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Financial Constraints as a Barrier to Export Participation

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Abstract

The paper analyzes the link between financial constraints and firms' export decisions, using a large micro-level data set on French manufacturing firms over the 1996–2004 period. Our main finding is that firms enjoying better ex-ante financial heath are more likely to start exporting. This results contrasts with the previous empirical literature which found evidence that participation to exports market improves a firm financial health but not that export starters display specific ex-ante financial advantages. By contrast, our result supports the view that financial constraints act as a barrier to export participation. This finding has important policy implications as it suggests that, in presence of financial markets imperfections, public intervention can be called for to help efficient but financially constrained firms to overcome the sunk entry costs into export markets and expand their activities abroad.

Keywords: Export; Firm heterogeneity; Financial constraint; Sunk costs

JEL Classification: F14; G32; L25; D92

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1 Introduction

This paper analyzes the link between firms' export decisions and financial constraints on a large scale longitudinal micro-level dataset. We use as our theoretical background the recent models of firm's heterogeneity and international trade which emphasize the role of sunk entry costs into export markets (Baldwin, 1988; Roberts and Tybout, 1997; Melitz, 2003)[1]. Once extended to allow for imperfect capital markets, those models offer to financial variables a key role as a determinant of firm export decisions (Chaney, 2005). Indeed, the existence of sunk entry costs into export markets brings about the question of the financing of such expenditures that, by their very nature, are not matched by contemporaneous receipts. In the presence of financial market imperfections, It may well be —and this is the main research question from which we start— that exporters are those firms who can successfully overcome this financial problem. In fact, this would be consistent with the evidence of exporters outperforming non exporters in several dimensions as shown in the large literature triggered by Bernard and Jensen (1995).

On the other hand, existing empirical literature suggests that exporting may have a beneficial effect on financial constraints, essentially in the form of reducing informational asymmetries by means of some sort of signalling effect or in the form of reducing risk by the diversification benefit of selling in multiple nations (Ganesh-Kumar et al., 2001; Campa and Shaver, 2002). The positive impact of export participation on financial health has found its strongest support in a recent contribution by Greenaway et al. (2007) (GGK afterwards). This paper provides the first attempt to evaluate to which extent the *self-selection* and the *ex-post* effects drive the correlation between financial variables and firm export decisions. However, the empirical investigations ends up with only support in favor of the *ex-post* effects.

In what follows we present a new attempt to evaluate the relative importance of *self-selection* and *ex-post* effects based on a large panel of French manufacturing firms over the 1996–2004 period. We add on the previous literature by two main respects. First, we propose a new way to measure the degree of financial constraint, base on time-varying, continuous, multidimensional indexes of the access to external finance, which we believe is superior to existing methodologies; second, we shed new light on the role played by access to external financial resources in shaping firms export decisions.

We can summarize our main findings as follows: First, the relationship between financial variable and export decisions is mainly driven by the negative impact of financial constraints on the decision to start exporting. Second, firms starting to export display a significant ex-ante financial advantage compared to their non exporting counterparts. Third, we do not find significant evidence of any signalling or diversification benefit effects after entry into the export

[1]The assumption that entry into foreign markets involves large sunk costs is supported by an expanding empirical literature (see, amon others, (Bernard and Wagner, 2001; Das et al., 2001; Tybout, 2001; Bellone et al., 2006)

market. This is to say that firms that start serving foreign markets do not improve their financial health as a consequence of exporting. Finally we show that the reasons why our study end up with opposite conclusion compared to the previous literature involve both measurement issues and methodological concerns.

The rest of the paper is organized as follows. Next Section presents an overview of the empirical literature on financial constraints and how they relate to exporting behaviors. Section 3 presents our data and the different measures of financial constraints that will be used in the paper. In Section 4, we present the results of different estimations on the relationship between financial constraints, export decisions, and export status. Section 5 draws the main policy implications of our analysis and concludes.

2 A glance at the existing literature

Since the late 1980s a large number of empirical studies have addressed the issue of financial constraints, mainly in order to study the relation between firms investment and the availability of internal funds. Indeed, a large and convincing evidence exists showing that when a standard investment equation is augmented with cash flow availability, the fit of the equation is improved. Now, under perfect capital markets, internal and external sources of financial funds should be perfectly substitutable (Modigliani and Miller, 1958), so that the availability of internal funds should not affect investment decisions.

While there is a substantial consensus on the notion that liquidity does matter in investment equations, much less agreement exists on why this is the case. Chirinko and Schaller (1995) suggest two possible hypotheses: the existence of financial constraints (due to the existence of either asymmetric information or transaction costs), and mere mispecification whereby liquidity takes up the effect of other omitted variables. In particular, contrasting empirical evidence exists on the notion that investment responsiveness to cash-flow implies the existence of financial constraints.

2.1 Measuring financial constraints

The usual empirical strategy adopted to detect the existence and the relevance of financial constraints entails segmenting the sample into subgroups of firms with different likelihood of facing financial constraints. Thus for instance, Fazzari et al. (1988) claim that firms with low dividend payout ratios (likely constrained) display higher investment-cash flow sensitivity. A number of subsequent studies tend to find supporting evidence using a number of different variables to identify constrained firms (Bond and Meghir, 1994; Gilchrist and Himmelberg, 1995; Chirinko and Schaller, 1995).

The first paper finding opposite results is, to the best of our knowledge, Devereux and Schiantarelli (1990) which reports a higher cash flow coefficient for larger firms, even after

controlling for sector heterogeneity. But it is only with the work by Kaplan and Zingales (1997) that the usefulness of investment-cash flow sensitivity as a measure of financial constraint has been definitely questioned. Exploiting qualitative information from financial statements of firms classified as constrained in Fazzari et al. (1988), the authors show that firms appearing as less constrained display substantially higher investment-cash flow sensitivity. Hence, they conclude, the latter can no longer be regarded as a useful measure of financial constraint. Since then, other authors have reported evidence of a negative relation between investment-cash flow sensitivity and financial constraints (for instance Kadapakkam et al., 1998; Cleary, 2006).

To overcome the weakness of the degree of investment-cash flow sensitivity as a measure of financial constraints, alternative strategies have consisted in placing firms in two different groups on the basis of some arbitrary threshold such as median values, or first quartiles (Devereux and Schiantarelli, 1990; Gilchrist and Himmelberg, 1995; Greenaway et al., 2005; Cleary, 2006). Other authors use a finer classification and classify firms in three or more groups (Fazzari et al., 1988; Kadapakkam et al., 1998; Kaplan and Zingales, 1997). Almost all the papers rely on a limited list of variables such as size, age, dividend policy, membership in a group or conglomerate, existence of bond rating, and concentration of ownership. All these variables are ment to capture source of informational asymmetries that can potentially constrained access to capital markets. So, for instance, Fazzari et al. (1988) claim that dividends are a residual decision in firms strategy and, under the assumption that external finance is more costly than internal funds, paying high dividends in presence of profitable investment opportunities is not consistent with profit maximization. Hence, high dividend payout ratios signal the absence of financial constraints. Big and mature firms are likely to find easier access to external funds as it should be easier to collect information on them compared to young and small enterprises. Similarly, membership in a larger conglomerate should facilitate market access both because of the signaling exercised and because the single firm can likely receive funds from its headquarter. Also, the mere existence of a bond rating (even irrespective of the rating itself) can signal a commitment of the firm vis-à-vis financial markets. In a similar vein the existence of a dominant shareholder is seen as a way to reduce agency problem with management and therefore to act as a guarantee toward external investors. Other papers, namely Becchetti and Trovato (2002) and Savignac (2006), use survey data whereby firms themselves give a self-assessment of their difficulty to access external financial funds.

There are a few weaknesses related to the above strategies. First, Hubbard (1998) notes how most of the chosen criteria tend to be time invariant whereas one can imagine that firms switch between constrained or unconstrained regimes depending on overall credit conditions, investment opportunities and idiosyncratic shocks. Second, all works relying on dividend payments are restricted to quoted firms which, at least for what concerns continental Europe, tend to be large and mature. As a further potential problem, we add that all the above studies rely on a unidimensional definition of financial constraint, i.e. they assume that a single variable

can effectively identify the existence of a constraint, and the latter is viewed as a clear-cut phenomenon that is either in place or not, without allowing for different degrees. Notable exceptions are the works by Lamont et al. (2001), Cleary (1999, 2006), an Whited and Wu (2006). The first paper builds a multivariate index that builds on Kaplan and Zingales (1997) whereby five variables are weighted using regression coefficients in the Kaplan and Zingales (1997) paper and collapsed into a single indicator.[2] The main difficulty with this approach is the need to extrapolate results obtained on a small sample of 49 US quoted firms (those used in Kaplan and Zingales, 1997) and apply them to a larger population (and in a different period). Furthermore, one of the variables needed to compute the index is Tobin's Q, whose use as a proxy for investment opportunities is rather controversial and lies at the core of the investment-cash flow debate outlined above. Whited and Wu (2006) take a similar route but perform their own estimate and base their index on a structural model whereby they measure financial constraints by means of the shadow price of capital.[3]

Another interesting attempt to develop a time-varying, continuous measure of financial constraints is due to Cleary (1999), which uses multiple discriminant analysis (in a way similar to Altman, 1968) to compute a score based on six variables.[4] The methodology entails two steps: first one needs to classify firms as constrained or unconstrained according to some characteristic, second the statistical analysis is performed which delivers a coefficient for each of the (six) control variables.[5] The score is then obtained as the predicted value of the empirical model, and it can be applied also to firms excluded from the first step of the analysis. To separate firms Cleary (1999) makes the hypothesis that firms reducing dividend payments one year to the next, are likely to be financially constrained, whereas those augmenting them are likely not to be constrained. Firms keeping dividend payment constant are not used in the multiple discriminant analysis, but later they are nonetheless attributed a score.[6]

2.2 Financial constraints and export decisions

In presence of imperfect capital markets, one can figure out at least two rationales of why exporting firms should be less financially constrained than non exporting firms: one stressing

[2]The variables are (i) cash flow to fixed assets, (ii) market to book ratio, (iii) debt to total assets, (iv) dividends to fixed assets, and (v) cash to fixed assets.

[3]The variables included in the model are (i) the ratio of long-term to total debt, (ii) a dividend dummy, (iii) sales growth (both for the individual firm and the sector), (iv) (the log of) total assets, (v) the number of analysts following the firm, (vi) the ratio of liquid to total assets, (vii) the industry debt to assets ratio.

[4]There are (i) the current ratio, (ii) the debt ratio, (iii) the fixed charge coverage, (iv) the net income margin, (v) sale growth, and (vi) slack over total assets. See Cleary (1999) for a definition of the variables.

[5]This is very much similar to what a probit or a logit estimation would do. In fact, multiple discriminant analysis is nothing more than an ancestor of these methodologies, which, because of current computer power, are probably preferable as more robust .

[6]An obvious requirement of this methodology is working with quoted firms. In principle one could then derive a score for non quoted firms as well, but it is not clear how well the index would then behave.

the link going from financial constraints to export behaviors, the other assuming that causality runs in the opposite direction.

First, if firms have to incur large sunk entry costs to enter into export markets, financially constrained firms may be less able to cover those costs compared to unconstrained firms. this implies that only less constrained firms will be able to start exporting. This simple idea is formalized in Chaney (2005) which adds liquidity constraints to a model populated by heterogeneous firms differently engaged in international trade (à la Melitz, 2003). His model echoes the growing set of evidence according to which a large part of trade barriers take the form of fixed costs which must be paid up-front. A growing body of empirical literature documents significant hysteresis effects associated with firms' export participation and interprets this as signalling the relevance of sunk entry costs.[7] In the business literature, Moini (2007) reports results form a survey among US non exporters, where firms claim their primary obstacle to initiate an export program is the presence of high up-front costs.

Second, the very fact of exporting can generate an advantage in terms of access to external financial funds. This can be rationalized in different ways: (i) exporting firms may generate more stable cash flows, as they benefit from international diversification of their sales (Campa and Shaver, 2002); (ii) selling in international markets can be considered as a sign of efficiency and competitiveness by domestic financial markets, so that exporting lowers the informational asymmetries that lie behind financial constraints (Ganesh-Kumar et al., 2001); (iii) foreign exchanges revenues may represent a better collateral to access external funds in foreign financial markets (Tornell and Westermann, 2003).[8]

In particular, Campa and Shaver (2002) postulate a link going from exporting to financial constraints: exporters, their arguments goes, enjoy a more stable flows of revenues because they sell their products in markets whose business cycles are not perfectly correlated. Also, exporting being associated with better performance, firms engage in international activities send a reassuring signal about their 'type' to the market. Both these effects should grant easier access to external finance to exporting firms. Empirically, Campa and Shaver show that investment is less sensitive to cash flow for the group of always exporters compared to the group of never exporters. Considering next the remaining group of firms which shift their export

[7] See Roberts and Tybout (1997) for Colombia, Bernard and Wagner (2001) for Germany, Campa (2004) for Spain, Bernard and Jensen (2004) for the US. Das et al. (2001) go one step further and estimates a structural model to quantify sunk costs. They conclude that entry costs into export market are substantial.

[8] It is noticeable that, in specific economic environments, the fact of exporting can generate a disadvantage instead of an advantage in terms of financial health. For instance, Espanol (2003) works with a panel of Argentinean firms and she documents an inverse relationship whereby exporting firms are those facing larger constraints. She argues that this can be explained by the specific macroeconomic context of the 1990's in Argentina: the appreciation of the currency which followed financial liberalization may have triggered a profit squeeze for exporting firms, and weakened their balance sheet (diminishing both sales and asset accounts). As a consequence, not only it reduced internal finance but also increased the probability of bankruptcy, therefore reducing banks' willingness to lend to exporting firms.

status during the period of investigation, they show that financial constraints are more binding for those firms when they do not export compared to when they do export. Nonetheless, the Campa and Shaver (2002) results suffers from a few shortcomings. First, in using the sensitivity of investments to cash-flows, Campa and Shaver are directly confronted to the Fazzari et al. (1988) critic which casts strong doubt on the usefulness of this financial constraints measure. Second, if both the diversification and the signalling channels were important, one should observe a positive correlation between the share of firms' foreign sales and their ability to overcome financial constraints. Hence, export intensity rather than export status should be the most influential determinant of a reduction of the constraint, but Campa and Shaver fail to find such a relationship. finally, as they do not control for firm-level heterogeneity in productivity, they cannot rule out the possibility that an independent change in productivity cause altogether the decision of exporting and the lessening of the financial constraints.

In a recent paper, Greenaway et al. (2007) propose a more accurate assessment of the relationship between financial constraints and export decisions. Working with a large scale panel of UK manufacturing firms over the 1993-2003 period, they explicitly test for the causality running between the two variables. Improving on Campa and Shaver in the way they measure financial constraints (actually using a segmenting variable —the liquidity ratio or the leverage ratio— instead of using the sensitivity of the firms' investments to cash-flows), they conclude in favor of the causality running from export to financial health. In other words, they find no evidence in favor of the self-selection hypothesis but strong evidence in favor of ex-post effects. However, the way GGK identify financial constraints also raises some issues as the authors select, among a number of financial variables used to identify the constraint, those that better discriminate among exporters and non exporters. Therefore, they risk ending-up with a built-in relation between their index of financial constraint and the probability of becoming an exporter.[9]

3 Data and methodology

3.1 Data sources: the EAE survey and the DIANE database

We use data from two main sources. Both of them collect information on French firms, though their coverage is somehow different. The first (EAE) is a survey that gathers information from the financial statements and balance sheets of all individual manufacturing firms with at least 20 employees, from 1990 to 2004.[10] Each unit is endowed at birth with an identifying number

[9]The details on the choice of the variables used to measure the degree of financial constraints faced by the firms are not presented in Greenaway et al. (2007) paper but have to be found in a companion paper (Greenaway et al., 2005).

[10]The survey (*Enquête Annuelle d'Entreprises*) is conducted by the French Ministry of Industry. The surveyed unit is the legal (not the productive) unit, which means that we are dealing with firm-level data. To investigate

that allows us to track the firm over time. The second source of information is the *DIANE* database published by Bureau van Dijk, which collects data on over 1 million French firms for the period 1996–2005. This database provides us with many financial stock variables absent from the *EAE* survey. Merging the two datasets yields around 83,000 firm/year observations, stemming from an unbalanced panel of over 12,500 manufacturing enterprises followed over the period 1996–2004.[11]

3.2 The index of financial constraints

The way financial constraints are measured is a very sensitive issue in the literature which investigates the link between financial variables and firms' investment decisions. Measurement issues may be important as well in the new literature on the relationship between financial variables and firms' export decisions. In this paper, we propose to confront four different measures of financial constraints.

The two first indexes are the liquidity ratio and the leverage ratio.[12] Both measures inform about the general financial health of a firm but may have some weakness as an index of financial constraints as they rely on a single variable to classify firms *ex ante*. In other words, they are unidimensional measures of financial constraints.

Therefore, we also rely on indexes which attempt to collapse information coming from different variables which convey important information relative to the existence of financial constraints. The indexes are built following the methodology initially proposed by Musso and Schiavo (2007) (which in turn build on Cleary, 2006). The 7 variables chosen to enter into the indexes are selected on the basis of their performance in existing studies, and their perceived importance in determining ease of access to external financial funds. They are: size (measured by total assets), profitability (return on total assets), current ratio (current asset over current liabilities), cash flow generating ability[13], solvency (own funds over total liabilities, measuring the ability by a firm to meet its long-term financial obligations), trade credit over total assets and repaying ability (financial debt over cash flow).

For each of these 7 dimensions, and each year, we first compute the value of the firm relative to the average of all firms belonging to the same 2-digit NACE sector, and then place it in one of the quintiles in which the resulting distribution is divided.[14] Hence, for each

the role of financial constraints on growth and survival, firm, rather than plant level data seem appropriate.

[11] Chirinko and Schaller (1995) note that focusing on manufacturing only —as it is often done in the literature— may exaggerate the role played by financial constraints because of the specialized nature of the assets involved with those firms.

[12] The liquidity ratio is defined as the firm's current assets minus its short-term debt over total assets, and our leverage ratio as the ratio of the firm's short-term debt to current assets.

[13] This is the maximum amount of resources that a firm can devote to self-financing, and corresponds to the French *capacité d'autofinancement*.

[14] To account for the presence of outliers we trim the top and bottom 0.5% observations for each variable.

firm/year observation we end up with 7 scores ranging from 1 to 5, with 1 containing the smallest values. This information is then combined in different ways to obtain a synthetic index, which is then rescaled to have a common 1–10 range, with smaller values being associated with more constrained firms. In what follows we concentrate on two ways to combine the information: (i) a simple sum of the 7 scores (Score A); (ii) the number of dimensions for which the firm/year lies in the first or second quintiles (Score B)[15].

The correlations between these four measures of financial constraints are presented in Table 1 below. It is noticeable that unidimentional measures and multidimensional ones, while positively correlated, clearly encompass different information. On the other hand, the liquidity ratio displays almost the same information than the leverage ratio as do Score A compared to Score B.

[Insert Table 1 here]

3.3 Measures of firm productivity

In what follow, we compute Total Factor Productivity (TFP) using the so-called *Multilateral Productivity Index* first introduced by Caves et al. (1982) and extended by Good et al. (1997). This methodology consists of computing the TFP index for firm i at time t as follows:

$$\begin{aligned} \ln TFP_{it} = \ln\ Y_{it} - \overline{\ln\ Y_t} + \sum_{\tau=2}^{t} \left(\overline{\ln\ Y_\tau} - \overline{\ln\ Y_{\tau-1}}\right) \\ - \left[\begin{array}{l} \sum_{n=1}^{N} \frac{1}{2} \left(S_{nit} + \overline{S_{nt}}\right) \left(\ln\ X_{nit} - \overline{\ln\ X_{nt}}\right) \\ + \sum_{\tau=2}^{t} \sum_{n=1}^{N} \frac{1}{2} \left(\overline{S_{n\tau}} + \overline{S_{n\tau-1}}\right) \left(\overline{\ln\ X_{n\tau}} - \overline{\ln\ X_{n\tau-1}}\right) \end{array} \right] \end{aligned} \quad (1)$$

where Y_{it} denotes the real gross output of firm i at time t using the set of N inputs X_{nit}, where input X is alternatively capital stocks (K), labor in terms of hours worked (L) and intermediate inputs (M). S_{nit} is the cost share of input X_{nit} in the total cost. [16] Subscripts τ and n are indices for time and inputs, respectively. Symbols with an upper bar correspond to measures for the reference point (the hypothetical firm), computed as the means of the corresponding firm level variables, for all firms, in year t. This methodology is particularly well suited to comparisons of within firm-level panel datasets across industries in that it guarantees the transitivity of any comparison between two firm-year observations by expressing each firm's input and output as deviations from a single reference point.

[15] We have tried also other ways to combine the information, with identical results. Additional details are available upon request.

[16] See Bellone et al. (2008) for more details on the method and a full description of the variables.

3.4 Descriptives Statistics

Table 2 presents descriptive statistics for different types of firms present in the dataset: those which always export (Continuous Exporters) during the whole period, those which do no export initially but become exporters between 1993 and 2004 and continue to export ever since (Export Starters), and those concentrating exclusively on the domestic market (Never Exporters).

[Insert Table 2 here]

Consistently with the literature on export and productivity, we observe a clear ranking between exporters and non-exporters. Specifically, firms which export (either continuous exporters or export starters) tend to be larger, more efficient and less financially constrained than never exporting firms.[17]

The largest gaps are between the continuous exporters and the never exporters, whereas the difference between starters and never exporters is much smaller (apart from average productivity). On average, firms belonging to the former group are 27% times more liquid (and their leverage ratio is 11 % lower) than non-exporting firms. In terms of our Credit constraints indexes (Score A et B), the ranking of continuous exporters is respectively 7% and 6% higher. It is also noticeable that our four financial constraints measures offer a consistent ranking. For each index, on average, continuous exporters are less financially constrained than export starters which themselves are less financially constrained than never exporters.

4 Empirical Results

We start our econometric analysis by investigating the role of financial constraints in determining the probability of exporting next period. In this inquiry, all types of exporting firms (namely, continuous, starters and switchers) are pooled altogether. We then restrict our sample to export starters and never exporters in order to investigate further causality issues.

4.1 The probability of exporting

We regress the probability of exporting in time t as a function of the degree of financial constraint in $t-1$. We use a large number of controls, including lagged size, wage, and productivity along with industry [18] and year dummies. Specifically, we estimate:

[17] Remember that our *Scores* measure ease of access to external finance so that larger values imply a lower constraint.

[18] Firms are allocated to one of the following 14 industrial sectors: Clothing and footwear; Printing and publishing; Pharmaceuticals; House equipment and furnishings; Automobile; Transportation machinery; Machinery and mechanical equipment; Electrical and electronic equipment; Mineral industries; Textile; Wood and paper; Chemicals, Metallurgy, Iron and Steel; Electric and Electronic components

$$\begin{aligned}\text{Expdum}_{it} = {} & a_0 + a_1 \text{ Very small}_{i(t-1)} + a_2 \text{ Small}_{i(t-1)} + a_3 \text{ Medium}_{i(t-1)} \\ & + a_4 Large_{i(t-1)} + a_5 Wage_{i(t-1)} + a_6 TFP_{i(t-1)} + a_7 Subsidiaries_i \\ & + a_8 Finconst_{i(t-1)} + industry + time + \epsilon_{it}\end{aligned} \tag{2}$$

where the subscript i indexes firms and t, time. *Expdum* is a dummy variable equal to 1 if firm i exported in year t, and 0 otherwise. $Verysmall$ (respectively *Small* to *Large*) is a dummy variable equal to 1 if the firm i's real assets in t are in the first quintile (respectively in the second to the fifth quintile. Very large is the omitted category. $Wage$ is equal to the ratio of the firm's total wage bill to the number of hour worked, TFP is our index of relative productivity (see, Subsection 3.3). *Subsidiaries* is a dummy variable equal to 1 if the firm has subsidiaries, and 0 otherwise. $Finconst$ denotes alternatively each of our four measures of financial constraints: Liquidity ratio, Leverage ratio, Score A, and Score B.

In order to check the robustness of the coefficients on financial variables, we present the results obtained from two different estimators: a Random-Effects Probit estimator, and a Fixed-Effects Linear Probability Model. Moreover, we run the estimations for each of the four alternative financial constraints measures. Finally, we augment the initial Equation 2 with, as an additional control, the lagged dependent variable. This dynamic specification allows us to take into account hysteresis in export market participation. We want to investigate if, once hysteresis is controlled for, the degree of financial constraints in $t-1$ still impact the decision of exporting in t. For the dynamic specification, we also run two different estimations: a dynamic Random-effects Probit model and a dynamic Fixed-Effects Linear Probability model. We end up with two tables, table 3 and table 4, respectively for the static specifications and for the dynamic specifications.

[Insert Table 3 here]

[Insert Table 4 here]

For each estimation, all control variables are significant and display the expected sign. In particular, the size dummies are larger in absolute value for the smallest firms, indicating that smaller firms are less likely to export than larger ones. The wage and productivity variables have a positive effect on the probability of being an exporter, consistently with the fact that exporting firms tend to pay higher wage and to be more efficient. Firms with subsidiaries (either at home or abroad) are more likely to export, suggesting some additional motive for exporting of those firms even after controlling for their other favorable characteristics.In the dynamic specifications, the coefficients on the lagged dependent variable are high and significant while the value the coefficients on each of the other controls decreases. Nonetheless, each coefficient

still displays its expected sign and is significant. This means that, whatever the current export status of the firm, its contemporaneous characteristics still impact its future export decision.[19]

In comparison, the evidence on the impact of the financial variables are more mixed. On the one hand, each of the unidimentional measures (the liquidity ratio or the leverage ratio) displays the expected sign and is significant. In other words, good financial health (high liquidity or low leverage) in $t-1$ increases the probability of being an exporter in t. Moreover, this results still holds in the dynamic specifications [20]. On the other hand, the multidimensional financial constraints indexes (either Score A or Score B) do not produce consistent results with the liquidity or leverage ratios. In neither of the 16 estimations, do Score A or Score B display a positive and significant coefficient.

At this stage, our results cast some doubts on the effectiveness of the link between financial variables and the decisions to export: if multidimensional indexes are more reliable measures of financial constraints than unidimentional ones, one should be concerned by the fact that the coefficient on Score A et B lose their significance when controls are included in the regressions.[21] This could indicate that financial markets are efficient enough for financial constraints not impacting the export decisions of firms.

However, another possible explanation is that financial variables do not impact in the same way on continuous exporters and export starters. Suppose, for instance, that financial constraints only impact the decision to start exporting but have no additional impact on the export decisions of established exporters. Hence, it is possible that the coefficient of our financial constraint index is not significant in the overall sample because of a sort of composition effect.

To specifically investigate this hypothesis, we relate our financial constraints indexes to the firm decision to start exporting. We want to check whether only those firms that are relatively less constrained can afford to pay the sunk entry cost in export markets and therefore start seeling abroad.

To do so we proceed in two steps. First, we examine whether future exporters have an ex-ante financial advantage compared to non exporters. Then, we provide a formal analysis of the decision to start exporting.

4.2 The ex-ante financial advantage of future exporters

As a preliminary issue, we investigate whether future exporters display an ex-ante financial advantage over their non exporting counterparts, namely firms belonging to the same industry

[19] That is to say that, among today exporters, large firms which pay high wage and which display relatively high productivity are still the more likely to pursue exporting tomorrow.

[20] Once more, the coefficients on both ratios are lower than in the static specifications but they are still significant. This means that among today exporters, the more liquid (less leveraged) firms are still the more likely to pursue exporting tomorrow.

[21] We indeed checked that without size, Wage and TFP as control variables, Score A and B display significant coefficients with the expected positive sign. These results are available upon request.

and share similar characteristics in terms of size and efficiency. We use a specification adapted from the standard Bernard and Jensen (1999) methodology. We consider the group of firms which start to export between 1999 and 2004. We then compare their degree of financial constraint with the one of their never exporting counterparts. The comparison is done one and three years before entry into the export markets. Specifically, we estimate:

$$\ln Finconst_{i,t-s} = \alpha + \beta Exportdum_{it} + \gamma Z_{i,t-s} + dummies + \varepsilon_{it} \quad (3)$$

where $Finconst$ is alternatively one of our four measures of financial constraints, $Exportdum$ is the dummy for exporter status, and Z a vector of controls that comprises $Size$ (as measured by Employment), productivity (TFP), profitability (operating income over total assets), and a set of industry-year dummies.

It must be emphasized that Equation 3 does not test for a causal relationship. It rather allows to evaluate the strength of the pre-entry premium —i.e. to see to what extent firms that export in time t were already less constrained some times prior the entry— by means of a simple t-test on the significance of the β coefficient. Results are presented in table 5.

[Insert Table 5 here]

The coefficient of the export dummy is positive and significant in almost all cases, backing the idea that before entering into foreign markets, future exporters enjoyed easier access to external financial funds. One year before, export starters are around 36% less constrained than their non exporting counterparts (in terms of Score A or Score B). The financial advantage of future exporters is less pronounced in terms of the liquidity ratio and of the leverage ratio. This results is consistent with the idea that liquidity and leverage ratios, even though they inform on the financial heath of a firm, may be less consistent indexes of the ability of a firm to access external finance than multidimentional indexes as Score A and B.

We performed the following robustness tests. First, we run the same regressions excluding switching firms from our sample. This implies eliminating all firms that do start exporting during the period under consideration, but do not continue to serve export markets ever since. Hence, we reduce the number of entries into foreign markets to "successful entries" only. Results are presented in table 9 of Appendix A: the estimated coefficients are lower but, in almost all cases, robust to the change of sample. Second, we implemented the specification which led GGK to reject the self-selection hypothesis for their UK dataset.[22] Results are presented in Table 12 of Appendix B. We end up with results very consistent with the previous literature. Indeed, implementing the GGK empirical strategy leads us to reject the hypothesis that futures exporters displays an ex-ante financial advantage over non exporters. This leaves us with the

[22]Indeed, we wonder to which extent the discrepancies between the results presented by GGK and ours are driven by differences in the datasets, by the financial variable used, or by the empirical strategies.

issue of which specification should be preferred? In our view, specification 3 has one main advantage: it investigates the ex-ante financial advantage at different points in time rather than on the average values taken over the whole pre-entry period (as in GGK). This allows us to take into account the fact that the degree of financial constraints faced by a firm is time-varying. A manager who think about expanding his firm activities abroad can decide to delay the firm entry into export markets if the firm is financially constrained. This manager could find rational to wait until the financial constraints of the firms have been lessened to start exporting. In such a scenario, averaging the financial constraints index of the firm over the whole pre-entry period could lead to misleading results.

4.3 The decision to start exporting

In this section, we ask if among the today non exporting firms, the ones which will decide tomorrow to expand their activity abroad are the less financially constrained ones. In other words, we investigate the impact of financial variables on the decision to *start* exporting rather than on the mere decision to export as it was done in Section 4.1 above. We intervene on the dependant and explanatory variables in Equation 3: i.e instead of regressing the financial constraints on the future export status, we regress the future export status on the financial constraints. Specifically, we use the subsample of Export starters and Never exporters[23], and estimate:

$$\begin{aligned} \text{Expdum}_{it} = a_0 + a_2 Size_{i(t-1)} + a_3 TFP_{i(t-1)} + a_4 Finconst_{i(t-1)} \\ + industry + time + \varepsilon_{it} \end{aligned} \tag{4}$$

where $Expdum$, $Finconst$, and TFP are defined as before. In this specification, firm size is controlled for by its employment (number of hours worked). Results are presented in Table 6.

[Insert Table 6 here]

We find that the coefficients on the Financial Constraints indexes are all positive and significant in the regressions which investigate the impact of one year lagged financial constraints index on the decision to start exporting in t. On the other hand, the coefficients lose their significance when the financial advantage is estimated 3 year before the entry into export market. This is consistent with the idea that it is the short-run availability of external finance which is determinant in the decision to enter for the first time new foreign markets.

4.4 Detecting Ex-post effects

In this section we present an empirical assessment of the extent to which exporting firms benefit from their activities abroad in terms of access to external finance. Once again we use specifica-

[23] In this regression, both the continuous exporters and the switchers are excluded

tions adapted from Bernard and Jensen (1999) to investigate whether firms' financial constraints go down after their entry into foreign markets. We examine exporter and non-exporter levels and growth rates over short and medium intervals for our four measures of measures of Financial constraints. Specifically, we estimate:

$$Finconst_{i,t+s} = \alpha + \beta Exportdum_{i,t} + +\gamma X_{i,t+s} + \varepsilon_{i,t} \tag{5}$$

and

$$\Delta Finconst_{i,t/t+s} = \alpha + \beta Exportdum_{i,t} + \gamma X_{i,t} + \varepsilon_{i,t} \tag{6}$$

where Δs identify growth rates between time t and $t+s$.

Hence, we test whether after starting to export firms experience a change in their access to external finance that is not explained by a contemporaneous change in size, profitability and productivity. Results are presented in tables 7 and 8 below.

[Insert Table 7 here]

[Insert Table 8 here]

We don't find any evidence to support a beneficial effect of exporting in the position of the firm vis-à-vis external investors. In the regression in levels, the estimated coefficients of the export dummy are positive and significant in the short-run interval only for the leverage ratio and Score A. On a longer horizon, none of them is significant whatever the measure of financial constraints. Moreover, when one considers growth rates (instead of the levels) none of the coefficients on the export dummy is significant.

Here again we performed different robustness checks. Results are robust to the exclusion of switching firms (see table 10 and 11 in Appendix A). We also replicate the specification which led GGK to conclude in favor of the presence of ex-post gains. This specification consists in comparing average levels of the financial constraints indexes [24] instead of comparing those levels in specific point in time (as in Equation 5), or instead of comparing their growth rates (as in Equation 6). When implementing the GGK specification on our dataset, we also find positive and significant ex post effects (see results in 13 of Appendix B). However, our preferred specification remains the ones implemented in this section. Indeed, in the case where Export starters are already financially advantaged before starting to export, the GGK specification does not allow to investigate whether exporting involves *additional* gains in terms of financial health. Only a test of the change in the financial constraints indexes as performed in Equation 6 can support the hypothesis of ex-post benefit[25].

[24] the average is computed over 3 to 4 years after the entry into export markets

[25] And even so, the test is still inconclusive. Indeed, suppose there is a firm that experiences favorable shocks

5 Conclusion

In this paper, we investigated the link between financial constraints and firms' export decisions. We used different measures of financial constraints that take into account the complex nature of this phenomenon. The literature presents two different views of the relationship between export and financial constraints: one stresses the fact that constrained firms will not be able to afford the up-front costs associated with entry into a new market, the other suggests that exporting act as a signalling device and therefore exporting firms will benefit from a better access to external financial funds. In this paper, we presented an attempt to discriminate among the *self-selection* and the *signalling or diversification benefit* hypotheses based on a large panel of French manufacturing firms. Our main finding is that 'self-selection' occurs: among all today non exporters, only less constrained firms decide to start exporting in the next one to three years. On the contrary, we do not find significant evidence that firms becoming exporters do not experience a reduction in their constraint as a consequence of exporting. All in all, we conclude that our data support the recent models of firm's heterogeneity and international trade which emphasize self-selection into export markets in a context of financial market imperfections. In those models, public intervention can be called for to help efficient but financially constrained firms to overcome the sunk entry costs into export markets and expand their activities abroad. In this perspective, our results can be seen as justifying the export promotion policies which have flourished in most of the industrialized countries since the late of the 1990s and early 2000s and which mainly consist in helping small and medium size firms to overcome the fixed entry costs into export markets.

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in terms of its access to external finance that help it afford the costs of entry into exporting at time t, and it continues experiencing such favorable shocks after the time t of entry. In cases like that, how do we identify ex-post benefits from exogenous positive shocks that have nothing to do with exposure to exporting? This difficulty lies at the heart of the debate on the presence of Learning-by-exporting effects as recently reviewed by Isgut and Fernandes (2007).

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Appendix A: Self selection and ex-post effects: results without switchers

In this appendix, we present the results of regressions run of a sample of firms which excludes switching firms. We present both the self-selection equation (Specification 3 in section 4.2) and the ex-post equations both in levels and in growth rates (Specifications 5 and 6 in section 4.4))

[Insert Table 9 here]

[Insert Table 10 here]

[Insert Table 11 here]

Appendix B: A replication of Greenaway et al. (2007)

The specifications implemented by GGK also borrow from Bernard and Jensen (1999). In order to test the self-selection hypothesis, one needs to consider only the group of firms which export in the final year $t = T$ of a given period of time $[0; T]$. This period is alternatively the entire time period 1996-2004 or subperiods, 1996–2000 and 2001–2004. All other firms are then dropped form the sample expect the ones which never exports within the whole period $[0; T]$. This later group is the control group. We next perform a test based on the average values of the financial constraints measure for both groups of firms over the period $[0; T-1]$ and investigate whether those values differ in favor of the group of Export starters. Specifically, we estimate:

$$\frac{1}{T-1}\sum_{0}^{T-1}\ln X_{i,t} = \alpha + \beta Exportdum_{iT} + \delta D_i + \gamma Size_{i,0} + \varepsilon_{it} \tag{7}$$

where D_i is a set of Industry dummies and $Size$ a variable which control for the firm' initial size, measured in terms of employment(number of hours worked). The results are displayed in table 12.

[Insert Table 12 here]

Concerning the test of the presence of ex-post effects, the specification requires to consider the group of firms which start to export in the initial year $t = 0$ of a given period of time $[0; T]$. This period is alternatively the entire time period 1996-2004 or subperiods, 1996-2000 and 2001-2004. All other firms are then dropped from the sample except the ones which never export within the whole period $[0; T]$. This later group is the control group. The test consists in comparing the average values of the financial constraints levels for both groups of firms over the period $[1; T]$ and in investigating whether those levels differ in favor of the group of Export starters [26].

$$\frac{1}{T-1}\sum_{1}^{T}\ln X_{i,t} = \alpha + \beta Exportdum_{i0} + \delta D_i + \gamma Size_{i,0} + \varepsilon_{it} \tag{8}$$

where D_i and $Size$ are defined as before. The results are displayed in table 13.

[Insert Table 13 here]

[26] Note that, when the test is performed on the entire period, it is as if continuous exporters were compared to their never exporting counterparts.

Table 1: Correlations between Financial Constraints indexes

Pearson's r and Spearman Rho Correlation Coefficient				
	Liquidity ratio	Leverage ratio	Score A	Score B
Liquidity ratio	1	*-0,90*	*0,50*	*0,45*
Leverage ratio	-0,92	1	*-0,55*	*-0,49*
Score A	0,46	-0,46	1	*0,90*
Score B	0,41	-0,41	0,90	1

Numbers in italics denote Spearman rho correlation coefficient

Table 2: Descriptive statistics

Continuous Exporters

variable	obs	mean	std. dev.	min	max
Liquidity ratio	43858	0,324	0,275	-3,66	1,00
Leverage ratio	43858	0,598	0,377	0	9,01
Score A	43858	5,747	1,776	0	10
Score B	43858	6,925	2,410	0	10
log Employ	43858	11,573	0,812	10,32	14,88
log TFP	43858	0,034	0,155	-1,42	1,16

Export Starters

variable	obs	mean	std. dev.	min	max
Liquidity ratio	7113	0,271	0,276	-1,75	0,98
Leverage ratio	7113	0,670	0,392	0	7,18
Score A	7113	5,460	1,836	0	10
Score B	7113	6,598	2,551	0	10
log Employ	7113	11,198	0,626	10,32	17,47
log TFP	7113	0,021	0,163	-1,18	1,29

Never Exporters

variable	obs	mean	std. dev.	min	max
Liquidity ratio	10583	0,254	0,312	-1,98	1
Leverage ratio	10583	0,706	0,480	0	7,64
Score A	10583	5,333	1,853	0	10
Score B	10583	6,520	2,551	0	10
log Employ	10583	11,082	0,610	10,32	14,94
log TFP	10583	0,012	0,175	-1,60	1,53

Table 3: Financial Constraints and the decision to export: Static specifications

	Random-Effects Probit					Fixed-Effects Linear Probability Model			
	(1)	(2)	(3)	(4)		(5)	(6)	(7)	(8)
Very small$_{t-1}$	-2.032	-2.022	-2.018	-2.022	-0.201	-0.199	-0.199	-0.199	
	[0.066]***	[0.066]***	[0.067]***	[0.067]***	[0.008]***	[0.008]***	[0.008]***	[0.008]***	
Small$_{t-1}$	-1.605	-1.598	-1.592	-1.595	-0.147	-0.146	-0.145	-0.145	
	[0.062]***	[0.062]***	[0.062]***	[0.062]***	[0.007]***	[0.007]***	[0.007]***	[0.007]***	
Medium$_{t-1}$	-1.301	-1.297	-1.289	-1.290	-0.109	-0.109	-0.108	-0.108	
	[0.060]***	[0.060]***	[0.060]***	[0.060]***	[0.007]***	[0.007]***	[0.007]***	[0.007]***	
Large$_{t-1}$	-0.742	-0.740	-0.735	-0.735	-0.052	-0.052	-0.051	-0.051	
	[0.056]***	[0.056]***	[0.056]***	[0.056]***	[0.006]***	[0.006]***	[0.006]***	[0.006]***	
Wage$_{t-1}$	0.714	0.715	0.673	0.648	0.094	0.095	0.090	0.088	
	[0.422]*	[0.422]*	[0.423]	[0.423]	[0.046]**	[0.046]**	[0.046]**	[0.046]*	
ln TFP$_{t-1}$	0.785	0.789	0.887	0.912	0.078	0.079	0.089	0.091	
	[0.105]***	[0.105]***	[0.111]***	[0.109]***	[0.012]***	[0.011]***	[0.012]***	[0.012]***	
subsidiaries	0.751	0.750	0.760	0.760	0.083	0.083	0.083	0.083	
	[0.059]***	[0.059]***	[0.059]***	[0.059]***	[0.008]***	[0.008]***	[0.008]***	[0.008]***	
Liquidity$_{t-1}$	0.324				0.035				
	[0.049]***				[0.005]***				
Leverage$_{t-1}$		-0.232				-0.025			
		[0.034]***				[0.004]***			
Score A$_{t-1}$			-0.002				-0.000		
			[0.009]				[0.001]		
Score B$_{t-1}$				-0.006				-0.001	
				[0.006]				[0.001]	
Constant	3.321	3.563	4.673	3.570	0.969	0.986	0.978	0.884	
	[0.223]***	[0.224]***	[0.230]***	[0.227]***	[0.024]***	[0.024]***	[0.025]***	[0.027]***	
Observations	69694	69694	69694	69694		69694	69694	69694	69694

Standard errors in brackets; * significant at 10%; ** significant at 5%; *** significant at 1%

Table 4: Financial Constraints and the decision to export: Dynamic specifications

	Dynamic Random-Effects Probit				Dynamic Fixed-Effects Linear Probability Model			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Export dum_{t-1}	2.317	2.318	2.326	2.326	0.648	0.648	0.649	0.649
	[0.021]***	[0.021]***	[0.021]***	[0.021]***	[0.003]***	[0.003]***	[0.003]***	[0.003]***
Very small_{t-1}	-0.627	-0.622	-0.618	-0.620	-0.096	-0.095	-0.095	-0.096
	[0.032]***	[0.032]***	[0.033]***	[0.032]***	[0.004]***	[0.004]***	[0.004]***	[0.004]***
Small_{t-1}	-0.486	-0.483	-0.476	-0.477	-0.066	-0.065	-0.065	-0.065
	[0.030]***	[0.030]***	[0.030]***	[0.030]***	[0.004]***	[0.004]***	[0.004]***	[0.004]***
Medium_{t-1}	-0.411	-0.409	-0.401	-0.402	-0.050	-0.050	-0.049	-0.049
	[0.029]***	[0.029]***	[0.029]***	[0.029]***	[0.004]***	[0.004]***	[0.004]***	[0.004]***
Large_{t-1}	-0.253	-0.252	-0.246	-0.246	-0.025	-0.025	-0.024	-0.024
	[0.028]***	[0.028]***	[0.028]***	[0.028]***	[0.004]***	[0.004]***	[0.004]***	[0.004]***
Wage_{t-1}	1.279	1.281	1.217	1.205	0.187	0.187	0.177	0.176
	[0.276]***	[0.276]***	[0.277]***	[0.276]***	[0.041]***	[0.041]***	[0.041]***	[0.041]***
ln TFP_{t-1}	0.323	0.329	0.375	0.382	0.050	0.051	0.059	0.060
	[0.059]***	[0.059]***	[0.062]***	[0.061]***	[0.009]***	[0.009]***	[0.010]***	[0.009]***
subsidiaries	0.129	0.129	0.128	0.128	0.021	0.021	0.021	0.021
	[0.019]***	[0.019]***	[0.019]***	[0.019]***	[0.003]***	[0.003]***	[0.003]***	[0.003]***
Liquidity_{t-1}	0.147				0.024			
	[0.027]***				[0.004]***			
Leverage_{t-1}		-0.102				-0.017		
		[0.019]***				[0.003]***		
Score A_{t-1}			0.001				-0.000	
			[0.005]				[0.001]	
Score B_{t-1}				-0.000				-0.000
				[0.003]				[0.001]
Constant	-0.520	-0.293	-0.358	-0.466	0.296	0.329	0.322	0.308
	[0.095]***	[0.094]***	[0.099]***	[0.099]***	[0.014]***	[0.014]***	[0.015]***	[0.014]***
Observations	69694	69694	69694	69694	69694	69694	69694	69694

Standard errors in brackets; * significant at 10%; ** significant at 5%; *** significant at 1%

Table 5: Self-selection into exporting by less constrained firms

	Liquidity ratio		Leverage ratio		Score A		Score B	
	t-1, t	t-3, t	t-1, t	t-3, t	t-1, t	t-3, t	t-1, t	t-3, t
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Export dum	0,0238	0,0286	-0,0483	-0,0559	0,1938	0,377	0,2247	0,3602
	[0.0123]*	[0.0208]	[0.0188]**	[0.0320]*	[0.0722]***	[0.1241]***	[0.1025]**	[0.1757]**
ln Employ $_{t-s}$	-0,0209	-0,0248	0,0431	0,0475	-0,0405	0,013	-0,2972	-0,1684
	[0.0092]**	[0.0134]*	[0.0141]***	[0.0206]**	[0.0542]	[0.0799]	[0.0769]***	[0.1132]
ln TFP $_{t-s}$	0,4184	0,5079	-0,5156	-0,5759	3,4932	3,442	4,065	3,9616
	[0.0328]***	[0.0525]***	[0.0503]***	[0.0807]***	[0.1926]***	[0.3130]***	[0.2735]***	[0.4433]***
ln Profitability $_{t-s}$	-9,2093	1,2609	0,9481	-1,344	-28,0118	-19,5383	-29,2796	-39,1442
	[28.9028]	[7.3381]	[4.7112]	[11.2949]	[18.0457]	[43.7897]	[25.6249]	[62.0197]
Constant	1,0478	-11,622	-8,8383	13,2099	271,5987	186,8523	287,5227	372,3064
	[3.0759]	[68.9447]	[44.2697]	[106.1200]	[169.5691]	[411.4204]	[240.7889]	[582.6989]
Observations	3333	1514	3333	1514	3333	1514	3333	1514
R-squared	0,1	0,13	0,08	0,11	0,14	0,16	0,11	0,11

Standard errors in brackets

significant at 10%; ** significant at 5%; *** significant at 1%

Table 6: Financial constraints and the decision to start exporting

	t-1				t-3			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ln Employ$_{t-s}$	0.283	0.292	0.289	0.290	-0.017	-0.009	-0.006	-0.005
	[0.044]***	[0.044]***	[0.044]***	[0.044]***	[0.076]	[0.076]	[0.076]	[0.076]
ln TFP$_{t-s}$	-0.378	-0.340	-0.297	-0.294	-0.727	-0.637	-0.628	-0.638
	[0.154]**	[0.151]**	[0.150]**	[0.149]**	[0.298]**	[0.292]**	[0.295]**	[0.291]**
Score A$_{t-s}$	0.049				0.051			
	[0.014]***				[0.024]**			
Score B$_{t-s}$		0.032				0.024		
		[0.010]***				[0.017]		
Liquidity ratio $_{t-s}$			0.191				0.139	
			[0.081]**				[0.138]	
Leverage ratio$_{t-s}$				-0.147				-0.139
				[0.053]***				[0.096]
Observations	3302	3302	3302	3302	1508	1508	1508	1508

Standard errors in brackets; * significant at 10%; ** significant at 5%; *** significant at 1%

Table 7: Ex-post effects (in levels)

	Liquidity ratio		Leverage ratio		Score A		Score B	
	t, t+1	t, t+3	t, t+1	t, t+3	t, t+1	t, t+3	t, t+1	t, t+3
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Export dum	0,0123	-0,0229	-0,0397	0,0264	0,1271	-0,0719	0,1495	-0,1214
	[0.0116]	[0.0152]	[0.0167]**	[0.0216]	[0.0623]**	[0.0902]	[0.0881]*	[0.1281]
ln Employ $_{t+s}$	-0,0219	-0,0496	0,0353	0,0714	-0,0494	-0,122	-0,2623	-0,3355
	[0.0075]***	[0.0075]***	[0.0108]***	[0.0107]***	[0.0404]	[0.0447]***	[0.0571]***	[0.0635]***
ln TFP $_{t+s}$	0,3328	0,375	-0,4171	-0,4293	3,6237	4,1053	4,1877	4,6499
	[0.0286]***	[0.0308]***	[0.0413]***	[0.0435]***	[0.1539]***	[0.1821]***	[0.2175]***	[0.2588]***
ln Profitability $_{t+s}$	3,799	-1,4178	-0,2247	1,9785	-13,339	-7,0308	-19,6539	1,9101
	[14.8232]	[1.9872]	[2.2755]	[2.8122]	[8.4772]	[11.7621]	[11.9862]	[16.7124]
Constant	-0,3862	14,4604	2,8484	-19,0422	131,0555	73,8335	194,3072	-6,8761
	[1.5772]	[18.6697]	[21.3857]	[26.4210]	[79.6707]	[110.5056]	[112.6497]*	[157.0146]
Observations	5341	3902	5341	3902	5341	3902	5341	3902
R-squared	0,07	0,09	0,06	0,07	0,13	0,15	0,1	0,11

Standard errors in brackets

significant at 10%; ** significant at 5%; *** significant at 1%

Table 8: Measuring the Ex-post effects (growth rates)

	Liquidity ratio		Leverage ratio		Score A		Score B	
	t, t+1	t, t+3	t, t+1	t, t+3	t, t+1	t, t+3	t, t+1	t, t+3
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Export dum	-1,9072	-5,2453	0,0073	0,0229	-0,006	0,0296	-0,0051	-0,0172
	[12.4819]	[3.9115]	[0.0140]	[0.0228]	[0.0149]	[0.0249]	[0.0184]	[0.0326]
ln Employ $t = 0$	9,6415	0,3336	-0,0149	0,0152	-0,0117	-0,0407	-0,0123	-0,0314
	[8.1483]	[1.9752]	[0.0093]	[0.0118]	[0.0097]	[0.0126]***	[0.0120]	[0.0164]*
ln TFP $t = 0$	3,6202	-8,098	-0,0118	0,0211	-0,218	-0,285	-0,2835	-0,3566
	[30.3361]	[8.2120]	[0.0344]	[0.0481]	[0.0361]***	[0.0522]***	[0.0448]***	[0.0684]***
ln Profitability $t = 0$	203,0937	115,513	-8,7028	0,9222	0,5299	-4,5769	-1,9658	-2,4968
	[2,683.7326]	[1,257.3591]	[2.8633]***	[6.8795]	[3.1971]	[7.9902]	[3.9623]	[10.4622]
Constant	-2 041,78	-1 080,57	82,9847	-6,9753	-3,8167	44,8956	19,7681	25,3946
	[25,218.6223]	[11,811.9600]	[26.9042]***	[64.6379]	[30.0426]	[75.0622]	[37.2309]	[98.2843]
Observations	5462	3976	4744	3448	5462	3976	5458	3973
R-squared	0,01	0,06	0,04	0,03	0,03	0,04	0,03	0,03

Standard errors in brackets

significant at 10%; ** significant at 5%; *** significant at 1%

Table 9: Self-selection into export markets: results excluding switchers

	Liquidity ratio		Leverage ratio		Score A		Score B	
	t-1, t	t-3, t	t-1, t	t-3, t	t-1, t	t-3, t	t-1, t	t-3, t
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Export dum	0,0107	0,0441	-0,035	-0,0833	0,155	0,4252	0,1417	0,398
	[0.0147]	[0.0278]	[0.0232]	[0.0430]*	[0.0861]*	[0.1652]**	[0.1227]	[0.2339]*
ln Employ $_{t-s}$	-0,0183	-0,023	0,0386	0,0474	-0,0556	0,0244	-0,3101	-0,1153
	[0.0103]*	[0.0147]	[0.0164]**	[0.0228]**	[0.0606]	[0.0877]	[0.0864]***	[0.1242]
ln TFP $_{t-s}$	0,4186	0,4858	-0,5257	-0,5622	3,3298	3,2229	3,8654	3,7788
	[0.0369]***	[0.0576]***	[0.0584]***	[0.0893]***	[0.2163]***	[0.3429]***	[0.3083]***	[0.4855]***
ln Profitability $_{t-s}$	2,8676	1,6338	-0,603	-2,1878	-2,5579	-11,79	2,0332	-28,949
	[4.4930]	[7.4660]	[7.1040]	[11.5678]	[26.3298]	[44.4336]	[37.5284]	[62.9167]
Constant	-26,716	-15,085	6,2261	21,0151	29,4305	112,919	-10,105	275,281
	[42.2174]	[70.1443]	[66.7520]	[108.6822]	[247.4045]	[417.4637]	[352.6305]	[591.1166]
Observations	2535	1254	2535	1254	2535	1254	2535	1254
R-squared	0,12	0,14	0,09	0,12	0,16	0,16	0,12	0,12

Standard errors in brackets

significant at 10%; ** significant at 5%; *** significant at 1%

Table 10: Ex-post effects (in levels): results excluding switchers

	Liquidity ratio		Leverage ratio		Score A		Score B	
	t, t+1	t, t+3	t, t+1	t, t+3	t, t+1	t, t+3	t, t+1	t, t+3
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Export dum	0,017	0,0097	-0,0545	-0,0354	0,2721	0,2	0,3532	0,1526
	[0.0146]	[0.0218]	[0.0229]**	[0.0321]	[0.0841]***	[0.1301]	[0.1189]***	[0.1821]
ln Employ $_{t+s}$	-0,0251	-0,0604	0,0412	0,0814	-0,1246	-0,2412	-0,3238	-0,3829
	[0.0101]**	[0.0122]***	[0.0158]***	[0.0180]***	[0.0580]**	[0.0730]***	[0.0820]***	[0.1021]***
ln TFP $_{t+s}$	0,3398	0,4332	-0,4655	-0,5188	3,3808	4,2637	3,8985	4,6911
	[0.0364]***	[0.0498]***	[0.0572]***	[0.0732]***	[0.2099]***	[0.2967]***	[0.2968]***	[0.4153]***
ln Profitability $_{t+s}$	2,8751	0,3667	-3,624	-1,0461	21,4891	26,4708	5,283	-3,9746
	[3.0135]	[11.6815]	[4.7379]	[17.1742]	[17.3782]	[69.6000]	[24.5692]	[97.4124]
Constant	-26,94	-1,9888	35,3118	8,9473	-194,25	-241,6	-39,737	48,6014
	[28.3154]	[109.7419]	[44.5184]	[161.3434]	[163.2893]	[653.8595]	[230.8577]	[915.1431]
Observations	2704	1518	2704	1518	2704	1518	2704	1518
R-squared	0,1	0,13	0,08	0,11	0,15	0,17	0,12	0,13

Standard errors in brackets

significant at 10%; ** significant at 5%; *** significant at 1%

Table 11: Ex-post effects (in growth rates): results excluding switchers

	Liquidity ratio		Leverage ratio		Score A		Score B	
	t, t+1	t, t+3	t, t+1	t, t+3	t, t+1	t, t+3	t, t+1	t, t+3
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Export dum	-0,0859	-20,582	0,0191	0,007	-0,0115	-0,0054	-0,0052	-0,0473
	[1.1066]	[8.6733]**	[0.0161]	[0.0314]	[0.0174]	[0.0287]	[0.0237]	[0.0426]
ln Employ $t = 0$	-1,4645	2,7249	-0,0287	-0,0098	0,0063	-0,0126	0,0142	-0,0052
	[0.7762]*	[5.0188]	[0.0113]**	[0.0188]	[0.0122]	[0.0166]	[0.0166]	[0.0247]
ln TFP $t = 0$	1,0184	-20,656	0,0112	0,0144	-0,2456	-0,1775	-0,334	-0,2141
	[2.6472]	[21.0560]	[0.0388]	[0.0784]	[0.0417]***	[0.0697]**	[0.0567]***	[0.1035]**
ln Profitability $t = 0$	-1,238	1705,93	-6,0532	-5,8405	1,9114	10,6192	-2,6286	3,5074
	[244.3719]	[8,282.8162]	[3.3634]*	[29.0342]	[3.8466]	[27.4201]	[5.2360]	[40.7107]
Constant	35,2475	-16046	58,1141	55,821	-16,902	-98,593	25,4477	-31,746
	[2,296.2161]	[77,816.0962]	[31.6071]*	[272.7679]	[36.1441]	[257.6087]	[49.1992]	[382.4726]
Observations	2678	1505	2382	1337	2678	1505	2676	1504
R-squared	0,04	0,13	0,05	0,08	0,06	0,07	0,05	0,07

Standard errors in brackets

significant at 10%; ** significant at 5%; *** significant at 1%

Table 12: Self selection into exporting: results *a la* GGK

	1996-2004			1996-2000			2001-2004		
	No Controls	Industry controls	Industry and size controls	No Controls	Industry controls	Industry and size controls	No Controls	Industry controls	Industry and size controls
Liquidity ratio	-0,00244	-0,0072	-0,00767	0,00812	-0,001	0,0108	0,0146	0,0117	0,0139
	[0.021]	[0.021]	[0.022]	[0.022]	[0.022]	[0.023]	[0.018]	[0.018]	[0.019]
Leverage ratio	-0,011	-0,003	-0,015	-0,0111	-0,0025	-0,0151	-0,0217	-0,0185	-0,0209
	[0.033]	[0.033]	[0.034]	[0.033]	[0.033]	[0.034]	[0.027]	[0.027]	[0.028]
Score A	0,143	0,139	0,130	0,143	0,139	0,13	0,1	0,125	0,049
	[0.12]	[0.12]	[0.12]	[0.12]	[0.12]	[0.12]	[0.11]	[0.11]	[0.11]
Score B	0,180	0,162	0,157	0,18	0,162	0,157	0,0864	0,0982	0,021
	[0.17]	[0.17]	[0.17]	[0.17]	[0.17]	[0.17]	[0.15]	[0.16]	[0.15]

Table 13: Ex post effect (in levels): results *a la* GGK

	1996-2004			1996-2000			2001-2004		
	No Controls	Industry controls	Industry and size controls	No Controls	Industry controls	Industry and size controls	No Controls	Industry controls	Industry and size controls
Liquidity ratio	0.0444***	0.0402***	0.0537***	0.0371***	0.0335**	0.0446***	0.0606***	0.0538***	0.0718***
	[0.012]	[0.012]	[0.013]	[0.014]	[0.014]	[0.015]	[0.014]	[0.014]	[0.014]
Leverage ratio	-0.0623***	-0.0542***	-0.0604***	-0.0538***	-0.0459**	-0.0490**	-0.0816***	-0.0724***	-0.0853***
	[0.016]	[0.016]	[0.017]	[0.019]	[0.019]	[0.021]	[0.019]	[0.019]	[0.019]
Score A	0.308***	0.315***	0.174**	0.336***	0.335***	0.168*	0.315***	0.296***	0.171*
	[0.080]	[0.080]	[0.084]	[0.093]	[0.093]	[0.099]	[0.092]	[0.092]	[0.094]
Score B	0.366***	0.355***	0.215**	0.396***	0.373***	0.213*	0.284**	0.256**	0,132
	[0.10]	[0.10]	[0.11]	[0.12]	[0.12]	[0.13]	[0.12]	[0.12]	[0.13]