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Home Firm Performance after Foreign Investments and Divestitures

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Dirk Engel and Vivien Procher[1]

Home Firm Performance after Foreign Investments and Divestitures

Abstract

'Being international' has nearly become an undisputed aim for firms in a globalized world. Several papers find a positive relationship between foreign direct investment (FDI) and the home performance of firms. In this paper we address the "FDI – export" relationship to better understand this pattern. Furthermore, by presenting first results on firm's post-divestiture employment growth at home we are able to provide a more comprehensive view on firm performance after stepping in and out of foreign markets. We apply a propensity score matching technique in combination with a difference-in-difference estimator to analyze the performance dynamics of French firms that invested abroad or carried out foreign divestitures during the period 2000-2007. FDI has on average a positive home firm effect in terms of export share, operating turnover and employment. Industry differences reveal that firms in high-tech industries experience a strong increase in their home performance, whereas firm performance in low-tech industries increases only moderately in post-investment periods. In contrast, the divestiture impact on the post-divestiture performance is rather negligible..

JEL Classification: F21, F23, D21, L25

Keywords: Foreign markets; entry and exit; firm performance

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1. Introduction

Policymakers worry that foreign direct investments (FDI) imply a significant relocation of jobs from home to host countries. From a theoretical point of view, switching from export to FDI might substitute export activity to some extent. A negative effect is often expected for factor-seeking FDI where firms decide to relocate some production processes to exploit cost advantages at foreign affiliates' locations. However, existing papers do not provide a substantial empirical confirmation for negative effects of FDI on home employment, e.g. Barba Navaretti and Castellani 2008, Becker and Muendler 2008, Desai et al. 2009. Therefore, this paper investigates the extent to which the FDI – export relationship can help to explain this pattern. Based on a large database for French firms and applying propensity score matching combined with a difference-in-difference estimator it can be shown that FDI and exporting constitute rather complements than substitutes. To the authors knowledge there is no study which analyzes the FDI and export relationship as well as the relationship between FDI and home plant employment.

Head and Ries (2004) argue that vertical specialization of firms and home centralization of certain (e.g. knowledge-intensive) products may matter for firms which in turn would point towards a positive association between FDI and exporting. By differentiating between firms in high-tech and low-tech industries we further attempt to provide some empirical evidence. The imitation of knowledge-intensive products might have great consequences for the comparative advantage of firms in high-tech industries, so that the latter might be more inclined to opt for home centralization of production processes than firms in low-tech industries. As a result, export activity of firms in high-tech industries might be more affected by the FDI decision.

While many empirical studies analyze the role of investments and acquisitions on home plant performance, we fail to detect any study which addresses the effects of divesting from abroad on home firm employment, turnover and export activity. The recently published meta-analysis of Lee and Madhavan (2010) clearly confirms this research gap. Existing papers focus either on stock price changes due to foreign divestitures announcements or financial accounting measures (e.g. return on investment). Driven by the globalization of production processes, divestitures have become of increasing relevance in the last decades. Moreover, business restructuring due to the financial and economic crisis in 2008 will further raise the likelihood of divestitures in the years to come.

Additionally, investments of an acquirer often go hand in hand with divestments of a seller. Kaplan and Weisbach (1992) analyzed a sample of large acquisitions between 1971 and 1982

and detect that 44% of targets are divested by the acquirer by the end of 1989. By analyzing both, the effects of investing abroad and divesting from abroad, we finally provide a comprehensive view on the home performance of firms after stepping in and out of foreign markets.

The remainder of the paper is organized as follows: Section 2 contains a brief review of the FDI and divestiture literature with respect to firm performance. Section 3 describes the methodological approach. A data description is provided in Section 4. Section 5 presents and discusses the estimation results. Section 6 concludes.

2. Background

2.1 Effects of investing abroad

The debate of home market effects from FDI is often linked to the actual type of FDI, namely horizontal and vertical FDI. Resource-seeking (vertical) FDI might affect home plant output and employment negatively and productivity positively in the short-term as some production processes are relocated to exploit cost advantages at the foreign location. In the long-term, however, positive backward effects on output and employment based on reducing the cost of production may dominate which then allows to decrease product prices and thus, could induce higher demand at home.

Market-driven (horizontal) FDI might not affect home employment if there is no other efficient opportunity to serve foreign markets otherwise. Moreover, extensive intra-firm trade between the headquarters and their foreign affiliates can even increase the number of employees at home. However, horizontal FDI might equally well substitute some export activities and therefore, employment at home declines. Moreover, multinational enterprises (MNEs) with horizontal FDI are likely to exploit economies of scale by accessing new markets which in turn may have positive effects on the productivity at home. Similarly, firms experience performance gains through their exposure in foreign markets (see e.g. the *learning-by-exporting* hypothesis postulated by Wagner 2007). In sum, it is not only difficult to predict home plant effects, it is also difficult to differentiate between horizontal and vertical FDI as FDI decisions often follow complex integration strategies with investments being interdependent and benefiting from complementarities across locations (Yeaple 2003).

Recent empirical studies analyses intensively the effects of investing abroad on home plant's performance. The initial paper of Egger and Paffermayr (2003) marks the starting point for empirically studying the effects of investing abroad at home on the micro level of firms.

Based on the extensive use of propensity score matching combined with a difference-in-differences (DiD) approach in the microeconometric program evaluation, this kind of estimator has also received increasing attention in the FDI literature.

Barba Navaretti and Castellani (2008) apply this estimator and find significant positive effects of outward FDI by Italian MNEs on turnover and productivity (TFP) at home but the effect on employment is insignificant. Based on a small sample of 47 German MNEs, Kleinert and Toubal (2007) also observe an insignificant effect on employment and a significant increase in TFP in the first year after investing abroad. Jäckle and Wamser (2010) use the same database and apply Heckman's (1978) parametric estimator for endogenous treatment effects. They find significant positive effects of FDI on TFP for German MNEs up to three years after going abroad.[1] For Japanese MNEs, Hijzen et al. (2007) observe a weak significant positive effect on home plant TFP in the initial year and significant positive effects on output and employment in the following three years. The study of Becker and Muendler (2008) combines German plant level data with data about foreign affiliates to estimate the effect of employment expansion in foreign affiliates on domestic employment. The authors detect that the probability of domestic worker separation is significantly reduced. In fact, the fear of policy makers that outward FDI relocates jobs from home to target countries is hardly supported in corresponding empirical studies.

A handful of papers consider host country characteristics to estimate the effects of investing abroad for horizontal and vertical FDI. Head and Ries (2004) look at the host countries chosen by firms for their investments and classify them into low- and high-wage countries. The authors argue that firms with investment in low-wage countries only follow vertical FDI motives, whereas companies with investments in a wider range of low- and high-wage countries follow a more horizontal pattern of FDI. Barba Navaretti et al. (2010) adopt the basic idea to analyse the impact on TFP, turnover and employment at home for Italian and French MNEs. Interestingly, the findings do not differ remarkably for outward investments in low-wage and high-wage countries. TFP growth is significantly positive in Italy, whereas FDI of French firms does not matter for TFP growth at home. Employment is neither significantly negative in France nor in Italy. Similarly, Becker and Muendler (2008) do not detect any remarkable differences across several host country locations. In sum, there is hardly any evidence of a negative effect of outward investments on home performance, in particular on home employment.

[1] Interestingly the OLS estimates are downward biased in this study which suggests that no significant differences in TFP growth and employment growth exist.

Given that MNEs pursue horizontal and vertical FDI simultaneously in the same host countries (Feinberg and Keane 2006), the lack of notable differences in the effects across low-wage and high-wage countries might not be surprising. In a recent study Hering et al. (2009) consider affiliates characteristics to better distinguish between horizontal and vertical FDI for Japanese MNEs. Affiliates with a high level of local purchases and high sales back to Japan are defined as vertical FDI. In line with theoretical predictions of the 'proximity-concentration trade-off' the authors observe that horizontal FDI substitutes exports from MNEs' home in Japan. In contrast, imports increase for MNEs with vertical FDI. The study further points out that labour productivity in Japanese parent companies increases either when Japanese MNEs start horizontal FDI in high-income countries or vertical FDI in low-income countries.

Many other papers explicitly address the relationship between FDI and export. Head and Ries (2004) summarize most of this literature and argue that complementarity between FDI and export occurs when investing abroad is linked with (i) vertical specialization (exports of intermediate goods between the parent company and its foreign affiliates) and/or (ii) home centralization of one product and foreign centralization of another product. Here, home centralization for firms becoming engaged in FDI implies, that they simultaneously increase the domestic production for products destined for export markets.

A comprehensive study, however, which analyses the "FDI – export" and the "FDI – home performance" relationship simultaneously is still missing. Analyzing export activities, employment, turnover and productivity in the post-change period also offers useful insight for the general understanding of changes in production processes.

We further expect that the complementarity between FDI and export differs with respect to firm's strategy of home centralization based on their technological advantage. In general, products of firms in high-tech industries are based on remarkable achievements in R&D in order to create a sustainable technological advantage. Faced by the risk of product imitation firms may opt for home centralization of high-tech products and vertical specialization in order to reduce this risk. Therefore, one might assume that firms in high-tech industries are more inclined to opt for home centralization and vertical specialization than firms in low-tech industries. As a result, export activity of firms in high-tech industries might then be more affected by foreign market entry and exit via FDI than typical low-tech firms. Recent empirical findings of Stiebale (2010) strengthen this prediction. Applying an empirical framework which accounts for unobserved firm heterogeneity and the possible endogeneity of cross-border acquisitions, he shows that R&D activity of acquirers in high-tech industries was intensified after an outward merger or acquisition compared to acquirers in low-tech

industries. Thus, the concentration of R&D at home might be driven by realizing economies of scale as well as by the fact that knowledge spillover to competitors should be minimized.

2.2 Effects of divesting from abroad

While the literature intensively discusses the effects of investing abroad, there are not many studies in the Economics literature which analyse the effects of foreign divestitures on the home performance of enterprises. Foreign divestitures are characterized by a shut down or asset sale of foreign operations (e.g. Benito 1997). Following Hanson and Song (2003) and Mathur et al. (2006) four main reasons for divesting can be detected: (i) Eliminating negative synergies, (ii) raising cash to fund other investments, (iii) agency problems, and (iv) a positive difference between acquirer's willingness to pay for the asset and its valuation by the seller. With respect to foreign operations, negative synergies mainly arise when a foreign subsidiary underperforms and resources have to be shifted from the mother company to the foreign subsidiary. Agency problems are mainly driven by managerial discretion. Insufficient monitoring mechanism as well as managerial incentive schemes to promote growth instead of profitability of firms imply that manager tend to waste free cash flow for less profitable projects to realize their own non-value maximizing objectives (Jensen 1986).

The empirical literature on the effects of divestitures either focus on accounting measures like return on assets (ROA) or market-based measures like cumulative abnormal returns (see Lee and Madhavan 2010 for details). With respect to the latter stock price changes prior and after the announcement of divestiture are analysed (see e.g., Cao et al. 2008 for a recent study). Given that divestitures reduce negative synergies as well as agency costs, the mother company has the potential to increase its cash position. Hanson and Song (2003) empirically confirm this prediction. Divesting firms have significant lower returns on asset than matched control firms in the two years before divestiture, but significant higher returns in the second and third year after divestiture. Denis and Shome (2005) analysed 130 large asset downsizings between 1985-1994 and detect that downsized firms achieve on average an 7.9% increase in the mean of operating income divided by book value of assets within three years after downsizing.

The effects on employment and productivity might differ from effects on accounting measures. First, foreign divestitures can offer growth opportunities at headquarters when production is shifted back home and foreign markets of previously divested foreign affiliates are partly served from home. Based on 664 foreign divestiture announcements, Mathur et al.

(2006) did not find an significant reduction in foreign sales related to total sales between two years after and one year before announcements for firms with foreign divestitures in comparison to control firms without foreign divestitures. This finding supports the view that these firms did not exit foreign markets completely.

Positive employment effects may also occur due to reduced negative synergies, debt overhang and agency problems. Mathur et al. (2006) detected that capital expenditures divided by total assets are slightly higher for firms with foreign divestitures than for control firms. Thus, home enterprise' employment might gain from foreign divestitures. However, if markets previously served by divested foreign affiliates are not direct served from production plants at home, e.g. due to a complete market exit or serving markets from other foreign affiliates, companies' employment in the home country might not be affected. Thus an empirical analysis can provide a more comprehensive understanding of average employment effects after foreign divestitures.

3. Methodology: Evaluation problem and matching procedure

In this section we briefly describe the methodological approach of a difference-in-difference (DiD) estimator which is applied in this paper. An example would be an exporter who becomes engaged in FDI. The goal is to identify the *average treatment effect on the treated* (ATT), i.e. the average effect of this upward change of internationalization on companies which start undertaking FDI (*treatment*).

The ATT for all treatments then is given as follows:

$$ATT = E\left[Y^1_{i,t+k} - Y^C_{i,t+k} \mid X_{i,t-1}, DI_{i,t} = 1\right]$$
$$= E\left[Y^1_{i,t+k} \mid X_{i,t-1}, DI_{i,t} = 1\right] - E\left[Y^C_{i,t+k} \mid X_{i,t-1}, DI_{i,t} = 1\right]$$

where $Y^1_{i,t+k}$ denote firm *i*'s outcome in a subsequent year *k* after firm *i* has changed its mode of internationalization from an exporter to become a MNE in year *t* ($DI_{i,t}$=1), $X_{i,t-1}$ contains a set of firm characteristics and $Y^C_{i,t+k}$ denotes the outcome of firm *i* if it had not invested abroad. Obviously, the latter outcome $E\left[Y^C_{i,t+k} \mid X_{i,t-1}, DI_{i,t} = 1\right]$ is unobservable, and this so-called *counterfactual outcome* is noted with *C*.

The counterfactual outcome poses the main evaluation problem. One needs an adequate estimator for the counterfactual outcome of a treatment. A simplistic approach would be to

take the outcome of a continuous exporter (*non-treatment*). This approach would only be valid if there is a random selection into the group of switchers. However, this is unlikely to be the case here. Therefore, the potential selection bias must be accounted for in order to arrive at valid estimates of the internationalization impact. A number of non-experimental techniques (e.g. instrumental variable (IV) approach, matching) exist to deal with the selection issue (see e.g. Heckman et al. 1998, 1999, Schmidt 2007). In this paper we will combine the *propensity score matching* to construct the sample of adequate counterfactual firms with the *difference-in-difference* (DiD) estimator to estimate the *ATT* (e.g. Blundell and Costa Dias 2000, 2002).

The method of matching follows the idea of selection on observables: For every firm in the treatment group a matching firm from the non-treatment group needs to be found with very similar characteristics on the observables. However, for the matching to be valid, certain requirements have to be met. A fundamental identifying assumption is the conditional independence assumption (CIA). CIA states that conditional on matrix $X_{i,t-1}$, the observables in the period before investing abroad, the outcome of those who do not switch is independent of the actual treatment status. This implies that the outcome $Y^0_{i,t+k}$ of a non-treatment is an adequate estimator for the counterfactual outcome $Y^C_{i,t+k}$ of a treatment provided that no systematic differences in the matrix $X_{i,t-1}$ over all treatments and non-treatments exist:

$$E\left[Y^C_{i,t+k} \mid DI_{i,t} = 1, X_{i,t-1}\right] = E\left[Y^0_{i,t+k} \mid DI_{i,t} = 1, X_{i,t-1}\right]$$

The CIA then implies that any difference in unobservables is trivial and that they do not affect outcomes in the absence of treatment (see Heckman et al. 1998). Keeping in mind that the CIA is an untestable assumption, not only a rich dataset is needed for the CIA to hold, one also needs to be confident that the determinants of the outcome variable and the major determinants to explain the change of the mode of internationalization are observed.

As the number of observables used in the matching increases it becomes rather difficult to find a suitable match for every firm and every unmatched firm results in a loss of this observation. The propensity score method suggested by the pioneer work of Rosenbaum and Rubin (1983) constitutes a helpful solution by computing$p(X_{i,t-1})$, the probability of investing abroad conditional on observables $X_{i,t-1}$ by applying a logit or probit estimation. Rosenbaum and Rubin (1983) demonstrate that it is sufficient to use this single index

propensity score to obtain consistent estimates for the counterfactual situation instead of matching on all observable variables. One can then postulate that:

$$E\left[Y^{C}_{i,t+k} \mid DI_{i,t} = 1, p(X_{i,t-1})\right] = E\left[Y^{0}_{i,t+k} \mid DI_{i,t} = 1, p(X_{i,t-1})\right]$$

The precondition is that the propensity score of matched non-treated companies to become MNEs is very close to the propensity score of treated firms. The effective implementation of propensity score matching needs to fulfil the *common support* assumption, i.e. the exclusion of non-treated companies that are poorly matched with respect to the propensity score. One has to bear in mind that the estimated treatment effect only measures the *ATT* of those falling within the common support. We apply propensity score matching with replacement to improve the fit of matches. This procedure implies that a non-treated firm can be matched to more than one treated firm. Therefore, a correction for standard errors to draw conclusion on statistical inference is required. We follow Lechner (2001) and apply his estimator for an asymptotic approximation of the standard errors.

Several matching methods are at the hands of the researcher (e.g. Blundell and Costa Dias 2002). In this study we report the results of the nearest neighbour matching[2] and check for the robustness of the results with the Mahalanobis distance (MD) matching. The nearest neighbour method matches each treated firm with a one non-treated firm with the closest propensity score. The MD method is a propensity score based matching technique which allows to put additional weight on selected covariates (here the industries). While treated and non-treated firms are very similar to industry, this is especially useful to control for industry specific business cycle shocks. The matching method in hand, we then apply difference-in-difference estimator to calculate the ATT as follows:

$$ATT_{DID} = E\left[Y^{1}_{i,t+k} - Y^{1}_{i,t-1} \mid DI_{i,t} = 1, p\left(X_{i,t-1}\right)\right] - E\left[Y^{0}_{i,t+k} - Y^{0}_{i,t-1} \mid DI_{i,t} = 1, p\left(X_{i,t-1}\right)\right]$$

Considering the difference of $Y^{1}_{i,t+k} - Y^{1}_{i,t-1}$ for treated firms and $Y^{0}_{i,t+k} - Y^{0}_{i,t-1}$ for matched non-treated firms eliminates potential effects of time-invariant unobservables on the outcome variable. It remains a bias only from two sources: First, time-variant unobservable firm characteristics may differ between treated and matched non-treated firms (e.g., organisational innovations, entry and exit of experts and management) and both groups response differentially to changes in markets and macroeconomic conditions.

[2] The matching procedure is carried out using software package *psmatch2* in STATA 11 (see Leuven and Sianesi 2003).

4. Data

4.1 Panel structure

In the paper at hand the firm-level data are taken from the European AMADEUS database which is provided by Bureau van Dijk. Whereas companies' financial records are available for up to 10 years, information on their ownership and subsidiary structure is limited to the year of data compilation. In this chapter, we focus on changes in the international status of companies *between* the years 2000 and 2002, 2002 and 2004, as well as 2005 and 2007, respectively. Consequently, we analyse the post-entry and post-exit home performance of French exporters and MNEs that change their status in 2001, 2003 or 2006.

Our dataset is limited to unconsolidated firm-level accounts in order to analyse location and entity specific performance effects. The data set includes companies of a wide range of manufacturing and service industries.[3] Table 1 provides an overview of the underlying panel structure. The overall panel is unbalanced as the latest year for which key financial data are available is 2007. Given the underlying data structure, the short-term analysis in $t+1$ is based on a larger sample of firms than the long-term analysis for $t+5$ and $t+6$. The latter is restricted to firms that changed their internationalization status in 2001.

We differentiate between two types of changers with exporting firms that become engaged in FDI (i.e. new MNEs, DX-DI) and MNEs that divest all foreign affiliates to become pure exporters (DI-DX). The number of observations, as depicted in Table 2, are obtained from probit estimations with variables taken from the pre-change periods. In sum, the number of exporters going abroad is much larger (884) than the number of MNEs that cease their foreign operations (279). In the majority of cases a large pool of potential control firms (non-changers) exists which is a pre-requisite for finding a comparable firm for each treated observation in the subsequent matching procedure.

The number of firms used in the matching procedure and difference-in-difference analysis can be further reduced if key performance variables are missing in the post-change period. Consequently, the number of observations depends on the type of change, the year of change

[3] Excluded from the analysis are the following industries (with the industry codes (NACE) in parentheses): Agriculture, hunting and forestry (01, 02), fishing (05), mining and quarrying (10-14), management activities of holding companies (7415), public administration and defense, compulsory social security (75) and activities of membership organizations (91). Moreover, the dataset is purged from outliers for key financial indicators.

Table 1: **Panel structure**

Pre-change		Change	Post-change					
t-2	*t-1*	***t***	*t+1*	*t+2*	*t+3*	*t+4*	*t+5*	*t+6*
1999	2000	**2001**	2002	2003	2004	2005	2006	2007
2001	2002	**2003**	2004	2005	2006	2007	-	-
2004	2005	**2006**	2007	-	-	-	-	-

Table 2: **Number of observations**

Pre-change year (t-1)		2000	2002	2005	Total
Foreign investment (FDI)					
DX-DI	**Treated**	539	155	190	**884**
DX-DX	**Control**	5,025	4,908	4,976	**14,909**
Foreign divestment					
DI-DX	**Treated**	73	135	71	**279**
DI-DI	**Control**	60	475	526	**1,061**

Notes: Changes in the internationalization status can occur between 2000 and 2002, 2002 and 2004, 2005 and 2007, where the first year refers to the pre-change period (t-1). For example, firms in the DX-DI group with the pre-change year 2000 were exporters (DX) in 2000 who became MNEs (DI) by 2004. The number of observations is obtained from probit models on pre-change variables. The control groups refer to the potential number of firms that can function as control observations in the matching procedure. *Total* refers to firm-year observations.

and the specific outcome variable.[4] Therefore, the final sample size is reported with the results for the difference-in-difference analysis in Tables 6 to 9 in Section 5.2.

4.2 Outcome and Control Variables

All firm-specific state variables used in the probit model to explain the internationalization behaviour are taken from the pre-change period, *t-1*. The export activity, our main indicator of

[4] In principle there are 36 different sample sizes due to 2 changing modes (DX-DI and DI-DX), 3 changing years (2001, 2003 and 2006) and 6 outcome variables (export turnover, export share, number of employees, operating turnover, labour productivity and TFP).

interest, is measured in absolute terms as *export turnover* and in relative terms as *export share* (export to total operating revenue).

Many theoretical and empirical papers (e.g. Roberts and Tybout 1997, Bernard and Jensen 2004, Helpman et al. 2004) emphasize the important role of basic firm characteristics like the number of *employees*, *operating revenue*, *age* and *productivity* for bearing the sunk costs of foreign market entry. Operating revenue is included as state variable and growth rate to account for companies' state dependence and growth path. The productivity measures used in this paper refer either to labour productivity, defined as operating revenue per employee, or total factor productivity (TFP). The latter is obtained by following the procedure of Levinsohn and Petrin (2003) which yields consistent estimates of firm-level TFP.[5]

Recently published studies point out that multi-unit and multinational characteristics as well as ownership characteristics can also affect firm's mode of internationalization (e.g. Roper et al. 2006, Bernard and Jensen 2007, Greenaway et al. 2007). Therefore, firms' ownership structure is used as a proxy for the underlying strategic interests of its owners and is captured by the dummy variables *corporate shareholder*, *financial shareholder*, *state shareholder*, *individual shareholder* and *foreign shareholder* for non-French investors. Only owners with an ownership share of 10% or more are taken into account in order to assure an effective voice in the management of a firm. The organizational structure is further accounted for by the number of *domestic subsidiaries*.

Financially constrained firms might be less likely to enter (Chaney 2005) and more likely to leave foreign markets. Companies can fail to finance their internationalization because of a liquidity shortage. Thus, following recent empirical papers on foreign market participation (Greenaway et al. 2007, Stiebale 2010), we include a *liquidity ratio* defined as the difference of current assets and current liabilities to total assets.

Markusen (1995) points out the positive correlation between the importance of intangible assets in industries and the economic importance of MNEs. The ratio of intangible fixed assets to tangible fixed assets is used as a proxy for the *knowledge capital* because no direct information is available on corporate R&D expenses. Finally, up to 28 *industry dummies* based on the two-digit NACE classification attempt to capture remaining industry-specific heterogeneity.

[5] Levinsohn, Petrin and Poi (2003) provide a STATA command (*levpet*) to implement their TFP estimations. The TFP value corresponds to the residual obtained from a firm-specific logarithmised Cobb-Douglas production function. In contrast to labour productivity, TFP has no obvious scaling or natural base values thereby impeding a direct interpretation.

For evaluating the post-entry as well as post-exit performance we concentrate on six outcome variables. The main variables of interest are export share and export turnover in order to analyse the extent to which exports serve as substitutes or complements of FDI. Additionally, employment, operating revenue, labour productivity and total factor productivity are taken into account. With exception of the export share we compute and compare growth rates of variables between the treatment and non-treatment group. The computation of the growth rate follows Evan's (1987) approach by assuming an exponential growth trend.[6] Annual average growth rates are calculated as difference between the logarithm of outcome variables in any year $t+k$ (with $k \geq 1$) and the pre-switching year $t-1$ divided by the number of years between $t+k$ and $t-1$.

5. Results

5.1 Propensity Score Matching

In a first step of the matching procedure, we acquire the propensity score for each firm by estimating the probability of changing the international status in a probit model. We run separate probit estimations for each switching mode and year. Table 3 provides an overview of the probit estimations for the year 2002.[7] Exporters exhibiting a high operating turnover are more likely to become engaged in FDI while it has not significant effect on the likelihood of exiting foreign markets. Firms with a higher export share are more likely to set up foreign operations whereas absolute export turnover exhibits a negative effect. However, leaving operating turnover out of the estimation yields a positive and highly significant coefficient for export turnover.[8]

The ownership structure constitutes an important indicator for changes in the internationalization status. Corporate and financial shareholders increase the probability for exporters to invest abroad and financial investors increase the likelihood of a downward change for MNEs. Labour productivity decreases the likelihood of exporters to become MNEs. Using, however, a more parsimonious specification reveals that productivity significantly increases the likelihood to change upwards while it has no effect on changing downwards.

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[6] Alternatively, a constant growth trend can be assumed. However, for analyzing average employment growth based on N-firms with consideration of positive and negative growth rates, the error is lower if an exponential growth trend is assumed.

[7] The probit estimations for 2000 and 2005 yield similar results and are available on request.

[8] The correlation between operating turnover (in logs) and export turnover is 0.29.

Table 3: Probit estimations for all internationalization changes in 2002

Base group	DX-DX	DI-DI
Treatment group	**DX-DI**	**DI-DX**
Performance characteristics		
Export turnover	-0.00000340**	-0.000000556
	(2.33)	(1.12)
Export share	1.067***	0.107
	(6.86)	(0.42)
Employees (in logs)	-0.0751	0.0682
	(0.85)	(0.71)
Operating turnover (in logs)	0.344***	0.124
	(4.03)	(1.32)
Operating turnover growth	-0.0205	-0.0683
	(0.43)	(0.42)
Labour productivity	-0.000225*	-0.0000137
	(1.65)	(0.64)
Ownership structure		
Corporate shareholder (d)	0.177*	-0.249
	(1.94)	(1.56)
Financial shareholder (d)	0.385***	0.428***
	(2.93)	(2.69)
State shareholder (d)	0.259	0.0436
	(0.92)	(0.12)
Individual shareholder (d)	0.142	0.205
	(1.61)	(1.52)
Foreign shareholder (d)	-0.0129	-0.242
	(0.10)	(-1.26)
Domestic subsidiaries	0.0193	0.000704
	(1.35)	(0.05)
General firm characteristics		
Liquidty ratio	0.251	-0.145
	(1.38)	(0.60)
Knowledge capital	-0.00185	0.00152
	(0.32)	(0.51)
Age	-0.00113	-0.00127
	(0.50)	(0.46)
Constant	-3.821***	-1.380*
	(6.74)	(1.80)
N	5,063	610

Notes: Reported are the coefficents from probit estimations. The treatment variable takes the value 1 if a switch occurs, 0 otherwise. Control dummies are included for the industry affiliation of the companies. (d) for discrete change of dummy variable from 0 to 1. The z-statistics are in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Table 4: Balancing test for nearest neighbour matching, DX-DI and DX-DX in 2002

Variable	Sample	Treated	Control	Bias (%)	Bias reduction (%)	t	p > |t|
Export turnover	Unmatched	16855	5327	24.7		2.60	0.009
	Matched	16855	21315	-9.6	61.3	-0.88	0.379
Export share	Unmatched	0.317	0.127	79.8		11.08	0.000
	Matched	0.317	0.285	13.5	83.0	1.00	0.317
Employees (in logs)	Unmatched	4.38	3.03	93.8		11.67	0.000
	Matched	4.38	4.59	-14.5	84.5	-1.23	0.221
Operating turnover (in logs)	Unmatched	9.83	8.20	104.1		12.59	0.000
	Matched	9.83	10.06	-14.8	85.8	-1.30	0.195
Operating turnover growth	Unmatched	0.082	0.137	-1.7		-0.15	0.883
	Matched	0.082	0.018	1.9	-16.0	2.14	0.033
Labour productivity	Unmatched	343.2	331.7	0.6		0.05	0.959
	Matched	343.2	361.6	-0.9	-61.5	-0.32	0.749
Corporate shareholder (d)	Unmatched	0.600	0.327	56.9		7.13	0.000
	Matched	0.600	0.613	-2.7	95.3	-0.23	0.817
Financial shareholder (d)	Unmatched	0.142	0.043	34.5		5.78	0.000
	Matched	0.142	0.110	11.3	67.3	0.85	0.393
State shareholder (d)	Unmatched	0.026	0.012	10.5		1.59	0.111
	Matched	0.026	0.019	4.8	54.5	0.38	0.703
Individual shareholder (d)	Unmatched	0.355	0.338	3.6		0.45	0.655
	Matched	0.355	0.329	5.4	-49.8	0.48	0.633
Foreign shareholder (d)	Unmatched	0.135	0.050	29.7		4.69	0.000
	Matched	0.135	0.181	-15.7	47.1	-1.09	0.277
Domestic subsidiaries	Unmatched	1.168	0.324	38.1		6.28	0.000
	Matched	1.168	1.039	5.8	84.7	0.33	0.739
Liquidty ratio	Unmatched	0.236	0.178	23.5		2.67	0.008
	Matched	0.236	0.232	1.6	93.1	0.15	0.880
Knowledge capital	Unmatched	1.435	2.957	-7.3		-0.65	0.516
	Matched	1.435	1.272	0.8	89.3	0.30	0.764
Age	Unmatched	29.18	25.41	20.8		2.77	0.006
	Matched	29.18	31.52	-12.9	38.1	-1.01	0.316
Propensity score	Unmatched	0.104	0.028	115.5		18.91	0.000
	Matched	0.104	0.104	0.2	99.8	0.01	0.989

Notes: Reported are the mean values of the treated (DX-DI) and control (DX-DX) group, before and after the matching for the year 2002 (pre-change year, *t-1*). The t-test are used to test for the equality of those means. The corresponding results for the industry variables are not reported but they are available on request.

Table 5: Balancing test for nearest neighbour matching, DI-DX and DI-DI in 2002

Variable	Sample	Treated	Control	Bias (%)	Bias reduction (%)	t	p > |t|
Export turnover	Unmatched	44122	42791	0.9		0.09	0.932
	Matched	45768	55365	-6.2	-621.1	-0.37	0.710
Export share	Unmatched	0.294	0.308	-5.3		-0.54	0.592
	Matched	0.303	0.259	16.3	-207.8	1.39	0.165
Employees (in logs)	Unmatched	5.07	4.80	17.5		1.82	0.069
	Matched	5.06	5.03	2.0	88.3	0.16	0.876
Operating turnover (in logs)	Unmatched	10.58	10.31	16.6		1.72	0.087
	Matched	10.56	10.40	9.5	43.1	0.71	0.481
Operating turnover growth	Unmatched	0.036	0.052	-4.0		-0.35	0.726
	Matched	0.035	-0.015	12.7	-218.7	1.37	0.171
Labour productivity	Unmatched	663.9	819.2	-4.1		-0.37	0.714
	Matched	635.1	348.3	7.5	-84.6	1.18	0.240
Corporate shareholder (d)	Unmatched	0.726	0.771	-10.3		-1.07	0.285
	Matched	0.742	0.695	10.8	-5.1	0.83	0.406
Financial shareholder (d)	Unmatched	0.244	0.133	28.8		3.17	0.002
	Matched	0.211	0.203	2.0	93.0	0.15	0.878
State shareholder (d)	Unmatched	0.030	0.027	1.4		0.14	0.888
	Matched	0.031	0.016	9.4	-591.0	0.82	0.411
Individual shareholder (d)	Unmatched	0.356	0.318	8.0		0.82	0.411
	Matched	0.359	0.469	-23.1	-190.4	-1.78	0.076
Foreign shareholder (d)	Unmatched	0.096	0.147	-15.6		-1.53	0.127
	Matched	0.102	0.055	14.3	8.2	1.40	0.164
Domestic subsidiaries	Unmatched	2.47	1.92	12.2		1.18	0.240
	Matched	2.38	3.09	-15.5	-27.3	-1.04	0.297
Liquidty ratio	Unmatched	0.149	0.181	-11.2		-1.21	0.226
	Matched	0.156	0.176	-7.3	35.1	-0.62	0.535
Knowledge capital	Unmatched	3.61	2.40	5.6		0.66	0.511
	Matched	3.59	1.78	8.4	-50.3	0.75	0.452
Age	Unmatched	35.18	34.61	2.4		0.24	0.808
	Matched	35.41	34.52	3.8	-59.0	0.30	0.763
Propensity score	Unmatched	0.283	0.204	65.5		7.23	0.000
	Matched	0.265	0.265	0.1	99.8	0.01	0.993

Notes: Reported are the mean values of the treated (DI-DX) and control (DI-DI) group, before and after the matching for the year 2002 (pre-change year, *t-1*). The t-test are used to test for the equality of those means. The corresponding results for the industry variables are not reported but they are available on request.

Figure 1 Propensity score densities for DX-DI and DX-DX (in 2002)

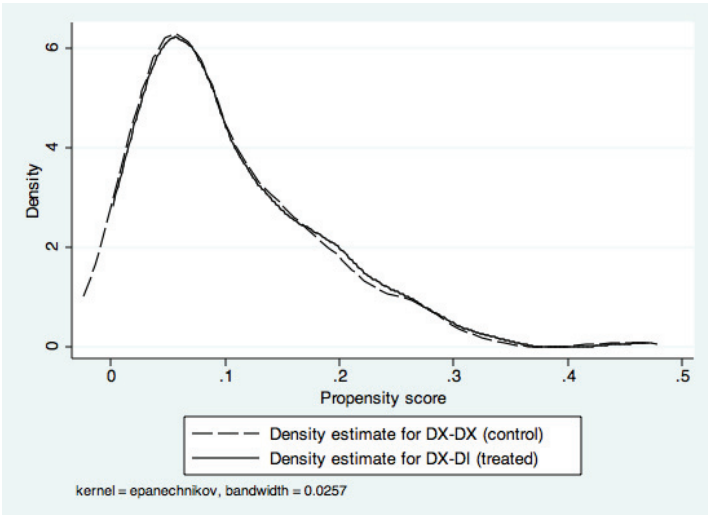
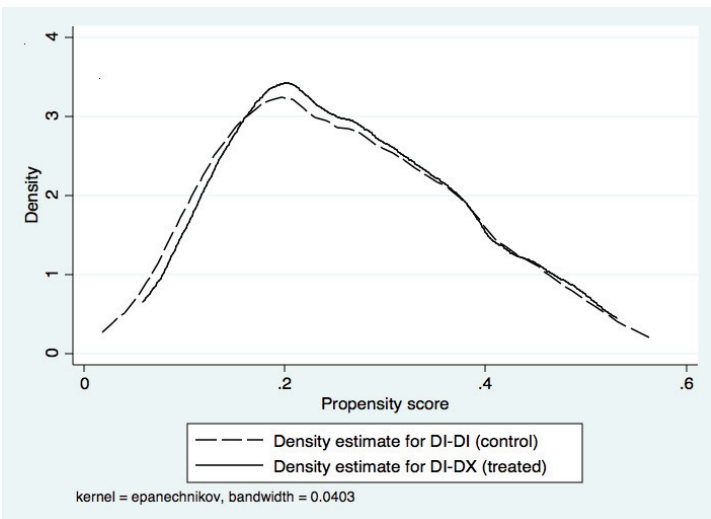


Figure 2: Propensity score densities for DI-DX and DI-DI (in 2002)



The obtained propensity scores from the probit estimations are used to match each changing firm (treated) to a non-changing firm (control) with the nearest propensity score. Table 4 and Table 5 show the balancing test for the treated and control groups before and after the

matching for the year 2002 (*t-1*).[9] Reported are the means of variables used in the probit estimation which then allows to compare the ex-ante mean difference between changers and non-changers in the unmatched and matched samples. Before the matching firms differ substantially with respect to the means of the reported covariates. Exporters that become new MNEs (DX-DI, Table 4) are on average larger (in terms of operating turnover, number of employees and number of domestics subsidiaries), older and more productive. Moreover, their share of exports, corporate, financial and foreign investors is about twice as large as for continuous exporters. In contrast, knowledge capital is higher for continuous exporters in the unmatched samples.

Before the matching, MNEs that become pure exporters (DI-DX, Table 5) are fairly similar to continuous MNEs in terms of size, age, export extensity and intensity. However, labour productivity and the share of foreign shareholders are on average lower for the former whereas knowledge capital and the share of financial shareholders are higher.

Overall, the large ex-ante difference which exists between treated and control firms in the unmatched samples can be alleviated through the matching process. Large bias reductions are achieved (column 6) and the t-tests (columns 7 and 8) show that for all variables (with the exception of operating turnover growth in Table 4 and individual ownership in Table 5) no significant differences in the mean values are discernible between changers and non-changers. Most important, the propensity is not significantly different in both groups after the matching.

The fit of the match can further be evaluated by examining the underlying density distributions of the propensity score for both groups. Whereas the density distribution for the upward changing sample is nearly identical after the matching (Figure 1), the overlap of the entire distributions in the downward case is large but not identical (Figure 2).

5.2 Difference-in-difference estimation

The results from the difference-in-difference estimation for the various performance indicators and internationalization modes are presented in Tables 6 and 7. The three year samples for each internationalization mode are pooled.[10] Consequently, the short-term analysis in *t+1* is based on a larger sample of firms than the long-term analysis for *t+5* and

[9] The balancing tests for 2000 and 2005 yield similar results and are available on request.

[10] The pooling should increase the robustness of the results. Results for the ex-post performance analysis for each internationalization mode and year sample are available on request. In the previous step for the probit estimations, the samples have not been pooled to be better account for any macroeconomic year fixed effects. In principle, we refrain from matching a firm in 2000 with a firm in 2005.

t+6 (see the panel structure in Table 1). Furthermore, the results from the difference-in-difference estimations are presented for firms which might not have a complete outcome record in all post-change periods (e.g. operating revenue is missing in one period).[11]

Investing abroad

With exception of export share all results from the difference-in-difference estimations measure differences between annual average growth rates in the outcome variable for treated and non-treated firms. Table 6 shows the results for the home performance of exporters that have become engaged in FDI (DX-DI). Our main variables of interest are at first export turnover and export to total operating turnover (export share). New MNEs do not display a significant increase in the absolute export turnover compared to exporters that, at the same time, did not become engaged in FDI.

However, new MNEs display a significantly higher growth in the export share in all post-change periods. In the first year after switching the difference in the export share is around 4.00 percentage points between treated and non-treated firms. This difference increases to 9.18 percentage points six years after switching. Again, the change is remarkably high because treated firms display an initial ratio of exports to total sales of around 31.7 per cent (see Table 4). These findings suggest that exporting and FDI are rather complements than substitutes in international trade. This conclusion is in line with the theoretical predictions and empirical findings of other scholars (e.g. Head and Ries 2004, Krautheim 2009).

The difference-in-difference measures show positive signs in for employment and turnover growth in the short and medium term. The turnover growth is always about one percentage point higher than the employment growth. One reason for this rise in turnover might be that foreign investments based on cross-border mergers and acquisitions (M&As) increase the opportunity to exploit economies of scale within the enlarged corporate network (e.g. Röller et al. 2001). Nevertheless, neither labour productivity nor TFP are significant at the conventional levels. The latter finding suggests that productivity gains at home are rather limited. As a robust check, we restricted our analysis to firms within each cohort (see Table 1) that exhibit a complete post-change record in the respective outcome variables. Previous results are confirmed.[12]

[11] Robustness checks are carried out for firms with a complete outcome record in all post-change periods.

[12] Results are available on request.

Table 6: The effect of becoming engaged in FDI on firm's home performance (DX-DI)

Outcome variable	x_{t+k} - x_{t-1}	Treated firms	Diff-in-diff	t
Export turnover	*t+1*	829	0.0420	0.893
	t+2	641	0.0608	1.291
	t+3	626	0.0375	1.021
	t+4	628	0.0355	1.134
	t+5	468	0.0452	1.100
	t+6	483	0.0125	0.389
Export share	*t+1*	882	0.0400 ***	2.754
	t+2	688	0.0596 ***	2.829
	t+3	680	0.0615 ***	2.656
	t+4	684	0.0711 ***	2.882
	t+5	523	0.0824 **	2.467
	t+6	537	0.0918 ***	2.657
Employment	*t+1*	824	0.0251	1.574
	t+2	619	0.0409 **	2.571
	t+3	592	0.0388 **	2.116
	t+4	617	0.0236 *	1.748
	t+5	440	-0.0051	0.405
	t+6	516	-0.0006	0.050
Operating turnover	*t+1*	882	0.0377 **	2.463
	t+2	688	0.0530 ***	2.804
	t+3	680	0.0431 **	2.205
	t+4	684	0.0414 **	2.064
	t+5	523	0.0335	1.622
	t+6	537	0.0226	1.275
Labour productivity	*t+1*	824	0.0124	0.771
	t+2	619	0.0112	0.862
	t+3	592	0.0042	0.371
	t+4	617	0.0056	0.494
	t+5	440	0.0169	1.415
	t+6	516	0.0150	1.159
TFP	*t+1*	789	0.0054	0.361
	t+2	572	-0.0143	0.782
	t+3	587	-0.0051	0.331
	t+4	570	-0.0077	0.713
	t+5	404	0.0055	0.557
	t+6	470	0.0059	0.564

Notes: Reported are the results for the difference-in-difference estimations with x_{t+k} - x_{t-1}, where t = change period and k takes the values 1 to 6. "Full restriction" implies that variable information must be available in all post-change periods. "No restriction" imposes no restriction on the information availability. The t values are reported and * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 7: The effect of foreign divestment on firm's home performance (DI-DX)

Outcome variable	x_{t+k} - x_{t-1}	Treated firms	Diff-in-diff	t
Export turnover	*t+1*	242	-0.0156	0.190
	t+2	156	-0.0580	0.877
	t+3	150	-0.0584	1.036
	t+4	154	-0.0419	0.802
	t+5	43	-0.0782	0.526
	t+6	45	-0.0794	0.562
Export share	*t+1*	255	0.0588 **	2.225
	t+2	185	0.0077	0.202
	t+3	183	0.0186	0.469
	t+4	187	0.0077	0.192
	t+5	58	0.0351	0.261
	t+6	60	0.0442	0.292
Employment	*t+1*	245	0.0282	0.925
	t+2	172	0.0225	0.721
	t+3	159	0.0246	0.790
	t+4	180	0.0205	0.850
	t+5	37	0.0330	0.367
	t+6	58	0.0003	0.006
Operating turnover	*t+1*	255	0.0018	0.068
	t+2	185	-0.0009	0.029
	t+3	183	0.0130	0.460
	t+4	187	-0.0014	0.052
	t+5	59	-0.0104	0.169
	t+6	60	-0.0099	0.199
Labour productivity	*t+1*	244	-0.0307	1.061
	t+2	172	-0.0170	0.500
	t+3	159	-0.0063	0.263
	t+4	179	-0.0245	1.212
	t+5	37	-0.0030	0.035
	t+6	58	-0.0065	0.135
TFP	*t+1*	222	-0.0137	0.559
	t+2	139	-0.0047	0.222
	t+3	140	-0.0013	0.076
	t+4	147	-0.0128	0.942
	t+5	29	0.0228	0.251
	t+6	48	0.0046	0.096

Notes: Reported are the results for the difference-in-difference estimations with x_{t+k} - x_{t-1}, where t = change period and k takes the values 1 to 6. "Full restriction" implies that variable information must be available in all post-change periods. "No restriction" imposes no restriction on the information availability. The t values are reported and * p<0.10, ** p<0.05, *** p<0.01.

Foreign divestitures

Table 7 reports the difference-in-difference measures for the situation that MNEs divest all foreign operations to become pure exporters (DI-DX). We find that a downward change from FDI to exporting results in a significant short-term increase in the export share for treated firms. In the medium- and long-run, however, these switching firms do not display higher export intensity than MNEs that did not change. The short-term effect is in line with the prediction that divesting from abroad implies a concentration of production at home and serving foreign markets by exporting. Losing the affiliate in foreign markets might reduce in the long-term, however, the chance to export home-centred products to foreign markets at lower costs (see Krautheim 2009 for detail).

Export turnover, operating revenue and employment are not significantly affected by changing the internationalization mode. Moreover, both productivity measures exhibit negative coefficient which are, however, not significant at the conventional levels. Thus, a retreat from international markets is neither linked to performance losses nor gains at home. After divestitures, companies can (re)focus on their domestic activities and streamline processes to the demand of their home market. Robustness checks for firms with a complete post-change record confirm these results.

Overall, cross-border divestitures do not significantly affect the growth path of divesting firms. This finding contradicts findings that divestitures are positively evaluated by financial markets due to positive cumulative abnormal returns after the announcement of a divestiture (see e.g., Mathur et al. 2006).

Industry differences

In a next step, the above analysis is repeated by splitting the sample into high- and low-technology firms to better account for heterogeneity in the underlying technology profile of enterprises. While we do not have data about expenditures for research and development we apply the NIW/ISI list of high-tech industries in manufacturing (Legler and Frietsch 2007) and the list of high-tech service industries suggested by Nerlinger (1998).

Table 8 reports the findings from the difference-in-difference estimation of exporters that become engaged in FDI (DX-DI). Exporters in high-tech industries exhibit a strong growth in their export turnover of up to 9.6 percentage points in the short-term compared to non-treated high-tech firms, whereas companies in low-tech industries do not achieve any significant growth in export share related to non-treated low-tech firms.

Table 8: Performance of high- and low technology firms (DX-DI)

Outcome variable	x_{t+k} - x_{t-1}	Treated firms high technology	Diff-in-diff	t	Treated firms low technology	Diff-in-diff	t
Export turnover	*t+1*	270	0.0964 *	1.700	559	0.0151	0.321
	t+2	210	0.0698	1.281	431	0.0564	1.203
	t+3	203	0.0637	1.349	423	0.0250	0.717
	t+4	210	0.0791 **	2.043	418	0.0146	0.485
	t+5	158	0.0729	1.609	310	0.0323	0.792
	t+6	158	0.0525	1.285	325	-0.0066	0.219
Export share	*t+1*	290	0.0502 ***	2.765	592	0.0350 **	2.522
	t+2	223	0.0649 **	2.364	465	0.0570 ***	2.957
	t+3	218	0.0798 ***	2.721	462	0.0528 **	2.428
	t+4	220	0.0973 ***	3.206	464	0.0587 **	2.501
	t+5	169	0.1336 ***	3.318	354	0.0579 *	1.819
	t+6	175	0.1165 ***	2.852	362	0.0798 **	2.409
Employment	*t+1*	269	0.0226	1.232	555	0.0263	1.576
	t+2	199	0.0528 **	2.535	420	0.0353 **	2.315
	t+3	186	0.0442 *	1.658	406	0.0360 **	2.269
	t+4	201	0.0288 **	1.976	416	0.0211	1.505
	t+5	143	-0.0065	0.430	297	-0.0046	0.351
	t+6	169	0.0037	0.284	347	-0.0027	0.208
Operating turnover	*t+1*	290	0.0602 ***	2.697	592	0.0267 *	1.830
	t+2	223	0.0774 ***	3.094	465	0.0413 **	2.321
	t+3	218	0.0649 **	2.556	462	0.0329 *	1.786
	t+4	220	0.0574 **	2.105	464	0.0339 *	1.879
	t+5	169	0.0486 *	1.947	354	0.0263	1.336
	t+6	175	0.0355	1.559	362	0.0165	0.989
Labour productivity	*t+1*	269	0.0468 ***	2.603	555	-0.0044	0.268
	t+2	199	0.0299 *	1.854	420	0.0023	0.179
	t+3	186	0.0193	1.390	406	-0.0030	0.268
	t+4	201	0.0114	1.001	416	0.0027	0.227
	t+5	143	0.0253 *	1.928	297	0.0124	1.023
	t+6	169	0.0188	1.452	347	0.0131	0.981
TFP	*t+1*	244	0.0332	1.516	545	-0.0077	0.559
	t+2	172	0.0130	0.556	400	-0.0264	1.570
	t+3	179	0.0169	0.829	408	-0.0152	1.089
	t+4	175	0.0117	0.884	395	-0.0167	1.645
	t+5	125	0.0261 **	2.144	279	-0.0044	0.466
	t+6	142	0.0169 *	1.754	328	0.0009	0.085

Notes: Reported are the results for the difference-in-difference estimations with x_{t+k} - x_{t-1}, where t = change period and k takes the values 1 to 6. The t values are reported and * p<0.10, ** p<0.05, *** p<0.01.

Table 9: Performance of high- and low technology firms (DI-DX)

Outcome variable	x_{t+k} - x_{t-1}	Treated firms high technology	Diff-in-diff	t	Treated firms low technology	Diff-in-diff	t
Export turnover	*t+1*	91	0.0305	0.412	151	-0.0439	0.461
	t+2	57	0.0151	0.181	99	-0.0997	1.430
	t+3	51	0.0380	0.494	99	-0.1084 *	1.915
	t+4	55	0.0442	0.641	99	-0.0892	1.629
	t+5	17	0.0509	0.281	26	-0.1499	0.978
	t+6	14	0.0474	0.186	31	-0.1275	1.067
Export share	*t+1*	92	0.0700 **	2.176	163	0.0525 *	1.920
	t+2	65	-0.0106	0.226	120	0.0176	0.444
	t+3	63	0.0294	0.611	120	0.0131	0.316
	t+4	67	0.0166	0.329	120	0.0027	0.063
	t+5	21	0.1055	0.711	37	-0.0050	0.034
	t+6	22	0.0751	0.397	38	0.0263	0.173
Employment	*t+1*	90	0.0142	0.424	155	0.0360	1.007
	t+2	60	0.0362	0.878	112	0.0153	0.449
	t+3	53	0.0520	1.238	106	0.0106	0.331
	t+4	65	0.0364	1.128	115	0.0116	0.455
	t+5	13	0.0109	0.089	24	0.0450	0.483
	t+6	22	0.0071	0.117	36	-0.0038	0.068
Operating turnover	*t+1*	92	0.0317	1.092	163	-0.0152	0.499
	t+2	65	0.0362	1.007	120	-0.0211	0.607
	t+3	63	0.0525	1.469	120	-0.0080	0.277
	t+4	67	0.0284	0.731	120	-0.0181	0.664
	t+5	22	-0.0026	0.030	37	-0.0150	0.247
	t+6	22	0.0088	0.116	38	-0.0207	0.451
Labour productivity	*t+1*	89	0.0037	0.121	155	-0.0506	1.518
	t+2	60	0.0078	0.214	112	-0.0301	0.808
	t+3	53	0.0028	0.088	106	-0.0106	0.431
	t+4	65	-0.0221	0.861	114	-0.0261	1.203
	t+5	13	0.0606	0.547	24	-0.0375	0.422
	t+6	22	0.0017	0.029	36	-0.0112	0.217
TFP	*t+1*	79	-0.0114	0.298	143	-0.0147	0.680
	t+2	42	0.0186	0.675	97	-0.0154	0.736
	t+3	45	0.0119	0.545	95	-0.0075	0.446
	t+4	48	-0.0020	0.089	99	-0.0177	1.444
	t+5	10	0.0162	0.125	19	0.0267	0.321
	t+6	18	0.0152	0.272	30	-0.0017	0.034

Notes: Reported are the results for the difference-in-difference estimations with x_{t+k} - x_{t-1}, where t = change period and k takes the values 1 to 6. The t values are reported and * p<0.10, ** p<0.05, *** p<0.01.

Moreover, firms in high-tech industries display a significant growth in the export share of 5.0 up to 13.4 percentage points in the post-switching periods compared to exporters that did not become engaged in FDI. In contrast, firms in low-tech industries attain an export share growth of 3.5 to 8.0 percentage points only. These findings might indicate that home centralization of certain products is stronger for high-technology firms.

Similarly, the employment and operating turnover growth is usually two to three percentage points higher for high-technology firms compared to the results for the low-technology firms. Finally, firms in high-tech industries experience a significant productivity growth in the short- and long-term, whereas low-tech firms exhibit no significant growth in this outcome variable. In sum, high-technology exporters that become engaged in FDI clearly outperform non-switching high-technology exporters as well as switching low-technology exporters.

Results for the home performance of MNEs that become pure exporters (DI-DX) are displayed in Table 9. Both, high-technology and low-technology firms that switch downwards experience a short-term growth in their export intensity of 7.0 and 5.3 percentage points, respectively, compared to non-switching firms. Downward switching MNEs in low-technology industries experience a negative turnover and productivity growth in all post-change periods, which, however, is insignificant.

The overall results for divesting firms show no substantial performance differences with respect to technology differences, though a larger firm sample might be helpful to check for the robustness of those findings. Furthermore, analyzing the reasons for divestiture as well as the transaction form (sell-off, shutting down, spin-off) might be essential to further enhance the knowledge concerning the link between investment, divestiture and subsequent corporate performance.

6. Conclusion

This paper empirically analyses for French firms the effects on home enterprises' performance when investing or divesting abroad. A propensity score matching combined with a difference-in-difference estimator is applied to derive empirical findings.

We find a substantial rise in the export share for exporters becoming engaged in outward FDI indicating that FDI and exports are rather complements than substitutes. This complementarity might explain why the annual employment and turnover growth exceeds 2 to 5 percentage points in the post-change periods for new MNEs. The positive association

between FDI and exporting is very strong for switching firms in high-tech industries compared to non-switching firms and moderate for switching firms in low-tech industries.

Not many studies have analysed whether and how divesting from abroad affects home enterprise' performance, although divestitures, like investments, are a central part in global business dynamics. In the short-term former FDI activities are substituted by exports. However, contrary to positive responses of financial markets with respect to divestitures announcements, the impact of real economic effects in terms of turnover, employment and productivity are negligible in post-divestiture periods. Based on our findings, one can conclude that the home country does not need not to fear negative repercussion from firms coming back home, but neither can it gain from foreign divestiture.

7. References

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