.961 | 0.195 | 0 | 1 |
| Regulation impact | 2,718 | 0.104 | 0.035 | 0.031 | 0.242 |
| Union coverage | 2,933 | 68.951 | 25.493 | 15 | 99 |
| Union density | 3,132 | 38.220 | 18.746 | 8.6 | 78 |

Note: The statistics refer to the sample in Table 3.

Table 2: Summary statistics for extensive margin

| VARIABLES | (1) N | (2) Mean | (3) SD | (4) Min | (5) Max |
|---|----------|-------------|-----------|------------|------------|
| Number of new investments | 14,646 | 0.068 | 0.333 | 0 | 9 |
| Number of new affiliates (with exports) | 14,646 | 0.046 | 0.272 | 0 | 9 |
| Number of new affiliates (only selling to the local market) | 14,646 | 0.021 | 0.166 | 0 | 6 |
| Experience | 14,646 | 0.142 | 0.349 | 0 | 1 |
| EU | 14,646 | 0.464 | 0.499 | 0 | 1 |
| NAFTA | 14,646 | 0.042 | 0.200 | 0 | 1 |
| Host market access (log) | 14,646 | 8.623 | 0.767 | 6.396 | 9.896 |
| Host openness (log) | 14,646 | 3.748 | 0.572 | 2.162 | 5.146 |
| Host real GDP (log) | 14,646 | 19.41 | 1.348 | 16.66 | 22.85 |
| Host real GDP per capita (log) | 14,646 | 9.673 | 0.329 | 8.423 | 10.34 |
| Parent size (log) | 14,646 | 6.219 | 1.937 | 1.160 | 12.31 |
| Parent R&D intensity (log) | 14,646 | -5.195 | 2.136 | -9.210 | -1.354 |
| EPL | 14,646 | 1.778 | 1.074 | 0 | 4.100 |

Note: The statistics refer to the sample in Table 10.

Table 3: No. of employees (log)

| VARIABLES | (1) Base | (2) Firm FE | (3) Industry FE | (4) Firm & Industry FE |
|--------------------------------|----------------------|----------------------|-----------------------|------------------------------|
| EPL | -0.176*** (3.282) | -0.118*** (2.638) | -0.161*** (3.566) | -0.137*** (3.022) |
| Host market access (log) | -0.202 (0.604) | -0.190 (0.733) | 0.088 (0.292) | -0.140 (0.450) |
| Host openness (log) | -0.071 (0.213) | -0.211 (0.945) | -0.025 (0.137) | -0.153 (0.992) |
| Host real GDP (log) | -0.074 (0.112) | 0.406 (0.555) | 0.258 (0.468) | 0.339 (0.700) |
| Host real GDP per capita (log) | 0.546 (0.721) | 0.117 (0.138) | 0.152 (0.293) | 0.345 (0.715) |
| Parent size (log) | 0.364*** (24.910) | 0.479*** (6.340) | 0.335*** (21.140) | 0.581*** (6.954) |
| Parent R&D intensity (log) | -0.046** (2.372) | 0.023 (0.908) | -0.012 (0.863) | 0.041** (2.158) |
| Experience | 0.188** (2.324) | 0.395*** (2.999) | 0.139* (1.843) | 0.352*** (2.999) |
| Age of affiliate | 0.024*** (12.619) | 0.024*** (13.444) | 0.021*** (9.402) | 0.022*** (10.101) |
| Initial sales affiliate | 0.084 (1.182) | 0.225** (2.565) | 0.190*** (3.607) | 0.205** (2.479) |
| EU | 0.213*** (2.644) | 0.291*** (3.439) | 0.333*** (5.366) | 0.292*** (3.819) |
| NAFTA | 0.374*** (3.883) | 0.265** (2.389) | 0.367*** (5.643) | 0.327*** (3.496) |
| Constant | -0.334 (0.036) | -7.256 (0.828) | -6.204 (0.914) | -8.352 (1.000) |
| Observations | 3,242 | 3,242 | 3,242 | 3,242 |
| R-squared | 0.365 | 0.522 | 0.528 | 0.628 |
| Firm FE | No | Yes | No | Yes |
| Industry FE | No | No | Yes | Yes |

Note: Industry FE are up to 5 digit level and time varying as they trace an affiliate over time. All specifications include country- and year-specific FE. Robust absolute t-statistics, clustered on countries, in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 4: No. of employees (log),
robustness checks

| VARIABLES | (1) UBS | (2) Regulation | (3) IPR | (4) Labor market | (5) All |
|--|---------------------|---------------------|----------------------|---------------------|---------------------|
| EPL | -0.181** (2.567) | -0.174** (2.582) | -0.144*** (3.232) | -0.135* (2.043) | -0.177* (2.044) |
| Log of wage cost per hour for a toolmaker (UBS) | -0.207 (1.101) | | | | -0.415** (2.269) |
| Regulation impact | | -1.256 (0.396) | | | -1.586 (0.505) |
| Intellectual property rights | | | 0.143* (1.824) | | 0.327** (2.197) |
| Union coverage | | | | 0.002 (0.372) | -0.001 (0.220) |
| Union density | | | | 0.002 (0.591) | 0.002 (0.209) |
| Bargaining centralization | | | | 0.103 (1.199) | 0.298** (2.892) |
| Gross benefit replacement rates | | | | -0.001 (0.345) | -0.005 (1.745) |
| Constant | -5.738 (0.500) | -4.876 (0.401) | -8.450 (1.051) | -5.222 (0.652) | -3.280 (0.288) |
| Observations | 2,742 | 2,718 | 3,242 | 2,914 | 2,481 |
| R-squared | 0.618 | 0.621 | 0.628 | 0.631 | 0.628 |

Note: All specifications include other controls and country-, year-, industry-, and firm-specific FE. See also note to Table 3.

Table 5: Composition of sales

| VARIABLES | (1) No. of employees | (2) Total sales | (3) Total exports | (4) Exports to 3rd country | (5) Local sales |
|-----------------------------------|----------------------------|----------------------|-------------------------|----------------------------------|----------------------|
| EPL | -0.137*** (3.022) | -0.105** (2.656) | -0.302*** (2.987) | -0.330** (2.635) | -0.027 (0.422) |
| Age of affiliate | 0.022*** (10.10) | 0.024*** (10.65) | 0.015*** (4.383) | 0.011*** (2.932) | 0.017*** (6.467) |
| Host market access (log) | -0.140 (0.450) | 0.385 (1.086) | 0.655 (0.744) | 1.975 (1.554) | 0.926 (1.647) |
| Host openness (log) | -0.153 (0.992) | 0.506** (2.305) | 1.841*** (3.539) | 2.541*** (3.101) | 0.278 (1.168) |
| Host real GDP (log) | 0.339 (0.700) | 0.375 (0.568) | -1.754 (1.393) | -2.350 (1.585) | 0.101 (0.169) |
| Host real GDP per capita (log) | 0.345 (0.715) | 0.712 (0.974) | 2.199 (1.452) | 2.770 (1.480) | 0.369 (0.592) |
| Parent size (log) | 0.581*** (6.954) | 0.560*** (7.705) | 0.610*** (2.956) | 0.675*** (3.314) | 0.632*** (5.670) |
| Parent R&D intensity (log) | 0.041** (2.158) | 0.015 (0.669) | -0.043 (0.979) | -0.059 (1.010) | -0.011 (.282) |
| Experience | 0.352*** (2.999) | 0.683*** (4.730) | 0.678* (1.768) | 0.620 (1.454) | 0.748*** (4.013) |
| Initial sales affiliate | 0.205** (2.479) | 0.474*** (4.910) | -0.0156 (0.122) | 0.0715 (0.458) | -0.005 (0.034) |
| EU | 0.292*** (3.819) | 0.230** (2.247) | 0.001 (0.002) | 0.213 (0.524) | 0.104 (0.821) |
| NAFTA | 0.327*** (3.496) | -0.0460 (0.539) | 0.336* (2.045) | 0.216 (0.903) | 0.141 (1.250) |
| Constant | -8.352 (1.000) | -19.835** (2.115) | -6.552 (0.395) | -15.762 (0.742) | -16.962** (2.141) |
| Observations | 3,242 | 3,245 | 2,473 | 2,238 | 2,715 |
| R-squared | 0.628 | 0.664 | 0.578 | 0.564 | 0.640 |

Note: All specifications include other controls and country-, year-, industry-, and firm-specific FE. See also note to Table 3.

Table 6: Composition of sales
non-exporters

| VARIABLES | (1) No. of employees | (2) Total sales | (3) Local sales |
|--------------------------------|-------------------------|---------------------|---------------------|
| EPL | 0.312* (1.834) | 0.290* (1.809) | 0.516** (2.457) |
| Age of affiliate | 0.0115 (1.346) | 0.013* (1.770) | 0.016** (2.405) |
| Host market access (log) | -0.603 (0.455) | 0.315 (0.213) | 0.755 (0.495) |
| Host openness (log) | -0.643 (0.934) | -0.440 (0.578) | -0.587 (0.628) |
| Host real GDP (log) | 1.017 (0.527) | -0.073 (0.042) | 1.077 (0.651) |
| Host real GDP per capita (log) | -1.089 (0.657) | -0.014 (0.010) | -0.628 (0.458) |
| Parent size (log) | 0.305 (0.990) | 0.354 (1.216) | 0.525 (1.506) |
| Parent R&D intensity (log) | 0.093 (1.159) | 0.094 (1.462) | 0.134 (1.671) |
| Experience | 0.650* (1.980) | 1.394*** (3.062) | 1.562*** (3.371) |
| Initial sales affiliate | 0.295 (1.206) | 0.966*** (3.158) | -0.0305 (0.169) |
| EU | 0.596* (1.804) | 0.315 (1.278) | 0.409 (1.658) |
| NAFTA | -0.147 (0.384) | -0.215 (0.520) | -0.542 (1.231) |
| Constant | -0.977 (0.039) | -3.004 (0.122) | -24.745 (0.921) |
| Observations | 658 | 660 | 616 |
| R-squared | 0.726 | 0.778 | 0.816 |

Note: All specifications include country-, year-, firm- and industry-specific FE. See also note to Table 3.

Table 7: Composition of sales exporters

| VARIABLES | (1) No. of employees | (2) Total sales | (3) Total exports | (4) Exports to 3rd country | (5) Local sales |
|--------------------------------|----------------------------|---------------------|-------------------------|----------------------------------|---------------------|
| EPL | -0.148*** (3.516) | -0.093** (2.443) | -0.302*** (2.987) | -0.330** (2.635) | -0.037 (.648) |
| Age of affiliate | 0.020*** (8.483) | 0.022*** (9.716) | 0.015*** (4.383) | 0.011*** (2.932) | 0.017*** (4.822) |
| Host market access (log) | 0.219 (0.591) | 0.675 (1.588) | 0.655 (0.744) | 1.975 (1.554) | 0.849 (1.396) |
| Host openness (log) | 0.057 (0.242) | 0.718** (2.691) | 1.841*** (3.539) | 2.541*** (3.101) | 0.325 (0.876) |
| Host real GDP (log) | -0.339 (0.454) | 0.158 (0.206) | -1.754 (1.393) | -2.350 (1.585) | -0.794 (1.200) |
| Host real GDP per capita (log) | 0.553 (0.625) | 0.507 (0.512) | 2.199 (1.452) | 2.770 (1.480) | 0.771 (0.937) |
| Parent size (log) | 0.504*** (4.298) | 0.474*** (4.629) | 0.610*** (2.956) | 0.675*** (3.314) | 0.583*** (4.020) |
| Parent R&D intensity (log) | 0.023 (0.852) | 0.003 (0.084) | -0.043 (0.979) | -0.059 (1.010) | 0.014 (0.207) |
| Experience | 0.307 (1.594) | 0.489** (2.695) | 0.678* (1.768) | 0.620 (1.454) | 0.503 (1.704) |
| Initial sales affiliate | 0.176* (1.836) | 0.380*** (3.816) | -0.016 (0.122) | 0.072 (0.458) | -0.021 (0.117) |
| EU | 0.177** (2.312) | 0.197 (1.438) | 0.001 (0.002) | 0.213 (0.524) | 0.034 (0.186) |
| NAFTA | 0.413*** (4.851) | 0.045 (0.496) | 0.336* (2.045) | 0.216 (0.903) | 0.380*** (3.430) |
| Constant | -1.455 (0.166) | -16.307* (1.788) | -6.552 (0.395) | -15.762 (0.742) | -3.594 (0.432) |
| Observations | 2,470 | 2,471 | 2,473 | 2,238 | 2,099 |
| R-squared | 0.644 | 0.685 | 0.578 | 0.564 | 0.654 |

Note: All specifications include country-, year-, firm- and industry-specific FE. See also note to Table 3.

Table 8: Affiliate composition of sales
non-exporters with country-specific trends

| VARIABLES | (1) No. of employees | (2) Total sales | (3) Local sales |
|--------------------------------|-------------------------|---------------------|---------------------|
| EPL | 0.382* (1.825) | 0.452* (1.975) | 0.475 (1.573) |
| Age of affiliate | 0.012 (1.209) | 0.013 (1.492) | 0.015* (1.967) |
| Host market access (log) | -0.868 (0.349) | 0.369 (0.151) | -0.056 (0.023) |
| Host openness (log) | 1.128 (0.562) | 0.008 (0.004) | 1.135 (0.540) |
| Host real GDP (log) | 16.041** (2.227) | 7.306 (0.802) | 9.713 (0.910) |
| Host real GDP per capita (log) | -14.024** (2.129) | -5.337 (0.664) | -6.532 (0.660) |
| Parent size (log) | 0.387 (1.135) | 0.405 (1.276) | 0.541 (1.401) |
| Parent R&D intensity (log) | 0.096 (1.132) | 0.091 (1.436) | 0.134* (1.803) |
| Experience | 0.620** (2.672) | 1.329*** (3.204) | 1.441*** (3.657) |
| Initial sales affiliate | 0.251 (1.067) | 0.952*** (3.245) | -0.028 (0.155) |
| EU | -0.063 (0.161) | -0.166 (0.598) | -0.135 (0.353) |
| NAFTA | -0.567 (1.189) | -0.358 (0.699) | -0.284 (0.567) |
| Constant | -150.483* (1.792) | -86.124 (0.834) | -123.491 (1.088) |
| Observations | 658 | 660 | 616 |
| R-squared | 0.751 | 0.793 | 0.830 |

Note: All specifications include country-, year-, firm- and industry-specific FE and country-specific trends. See also note to Table 3.

Table 9: Composition of sales
exporters with country-specific trends

| VARIABLES | (1) No. of employees | (2) Total sales | (3) Total exports | (4) Exports to 3rd | (5) Local sales |
|-----------------------------------|----------------------------|---------------------|----------------------|--------------------------|---------------------|
| EPL | -0.119 (1.578) | -0.103* (1.788) | -0.231** (2.235) | -0.193 (1.472) | 0.007 (0.079) |
| Age of affiliate | 0.020*** (8.171) | 0.023*** (9.495) | 0.016*** (4.476) | 0.012*** (3.034) | 0.017*** (4.722) |
| Host market access (log) | 0.101 (0.270) | 0.365 (0.856) | 0.829 (1.214) | 2.182** (2.402) | 0.685 (0.808) |
| Host openness (log) | 0.258 (0.463) | 0.814 (1.552) | 1.997*** (3.121) | 2.828*** (3.304) | 1.087 (1.035) |
| Host real GDP (log) | 1.846 (0.578) | 2.573 (0.809) | 1.471 (0.269) | 4.620 (0.830) | 3.707 (0.755) |
| Host real GDP per capita (log) | -1.619 (0.506) | -1.875 (0.544) | -1.958 (0.333) | -5.716 (0.960) | -3.302 (0.785) |
| Parent size (log) | 0.496*** (3.982) | 0.445*** (3.958) | 0.606** (2.859) | 0.675*** (3.289) | 0.582*** (3.932) |
| Parent R&D intensity (log) | 0.018 (0.696) | -0.004 (0.109) | -0.046 (1.028) | -0.058 (0.979) | 0.006 (0.093) |
| Experience | 0.324* (1.730) | 0.502*** (2.877) | 0.659 (1.713) | 0.556 (1.249) | 0.580* (1.991) |
| Initial sales affiliate | 0.169 (1.727) | 0.381*** (3.795) | -0.031 (0.228) | 0.033 (0.200) | -0.024 (0.134) |
| EU | 0.266*** (2.901) | 0.344*** (3.361) | 0.077 (0.281) | -0.017 (0.052) | -0.011 (0.031) |
| NAFTA | 0.228 (1.321) | 0.032 (0.265) | 0.423** (2.439) | 0.307 (1.485) | 0.392** (2.443) |
| Constant | -19.937 (0.672) | -33.750 (1.278) | -24.544 (0.541) | -59.382 (1.227) | -48.848 (0.907) |
| Observations | 2,470 | 2,471 | 2,473 | 2,238 | 2,099 |
| R-squared | 0.647 | 0.689 | 0.583 | 0.571 | 0.658 |

Note: All specifications include country-, year-, firm- and industry-specific FE and country-specific trends. See also note to Table 3.

Table 10: Number of new affiliates

| VARIABLES | (1) Only local sales | (2) Also exporting | (3) All |
|--------------------------------|-------------------------|-----------------------|----------------------|
| EPL | -0.122 (0.503) | -0.276** (2.450) | -0.206** (2.340) |
| Host market access (log) | 0.325 (0.229) | -0.028 (0.038) | -0.040 (0.074) |
| Economic openness (log) | -0.310 (0.441) | 0.350 (0.787) | 0.119 (0.340) |
| Host real GDP (log) | 0.539 (0.252) | -3.873* (1.783) | -2.801** (2.049) |
| Host real GDP per capita (log) | 0.121 (0.053) | -3.460 (1.357) | 2.587 (1.639) |
| Parent size (log) | 0.100*** (3.151) | 0.221*** (7.860) | 0.183*** (9.366) |
| Parent R&D intensity (log) | -0.024 (0.579) | -0.119*** (5.343) | -0.090*** (5.581) |
| Experience | 2.931*** (14.591) | 3.290*** (18.384) | 3.141*** (19.547) |
| EU | 0.253 (0.628) | -0.088 (-0.333) | 0.014 (0.111) |
| NAFTA | -0.778*** (2.382) | 0.738*** (2.627) | 0.211 (1.019) |
| Constant | -20.318 (0.841) | 24.020 (1.295) | 15.912 (1.212) |
| Alpha (log) | -0.610 (0.926) | -0.970*** (3.724) | -1.217*** (4.210) |
| Observations | 14,646 | 14,646 | 14,646 |

Note: The specifications estimate a negative binomial regression model where the dependent variable is the number of new affiliates in a window two years before and two years after a survey. All specifications include country-, year- and industry-specific FE. Unlike Tables 3-9, industry-specific FE refer to the industry of the parent (not the industry of the affiliate). Robust absolute z-values, clustered on countries, in parentheses. See also note to Table 3.

Table 11: Number of new affiliates
with country-specific trends

| VARIABLES | (1) Only local sales | (2) Also exporting | (3) All |
|--------------------------------|-------------------------|-----------------------|----------------------|
| EPL | -0.147 (0.490) | -0.217* (1.843) | -0.190 (1.459) |
| Host market access (log) | -3.611** (2.099) | 0.048 (0.053) | -1.060 (1.639) |
| Host openness (log) | 0.016 (0.012) | 0.240 (0.275) | 0.245 (0.404) |
| Host real GDP (log) | 9.942 (1.586) | -4.976 (1.604) | -1.034 (0.332) |
| Host real GDP per capita (log) | -11.446* (1.806) | 4.015 (1.203) | -0.290 (0.098) |
| Parent size (log) | 0.093*** (3.324) | 0.224*** (7.767) | 0.184*** (9.087) |
| Parent R&D intensity (log) | -0.022 (0.519) | -0.120*** (5.347) | -0.090*** (5.943) |
| Experience | 2.955*** (14.192) | 3.286*** (18.365) | 3.148*** (18.958) |
| EU | 0.156 (0.331) | 0.291 (0.880) | 0.193 (1.030) |
| NAFTA | -1.652*** (4.509) | 0.006 (0.037) | -0.476*** (2.863) |
| Constant | -46.029 (0.776) | 38.297 (1.160) | 20.174 (0.622) |
| Alpha (log) | -0.976 (1.331) | -1.130*** (3.930) | -1.347*** (4.454) |
| Observations | 14,646 | 14,646 | 14,646 |

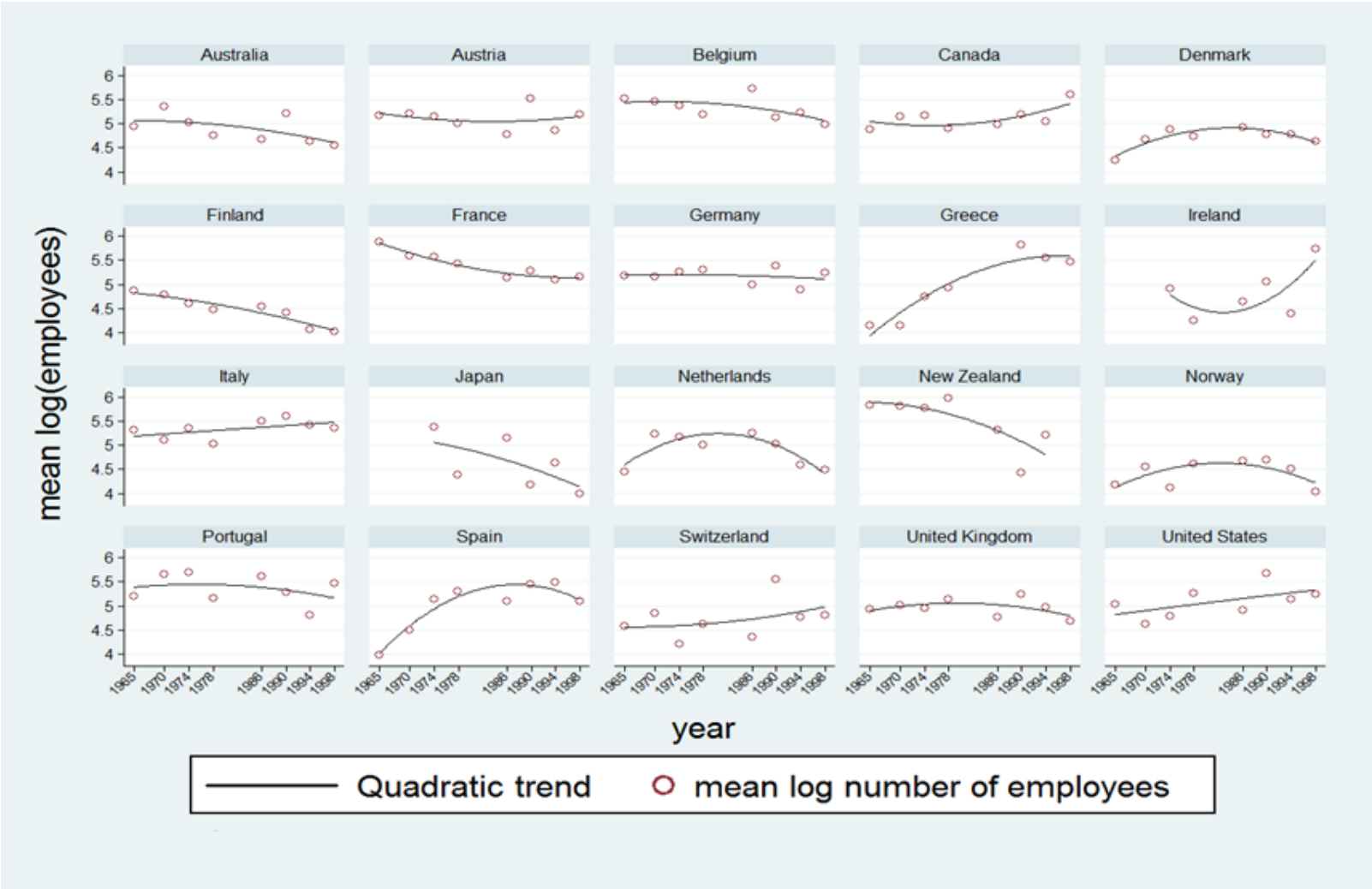
Note: See note to Table 10.

Table 12: Number of new affiliates
robustness checks

| VARIABLES | (1) Only local sales | | | (2) Also exporting | | | (3) All | | |
|--|-------------------------|--------------------|-------------------|-----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | (i) | (ii) | (iii) | (i) | (ii) | (iii) | (i) | (ii) | (iii) |
| EPL | -0.128 (0.528) | 0.068 (0.251) | 0.209 (0.751) | -0.276** (2.450) | -0.213 (1.584) | -0.257** (2.495) | -0.206** (2.340) | -0.116 (1.018) | 0.113 (1.103) |
| Log of wage cost per hour for a toolmaker (UBS) | | -0.013 (0.016) | 0.257 (0.300) | | -0.030 (0.073) | -0.462 (1.061) | | -0.043 (0.100) | -0.304 (0.763) |
| Regulation impact | | 4.446 (0.918) | 0.094 (0.020) | | -4.535 (1.526) | -6.143 (1.629) | | -2.031 (0.857) | -4.552 (1.526) |
| Intellectual property rights | | 0.606 (1.344) | 0.440 (0.658) | | 0.169 (0.966) | 0.131 (0.508) | | 0.307 (1.233) | 0.283 (1.013) |
| Union coverage | | | 0.021 (1.441) | | | -0.010 (1.049) | | | -0.004 (0.545) |
| Union density | | | -0.005 (0.175) | | | 0.005 (0.316) | | | 0.005 (0.551) |
| Bargaining centralization | | | 0.313 (0.538) | | | 0.607*** (3.999) | | | 0.576** (2.236) |
| Gross benefit replacement rate | | | -0.001 (0.024) | | | -0.014** (2.620) | | | -0.011 (1.550) |
| Constant | -19.795 (0.802) | -10.228 (0.240) | -7.519 (0.164) | 24.020 (1.295) | -6764 (0.247) | -33.915 (1.574) | 15.912 (1.212) | 9.268 (0.335) | -12.952 (0.668) |
| Alpha (log) | -0.606 (0.898) | -0.326 (0.528) | -0.846 (1.066) | -0.970*** (3.724) | -1.132*** (3.520) | -1,220*** (3.425) | -1.217*** (4.210) | -1.193*** (3.635) | -1.393*** (3.666) |
| Observations | 14,646 | 10,609 | 8,498 | 14,646 | 10,609 | 8,498 | 14,646 | 10,609 | 8,498 |

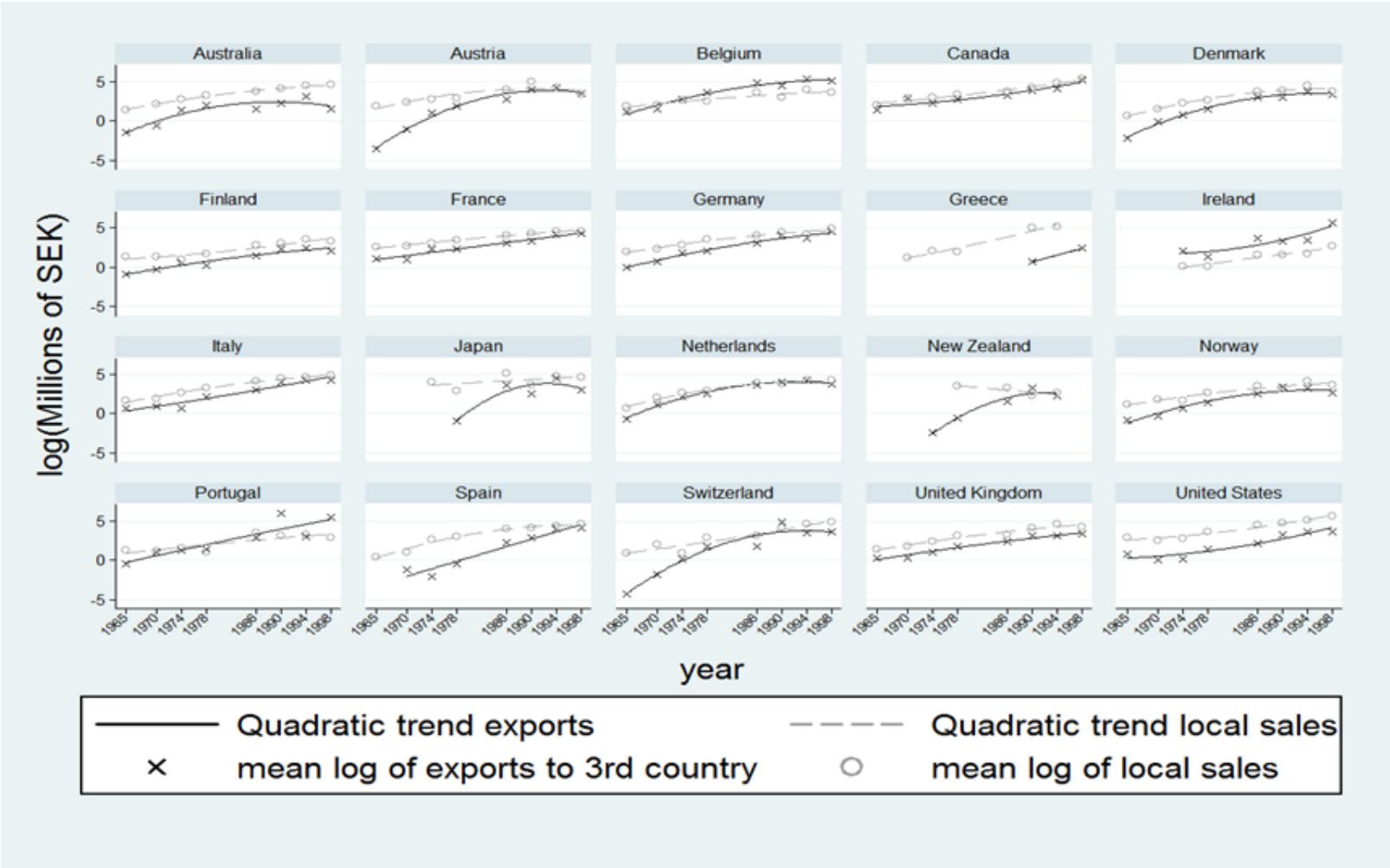
Note: See note to Table 10.

Figure 1: Average affiliate log employment by country and year



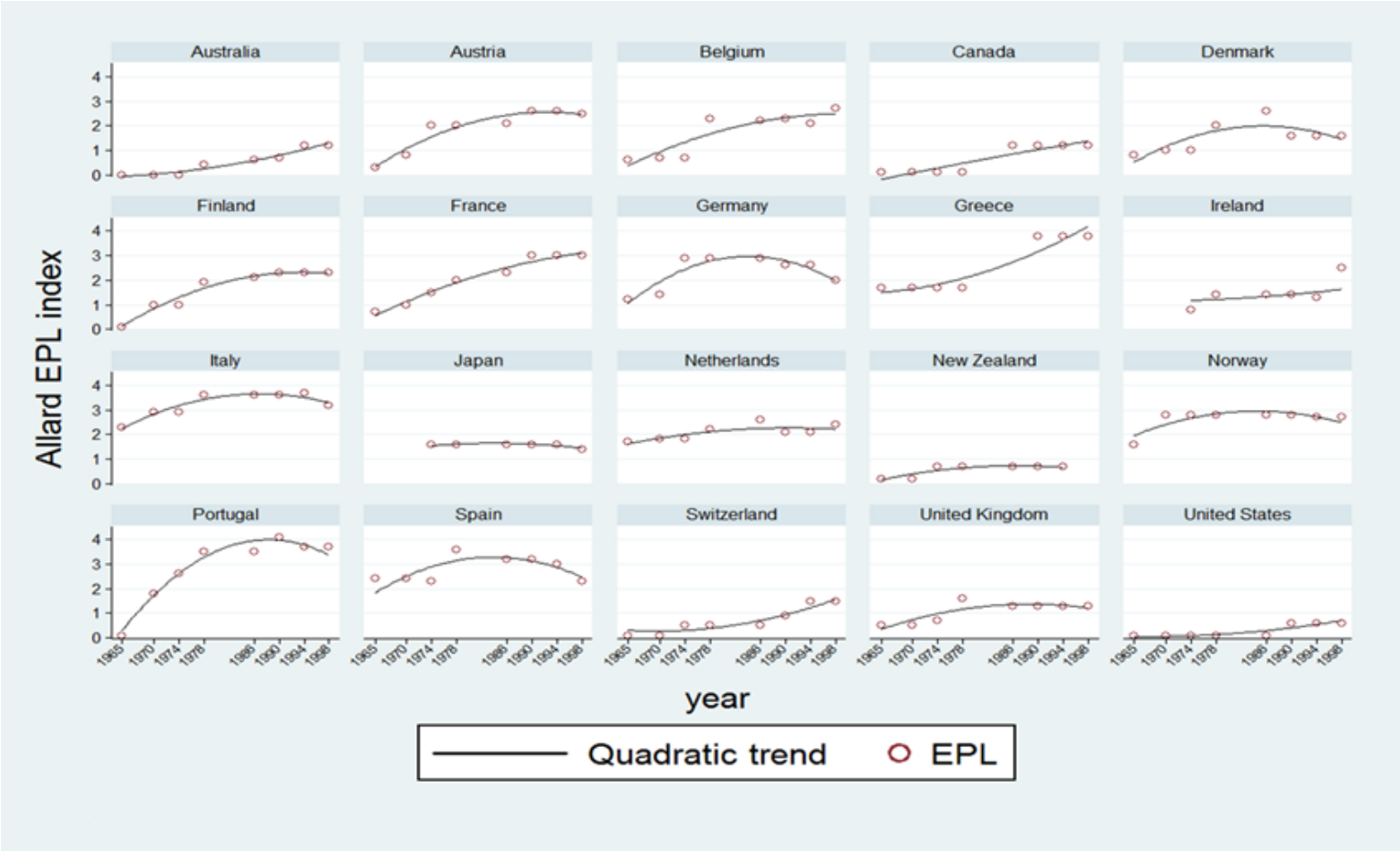
Note: Log of employment, measured as average number of employees, is indicated by circles and its fitted quadratic trend by a solid line.

Figure 2. Average affiliate log exports to 3rd country and log local sales by country and year



Note: Log of affiliate average exports to 3rd country is indicated by circles and its fitted quadratic trend by a solid line. Log of local average sales is indicated by cross marks and its fitted quadratic trend by a dashed line.

Figure 3: Allard's EPL index by country and year



Note: Allard's index of employment protection is indicated by circles and its fitted quadratic trend by a solid line.

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