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Who enters and leaves foreign markets? Evidence for French firms

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Foreign market dynamics and the symmetric role of firm-specific characteristics - Evidence for French Firms

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Who enters and leaves foreign markets? Evidence for French firms

(Foreign market dynamics and the symmetric role of firm-specific characteristics - Evidence for French Firms)

Abstract

This paper studies the internationalization behaviour of more than 300.000 French firms by examining the symmetric role of firm-specific factors on the decision to enter, exit or stay in foreign markets. It is argued that firm characteristics like productivity, financial liquidity and the ownership structure have a similar effect on export starters and continuous exporters. In contrast, determinants of foreign direct investments (FDI) and divestments are predicted to differ substantially. Multinomial probit (MNP) regressions confirm that firm-specific characteristics have a symmetric effect on entering and staying in foreign export markets. However, foreign investment and divestment decisions are more often characterized by asymmetric effects. The low explanatory power of performance-related measures suggests that divestments are to a larger extent driven by organizational and strategic factors.

Keywords: Foreign markets; Entry and exit; Exports; FDI; Multinomial probit model

JEL classification: F21, F23, D21, L21, C25

1. Introduction

In view of the ongoing economic globalization firms need to constantly evaluate and adjust their participation in international markets. The continuous lowering of trade barriers and advancements in the logistics and communication systems have increased the possibilities for firms to access new markets and suppliers. However, greater economic integration also implies greater international competition and shorter product life cycles which in turn can impede firms' internationalization. Subsequently, firms are more frequently confronted with the decision to enter or exit foreign markets.

In this paper we analyze the relationship between firm-specific characteristics and the entry and exit pattern in foreign markets for the two main modes of internationalization, namely the export and the foreign direct investment (FDI) participation. While numerous papers have dealt with the export participation (e.g. Roberts and Tybout 1997, Bernard and Wagner 2001, Greenaway et al. 2007, Wagner 2008), empirical evidence is rare on the role of firm-specific characteristics on the decision to invest abroad and to divest foreign operations. Earlier studies about divestments (see e.g. Boddewyn 1979 for an overview) concentrate on the role of poor performance as main explanatory factor for divestments. However, many scholars (e.g. Caves and Porter 1977, Eaton and Lipsey 1980, Roberts and Tybout 1997) argue that sunk costs may function as an exit barrier which in turn makes firms resistant to exit even if foreign operations are not profitable. For instance, divestments can be extremely costly due to long-term investments and contracts for fixed assets like machinery and buildings. Similarly, intangible assets like goodwill, licence agreements, plant-specific human capital and knowledge spillover from foreign affiliate can function as exit barriers. Major divestment determinants also include the strategic fit and organizational interdependency between the parent company and the foreign subsidiary (see e.g. Boddewyn 1979, 1983; Benito 1997).

Given the broad range of reasons for foreign divestments we assume that the relationship between firm characteristics and the foreign market entry via FDI differs substantially from the relationship between firm characteristics and the decision to divest. In contrast, based on the relative low entry and exit barriers for exporting, it is hypothesized that key company characteristics exhibit a positive and symmetric effect on entering and staying in foreign export markets. To our knowledge no previous study has empirically tested on this remarkable difference to explain the export and FDI participation.

Our hypotheses are tested on a large sample of more than 300.000 French firms from the manufacturing and service industry for which the internationalization status has been observed between 2000 and 2005. A multinomial probit (MNP) model is applied to estimate the transition probability of companies that change their internationalization status. The empirical findings confirm our hypotheses regarding the symmetric effect of firm-specific characteristics on entering and staying in the export market. In contrast, the foreign investment and divestment decisions are more often characterized by asymmetric effects.

The remainder of the paper is organized as follows: Section 2 derives the testable hypothesis, drawing on various economic and business theories. Section 3 describes the data. In Section 4 the econometric approach and the variables are presented. Section 5 presents and discusses the estimation results. Section 6 concludes.

2. Theoretical background and testable hypotheses

A firm choosing to export benefits from the concentration of production and can therefore exploit economies of scale, but it has to pay higher trade costs and incur sunk costs (e.g. cost of packaging, advertising, market-specific R&D). In their pioneer work, Roberts and Tybout (1997) model the role of sunk cost and other firm-specific factors for the decision to export. One implication of the theoretical model is that prior export experience permits to lower sunk costs. They show in their econometric investigation for Columbian plants that prior export experience has a significant and positive effect on the probability of exporting. The main role of sunk costs is also confirmed by findings of Bernard and Jensen (1995, 1999). The authors are among the first to show that exporters have already a higher productivity than non-exporters in the period *before* they enter export markets (see Wagner 2007 for an overview). Higher productivity offers the chance to realize higher profits and thus, to receive sufficient compensation for non-recoverable sunk costs.

Helpman et al. (2004) extend the analysis by differentiating between two main modes of internationalization, namely the export activity and FDI. The authors advocate that the mode chosen by firms reflects their productivity level: Only the most productive firms become multinational enterprises (DI), whereas firms with intermediate productivity enter foreign markets via exports (DX). The least productive companies produce only for the domestic market (D). The productivity ranking as postulated by Helpman et al. (2004) could be confirmed for firms from various countries including France (Engel and Procher

2008), Germany (Arnold and Hussinger 2006; Wagner 2006), the UK (Girma et al. 2005) and Japan (Head and Ries 2003).

While productivity matters for the upward change with respect to the internationalization mode (e.g. intensifying the international participation by changing from DX to DI), less research has been conducted on the relationship between productivity and downward changes (e.g. ceasing foreign operations by changing from DI to D). A theoretical background to answer this question is provided by Hopenhayn's (1992) model of the entry and exit pattern in an industry. He postulates that firm's productivity is path-dependent. High productive firms are more likely to remain highly productive in future periods of time. This implies that firms with productivity levels below a certain threshold value will exit the market in the next period whereas firms with productivity levels beyond the threshold value will stay in the market. Thus, low productive firms in period $t-1$ have a higher propensity to exit the market in period t than high productive firms. Hopenhayn further analyzes the role of sunk costs. He points out that high sunk costs provide a barrier to enter the market. The lower number of entries then reduces the productivity threshold for incumbents so that more low productive incumbents stay in the market in the next period.

Farinas and Ruano (2005) provide an empirical investigation of Hopenhayn's model for a sample of Spanish manufacturing firms. The authors find that incumbents achieve significant higher productivity levels than entering and exiting firms. With respect to the role of sunk costs, they further show that large firms with high sunk costs are characterized by, on average, lower productivity than large firms confronted with low sunk costs. All these findings are in line with the predictions of the Hopenhayn model.

Wagner (2008) is the first to test the model of Hopenhayn for firm dynamics in international markets, namely for the export market participation. He applies a Kolmogorov-Smirnov test methodology to compare the entire distribution of labour productivity for export starters, export stoppers and continuing exporters. The results reveal that the distribution of labour productivity for continuing exporters stochastically dominates the distribution of export stoppers and export starters. In line with Hopenhayn's model the selection of the fittest is confirmed and low productive firms exit the international market. These findings allow us to derive the following hypothesis:

Hypothesis 1a: *Productivity correlates symmetrically with the export participation. High productivity firms have a significant higher propensity to become exporters and to continue exporting than low productivity firms.*

The effect of productivity on foreign divestment is assumed to be different from its effect on the decision to stop exporting. In fact, FDI is associated with higher sunk costs which in turn results in higher entry barrier. According to Hopenhayn's (1992) model high sunk costs imply that the productivity threshold is remarkably lower compared to a regime with low sunk cost. Therefore, firms are more tolerant against poor productivity performance of their subsidiaries, so that only subsidiaries with a very low productivity are divested. This implication is in line with earlier divestment studies (see e.g. Boddewyn 1979). Moreover, the global commodity chain which is characterized by remarkable cross-boundaries flows of intermediate products and technological expertise within and between multinational enterprises (MNEs) has received increasing attention in recent years. A significant knowledge transfer from the foreign subsidiary to the parent company is found to exist (e.g. Almeida 1996). The divestment literature emphasizes the role of strategic and organizational factors for divestment decisions. Hence, divestments are less driven by pure performance measures. Subsequently, we formulate the following hypothesis:

Hypothesis 1b: *Productivity correlates asymmetrically with FDI. High productivity firms have a significant higher propensity to invest abroad than low productivity firms. The productivity of the subsidiary matters less for the decision to divest.*

The role of financial constraints on the internationalization of firms has become a major research topic in recent years. Modern finance theory suggests that financial markets are imperfect for firms with investment projects characterized by high sunk costs and a significant uncertainty about future outcomes (Carpenter and Petersen 2002). Consequently, firms are confronted with remarkable financing constraints (see Bond et al. 2003 for evidence for European countries) and since exporting and FDI imply sunk costs, financially constrained firms may have some disadvantages in entering foreign markets (Chaney 2005). In general, the importance of financial restrictions may increase with the level of sunk costs and thus, with the mode of internationalization. Empirical evidence is rare and exclusively addresses the export activity (e.g. Greenaway et al. 2007, Stiebale 2008). Hence, the following hypotheses can be derived:

Hypothesis 2a: Financial liquidity correlates symmetrically with the export participation. More liquid firms have a significantly higher propensity to export and to continue exporting than firms with less liquidity.

Hypothesis 2b: Financial liquidity is positively correlated with FDI. More liquid firms have a significantly higher propensity to invest abroad.¹

Beside the central role of performance measures in explaining international market participation, the role of ownership structure is also emphasized in numerous empirical studies. Roberts and Tybout (1997) find that firms owned by a corporation have a higher propensity to export than firms without this kind of ownership. The main argument comes from the resource-based view theory (e.g. McDougall et al. 1994) which postulates that investors may provide capital, specific know-how and access to a larger corporate network. In fact, corporate owners and in particular foreign corporate owners might provide specific resources to enter and serve foreign markets, namely internationally experienced staff as well as international customer and supplier networks. In addition, the experience of corporate investors and their embeddedness in foreign markets helps them to effectively monitor the internationalization process of related firms. Hence, compared to firms with individual shareholders, firms with corporate owners are more embedded in the global commodity chain and industrial ties to other affiliates, customers or suppliers of the corporate owner are likely to stay. This allows us to formulate the following hypothesis:

Hypothesis 3a: Corporate ownership correlates symmetrically with the export participation. Firms with corporate shareholders have a significantly higher propensity to become exporters and to continue exporting than firms with individual shareholders.

Hypothesis 3c: Foreign corporate ownership correlates symmetrically with the export participation. Firms with foreign corporate shareholders have a significant higher propensity to become exporters and to continue exporting than firms with domestic corporate shareholders.

While corporate ownership might increase the propensity to become engaged in FDI, its effect on the decision to divest might be more complex. Boddewyn (1983) points out that

¹ Analyzing the role of firm liquidity for foreign divestments sets up remarkable requirements for financial information of the subsidiaries. These information are, however, not sufficiently available in our data.

foreign-owned subsidiaries are divested more readily than domestic subsidiaries because of lower emotional and cultural ties of the home managers towards the to-be-invested foreign units. A larger physical distance can support this foreign discrepancy. Among others, Bernard and Sjöholm (2003) find that foreign owned plants in Indonesia are more likely to be shut down once they control for plant size and productivity. Furthermore, Benito (2005) argues that subsidiaries of MNEs have the highest propensity for divestments. MNEs have more subsidiaries and thus, more possibilities to re-allocate resources from one location to another. They are more experienced to try out workable solutions so that the investment and divestment rate is higher than the one for independent plants with a few foreign subsidiaries. In addition, whereas independent firms have full control over FDI decisions, firms related to MNEs usually have lower control over their FDI decisions. According to Benito (2005) subsidiaries of independent firms have the lowest propensity to be divested because these subsidiaries are often part of a global strategy to enter and serve foreign markets. We then conjecture:

Hypothesis 3b: *Corporate ownership correlates asymmetrically with FDI. Firms with corporate shareholders have a significantly higher propensity to invest abroad but a lower propensity to continue production abroad than firms with individual shareholders.*

Hypothesis 3d: *Foreign corporate ownership correlates asymmetrically with the FDI decision. Firms with foreign corporate shareholders have a significant higher propensity to invest abroad but a lower propensity to continue production abroad than firms with domestic corporate shareholders.*

Corporations that invest in other firms are often driven by operational and market-seeking motives (e.g. McNally 1997). In contrast, investment decisions by financial shareholders are considered to be dominated by short-term interests, namely a high return on investment. This in turn might translate into a request for a faster increase in international sales and market presence. Even though financial investors often cannot provide access to business and industrial networks in foreign markets, they can provide sufficient liquidity to enter and to stay in foreign markets. Compared to individual shareholders, significantly more financial resources are available to exploit opportunities in foreign markets. In particular, export starters and continuous exporters might benefit from financial investors as exporting activities require lower capital investment than FDI engagements. Finally, unprofitable foreign investments are probably stopped sooner by financial shareholders compared to other ownership types. Therefore, the following hypotheses will be tested:

***Hypothesis 4a:** Ownership by financial shareholders correlates symmetrically with the export participation. Firms with financial shareholders have a significantly higher propensity to start and to continue exporting than firms with individual shareholders.*

***Hypothesis 4b:** Ownership by financial shareholders correlates asymmetrically with FDI. Firms with financial shareholders have a significantly higher propensity to become engaged in FDI but they do not have a significantly higher propensity to continue their foreign operations than firms with individual shareholders.*

3. Data

The data used in the paper is taken from the AMADEUS (Analyse Major Databases from European Sources) data base. AMADEUS is a corporate database providing information on financial accounts, the ownership structure and affiliated companies. Bureau van Dijk compiles the AMADEUS database from company accounts filed under legal obligations in a European country. Despite the fact that the data is supplemented with information from company reports and regional providers, the data availability can vary to a great extent between countries. The sample in this paper is restricted to French firms as France is one of the few countries for which economic and financial indicators are frequently reported.

Only firms with unconsolidated financial account have been selected for the analysis. This ensures that a firm being part of a larger company group is not counted twice (i.e. via the consolidated account of the group). We exclude the industries with the NACE two-digit and four-digit codes 01 and 02 (Agriculture, hunting and forestry), 05 (Fishing), 10-14 (Mining and quarrying), 7415 (Management activities of holding companies), 75 (Public administration and defense, compulsory social security) and 91 (Activities of membership organizations e.g. trade unions) from the analysis². Variables in the upper and lower 1st percentile of the distribution are eliminated from the dataset in order to control for outliers and coding errors. Based on four updates of the AMADEUS database (update no. 88, 113, 136 and 146) we are able to observe the internationalization status of a company in the years 2000, 2002, 2004 and 2005. However, the exact date of a status change cannot be determined. For each company in the sample the internationalization

² The NACE (Nomenclature générale des Activités dans les Communautés Européennes) classification is the statistical industrial code for economic activities in the European Union.

status must be available for at least two years. Moreover, a change of this status is only allowed to take place between two consecutive observational years as to minimize the time gap for status changes³. Firms with multiple changes are excluded from the analysis. In sum, the sample contains 306,168 firms with non-missing values for the internationalization status.

Table 1: Internationalization status

2000	2002	2004	2005	D-D	D-DX	D-DI	DX-DX	DX-DI	DX-D	DI-DI	DI-DX	DI-D
X	X			8.015	691	9	2.377	26	824	3	2	2
	X	X		19.331	1.419	1	3.553	3	1.289	7	9	1
		X	X	101.507	3.906	21	12.033	39	3.577	137	7	3
X	X	X		25.927	2.999	8	7.454	37	3.116	5	11	5
	X	X	X	23.868	2.067	27	4.470	112	1.747	215	21	10
X	X		X	1.411	76	1	423	2	96	1	2	7
X		X	X	10.232	428	5	2.217	11	258	8	0	0
X	X	X	X	38.341	4.485	221	11.064	1.158	4.626	181	23	0
Total:				228.632	16.071	293	43.591	1.388	15.533	557	75	28

Table 1 provides an overview of the internationalization status of the companies in the sample. The dataset comprises both, companies from the manufacturing and service industry. Table 7 in the Appendix gives a detailed overview of the number of observations per industry sector. The internationalization literature typically differentiates between three types of companies: exporters (DX), multinational firms that are engaged in FDI (DI) and domestic companies that neither export nor have foreign subsidiaries (D). In the context of this paper, we analyze firms that change their internationalization status between two consecutive observational years and compare those to the respective group of non-changers. Hence, the internationalization behavior of firms can correspond to any of the following nine states: Continuous domestic firms (D-D), former domestic companies that either start to export⁴ (D-DX) or that become engaged in FDI (D-DI), continuous exporters (DX-DX), former exporters that either become engaged in FDI (DX-DI) or that stop exporting (DX-D), continuous multinational firms (DI-DI), former multinational firms that fully retreat from international markets (DI-D) or that become

³ That is why companies that were only observed in 2000 and 2004, or 2002 and 2005, or 2000 and 2005 had to be dropped from the sample.

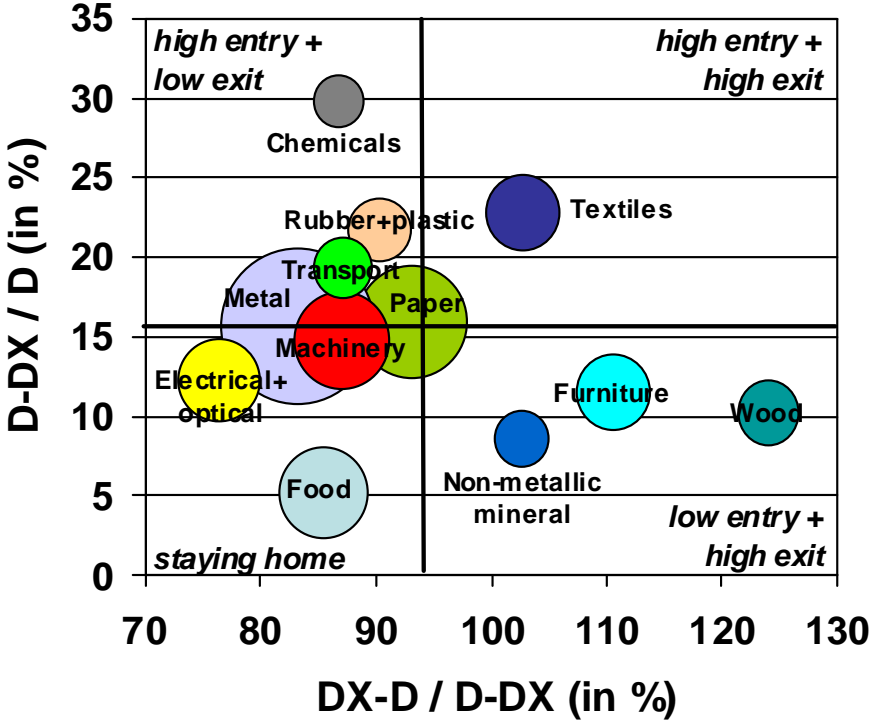
⁴ The categorization “export starter” does not imply that a firm has never exported beforehand. However, within the time period covered by the database those firms have started to export. The same applies to firms that become engaged in FDI.

exporters (DI-DX). In addition, assuming that the international market integration is highest for multinational firms (DI), followed by exporters (DX) and least for domestic companies (D), we refer to firms as up-changers (down-changers) if the market integration increases (decreases).

The majority of sampled firms are continuous domestic firms (74.7%) followed by continuous exporters (14.2%) (see row “Total” in Table 1). Furthermore, 0.2% of all observed firms are continuous multinational firms. In fact, around 11% of French firms change their mode of internationalization between two subsequent years. The ratio of export stoppers (DX-D) to starters (D-DX) is approximately one-to-one illustrating that the total number of exporters is relatively stable. In contrast, the ratio of FDI stoppers (DI-D, DI-DX) to starters (D-DI, DX-DI) is about one-to-sixteen with more firms become engaged in FDI than firms divesting their foreign subsidiaries. The number of firms that cease all their foreign operations is 103 and thus, divestment can be considered a very rare event. These findings suggest that sunk costs like hard-to-sell assets and the interrelatedness between company units might play a vital role for the exit decision. For example, Roberts and Tybout (1997) show that re-entry cost of firms that have been absent from the export market for more than one year are not significantly different than those faced by first-time exporters. Hence, the sunk cost burden in case of re-entry might prevent some firms from exiting in the first place.

In more detail, Figure 1 illustrates the ratio of export stoppers and starters (x-axis) and the ratio of export starters to firms serving the domestic market only (y-axis) for the different manufacturing sectors. On average 15.6% of all domestic manufacturing companies are export starter. The metal industry has the highest absolute number of exports starters and stoppers as depicted by the size of the bubble. The chemical, rubber and plastic, transport, metal and machinery industries are characterized by a high degree of international market entry and relatively low exit shares (in the upper left quadrant). These industries were also among the top-exporters with respect to the total French exporting volume in 2003 as reported by the OECD (2008) (see Table 8 in the Appendix).

Figure 1: Exporters in international markets

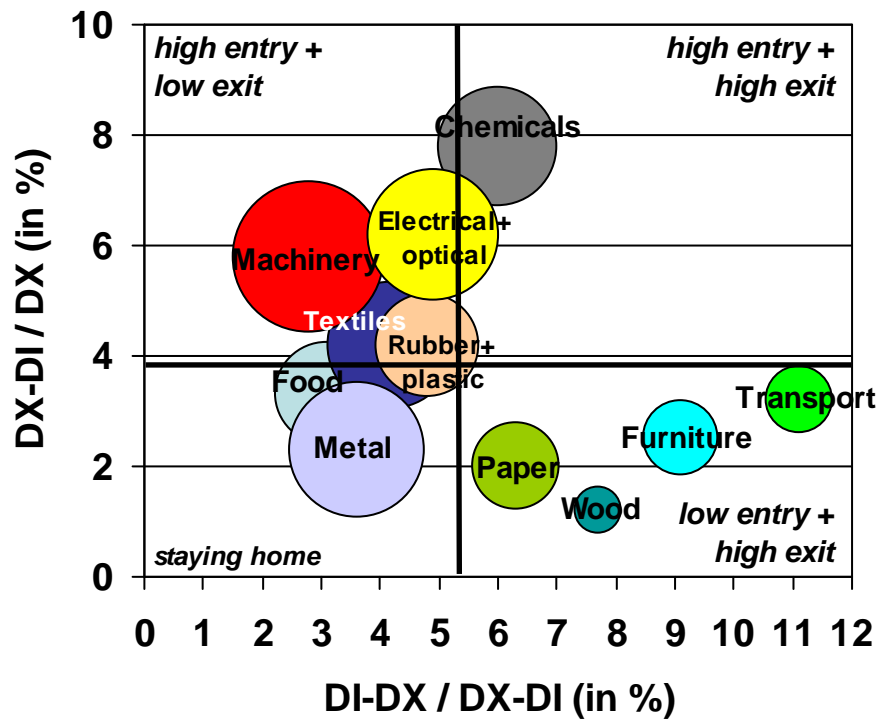


Similarly, Figure 2 depicts the ratio of firms that cease all FDI activities relative to exporters that start to undertake FDI (x-axis) and the ratio of exporters that become engaged in FDI relative to continuous exporters (y-axis)⁵. The chemical industry has the highest entry ratio, albeit exit is more frequent than in other high entry industries like the machinery and electrical and optical industry. The investments of all three industries often involve comparatively high sunk costs (due to larger industry facilities and high-technology equipment) which in turn can make exiting more costly for firms in these industries. Only 2% of the exporting firms from the paper, wood and furniture industry become engaged in FDI. In addition, a high share of firms exits foreign markets. In these industries, the collapse of the Communist regime in the 1990s has led an investment surge in Eastern Europe as firms wanted to profit from low prices for wooden materials. However, in recent years more and more firms return back home as customs and transport regulations have led to severe production and delivery delays⁶.

⁵ The main results are not altered by the inclusion of domestic companies; however, due to the lower number of observations, especially in the D-DI and DI-D group, they are excluded from the analysis.

⁶ On the one hand, raw material prices and processing cost are much lower in Eastern European countries than in France. On the other hand, productivity decreases and transport costs rise with the distance to France. Moreover, with the exception of Russia, factor costs for gas, water and electricity are on a

Figure 2: FDI engagement from exporters



4. Econometrics and variable description

In this paper we analyze the role of important firm-characteristics to explain up- and down-changes in the mode of internationalization. Given our data structure, with the internationalization status of firms only being observed in a limited number of years, we refrain from applying an econometric panel data model. Instead, we estimate the transition probabilities for firms that change and do not change their internationalization status between two consecutive time periods.

Considering several different internationalization choices as presented in section 3 we apply an unordered discrete choice model to evaluate how firms' characteristics affect the likelihood of a transition between different modes of internationalization. An m -choice multinomial model is specified with the utility of the j^{th} internationalization choice for firm i is given by

$$U_j = V_j + \varepsilon_j \quad \text{with} \quad V_j = x' \beta_j, \quad j = 1, 2, \dots, m. \quad (1)$$

comparable level for France and other Eastern European countries (see Cluster Forst und Holz: Ergebnisse der Cluster-Studie (2008)).

The deterministic component V_j depends on the individual company characteristics x and the coefficient vectors β_j . A firm will choose the internationalization mode that yields the highest utility (or profit), so that the probability of choosing alternative j is

$$\begin{aligned}
\Pr[y = j] &= \Pr[U_j \geq U_k, \quad \text{all } k \neq j] \\
&= \Pr[\varepsilon_k - \varepsilon_j \leq V_j - V_k, \quad \text{all } k \neq j] \\
&= \Pr[\tilde{\varepsilon}_{kj} \leq -\tilde{V}_{kj}, \quad \text{all } k \neq j]
\end{aligned} \tag{2}$$

where the tilda and the second subscript j denote the difference with respect to the reference mode j . Different assumptions about the distributions of the error terms ε lead to different unordered discrete choice models like the multinomial logit (MNL) and the multinomial probit (MNP) model. The MNL has errors that are independently and identically distributed (iid) according to the type-1 extreme-value distribution. It assumes the Independence from Irrelevant Alternatives (IIA) which implies that the ratio of choice probabilities between two internationalization alternatives is independent from any other alternative. As we found the IIA to be violated, a MNP model is applied. The MNP model assumes the errors are distributed multivariate normal, with mean 0 and covariance matrix Σ which in turn allows for the errors to be correlated.

Given the three internationalization states D, DX, DI, a MNP model with three choices is applied where, for example, the probability of choosing alternative 1 is given by

$$\begin{aligned}
p_1 = \Pr[y = 1] &= \Pr[\tilde{\varepsilon}_{21} \leq -\tilde{V}_{21}, \quad \tilde{\varepsilon}_{31} \leq -\tilde{V}_{31}] \\
&= \int_{-\infty}^{-\tilde{V}_{31}} \int_{-\infty}^{-\tilde{V}_{21}} f(\tilde{\varepsilon}_{21}, \tilde{\varepsilon}_{31}) d\tilde{\varepsilon}_{21} d\tilde{\varepsilon}_{31}.
\end{aligned} \tag{3}$$

In the case that binary outcomes are compared (D-DI to D-DX, and DI-DI to DI-DX/D) a discrete choice model is applied instead. Based on a vector of company characteristics we determine the unobserved propensity for the binary change of the mode of internationalization. Usually, a binary logit or probit model can be used to estimate the unknown coefficients. Table 1 shows, however, that a down-change from FDI to another modes is a very rare event. King and Zeng (2001) show that the estimated probability of this rare event is underestimated whereas the probability of the more frequent event is overestimated. They derive an approximate estimator for the transition probability which

includes a correction factor controlling for the small sample bias⁷. Thus we apply a rare event model to stress the role of firm-specific factors for the divestment pattern.

All firm-specific factors are taken from the year before the change. For firms that do not change their status the financial indicators refer mostly to the year 2002 and 2004, depending on data availability. In fact, many empirical papers (e.g. Stiebale 2008) point out that unobserved heterogeneity may be important when analysing foreign market entry. We are not able to fully account for unobserved heterogeneity in our model as many unobserved firm characteristics like products, process structures, proprietary technology, innovative capacity and corporate culture are likely to influence the internationalization behavior of firms. Subsequently, the results have to be interpreted carefully with respect to a causal effect of these variables on the decision to enter and to stay in foreign markets. However, we focus mainly on the symmetry of effects so that biases due to unobserved heterogeneity may matter to a lesser extent for this kind of interpretation.

With respect to Hypotheses 1a and 1b *productivity* is our first main variable of interest. Following the internationalization literature we use total factor productivity (TFP). Applying the procedure suggested by Levinsohn and Petrin (2003) consistent estimates of firm-level TFP are obtained from a Cobb-Douglas production function⁸.

Three financial indicators, reflecting firm's liquidity, are used to test Hypotheses 2a and 2b. First, cash flow is the balance of cash being received and spent within a defined accounting period. A company can fail to finance its internationalization because of a cash shortage even while being profitable. In line with investment models (e.g. Bond et al. 2003) we use the *cash flow ratio* defined as cash flow divided by tangible fixed assets in order to account for size effects of cash flow. The second indicator refers to the *working capital ratio*, defined as current assets minus current liabilities to tangible fixed assets, which represents the availability of operating liquidity. Third, the *liquidity ratio*, defined as current assets minus stocks over current liabilities, provides some information about the company's ability to pay off its short-term debt obligations which in turn can influence the cost for external credits. Creditors usually prefer a high liquidity ratio since

⁷ Tomz, King and Zeng (1999) provide a STATA command (*relogit*) to implement a rare event logit estimation.

⁸ Levinsohn, Petrin and Poi (2003) provide a STATA command (*levpet*) to implement their TFP estimations.

it reduces their risk in the short-run. Similar measures have been used by Greenaway et al. (2007) and Stiebale (2008) to analyse the role of financial factors for exporting decisions.

For analyzing the role of ownership structure (Hypotheses 3a-c, 4a, 4b) we define three dummy variables: *corporate shareholder*, *financial shareholder* and *state shareholder*. Firms with individual shareholder serve as reference group. Additionally, an interaction term *corporate shareholder* \times *foreign* is defined to test for significant differences between domestic and foreign corporate investors. The number of foreign financial shareholders is very low and thus, an interaction is not constructed.

Finally, we control for some additional observable characteristics. The internationalization process model (Johanson and Vahlne 1977, 1990) and new venture theory (e.g. Andersson 2000) emphasize the substantial role of entrepreneurial and managerial capabilities, and in particular, of the top management. Even though, managerial ability itself remains unobserved, thereby given rise to unobserved heterogeneity, the econometric model will include a dummy variable for *management change* taking the value of 1 if a change in the top management, including the CEO, managing director and president, has taken place and 0 otherwise.

Many French firms form a national network consisting of several domestic subsidiaries. Operating multiple interdependent entities requires to adapt organization structures and to coordinate production processes. Hence, operating domestic subsidiaries entails some learning effects which in turn might be helpful when establishing a foreign subsidiary i.e. it lowers the organizational barriers as well as costs for a new affiliate (e.g. Amit 1986). We attempt to control for these learning effects by including a variable for the number of *domestic subsidiaries*. We further consider firm's *age* and firm's *size* to control for economies of scale and learning effects. *Capital intensity* (total assets over the number of employees) and 20 *industry dummies* based on the two-digit NACE classification are included to capture technology differences and remaining industry-specific heterogeneity. Finally, five *regional dummies* (Ile-de-France, Bassin Parisien, East, East-Central and Mediterranean) based on the first-level NUTS⁹ classification control for regional differences.

⁹ The NUTS (Nomenclature des Unités Territoriales Statistiques) classification is the standard statistical geographic code for the regional sub-division of a country in the European Union.

Table 2 provides a statistical summary of the explanatory variables with respect to the internationalization status. A comparison of the indicators across groups reveals that the higher the mode of internationalization the larger, the older and the more productive are firms on average. In addition, former domestic companies that become exporters (D-DX) or become engaged in FDI (D-DI) have a higher cash flow ratio, working capital ratio and liquidity ratio than continuous domestic companies (DD). It might be surprising that the financial indicators are not only similar for export stoppers (DX-D) and for exporters that become engaged in FDI (DX-DI) but they are in both cases also lower than for continuous exporters (DX-DX). These findings might give a first indication that firm liquidity does not have the same impact across all internationalization states. The share of foreign, corporate and financial shareholders is on average larger for up-changers and highest for companies that are or become engaged in foreign markets. Moreover, exporters and international firms have also the highest the number of domestic subsidiaries.

Table 2: Definition of explanatory variables and summary statistic

Variable	Definition	D-D	D-DX	D-DI	DX-DX	DX-DI	DX-D	DI-DI	DI-DX	DI-D
Productivity	Total factor productivity (TFP)	24.133	36.934	73.673	43.011	68.718	34.545	74.046	74.940	52.743
		<i>39.138</i>	<i>55.272</i>	<i>90.228</i>	<i>61.095</i>	<i>86.316</i>	<i>52.861</i>	<i>90.029</i>	<i>89.286</i>	<i>84.960</i>
Employees	Number of employees	11.559	22.259	416.106	37.926	235.406	21.282	650.034	223.893	378.000
		<i>76.173</i>	<i>88.575</i>	<i>1136.817</i>	<i>236.056</i>	<i>647.790</i>	<i>89.857</i>	<i>4150.992</i>	<i>443.337</i>	<i>952.789</i>
Age	Age of company	12.684	15.707	23.539	19.361	26.282	16.600	27.115	23.853	18.143
		<i>11.393</i>	<i>13.993</i>	<i>24.534</i>	<i>16.853</i>	<i>23.096</i>	<i>14.277</i>	<i>25.709</i>	<i>19.734</i>	<i>14.742</i>
Cash flow ratio	Cash flow / tangible fixed assets	1.708	1.821	3.604	2.312	1.549	1.622	23.853	9.154	0.796
		<i>19.116</i>	<i>12.298</i>	<i>54.902</i>	<i>11.037</i>	<i>15.104</i>	<i>14.423</i>	<i>121.905</i>	<i>46.904</i>	<i>1.769</i>
Working capital ratio	Working capital / tangible fixed assets	4.572	7.154	14.224	9.657	8.244	7.106	7.681	44.649	4.766
		<i>26.877</i>	<i>32.007</i>	<i>147.977</i>	<i>40.054</i>	<i>51.823</i>	<i>28.840</i>	<i>63.278</i>	<i>283.003</i>	<i>6.767</i>
Liquidity ratio	(Current assets - stocks)/current liabilities	1.072	1.120	1.349	1.237	1.268	1.092	1.385	1.280	1.239
		<i>1.266</i>	<i>1.127</i>	<i>1.811</i>	<i>1.262</i>	<i>1.166</i>	<i>1.053</i>	<i>2.649</i>	<i>1.439</i>	<i>0.696</i>
Capital intensity	Total assets / employees	90.705	121.337	330.649	158.037	227.354	115.690	450.867	294.511	168.898
		<i>346.998</i>	<i>236.626</i>	<i>791.081</i>	<i>253.354</i>	<i>283.959</i>	<i>175.804</i>	<i>1542.370</i>	<i>773.522</i>	<i>313.220</i>
Corporate shareholder (d)	= 1, if at least one corporate shareholder	0.092	0.200	0.676	0.288	0.632	0.191	0.697	0.680	0.464
		<i>0.289</i>	<i>0.400</i>	<i>0.469</i>	<i>0.453</i>	<i>0.482</i>	<i>0.393</i>	<i>0.460</i>	<i>0.470</i>	<i>0.508</i>
Corporate*foreign shareholder (d)	= 1, if foreign corporate shareholder	0.004	0.018	0.102	0.043	0.125	0.016	0.145	0.187	0.071
		<i>0.060</i>	<i>0.134</i>	<i>0.304</i>	<i>0.204</i>	<i>0.331</i>	<i>0.125</i>	<i>0.353</i>	<i>0.392</i>	<i>0.262</i>
Financial shareholder (d)	= 1, if at least one financial shareholder	0.019	0.021	0.058	0.036	0.055	0.017	0.113	0.160	0.000
		<i>0.137</i>	<i>0.143</i>	<i>0.234</i>	<i>0.187</i>	<i>0.229</i>	<i>0.130</i>	<i>0.317</i>	<i>0.369</i>	<i>0.000</i>
State shareholder (d)	= 1, if state is shareholder	0.011	0.006	0.034	0.005	0.006	0.005			
		<i>0.103</i>	<i>0.077</i>	<i>0.182</i>	<i>0.071</i>	<i>0.080</i>	<i>0.068</i>			
Management change	= 1, if change of CEO, Managing director or president	0.113	0.137	0.055	0.185	0.102	0.124	0.345	0.240	0.143
		<i>0.316</i>	<i>0.344</i>	<i>0.228</i>	<i>0.388</i>	<i>0.303</i>	<i>0.329</i>	<i>0.476</i>	<i>0.430</i>	<i>0.356</i>
Domestic subsidiaries	Number of domestic subsidiaries	0.042	0.098	1.833	0.168	1.121	0.099	1.894	0.893	0.964
		<i>0.469</i>	<i>0.578</i>	<i>4.272</i>	<i>0.704</i>	<i>5.087</i>	<i>0.557</i>	<i>5.181</i>	<i>1.997</i>	<i>1.598</i>
Ile-de-France (d)	= 1, if company is located in Île de France (Greater Paris)	0.155	0.212	0.433	0.270	0.339	0.221			
		<i>0.362</i>	<i>0.409</i>	<i>0.496</i>	<i>0.444</i>	<i>0.474</i>	<i>0.415</i>			
Bassin Parisien (d)	= 1, if company is located in Champagne-Ardenne, Picardie, Normandy, Centre or Burgundy	0.159	0.150	0.096	0.131	0.125	0.135			
		<i>0.366</i>	<i>0.357</i>	<i>0.294</i>	<i>0.337</i>	<i>0.331</i>	<i>0.342</i>			
East (d)	= 1, if company is located in Lorraine, Alsace or Franche-Comté	0.072	0.098	0.048	0.114	0.102	0.098			
		<i>0.258</i>	<i>0.297</i>	<i>0.214</i>	<i>0.318</i>	<i>0.303</i>	<i>0.298</i>			
East-Central (d)	= 1, if company is located in Rhône-Alpes or Auvergne	0.145	0.153	0.099	0.158	0.133	0.157			
		<i>0.352</i>	<i>0.360</i>	<i>0.299</i>	<i>0.365</i>	<i>0.340</i>	<i>0.364</i>			
Mediterranean (d)	= 1, if company is located in Languedoc-Roussillon, Provence-Alpes-Côt d'Azur or Corsica	0.149	0.121	0.075	0.105	0.097	0.133			
		<i>0.356</i>	<i>0.326</i>	<i>0.264</i>	<i>0.307</i>	<i>0.296</i>	<i>0.340</i>			

5. Results

The full sample is divided in three sub-samples according to firm's initial internationalization status. Separate regressions are estimated for all three samples. In section 5.1 *domestic companies* can decide whether and how they want to internationalize (via exporting or FDI). Section 5.2 analyses the role of firm-specific factors on *exporters* decision to remain or leave the export market or to become engaged in FDI. Finally, the transition probabilities of multinational firms that can either continue or cease all their foreign operations are estimated in Section 5.3. Based on findings for the first two samples we are able to conclude on the symmetric effect of key variables on the decision to enter and exit export markets. Considering the empirical findings for all three samples we can discuss the asymmetric effect of key variables on the decision to enter and exit foreign investment markets.

5.1 Internationalization of domestic companies

Our first sample of firms focuses on domestic companies which are confronted with the alternatives to either serve only the domestic market or to internationalize via exporting or FDI. In columns (1) to (4) of Table 3 the marginal effects, calculated at the means of the independent variables, from a multinomial probit regression on the transition probabilities for continuous domestic companies (D-D), export starters (D-DX) and firms that become engaged in FDI (D-DI) are presented.

Core firm characteristics including productivity, age and size show the expected sign and significance in the estimations. Firms with a higher productivity are more likely to enter international markets. A 10% higher productivity increases, *ceteris paribus*, the likelihood to become an exporter by 0.148%. Figures 3 to 5 (in the Appendix) depict the relationship between productivity and the predicted probabilities to enter international markets in detail. Despite the large range in productivity levels, foreign market entry constitutes a rare event as only approximately 7% of the domestic companies start to export and less than 0.2% become engaged in FDI. Hence, the predicted probability of remaining a domestic company always remains above 92%¹⁰. Thus, a very low marginal effect for productivity and many more variables does not mean that the factor is economic irrelevant *per se*. Confirming recent findings of other scholars, size and age of the

¹⁰ The simulation of the predicted probabilities are based on the CLARFIY software written by King et al. (2000).

company have all a positive and significant effect on the probability to internationalize (e.g. Bernard and Jensen 1999, 2004). For example, an increase in the company size by 100 employees increases the likelihood to become an exporter by 0.13%. Similarly, companies that are ten years older have a 0.52% higher probability to become exporters. Related to an average probability of 7% to become an exporter, the propensity to become an exporter is about 7.4% higher for ten year older firms.

Table 3: Transition probabilities for domestic companies

	Multinomial probit model				Rare event logit model	
	D-DX ME	z-statistic	D-DI ME	z-statistic	D-DI ME	z-statistic
Productivity	0.000148***	(12.64)	0.00000333***	(6.21)	0.000038***	(4.06)
Employees	0.0000126***	(3.59)	0.000000311***	(5.75)	0.0000148***	(3.13)
Age	0.000522***	(16.16)	0.00000949***	(6.17)	0.0001146***	(4.12)
Cash flow ratio	-0.00000387	(0.24)	0.000000548	(0.67)	0.00000537	(0.51)
Working capital ratio	0.0000286***	(2.64)	0.000000187	(0.61)	-0.0000037	(1.01)
Liquidity ratio	-0.00156***	(4.19)	0.0000104	(0.91)	0.000439***	(2.92)
Capital intensity	0.00000241***	(3.02)	2.24e-08	(1.55)	0.00000214***	(2.37)
Corporate shareholder (d)	0.0366***	(19.93)	0.00298***	(7.83)	0.0119164***	(9.07)
Corporate*foreign sh (d)	0.0300***	(4.81)	0.000914**	(2.38)	0.0039622*	(1.91)
Financial shareholder (d)	0.00152	(0.43)	0.0000406	(0.27)	0.0030054	(1.02)
State shareholder (d)	-0.0307***	(12.31)	-0.000127	(1.15)	0.0035329	(0.81)
Management change (d)	-0.000352	(0.28)	-0.000367***	(8.05)	-0.0144943***	(5.35)
Domestic subsidiaires	0.00176***	(2.64)	0.0000676***	(6.38)	0.0024733***	(3.07)
Ile-de-France (d)	0.0267***	(16.62)	0.000568***	(4.01)	0.0030161**	(2.14)
Bassin Parisien (d)	0.00432***	(3.15)	-0.0000952	(1.36)	-0.0027029	(1.48)
East (d)	0.0370***	(15.62)	-0.00000485	(0.04)	-0.0029481	(1.29)
East-Central (d)	0.0120***	(7.98)	-0.0000351	(0.44)	-0.0041772**	(2.03)
Mediterranean (d)	0.00576***	(3.92)	-0.0000464	(0.56)	-0.0014908	(0.70)
nace15_16 (d)	-0.0169***	(9.40)	0.000131	(0.68)	0.0005013	(0.16)
nace17_19 (d)	0.100***	(10.53)	0.000856	(1.26)	0.0010287	(0.27)
nace21_22 (d)	0.0425***	(9.76)	-0.0000253	(0.16)	-0.005519	(1.61)
nace23_24 (d)	0.105***	(6.97)	0.000559	(0.95)	-0.0012504	(0.29)
nace25 (d)	0.0738***	(7.93)	0.000307	(0.73)	-0.0016717	(0.40)
nace26 (d)	-0.00176	(0.41)	0.000177	(0.55)	-0.0020996	(0.50)
nace27_28 (d)	0.0500***	(14.50)	0.000689**	(2.15)	0.0006929	(0.31)
nace29 (d)	0.0474***	(9.65)	0.000629	(1.44)	0.0012102	(0.38)
nace30_33 (d)	0.0127***	(3.29)	0.000148	(0.68)	0.0004262	(0.14)
nace34_35 (d)	0.0755***	(7.32)	0.00364**	(2.13)	0.0048855	(1.36)
nace36 (d)	0.0260***	(5.17)	0.00116*	(1.65)	0.0052903	(1.55)
nace45 (d)	-0.0449***	(46.57)	-0.000195***	(2.69)	0.0013722	(0.56)
nace51 (d)	0.0539***	(21.27)	0.000256*	(1.67)	-0.0022574	(1.20)
nace52 (d)	-0.0155***	(12.77)	-0.000196***	(2.66)	-0.0056365**	(2.03)
nace55 (d)	-0.0526***	(70.95)	-0.000155**	(2.08)	0.00972***	(3.27)
nace60_64 (d)	0.00761**	(2.41)	-0.000176**	(2.31)	-0.0056944*	(1.81)
nace70 (d)	-0.0335***	(20.99)	-0.000136	(1.36)	0.0055285	(1.49)
nace73_74 (d)	-0.00616***	(3.04)	-0.000184***	(2.82)	-0.0035281	(1.27)
nace90_93 (d)	-0.0362***	(34.67)	-0.000156*	(1.96)	0.0039	(1.27)
N	244 996		244 996		16 364	

Notes: In columns (1) to (4) the marginal effects (ME), evaluated at the means, from a multinomial probit regression are reported. The base group is D-D. In columns (5) and (6) the marginal effects from a rare event logit regression are reported. The base group is D-DX. The shareholder base group are individual shareholders. The regional base group includes the NUTS2 level regions FR3 (Nord-Pas-de-Calais) , FR5 (Pays de la Loire, Brittany, Poitou-Charentes) and FR6 (Aquitaine, Midi-Pyrénées, Limousin). The industrial base group includes the industries with NACE code 20, 37, 40, 41, 50, 65, 67, 71, 72, 80 and 85. The z-statistics are in parentheses. (d) for discrete change of dummy variable from 0 to 1. * p<0.10, ** p<0.05, *** p<0.01.

The findings for the financial indicators are fairly mixed and sometimes surprising. As far as the export participation is concerned firms with a high working capital ratio have a significant higher likelihood to become an exporter. The opposite effect, however, is observed, for the liquidity ratio. None of the three financial indicators correlates significantly with the FDI decision. The correlation cannot be interpreted as causality if unobservable characteristics (e.g. international experience and orientation of the management) can influence both the mode of internationalization and the firm's liquidity. For example, Stiebale (2008) detects a significant positive estimate for liquidity in pooled probit and Tobit-model explaining the export behavior of French manufacturing firms. However, the estimates lose its significance once he controls for time-invariant unobserved heterogeneity in a dynamic analysis. Our estimates are potentially upward biased but insignificant to a large extent. Reflecting this potential upward bias we conclude from our empirical findings that financial liquidity constitutes less of an impediment for foreign market entry than financial theories might suggest.

The findings for the ownership structure indicate that certain shareholder types correlate with a firm's internationalization status. For firms with corporate shareholders the transition probability to become an exporter (D-DX) increases by 3.66% and to become engaged in FDI (D-DI) by 0.298%. Moreover, for firms with foreign corporate shareholders the likelihood to start exporting increases by even 3.00% compared to firms with domestic corporate shareholder. These findings are supported by Greenaway et al. (2007) who show that foreign owned firms are more likely to export. In addition, Ilmakuunas and Nurmi (2007) provide empirical evidence that foreign ownership shortens the duration until a firm will start exporting. Thus, firms seem to benefit from the corporate network and international experience of their corporate shareholders. In contrast, firms with financial shareholders have no significant higher propensity for foreign market entry.

Firms with a change of positions at the top management have a significant lower propensity to be engaged in FDI. In contrast, the export entry decision is not significantly affected by a management change. Setting up and running a foreign subsidiary is associated with higher sunk costs than exporting, so that management discontinuity might rather hamper the FDI than the export participation. Moreover, the higher the number of domestic subsidiaries, the more likely a firm will enter foreign markets. Greenaway et al. (2007) also show that firms with subsidiaries are more likely to become exporters. Multi-firm corporations may exhibit a strategic advantage to exploit opportunities in foreign

markets. In addition, learning effects may matter to invest abroad. In fact, domestic firms that become engaged in FDI have on average already 1.8 domestic subsidiaries (see Table 2).

Firms situated at the Ile-de-France are more likely to enter foreign markets via FDI. Thus, Paris, being the economic and political centre of France, seems to offer an advantageous environment for firms that want to become engaged in FDI. For example, the recruitment of internationally experience staff and the availability to the associations like the Paris Chamber of Commerce and Industry (CCIP) can lower foreign entry barriers. The regional differences for export starters differ to a much lesser degree. With respect to the industry pattern, the regression results affirm certain industry pattern depicted in Figure 1 for export starters. For example, firms from the textile and chemical industry have the highest likelihood to become exporters. Overall, the transition probability to enter foreign markets is positive for most manufacturing industries. In the case of the D-DI group the marginal effects are often insignificant at the 10% level which in turn might be due to the relative low number of observations per industry group¹¹. With the exception of the wholesale industry, the predicted probability of entering foreign markets is negative and often significant for other service industries, supporting the argument that these industries are dominated by non-tradable goods and customer proximity. Irrespective from industry-specific heterogeneity in production and demand, capital intensity on the firm micro level has a positive and significant effect, too. Ilmakuunas and Nurmi (2007) also find that capital intensity increases the probability to start exporting.

Many firm-specific variables show a significant coefficient in our estimation. However, differences between the two internationalization modes are discernible. In the following, we test for the groups D-DX and D-DI whether these differences are also significant. The results of a rare logit event model are presented in column (5) and (6) of Table 3. The dependent variable will take the value 1 if a domestic company has decided to become engaged in FDI and the value 0 if it has become an exporter. Large, older and more productive companies are more likely to enter foreign markets via FDI. Thus, the productivity ranking, postulated by Helpman et al. (2004), is clearly confirmed. Additionally, higher liquidity and capital intensity seem to favour a market entry via FDI. Firms with a (foreign) corporate shareholder exhibit a higher probability to set up a

¹¹ The industry groups have been defined in such a way as to guarantee at least 5 observations per group.

foreign subsidiary rather than only starting to export. Moreover, the results confirm that a firm with a higher number of domestic companies favour to internationalize via FDI. Firms headquartering in Ile-de-France have a higher probability (i.e. significant at the 5% level) to become engaged in FDI. Finally, for most industries the differences in the foreign market participation are less pronounced than the previous results might have suggested.

5.2 Foreign market participation of exporters

Based on our second sample of firms we analyse the internationalization behaviour of French exporters. They can either remain exporters (DX-DX), become engaged in FDI (DX-DI) or retreat from foreign market operations (DX-D). A multinomial logit model is used to compare these opposing internationalization modes. The regression results are presented in Table 4.

Exporters with a higher productivity are more likely to become engaged in FDI and less likely to cease their export operations. Productivity affects both, the decision to enter foreign markets via export activity and the decision to stay in this mode of internationalization. Thus, *Hypothesis 1a*, stating the productivity correlates symmetrically and positive with the export participation, is strongly confirmed by the data. Similarly, symmetric effects are also found with respect to the size and age of the company. Fryges (2004) finds for technology-oriented firms in Germany and the UK that firm size is positively correlated with a higher persistence in firms' exporting behaviour.

Firms with a poor financial performance have a significantly lower propensity to continue exporting. The symmetry assumption of *Hypothesis 2a* is not supported because even though exporters with a higher liquidity are more like to remain exporters, a higher liquidity does not necessarily lead to an export market entry (see section 5.1). In the opposite direction, a better financial performance does not correlate significantly with a higher propensity for an upward change of the mode of internationalization for exporters. Therefore, *Hypothesis 2b* stating that more liquid firms are more engaged in FDI is not confirmed. Financial liquidity may play a more decisive role in preventing exporters from down-changing than fostering the international expansion via FDI.

Table 4: Transition probabilities for exporters

	Multinomial probit model			
	DX-DI		DX-D	
	ME	z-statistic	ME	z-statistic
Productivity	0.0000907***	(10.00)	-0.000305***	(6.04)
Employees	0.0000127***	(10.60)	-0.000180***	(8.32)
Age	0.000199***	(9.32)	-0.00110***	(9.05)
Cash flow ratio	-0.0000436*	(1.69)	-0.000630***	(3.97)
Working capital ratio	-0.00000761	(0.84)	-0.000185***	(3.36)
Liquidity ratio	0.0000133	(0.04)	-0.00819***	(4.64)
Capital intensity	0.0000103***	(7.97)	-0.000144***	(13.39)
Corporate shareholder (d)	0.0235***	(15.00)	-0.0375***	(8.40)
Corporate*foreign sh (d)	0.00726***	(3.20)	-0.0528***	(5.07)
Financial shareholder (d)	0.00679**	(2.45)	-0.0859***	(9.19)
State shareholder (d)	-0.00607*	(1.88)	0.0870***	(2.91)
Management change (d)	-0.0116***	(15.74)	-0.0443***	(9.32)
Domestic subsidiaires	0.00453***	(13.14)	-0.00451	(1.41)
Ile-de-France (d)	0.00614***	(4.18)	-0.0531***	(10.75)
Bassin Parisien (d)	-0.000986	(0.68)	-0.00867	(1.44)
East (d)	0.00195	(1.11)	-0.0679***	(11.79)
East-Central (d)	-0.000342	(0.24)	-0.0231***	(4.11)
Mediterranean (d)	0.00515**	(2.52)	-0.00845	(1.35)
nace15_16 (d)	0.00888**	(2.30)	-0.0926***	(10.38)
nace17_19 (d)	0.0207***	(4.40)	-0.157***	(24.13)
nace21_22 (d)	-0.00176	(0.75)	-0.0518***	(5.69)
nace23_24 (d)	0.0127***	(2.64)	-0.136***	(12.90)
nace25 (d)	0.00605*	(1.67)	-0.137***	(15.46)
nace26 (d)	0.00996	(1.60)	-0.0718***	(4.96)
nace27_28 (d)	0.00860***	(2.89)	-0.0907***	(13.79)
nace29 (d)	0.0352***	(6.04)	-0.122***	(16.60)
nace30_33 (d)	0.0207***	(4.02)	-0.0943***	(9.41)
nace34_35 (d)	0.00547	(1.19)	-0.114***	(9.72)
nace36 (d)	0.0139**	(2.55)	-0.0935***	(9.33)
nace45 (d)	0.00654	(1.61)	0.209***	(16.80)
nace51 (d)	0.00337*	(1.82)	-0.109***	(20.01)
nace52 (d)	-0.00676***	(4.04)	0.0509***	(6.74)
nace55 (d)	-0.00692*	(1.85)	0.196***	(9.87)
nace60_64 (d)	-0.0123***	(14.03)	-0.0603***	(5.88)
nace70 (d)	0.000979	(0.17)	0.157***	(5.70)
nace73_74 (d)	-0.00366*	(1.76)	0.00487	(0.44)
nace90_93 (d)	-0.00579**	(2.21)	0.109***	(6.62)
N	60 512		60 512	

Notes: The marginal effects (ME), evaluated at the means, from a multinomial probit regression are reported. The base group is DX-DX. The shareholder base group are individual shareholders. The regional base group includes the NUTS2 level regions FR3 (Nord-Pas-de-Calais), FR5 (Pays de la Loire, Brittany, Poitou-Charentes) and FR6 (Aquitaine, Midi-Pyrénées, Limousin). The industrial base group includes the industries with NACE code 20, 37, 40, 41, 50, 65, 67, 71, 72, 80 and 85. The z-statistics are in parentheses. (d) for discrete change of dummy variable from 0 to 1. * p<0.10, ** p<0.05, *** p<0.01.

Exporters with corporate and financial shareholders are more likely to become engaged in FDI and less likely to stop their exporting operations. The reverse holds for firms with state ownership. Nevertheless, the magnitude of the marginal effects can differ remarkably between up-changers and down-changers. For example, the transition probability for an upward change (DX-DI) increases by 3.08% for companies with a foreign corporate shareholder, whereas it decreases the probability for a downward-change by 9.03%. Thus, *Hypothesis 3a* and *Hypothesis 3c*, proposing that (foreign) corporate ownership correlates symmetrically with entering and staying in international markets, is confirmed for the internationalization mode of export activity. In contrast, *Hypothesis 4a*, proposing that ownership by financial shareholders correlates symmetrically with entering and staying in international markets is only partially confirmed.

Firms which experience a management change have a lower transition probability for both, an upward and a downward-change with respect to the internationalization mode. Probably, replacements within the top management team rather increase the state dependence for exporters than leading to profound changes in their internationalization behaviour. Moreover, a larger network of domestic subsidiaries increases the likelihood to expand international activities further by establishing foreign subsidiaries. Again, this might again reflect learning effects as firms with domestic subsidiaries might more efficient in establishing foreign affiliates.

Exporters headquartering in the East, East-Central or region or Ile-de-France exhibit the lowest transition probability to stop exporting. Moreover, exporters headquartering in the East, Ile-de-France or Mediterranean region are more likely to become engaged in FDI. The results for the industry dummies reveal that exporters from manufacturing industries are less likely to cease exporting. For example, the likelihood to change downward is 13.6% lower for exporters from the chemical industry (nace23_24). The results for the services industries are more heterogeneous. In addition, higher capital intensity increases the likelihood to continue exporting and to become engaged in FDI. These findings correspond to Ilmakuunas and Nurmi (2007) who show that higher capital intensity decreases the probability to stop exporting.

5.3 Divestment decisions by MNEs

The final analysis concentrates on MNEs that either continue to be engaged in FDI (DI-DI) or that divest all their foreign affiliates. The primary analysis is shifted from the parent to the more appropriate subsidiary level in order to highlight the role of several subsidiary characteristics for foreign divestment decisions. We use key performance indicators of the subsidiaries and their parent companies to examine the divestment decision.

The regression results from a probit model on the probability to stop parent companies engagement in a specific foreign subsidiary are presented in Table 5. Due to the very low number of down-changers (30 of 998 subsidiaries are targeted to be divested by parent companies) we restrict the analysis to a few core variables¹². In column (1) only subsidiary variables and ownership information of the parent company are taken into account. The marginal effect of subsidiaries productivity on the divestment probability is negative but insignificant at the conventional significance levels. This finding is confirmed in the estimation with an extended set of parent variables in column (3). Hence, whereas parent companies productivity has a positive effect on the entry decision in foreign markets via FDI, a high productivity of the foreign affiliate does not imply that the propensity of divestiture is significantly reduced. Therefore, *Hypothesis 1b*, stating that productivity correlates asymmetrically with FDI, is confirmed by the data. This result might also support the argument that strategic reasons might play a fundamental role for the decision to re-allocate resources from foreign affiliates.

In fact, none of the variables in the first regression is significant at the 10% level. The probability of divestment for subsidiaries is located in Eastern Europe is lower than for subsidiaries situated elsewhere in the world, albeit the coefficient is only significant at the 10% level in the extended regression. In addition, no significant difference is discernible for subsidiaries from the manufacturing and service industry. In neither of the two estimations we find a significant correlation between the ownership structure and the divestment decision. As shown in section 5.2, firms with corporate and financial owners exhibit a positive and significant higher propensity to change from exporting to FDI. Both results together suggest that the ownership structure correlates asymmetrically with the

¹² Shifting from the parent to the subsidiary level implies that the number of observations is reduced as key variables of affiliate information are often not available.

foreign investment and divestment decision. While *Hypothesis 4b* is clearly confirmed, *Hypothesis 3b* and *Hypothesis 3d*, stating that parent companies with (foreign) corporate ownership have a significant higher propensity to divest, is not confirmed.

Corporate ownership might allow to re-allocate resources from one affiliate to another in order to improve the overall corporate efficiency. This expected positive effect of corporate ownership on divestment might be compensated by a higher capacity of these firms to absorb positive externalities created at the foreign affiliates. Probably, unobserved heterogeneity at foreign affiliates' location might matter. Firms with corporate ownership are highly embedded in the global commodity chain with many involved members. Therefore, created knowledge at foreign affiliates' location can be used by many firms at the same time. In contrast, knowledge externalities at foreign affiliates' location can be exploited to lower extent by parent companies with individual shareholders.

Table 5: Foreign divestments

		Probit model			
		DI-DX/D			
		ME	z-statistic	ME	z-statistic
Subsidiary variables	Labour productivity	-0.024058	(1.63)	-0.0084775	(1.17)
	Manufacturing dummy (d)	0.0072678	(0.46)	-0.00325	(0.22)
	East Europe dummy (d)	-0.010146	(0.58)	-0.0220397*	(1.84)
Parent company variables	Corporate shareholder	-0.029706	(0.95)	-0.006345	(0.31)
	Foreign corporate shareholder	-0.006394	(0.30)	0.0403953	(1.43)
	Financial shareholder (d)	0.0181682	(0.47)	0.059622	(1.21)
	Employees			-2.58E-06	(0.31)
	Age			-0.000805	(1.45)
	Cash flow ratio			-2.09E-06	(0.47)
	Working capital ratio			0.000031	(1.09)
	Liquidity ratio			-0.0297868**	(2.10)
	Capital intensity			-0.0000775	(1.61)
	Management change (d)			-0.0075987	(0.45)
	Domestic subsidiaries			-0.0098527***	(2.70)
	Manufacturing dummy (d)			-0.0158833	(0.91)
	N		998		998

Note: In the table the marginal effects (ME), using the delta method, from a probit model regression are reported. The base group is DI-DI. The z-statistics are in parentheses. (d) for discrete change of dummy variable from 0 to 1. * p<0.10, ** p<0.05, ***

We further include some observable characteristics of parent company to control for the heterogeneity of the parent company and its effects on the divestment decision. The propensity of divestment is also significantly lower for subsidiaries of parent companies that have already a larger number of domestic subsidiaries. A larger corporate network is associated with larger possibilities and abilities to absorb knowledge externalities from foreign affiliates. The majority of the control variables exhibit no significant effect on the divestment decision. Overall, these findings suggest that foreign affiliate's performance alone cannot sufficiently explain the decision to divest.

Table 6: Summary of Hypotheses and findings

Independent variables	EXPORT				FDI			
	Hypothesis	Enter	Stay	Result	Hypothesis	Enter	Stay	Result
Productivity	H1a	+	+	Confirmed	H1b	+	0	Confirmed
Liquidity	H2a	+	+	Not confirmed	H2b	+	Not considered	Not confirmed
Corporate ownership	H3a	+	+	Confirmed	H3b	+	-	Not confirmed
	H3c	+	+	Confirmed	H3d	+	-	Not Confirmed
Financial ownership	H4a	+	+	Not confirmed	H4b	+	0	Confirmed

In Table 6 we summarize the theoretical predictions and results of the empirical tests in this study. Productivity and corporate ownership are positively correlated with the export participation but financial ownership and liquidity do not show the expected symmetric pattern on the export participation.

With respect to the FDI mode, the role of firm-specific characteristics for the entry and exit decision is hypothesized to be asymmetric. The asymmetric pattern is generally confirmed for productivity and financial ownership. However, subsidiaries from parent companies with corporate owners do not show a significant higher propensity to be divested.

In sum, determinants of foreign market dynamics show mostly a symmetric pattern for the export participation and an asymmetric pattern for the FDI mode. High level of sunk entry cost and strategic implications associated with FDI activities could help to explain these differences. Despite the large sample, the number of observations for divestments is

very low. Thus, our findings may give a first indication that firm characteristics are asymmetrically correlated with the FDI decision but further studies with a larger number of divestments are desirable to better understand foreign market dynamics.

6. Conclusion

In this paper the relationship between firm-specific characteristics and foreign market dynamics has been analyzed using a large French sample of domestic firms, exporters and MNEs. Whereas the ratio of export stoppers to export starters was approximately one-to-one, the ratio of FDI stoppers to FDI starters was about one-to-sixteen, thus, more firms become engaged in FDI than firms divesting their foreign subsidiaries. These findings suggested that the decision to divest foreign subsidiaries differs substantially from the decision to stop export activity.

Based on the Hopenhayn (1992) model it is hypothesized that productivity has a symmetric, positive effect on firms to start exporting and to continue exporting. In contrast, we argued that foreign investment and divestment decisions are more governed by an asymmetric productivity effect. Whereas outward investments are clearly found to be performance driven, it is stressed by the divestment literature (e.g. Boddewyn 1979, 1983; Benito 1997) that the foreign affiliate's performance is not necessarily the only reason for a divestiture. The proposed pattern of symmetric and asymmetric effects was further applied to other key firm-characteristics and empirically tested.

A noteworthy result from this study is that most firm characteristics have a symmetric effect on the export participation. More productive firms and firms with corporate owners have a higher propensity to enter and stay in the export market. Similar effects are observed for firm age and firm size. However, the role of firm liquidity for the export decision is less clear. More refined financial measures may provide more conclusive results. With respect to the investment and divestment decision many variables showed the expected asymmetric effect. On the one hand, more productive, larger and older firms and firms with corporate or financial shareholders are more likely to become engaged in FDI. On the other hand, parent companies with corporate owners are often assumed to form stable industrial networks, but the results showed that this does not protect foreign affiliates from becoming a divestment target. Moreover, the hypothesized negative relationship between the productivity of foreign affiliates and the divestment probability failed to receive statistical support in this study.

Our research has shown that well discussed firm-specific characteristics can be associated with the entry and exit pattern in export markets. Indeed, these characteristics matter also for outward investment, but their explanatory power for the divestment decision is very limited. One avenue for further research is to take the interrelatedness of company units into account. A deeper understanding of the corporate network will be of particular importance for an improved modelling of foreign investments and divestments. Recently published studies regarding the relevance of knowledge spillover and its diffusion within a corporate network (e.g. Almeida et al. 2002) might give one departure for further studies.

7. Appendix

Table 7: Internationalization status by industry

Nace Code	Description	D-D	D-DX	D-DI	DX-DX	DX-DI	DX-D	DI-DI	DI-DX	DI-D
15-16	Manufacture of food products, beverages and	8.185	447	10	1.491	64	382	21	2	2
17-19	Manufacture of textiles and leather products	942	280	5	1.905	96	288	35	4	0
20	Manufacture of wood and wood products	1.607	182	4	822	13	226	3	1	0
21-22	Manufacture of pulp, paper and paper products; publishing and printing	3.159	600	7	1.744	48	559	25	3	0
23-24	Manufacture of chemicals, chemical products and refined petroleum products	318	137	6	861	83	119	21	5	0
25	Manufacture of rubber and plastic products	785	218	5	1.238	63	197	26	3	0
26	Manufacture of other non-metallic mineral products	1.592	151	6	498	23	155	13	0	0
27-28	Manufacture of basic metals and fabricated metal products	6.507	1.210	25	3.650	111	1.009	44	4	1
29	Manufacture of machinery and equipment	2.737	474	8	1.879	141	413	61	4	2
30-33	Manufacture of electrical and optical equipment	2.706	376	12	1.258	103	288	28	5	0
34-35	Manufacture of transport equipment	685	166	14	669	27	145	19	3	0
36	Manufacture of furniture	2.007	262	8	994	33	290	17	3	0
45	Construction	53.967	1.207	24	922	37	1.233	15	2	3
51	Wholesale trade and commission trade, except of motor vehicles and motorcycles	16.703	3.375	45	12.602	305	2.994	103	19	3
52	Retail trade, except of motor vehicles and motorcycles	41.829	2.379	15	4.177	39	2.802	20	2	5
55	Hotels and restaurants	30.656	315	15	299	5	395	3	0	0
60-64	Transport, storage and communication	4.365	645	11	2.165	19	630	11	4	1
70	Real estate activities	3.202	134	11	181	10	149	3	0	1
73-74	R&D and other business activities	9.385	962	19	1.880	64	790	39	1	3
90-93	Other community, social and personal service activities	11.612	318	11	553	16	422	10	0	3
Other		25.683	2.233	32	3.803	88	2.047	40	10	4
Total number of observations		228.632	16.071	293	43.591	1.388	15.533	557	75	28

Note: Excluded from the analysis are industries with NACE 2-digit and 4-digit code 01 & 02 (Agriculture, hunting and forestry), 05 (Fishing), 10-14 (Mining and quarrying), 7415 (Management activities of holding companies), 75 (Public administration and defence; compulsory social security) and 91 (Activities of membership organizations e.g. trade unions).

Table 8: Total French export in 2004 (by industry in %)

NACE	Description	SITC	Export share in 2004
15-16	Manufacture of food products, beverages and tobacco	0, 1	11.1%
17-19	Manufacture of textiles and leather products	26, 61, 65, 85	2.4%
20	Manufacture of wood and wood products	63	0.4%
21-22	Manufacture of pulp, paper and paper products; publishing and printing	64	1.8%
23-24	Manufacture of chemicals, chemical products and refined petroleum products	32, 33, 5 (excluding 57 & 58)	17.7%
25	Manufacture of rubber and plastic products	62, 57, 58	3.5%
26	Manufacture of other non-metallic mineral products	66	1.4%
27-28	Manufacture of basic metals and fabricated metal products	67, 68, 69	7.0%
29	Manufacture of machinery and equipment	71, 72, 73, 74	10.9%
30-33	Manufacture of electrical and optical equipment	75, 76, 77	11.1%
34-35	Manufacture of transport equipment	78, 79	20.6%
36	Manufacture of furniture	82	0.7%

Note: The export shares by industry are classified by the SITC (Standard International Trade Classification Revision 3). For comparability purpose the authors provide an approximate transformation from the SITC to the NACE code. Source for the export figures is the OECD (2008).

Figure 3: Continuous domestic companies (D-D): Predicted probability in dependence on the productivity level (TFP)

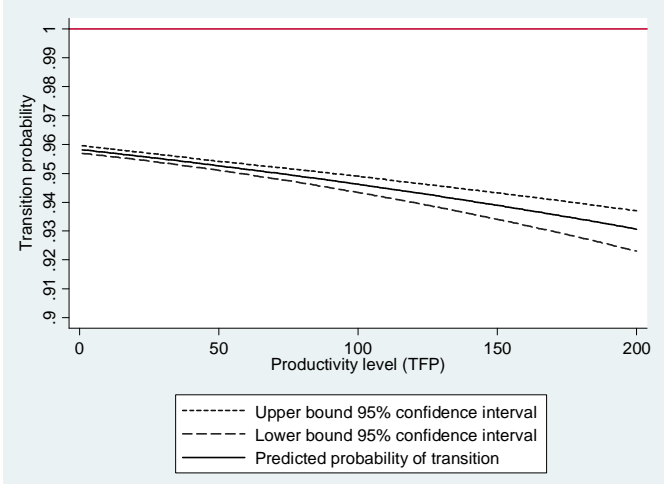


Figure 4: Export starters (D-DX): Predicted probability in dependence on the productivity level (TFP)

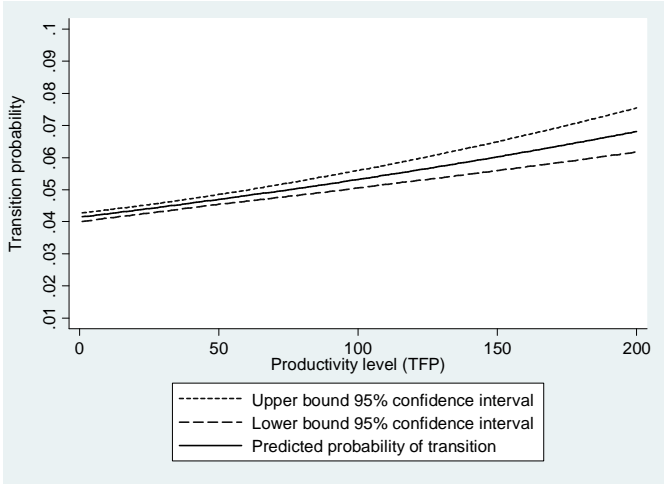
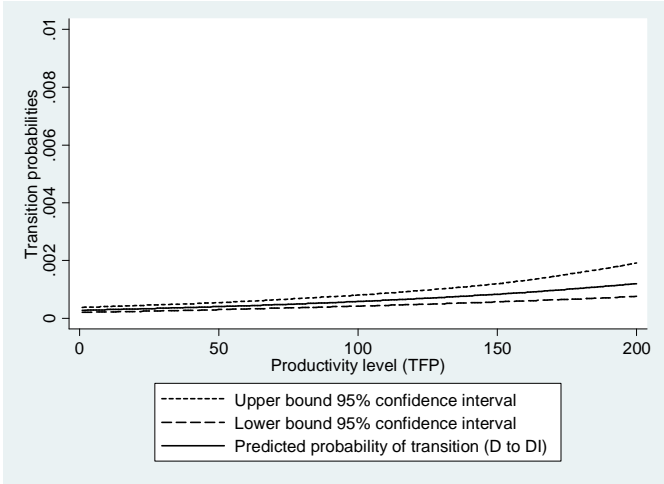


Figure 5: Domestic companies becoming engaged in FDI (D-DI): Predicted probability in dependence on the productivity level (TFP)



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