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Does Family Control Affect Trade Performance? Evidence for Italian Firms

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Abstract

This paper examines whether the export decision of firms is affected by their ownership structure, specifically it looks at whether family control is an obstacle to entering foreign markets. The underlying assumption is that family firms are risk averse. Risk aversion may be an obstacle to entering foreign markets, as far as these are perceived as more volatile and risky than the domestic one, particularly when such choice entices bearing relatively high sunk costs. We develop an illustrative theoretical model that shows how the combination between high risk aversion and low initial productivity may hinder family firms' decision to enter foreign markets, particularly distant ones. The empirical analysis, based on a detailed panel data set of Italian firms covering the years from 1995 to 2003, confirms such predictions by showing that family controlled firms do indeed export less than other type of companies even after controlling for firm heterogeneity in productivity, size, technology and access to credit.
JEL No. F1, F14, L2

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* Riccardo Faini suddenly passed away during the revisions of this paper. Work was already at a fairly advanced stage and most of the ideas, analytical structure and a large part of writing are his. The other two authors have done their best to complete and finalise research, but certainly the final outcome is not what it could have been if Riccardo had been with us till completion. We wish to thank participants at the CEP, LSE 2006 Annual Conference, Karolina Ekholm and participants at the joint CEPR/NBER conference in Stockholm, participants at the ETSG conference in Vienna, Davide Castellani, Fabiano Schivardi and participants at "The International Firm: Patterns and Modes" FIRB workshop for helpful comments and suggestions. Alessandra Tucci gratefully acknowledges the support of the Improving Human Potential Programme EC funded "Trade, Industrialization and Development" Research Training Network.

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1. Introduction

The ability of a firm to operate in a foreign market is largely a function of its own characteristics, namely its technology, the skill mix of its personnel, as well as its ownership, governance and organizational structure. When new opportunities open up abroad, the firm will respond by adjusting some of the factors that impinge on its competitiveness in foreign markets. Other factors, including its ownership structure, will be harder to change, particularly in the short run.

This paper takes a close look at the case of family firms. The key question we seek to address is whether these companies face different sets of incentives, compared say to widely owned firms, when entering a foreign market as exporters.

Family firms are widespread across Europe as well as in the US. In Italy family control is the dominant form of ownership in the corporate sector, with no substantial changes in this feature in the last couple of decades (Giacomelli and Trento, 2005). In France two thirds of listed firms are controlled either by the founder or his heirs (Sraer and Thesmar, 2006). Families control 45% of voting blocks of listed companies in Austria and 32% in Germany (Becht and Mayer, 2001). In the US large listed corporations like Wal-Mart or Ford are family controlled (Perez-Gonzalez, 2006).

The link between family firms and export has not been explored yet. On the one hand, many papers have analysed theoretically and empirically how family ownership affects performance in general (Caselli and Gennaioli, 2003, Burkart, Panunzi and Shleifer, 2003, Perez-Gonzalez, 2006, Sraer and Thesmar, 2006, Favero et al 2007, Bertrand and Schoar, 2006), but none whether it also influences the decision to enter export markets and internationalise activities. On the other hand, several papers by Marin and Verdier (2006 and 2003) relate export performance to the degree of decentralisation of the governance of the firm, but they do not deal directly with the ownership structure.

Why, then, is it important to analyse how the structure of ownership of firms affects their performance in the international market? In this paper we focus on risk aversion. The shareholder's objective in widely held firms is the maximization of expected profits. Shareholders are assumed to be able to diversify their portfolio in different (and uncorrelated) activities and, as a result, only require managers to maximize the expected value of profits. Accordingly, managers behave as if shareholders were risk neutral. Shareholders of family firms, instead, generally have a large share of their wealth concentrated in the company. With incomplete insurance markets, their ability to

diversify risk is limited. They will therefore try to reduce the exposure to risk of the firm they own. Formally, they or their managers will maximize the expected utility of the firm's profits rather than the expected value of such profits.

The attitude to risk has a substantial bearing on the export and FDI decision of firms. In what follows we focus on exports. Though it might be a way of edging local demand shocks, entering the export market is a risky choice: it involves sunk costs, potentially higher volatility of revenues, limited knowledge of a new market, tougher competition etc. Thus, whereas in widely held companies decision of entry is essentially related to expected cost and revenue factors, in family firms it is also affected by the level of risk aversion of the shareholders.

Family firms differ of course from public corporations under many other aspects that might also influence the export decision. It is often argued that they are relatively less efficient than other firms, for example because of the dynastic choice of management, and therefore cannot recover the sunk cost of entering the new export market[1]. Also, family firms are typically reluctant to partly decentralise governance in order to manage complex operations spread in several countries. We will also take these other factors into account in our analysis.

We develop a simple illustrative model of the decision of exporting. This choice is governed by the cost of entering new markets, the risk attendant to such decision and the owner's risk aversion. We assume that firms have the option of selling their goods in three different markets: home, a close foreign market (Europe) and a far away market (the rest of the world). Under different configurations on sunk costs and volatility of revenues across markets we show that the export decision is a function of both the sunk costs of exporting and the firm's risk aversion.

The predictions of our model are then tested for a panel of Italian firms. Italy provides an ideal testing ground for our model. The country has been steadily losing competitiveness in world markets[2] and has only recently been able to regain market shares. The specialisation of Italian firms in traditional sectors, their average small size and the wide diffusion of family ownership are often seen as major constraints to strengthening competitiveness and gaining market shares.

[1] Although evidence on this is not uncontroversial. For example, Favero et al, 2006 find in a subsample of listed companies that Italian family firms are more productive than the others.
[2] The share of Italian products in world trade in constant prices fell from 4.5% in 1995 to 3% in 2003, the years covered by our micro-data.

Our main results can be summarized as follows. We find that, controlling for several firm specific factors, family firms export less than others, both in Europe and in the rest of the World. On average these firms sell about 3 percent more output in the domestic market, 10 percent less in the European market and 12 percent less in non European countries than non family firms. This effect holds, even when we control for those standard factors which per se are supposed to hamper the efficient working of family firms and consequently the choice of exporting, like the structure of management and credit constraints. It also holds when we control for the direct effect of productivity. Although risk aversion cannot be directly observed and measured, it provides a plausible explanation of this gap.

It is however important to notice that we find non linearities in the way productivity and size relate to the export gap. The negative effect of being a family firm on exports is smaller for large and highly efficient firms[3]. In our framework of analysis this means that risk aversion is a greater obstacle to exporting for small and least productive firms, but its effect tends to fade away with size and efficiency. This is a realistic outcome. The "all eggs in one basket" argument certainly bites more when firms are small than for large, often diversified and listed conglomerates, albeit controlled by one family.

In what follows we briefly review the literature on family firms and performance. We then develop our theoretical model. The following section describes the data we use and our empirical specifications. In section 4 we report our empirical findings and finally we conclude and derive the main policy implications.

2. Family firms and the decision to export: analytical background

Why should the structure of ownership of firms affect their decision to carry out activities in foreign markets and their international performance? There are very few contributions looking at the exporting decision, but from the broader literature we may identify three reasons why family firms might behave differently from other firms: performance, agency problems and risk preferences.

As for performance, the positive association between efficiency and the international activities of the firms, being those exports or foreign direct investment, is a well established fact. Most of the theoretical and empirical literature reconciles this association with the need to overcome the fixed

[3] The effect of family firms on exporting becomes non significant at the 90th percentile of the size distribution and at the the 95th percentile of the productivity distribution.

cost of entering foreign markets. If family firms are on average less efficient, their ex-ante chances of having international operations are lower than for public companies.

Indeed, several studies have shown that, other things equal, family firms are less efficient than public companies. These findings go far back to the historical evidence on British firms provided by David Landes, (1965) to more recent analyses like, for example, the study of Perez Gonzales 2006 on US publicly traded corporations or Bloom and Van Reenen, 2006 on management practices in US, UK, France and Germany. On a broader scale, a cross country analysis of the relationship between family values and economic performance shows that 'countries where family is regarded as more important have lower levels of per capita GDP, smaller firms, a higher fraction of self-employment, fewer publicly traded firms on average, and rely less on external financing' (Bertrand and Schoar, 2007) . The only exception to this consensus is a recent study on France (Sraer and Thesmar, 2006), that finds that family owned firms, first or further generation, perform better than widely held companies and a study on a sample of 150 Italian listed companies by Favero et al (2006).

One reason why family firms perform relatively badly is that the dynastic transmission of the management responsibility over the firm reduces the pool of talents among which managers are selected (Caselli and Gennaioli, 2003, Burkart, Panunzi and Shleifer, 2003, Bennedsen et al 2006). Family firms may also be constrained by the lack of external funds and the owner's reluctance to open up management to qualified outsiders.

A second line of argument, but leading to opposite conclusions, concerns agency issues. The organizational strength of the family firm is indeed its ability to overcome agency problems in management decisions. Family bonds reduce the incentive to shirk for members of the family. Therefore, centralised management can in principle be more efficient when firms deal with complex and highly risky markets (Berle and Means, 1932). From this perspective family firms could in principle be expected to be better fit than other type of firms for the international market, given that these are highly volatile and less known to the firm than the domestic one.

These two arguments are however not fully convincing. As for the first one Marin and Verdier (2006) and Acemoglu et al (2007) argue that what really matters for performance, and consequently the decision to go abroad, is not much the type of ownership of the firm but, rather, the degree of decentralisation of decision making. This conclusion is also supported by evidence on a sample of US firms (Zahara, 2005). Family firms could likely overcome the problem of dynastic management

by hiring professional managers, as it is indeed the case in most large family companies. Therefore, even if on average we might expect family firms to be less productive, there will be a large variance in performance, as these firms move to more sophisticated and decentralised systems of management. Thus, when we relate ownership to export performance we must make sure we also control for the role external managers play within the firm. The same type of reasoning should also apply to the second argument and somehow revert its logic. When firms expand into foreign markets, family members are forced to delegate part of their power to independent managers. In other words, agency problems would emerge anyway, as centralised decision making procedures necessarily get diluted to successfully operate in foreign markets. If this is the case, then, the agency argument backfires. Shareholders could be against expanding into foreign markets, precisely because they do not want to decentralise decision making.

A third line of argument explaining a possible reluctance to expand abroad, the one we follow in this paper, is related to risk aversion. In the presence of incomplete markets for risk diversification, we might expect that decision making in a family firm is characterised by greater risk aversion than in a public company. Indeed, public companies should aim at maximizing expected profits, as shareholders can diversify their risk through their portfolio of assets. Shareholders of family firms are likely to have a large chunk of their wealth in the firm, in other words they are less able to diversify their risk through asset allocation. With imperfect insurance markets, risk adverse shareholders will tend to maximise their expected utility rather than the expected level of profits. The fact that family firms are often less leveraged than widely held corporation is taken by several contributions as an indirect evidence of the higher risk aversion of their shareholders (Agrawal and Nagarajan, 1990, Schulze and Dino, 1998, Zellweger, 2006, Gallo, Tapies and Cappuyns, 2000, Mishra and Mc Conaughy, 1999).

The reasons why risk aversion might discourage entry into foreign markets are three. The first one is that these markets can be more volatile than the domestic one. The counterfactual is of course that by selling their products in several markets firms mange to hedge market specific volatility. Yet, we will show in the next section that the variability of profits per employee is higher for exporting than for non exporting firms in our sample. The second one is that firms have a relatively imperfect knowledge of other countries and their economies. Finally, if exporting involves initial sunk costs, which are relatively large with respect to the size of the firm and financial markets are imperfect, then the risk of bankruptcy might be larger for exporters, other things equal. All these reasons are strengthened the more complex are international activities in terms of export intensity, the number and the distance of the markets served, the range of foreign operations (trade and FDI).

If these assumptions are correct, then risk adverse shareholders of family firms might be reluctant to undertake this step, independently of their ex-ante efficiency and the structure of management within the firm. Risk aversion might induce family firms to avoid entering foreign markets, even if they are highly profitable and they have already a fairly decentralised management structure.

In the next section we take this presumption to the data and show some stylised facts that are in line with the idea that family firms are more reluctant to enter export markets because of risk aversion.

3. Basic facts and motivations

We need three pieces of information to support our argument. *First* we must show that the behaviour of family firms is indeed consistent with the hypothesis of risk aversion. *Second*, we need to check if family firms export less than non family firms. Also, as the decision to export involves several potential markets, we need to see if the export behaviour of these firms is affected by the characteristics of the potential market, for example its remoteness. *Third*, we must examine if exporting does indeed involve more risk than operating in the domestic market. Before addressing these issues, though we must briefly describe the data set we use.

3.1 Data and descriptive statistics

The data used in this paper come from the last three waves (1998, 2001 and 2004) of a survey on activities of a representative sample of Italian manufacturing firms carried out by Capitalia (Osservatorio sulle Piccole e Medie Imprese).

The detailed questionnaire collects qualitative and quantitative information on ownership, trade, labour force and innovation on the previous three years. Such information is complemented with standard balance sheet data obtained from Amadeus (Bureau van Dijk).

All firms with more than 500 employees are included in each wave while most of the firms with less than 500 employees are selected with a stratified sampling method each time with a rotating panel scheme, therefore only few of them appear in two consecutive waves. After the cleaning procedures on missing and extreme values we obtain an unbalanced panel of 7393 firms covering the years from 1995 to 2003. Detailed description of sample selection and the dataset used in the paper can be found in Appendix A2.

From the detailed information on the firm's structure of labour force and ownership, we define family firms as those where either the founder or one of his family members is part of management. The only other restriction we impose is that the firm has a share of private ownership greater than zero[4]

This definition is relatively loose, as firms could be fully run by independent managers. Accordingly, several amongst Italy's largest groups would not be classified as family firms in our analysis. Yet this definition has two advantages. The first one is that it is probably fully exogenous from the exporting status of the firm. In other words firm that start exporting might need to hire independent managers, or dilute control, but not necessarily to change ownership status and expel or family members from management. The second one, that the presence of family member in management is an indirect, albeit imperfect indicator of the influence of the family over the running of the company. Moreover, notice that our sample combines non-listed and listed firms, which is a step forward with respect to previous empirical studies of family firms, which are based on evidence for listed firms[5].

Restricting our family firms to those with a non negative share of private ownership, might fail to capture family firms organised as holdings. In our sample there are indeed 574 firms that are managed by the founder and/or the family but have no private ownership. In Appendix A3 we carry out a robustness check and we show that our results hold when we include also this group of firms.

Table 1 reports the distribution of firms according to their ownership status and their size. Almost 80 percent of the firms in our sample can be classified as family firms, on the basis of our definition. As expected, the distribution of family ownership by firm size is skewed towards smaller firms. However family firms are not necessarily small. Indeed, more than 26 percent of the firms with more than 500 employees are family owned. Furthermore we show in the appendix that there is not an identifiable sectoral pattern in the distribution of family firms (Table A1.1).

[4] Private ownership refers to Italian individuals or Italian manufacturing firms.
[5] Perez-Gonzalez, 2006, Saer and Thesmar 2006 and Favero et al. (2006).

Table 1 Share of family firms by size classes

		Share of family firms (%)
Size classes by number of employees ***(share of size class)***	***Overall*** *(100%)*	79.41
	Less than 20 *(27.30%)*	89.13
	Between 21 and 50 *(33.42%)*	87.90
	Between 51 and 250 *(30.24%)*	72.72
	Between 251 and 499 *(4.82%)*	45.56
	More than 500 *(4.22%)*	26.31

Basic facts

Are family firms risk averse? Risk aversion cannot be observed directly, but we can compare the propensity of taking risky decisions of family and other firms. Several contributions have argued that an outcome of risk aversion is a less leveraged financial structure[6]. In table 2 we report a measure of leverage for the two groups of companies. This measure is given by the ratio of financial debts to total assets[7]. Family firms are moderately, on average, less leveraged than other firms. Of course this is a very crude indicator of risk aversion, in that the degree of leverage reflects both the preferences of the firms and of the bankers. Firms could be less leveraged because they have a lower ability to repay, because they are smaller and credit constrained (Guiso, 2004 shows that small Italian firms in Italy have less access to credit than larger ones). In table 2, indeed, we show that on average family firms in our sample are marginally less efficient[8] and smaller than other firms. Also, a larger share among them face credit constraints[9] and a smaller share use alternative sources of funding like risk capital. To control for higher moments of the distribution, we also show in figure 1 the distribution of the two groups of firms on the basis of their productivity. We find non family firms are weakly dominating family ones in terms of productivity distribution[10].

[6] See Guiso and Parigi (1999), Caselli, Pagano and Schivardi. (2003) and Collins(1997) among others.
[7] Financial debts are calculated as the sum of short and long term financial liabilities and bonds; Total assets= total liabilities and net asset (liabilities and shareholders funds)
[8] In Table 2, the logarithm of TFP is very close between family and non family firms. The TFP index – defined as the relative productivity of each firm with respect to the sector, year average– is smaller on average for family firms, though its standard deviation is lower.
[9] We define a firm as considered credit constrained if in the questionnaire it declares it were willing to pay a higher interest rate to obtain more credit.
[10] With a two sided stochastic dominance test we reject with 1 percent confidence level the hypotheses that the two distributions are equal and that the "family" one dominates the non family one. However we can accept with only 8 percent confidence level (P=0.08) that the family firms' productivity distribution is stochastically dominated by the non-family firms' one.

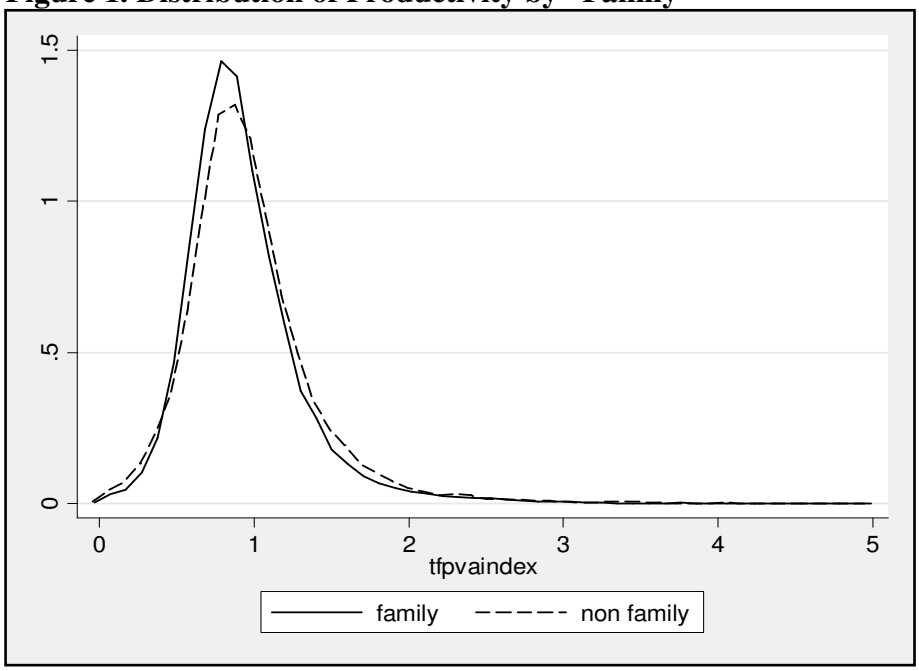
To understand if family firms are less leveraged, even taking into account the other characteristics that might impinge on their financial structure, we regress the leverage index on a dummy capturing the firm ownership status (family or not) and controls such as size, productivity, industry and time dummies. Furthermore we also include the credit constraint dummy as a control to check if the smaller leverage is entirely explained by the access to credit. Columns (3) and (6) in table A1.2 show that this is not the case. There is of course strong endogneity in all of these relationship; these regressions should be taken as purely descriptive. The results, reported in appendix A1, confirm that the lower leverage of family firms is robust to the inclusion of such controls. .

Table 2. Characteristics by ownership

	Family			Non Family		
	Obs	*Mean*	*Std. Dev.*	*Obs*	*Mean*	*Std. Dev.*
Leverage	24611	0.203	0.197	6461	0.232	0.189
Employment	26940	68.332	194.569	6989	305.489	759.917
LnTFP	24849	1.367	0.869	6602	1.073	0.530
TFP_index[a]	24849	0.883	0.438	6602	1.111	0.684
Share of Listed firms	26801	0.006	0.080	6911	0.034	0.182
Share of firms that are credit constrained	26512	0.050	0.217	6491	0.037	0.188

Notes:
The difference in the means is statistically different from zero at 1% confidence level for all the variables
[a] TFP index where productivity is normalized with respect to sector, year and class size averages.

Figure 1. Distribution of Productivity by "Family"



Do family firms export less? The second piece of information we need to establish is whether family firms do indeed export less than others. We need to qualify what we mean by 'exporting'. This normally refers to the export status of the firm, whether it exports or not. Actually this choice has several other dimensions. The first one is how much a firm does export, what share of its total output foreign sales account for. The second one is to which market products are sold. Are these neighbouring markets like the EU or more distant markets like Asia or the US? The final one is how many foreign countries products are sold to. Is it just one or more than one? If more than one, are these close to each other or far away? All these dimensions of foreign activities are important as they imply varying fixed costs and risk exposures. Entering each market involves a duplication of fixed costs and the exposure to new specific, possibly risky, market conditions. Selling in far away markets could likely be more costly and risky than following well beaten tracks in relative nearby locations.

According to our data, family firms do export a lower share of their sales than non family ones, 25,3% vs. 33,1%. In table 3 we look at market destinations. We report, for each group of firms, the share of those that only sell at home, only export to the EU, only to the Rest of the World and to both markets. We find that among family firms the share either not exporting or exporting just to one area (EU or RoW) is larger. In contrast the share of firms selling to both export areas is considerably lower. Of course this is again purely descriptive at this stage. We will show in section 6 how these results hold when tested under rigororus econometric analysis.

Table 3. Share of firms that sell to each "destination" by family (%)

	Family	**Non Family**
Only Home	34.27	23.77
Only EU (and Home)	16.06	13.96
Only OTHER (and Home)	5.05	4.70
All destinations	44.63	57.57
Tot.	*100.00*	*100.00*

If selling to both areas involves larger fixed costs and facing more uncertain market conditions this pattern could be reconducted to risk aversion. However this is true only if foreign markets are riskier than domestic ones.

Are foreign markets riskier than domestic ones? To assess whether foreign markets are risky, we compute for each firm a measure of the time variability of profits per employee[11]. If foreign markets are more volatile, hence riskier, we expect this index to rise with the foreign activities of the firm. Note that this might not be the case. If market volatility in different areas of the world (home and foreign or between foreign markets) is uncorrelated, exporting could actually be a way of hedging risks.

We therefore regress this index on several measures of the exporting activity of the firm and controls like size, industry and time dummies. We find that exports are positively related to the volatility of profits and that selling in different markets does not seem to be a risk hedging strategy. In column 1 of table 4 we compare exporting and non exporting firms, whereby EXP is a dummy which is equal 1 if firms do export. We find that profits are more volatile for firms that export. Yet, being an exporter in itself does not mean much. Here we classify as exporters also firms that do sell abroad 1% of their output. What matters for volatility is how important exports are with respect to the total activities of the firm. In column 2 we therefore look at the share of exports on total sales, and find that volatility keeps increasing with export intensity.

It is also important to consider the destination of exports. Far away markets could be riskier than closer ones: firms might have a more limited knowledge of such countries. But these markets could also provide better risk hedging, as trends in demand are less likely to be correlated to those at home. In our sample we can observe whether firms export to the EU or to the rest of the world (RoW). In column 3 we relate the volatility index to a dummy that captures four potential statuses of the firm: if it does not exports, our excluded dummy, if it exports to the EU, to the RoW or to both areas. We find that volatility is significantly higher for firms exporting to both areas. It is also higher (although not significantly) for firms exporting in either areas, but less so for exporters to the Rest of the World. We can therefore conclude that a diversified exporting strategy is indeed associated to higher risks. Firms operating in several markets are exposed to more uncertain outcomes, probably because they have a limited knowledge of individual countries, or because the likelihood of facing downward trends in local markets increases. Risks rise also when firms operate just in one export area, although "RoW" provides some better hedging than the nearby EU market.

[11] More precisely this measure is given by the standard deviation between t and (t-3) of the profits per employee

Table 4 Premium regressions: Variability of profit per employee

	Dependent Variables			
	σ(π/empl)	σ (π/empl)	σ (π/empl)	σ (π/empl) before and after exporting (starters)[a]
	(1)	(2)	(3)	(4)
Exporter Dummy	10.641			-1.537
	[4.198]**			[2.217]
Export Share		0.172		
		[0.067]***		
Exporter to EU & RoW (Dummy)			12.482	
			[4.576]***	
Exporter to EU only (Dummy)			6.778	
			[4.953]	
Exporter to RoW only (Dummy)			6.408	
			[7.073]	
Constant	-3.291	-3.923	-26.127	-5.744
	[3.944]	[3.889]	[16.592]	[2.717]**
Observations	27692	27659	27206	1058
R-squared	0.04	0.04	0.04	0.17

Notes: σ (π/empl) has been calculated between t and (t-3)
All estimations include two-digit industry dummies, size controls and time dummies.
[a] the sample has been restricted to those firms that we can follow for more than one wave and we can see changing their export status
Robust standard errors in brackets.
*significant at 10%; ** significant at 5%; *** significant at 1%;

Summing up exporting does indeed appear to be associated with higher volatility. It also seems that risks rise with the intensity and geographic diversification of foreign activities.

The stylised facts reported in this section are helpful in defining a set of working hypothesis for the construction of a simple theoretical model of the decision to export for risk adverse firms.

4. The model

Consider a simple model where a firm can either sell in its own domestic market (D) only or export to possibly two foreign markets (EU and ROW) as well.

If the firm caters only to the domestic market, its net revenue is:

$$R_D = y_D + \varepsilon$$

where ε is N(0,1). If the firm also sells to a foreign market, its additional revenue is:

$$R_i = y_i - f_i + \sigma_i \eta_i$$

where i= EU, ROW, η_i is N(0,1), $\sigma_i > 1$, and f_i is the fixed cost of exporting to country i. We assume that both η_{eu} and η_{row} are correlated with ε, with correlation coefficients ρ_{eu} and ρ_{row} respectively[12]. Note that y_D and $y_i - f_i$ are independently determined. The implicit (and strong) assumption in this set up is that either constant returns to scale prevail both at home and abroad (except for the fixed cost component) or that markets are segmented, so that the non stochastic component of revenues (y_D and $y_i - f_i$) are uncorrelated.

Finally, we assume that that firms' owners are not able to fully diversify their assets. Accordingly, they will maximize the expected value of the utility of the firm's profits rather than, as in the standard set up with complete diversification, the expected value of profits. For tractability, we assume that the owner's utility is of the CARA type. The optimization problem becomes:

$$E(U(R)) = E[-\exp(aR)] = \exp\left[aE(R) - \frac{a^2}{2} \operatorname{var}(R) \right]$$

where the second equality derives from the assumption that the error term is normally distributed. Risk aversion is measured by parameter *a.*

We need to determine the value of *R*. If the firm sells only in the domestic market, then $R=R_D$, with mean y_D and variance equal to one. If in addition the firm sells also to market i, then total revenue is distributed normally with mean $y_D + y_i$ and variance $1 + \sigma^2_i + 2\,\sigma_i\,\rho_i$. Accordingly, the firms will export to market i if the following condition holds:

$$y_D - \frac{a}{2} \le y_D + y_i - f_i - \frac{a}{2}(1 + \sigma_i^2 + 2\sigma_i \rho_i)$$

[12] For analytical simplicity, we assume that the correlation between the stochastic shock in the foreign markets is nil. Our results are basically unchanged if we relax this assumption.

i.e. if:

$$y_i - f_i \geq a\left(\frac{\sigma_i^{\,2}}{2} + \sigma_i \rho_i\right)$$

We first consider the case where $f_{eu} < f_{row}$ and $(\sigma_{eu}^2/2) + \sigma_{eu}\,\rho_{eu} \leq (\sigma_{row}^2/2) + \sigma_{row}\;\rho_{row}$, namely when the EU market is less costly and less risky than the rest of the world.
The possible equilibria can be represented by a simple graph:

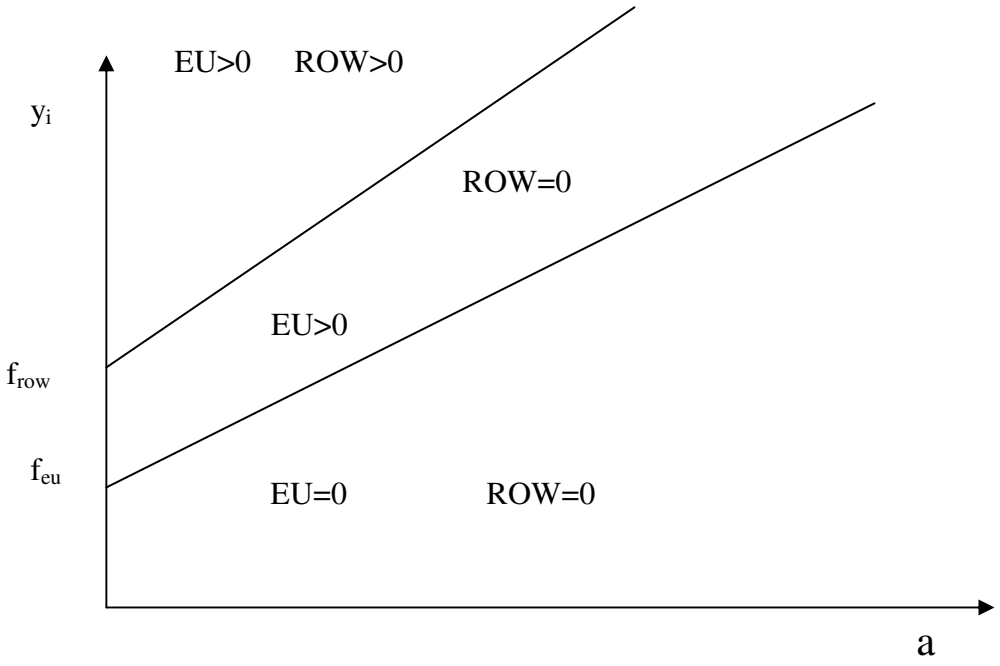


Figure 2: Equilibria

where EU (ROW) = 0 indicates that there is no export activity to the EU (ROW). Consider the area where the firm exports to both markets. Suppose that risk aversion, i.e. the parameter *a*, increases. We then move from left to right. We see that for a critical threshold of the risk aversion parameter, the firm will stop exporting to ROW (the riskier market) and for an even higher level of *a,* will stop exporting altogether.

We can also assess the impact of higher productivity. Suppose that initially the firm does not export to either markets (i.e. EU=ROW=0). If now y_i increases, the firm will first start exporting to the EU

and then when y_i is high enough will also export to the rest of the world. More crucially, we see that the impact of higher productivity on the export decision will depend on the level of risk aversion. With higher risk aversions, even relatively productive firm will not export.

Consider now the case where $f_{eu} < f_{row}$ and $(\sigma_{eu}^2/2) + \sigma_{eu}\,\rho_{eu} > (\sigma_{row}^2/2) + \sigma_{row}\;\rho_{row}$, namely when the EU market is less costly but riskier than the rest of the world. This may happen for instance if far away markets are less, or even negatively correlated, with home shocks. Graphically:

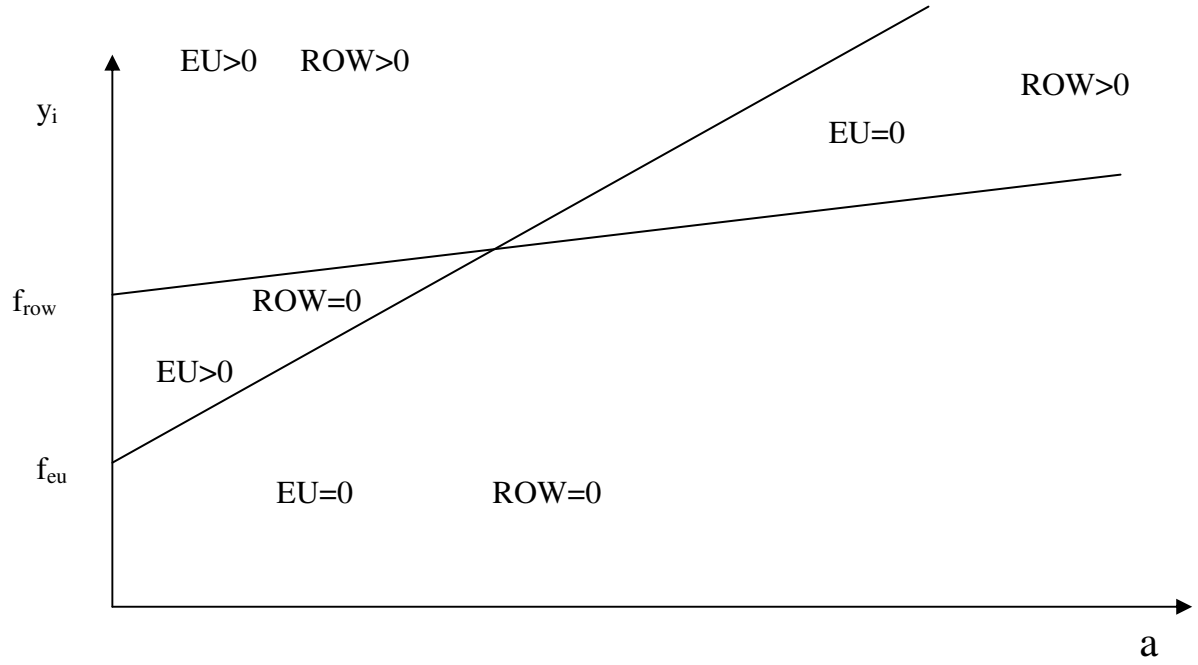


Figure 3: Equilibria (market diversification)

Most of the previous analysis carries through. The interesting twist here is that firms may not need to export to the EU before exporting to the rest of the world. Relatively risk averse firms may prefer exporting to far away markets first simply as a way to diversify their risk.

5. Empirical Implementation

In addition to the descriptive evidence shown in section 2, tables A.1.3 and A.1.4 in Appendix A1 report more summary statistics for the main variables of interest in this paper, and essentially compare firms across the two main characteristics we would like to study: their exporting status and their ownership status. As for the exporting status more than 60 percent of the firms in our sample

are exporters. Moreover, exporting firms typically sell both in the EU and in the Rest of the World. The share of firms exporting only to the EU is relatively small, 15,6%; that of firms exporting only to the Rest of the World is even smaller (4.9%). Interestingly enough, the domestic market is a key outlet, even for exporting firms.

A clear and expected pattern is that firms exporting in both markets are the largest and the most productive. Also, the role of independent managers and the skill intensity of the personnel seem to be increasing with the complexity of international activities.
Of course not much can be said from these purely descriptive patterns and we now move on to the econometric analysis.

5.2 Empirical Specifications

Our empirical strategy is understanding the relationship between the ownership status of the firm and its export performance. Remember that our presumption is that family firms are more reluctant to export, particularly to distant markets because of risk aversion. This can only be tested indirectly, as risk aversion cannot be measured. We will therefore estimate the link between ownership status and export, controlling for all the other observable factors that might also affect this relationship (productivity, management, credit constraints etc.).

The empirical specification is inspired by the model developed in section 4. We use a probabilistic framework to model the decision to export to a specific destination. A firm decides to sell its product abroad when the current value of expected utility from profits from exporting exceeds the fixed costs associated with international trade.

This can be expressed with a discrete-choice equation:

$$Y_{itj} = \begin{cases} > 0 & \text{if } \mathrm{E}\left[U(\pi_{itj}^{Y})\right] - F_{ij} > 0 \\ 0 & \text{otherwise} \end{cases} \qquad (1)$$

where Y_{itj} is the variable indicating sales of firm i at time t in market j (EU, Rest of the World, Home). $\mathrm{E}\left[U(\pi_{itj}^{Y})\right]$ is a function of expected profits and the attitude towards risks at the firm level and S_{ij} are fixed costs for firm i of exporting to j. We then assume that expected profits are a

function of firm characteristics X_{it} while the attitude toward risk depends on the firm's ownership structure. After adding an error term, the choice equation becomes:

$$Y_{itj} = \begin{cases} > 0 & \text{if } \lambda^Y X_{it}^Y + \gamma^Y R_{it} + D_j + \rho_i + \delta_t + \varepsilon_{it}^Y > 0 \\ 0 & \text{otherwise} \end{cases} \qquad (2)$$

According to the literature on the determinants of firms' export decision (Bernard and Jensen, 2004), the vector X_{it} of firm's characteristics includes employment, productivity, the age of the firm and technological proxies as skill intensity and R&D. R_{it} includes characteristics such as ownership structure that can capture risk aversion. D_j are destination dummies. ρ_i are time invariant firm's characteristics such as industry[13] and δ_t is a time effect.

Taking as dependent variable the *value* of sales to each destination we estimate Poisson regressions. We rely on a constant elasticity framework, where the conditional expectation of Y_{itj} can be expressed as $E(\exp(x_{it}\beta))$. We can then derive the following equation to be estimated via Poisson pseudo maximum likelihood estimator

$$\Pr(Y_{itj} \geq 0 \mid X_{it}^Y, R_{it}, D_j) = \exp(\lambda^Y X_{it}^Y + \gamma^Y R_{it} + D_j + \rho_i + \delta_t)$$

The Poisson estimator is adequate to take into account the zero-values of the dependent variable. In addition it has the desirable robustness property that consistency of estimates will be achieved as long as the conditional mean is correctly specified without requiring any additional assumptions on the distribution of Y_{itj} given X_{it} (Wooldridge, 2002 and Santos Silva and Tenreyro, 2006). Therefore the data do not have to follow a Poisson distribution neither Y_{itj} needs to be an integer for the estimations to be consistent (Gourieroux, Monfort and Trognong, 1984). Standard errors will be affected by deviations from the Poisson assumption: to cope with this issue we compute variance-covariance matrices robust to overdispersion and heteroskedasticity.

The framework presented in section 4 is focused on the discrete choice of exporting to a specific destination. Therefore, to distinguish between the choice of exporting and the quantities exported we also check for selection into export with an Heckman selection model.

[13] As a robustness checks we also estimate a specification with firm fixed effects.

6. Results

The first column of Table 5 shows the estimates of our benchmark equation on the value of sales by destination; where we do not include any proxy for risk aversion, i.e. vector R_{it}. As expected, we find that firms tend to sell, on average, a larger values at home than abroad, as indicated by the negative sign of both the EU[14] dummy and the Rest of the World dummy that represent the destination fixed effects[15]. Productivity is a key factor affecting the decision concerning the market of destination of output. A measure of total factor productivity is included in the estimations, by itself and interacted with the EU and the ROW dummies. We find that more productive firms tend to sell relatively more in the EU than at home and shipping an even greater share of their output to far away destinations in the Rest of the World. In all the estimates we control also for size and firm characteristics such as age, skill share, employment in R&D and share of foreign ownership. Different specifications of this benchmark equation are reported in appendix A1.

In column 2, we expand the benchmark equation to assess the impact of corporate ownership to see whether family firms behave differently. We therefore add to the baseline specification a dummy variable that takes a value of 1 for family firms (and zero otherwise) and interact it with the destination dummies. Note that our indicator of family firms is likely exogenous to the choice of the output market. We find that family firms, even after controlling for productivity and size[16] tend to sell more in the domestic market, export less to the EU and even less to the Rest of the World[17]. In other words, and this is our key results, the ownership status has a significant effect on the decision to export and specifically family firms are less likely to enter foreign markets, even less so for distant ones. Note that this effect holds independently on the standard effects of size and productivity on the exporting decision. In other words even though family firms might be less productive than non family ones, this and size are not sufficient motives to justify their relatively weaker export performance.

We also control for the interacted effect of the ownership status and productivity. Do our findings on the effect of ownership on the export decision change according to the level of productivity of the firm? We find that the negative family effect tends to be weaker the higher is productivity. The same result holds if we interact ownership status and size (Column 5). This tells us that the ownership constraint to exporting is partly overcome in more productive and larger firms.

[14] EU is considered in its EU15 meaning and it includes: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Luxemburg, Netherlands, Portugal, UK, Spain, Sweden
[15] Where the base category is the home market
[16] In columns 1 3 and 4 we also include size dummies but we do not report the coefficients.
[17] According to the Pseudo R^2, by adding this variable we also improve the fit of the model.

Table 5. Family and Trade

	Dep Var: Value of sales to j (EU, RoW, Home)				
	(1)	(2)	(3)	(4)	(5)
EU dummy	-0.553	-1.331	-0.471	-0.633	-1.156
	[0.004]***	[0.014]***	[0.009]***	[0.011]***	[0.031]***
RoW Dummy	-0.761	-1.674	-0.638	-0.889	-1.425
	[0.006]***	[0.017]***	[0.011]***	[0.013]***	[0.036]***
Family			0.059	0.029	0.061
			[0.004]***	[0.005]***	[0.010]***
Family*EU			-0.100	-0.110	-0.287
			[0.010]***	[0.020]***	[0.036]***
Family*RoW			-0.152	-0.129	-0.368
			[0.013]***	[0.024]***	[0.042]***
Lntfp	-0.048		-0.042	-0.007	
	[0.003]***		[0.003]***	[0.004]*	
Lntfp*EU	0.246		0.235	0.142	
	[0.010]***		[0.010]***	[0.015]***	
Lntfp*RoW	0.290		0.273	0.153	
	[0.012]***		[0.012]***	[0.018]***	
Lntfp*family				-0.002	
				[0.004]	
Lntfp*family *EU				0.058	
				[0.015]***	
Lntfp*family *RoW				0.050	
				[0.018]***	
Lnempl		0.013			0.023
		[0.001]***			[0.002]***
Lnempl*EU		0.200			0.156
		[0.003]***			[0.006]***
Lnempl*RoW		0.233			0.178
		[0.004]***			[0.007]***
Lnempl*family					-0.015
					[0.002]***
Lnempl*family *EU					0.075
					[0.007]***
Lnempl*family *RoW					0.086
					[0.008]***
Constant	2.246	2.262	2.297	2.395	1.929
	[0.149]***	[0.112]***	[0.150]***	[0.145]***	[0.139]***
Observations	90184	97585	90184	90184	97148
Pseudo Rsq	0.1648	0.1749	0.1694	0.1798	0.1760

Notes:
Coefficients for the regressors as estimated by Poisson maximum likelihood estimator; All estimations include controls (not reported) for Age of the firm, workers' skill ratio, employment in R&D, Share of foreign ownership (also interacted with destination dummies) in addition to size dummies (except for columns 2 and 5) two-digit industry dummies and time dummies. Robust standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%,

The Poisson estimates in Table 5 do control for "zeros" but do not properly differentiate between domestic and foreign markets. Therefore, to account for the selection into export market we also estimate an Heckman selection model with maximum likelihood and we report the results in table 6. To identify the selection equation we use the credit constraint dummy since we consider this as proxy of the fixed costs incurred by firms in entering markets. We exclude this variable from the second step given that once the fixed costs are paid firms decide on their sales on the basis of other characteristics. We choose to control only for selection in export markets and not selection into each

market (column 1b and 2b) since we want to exclude the domestic sales. Column 1a confirms the results of our benchmark equation and column 2a the results on the family variable.

Table 6 . Heckman selection model

Dep. Var.	*Value of sales to j* (1a)	*Export dummy* (1b)	*Value of sales to j* (2a)	*Export dummy* (2b)
EU dummy	-2.416		-2.323	
	[0.033]***		[0.074]***	
RoW Dummy	-4.813		-4.352	
	[0.044]***		[0.100]***	
Lntfp	0.158	0.153	0.178	0.154
	[0.036]***	[0.010]***	[0.036]***	[0.010]***
Lntfp*EU	0.569		0.558	
	[0.071]***		[0.072]***	
Lntfp*RoW	0.723		0.669	
	[0.093]***		[0.093]***	
Family			0.156	0.083
			[0.039]***	[0.015]***
Family*EU			-0.114	
			[0.081]	
Family*RoW			-0.562	
			[0.110]***	
Credit constraint		-0.028		-0.030
		[0.022]		[0.022]
Cr. constr.*EU				
Cr. constr.*RoW				
Constant	10.790	-1.991	10.710	-2.650
	[1.082]***	[0.209]***	[1.082]***	[0.186]***
Observations	88726	88726	88726	88726
Lambda	-0.065 [0.046]		-0.077 [0.048]*	

Notes:
j=EU, RoW, Home; All estimations include controls (not reported) for Age of the firm, workers' skill ratio, employment in R&D, Share of foreign ownership (also interacted with destination dummies) in addition to size dummies, two-digit industry dummies and time dummies; Robust standard errors in brackets * significant at 10%; ** significant at 5%; *** significant at 1%.

To conclude, as a robustness check, in Table 7, we show how these results are robust to controlling for unobserved firm heterogeneity using a fixed effect Poisson estimator[18]. These estimates should be seen with considerable caution. In a fixed effect framework, the coefficients are identified through firm level within variation. However, the structure of our panel means that larger firms are more likely to appear in two consecutive waves. Hence, in this latter case, our coefficients are more likely to capture the behaviour of large firms rather than small and medium sized ones.

[18] Poisson allows estimation of results with firm fixed effects since (unlike Heckman selection model) it is not susceptible to incidental parameter problems (Wooldridge, 2002). Robust standard errors are obtained using the "xtpqml" stata module that implements the correction described in Wooldridge (1999).

Table 7. Fixed Effects

	Dep Var: Value of sales to j (EU, RoW, Home)		
	(1)	(2)	(3)
	.		
EU dummy	-0.469	-0.466	-0.461
	[0.017]***	[0.017]***	[0.018]***
RoW Dummy	-0.636	-0.633	-0.628
	[0.021]***	[0.022]***	[0.022]***
Family	0.051	0.047	0.105
	[0.013]***	[0.013]***	[0.020]***
Family*EU	-0.102	-0.104	-0.190
	[0.019]***	[0.019]***	[0.033]***
Family*RoW	-0.155	-0.158	-0.236
	[0.023]***	[0.023]***	[0.040]***
Lntfp	-0.108	-0.109	-0.080
	[0.008]***	[0.008]***	[0.011]***
Lntfp*EU	0.229	0.233	0.178
	[0.017]***	[0.017]***	[0.023]***
Lntfp*RoW	0.267	0.272	0.219
	[0.020]***	[0.021]***	[0.027]***
Credit constraint		0.036	
		[0.023]	
Credit constraint*EU		-0.037	
		[0.040]	
Credit constraint*RoW		-0.015	
		[0.050]	
Lntfp*family			-0.055
			[0.014]***
Lntfp*family *EU			0.086
			[0.023]***
Lntfp*family *RoW			0.081
			[0.029]***
Observations	90183	88755	90183
Number of firms	7594	7528	7594
Log likelihood	-310547.54	-304783.06	-310499.2

Notes:
All estimations include controls (not reported) for Age of the firm, workers' skill ratio, employment in R&D, Share of foreign ownership (also interacted with destination dummies) in addition to size dummies two-digit industry dummies and time dummies.
Robust standard errors in brackets * significant at 10%; ** significant at 5%; *** significant at 1%,

Finally in Appendix 1 (Table A1.5) we report further robustness checks. We include in these regressions other observable factors that might affect the propensity of family firms to exports and that might therefore be captured by the family dummy in the estimations reported above. These are whether firms are listed (and indirect sign of access to capital and sophistication of the financial structure), credit constraint and the presence of independent managers.

We are aware that particularly the share of independent managers suffers from severe endogeneity problems. Still, it is necessary to check whether our results survive to the addition of such covariate. Findings are reassuring. The base results on the impact of the family dummy, size and productivity are all unchanged. Second, as expected, we find that firms with a higher share of outside managers

tend to export more, particularly to far away destinations, though the direction of causality for this variable remains ambiguous.

Summing up, even controlling for all those factors that might explain why family firms are less export oriented, our regressions preserve a significant effect of the family dummy. This tells us that family firms are less export oriented than other firms for other reasons than efficiency, size, the presence of independent managers or credit constraints. Even though we cannot capture it directly, we attribute this remaining unobserved effect to risk aversion.

Conclusions

This paper examines whether the export decision of firms is somehow affected by their ownership structure. The key argument is that family firms are likely to be more risk averse than widely owned firms. This is an all eggs in one basket argument: in the case of family firms most assets of the owners will likely be concentrated in the firm. In contrast, shareholders of widely held firms can diversify their assets through the market. Consequently, in the absence of complete insurance markets, the objective of family firms is to maximize the expected utility of their risk averse shareholders, and the objective of widely held firms is the maximisation of the profits of their (behaving like) risk neutral shareholders.

Risk aversion may be an obstacle to enter foreign markets, as far as these are perceived as more volatile and risky than the domestic one, particularly when such choice entices bearing relatively high sunk costs.

We develop an illustrative theoretical model that shows how the combination between high risk aversion and low initial productivity may hinder family firms' decision to enter foreign markets, particularly distant ones. We test this hypothesis for a sample of Italian companies. The problem is of great concern in Italy, where a large share of the firms are family owned. We do find that family ownership does indeed affect export choices in the expected way *independently* of productivity and other firm characteristics that influence export behaviour. We attribute this effect to risk aversion. Therefore we show that family management leads to a specific distribution of sales across markets: only because managed by the owners, these firms sell on average about 3 percent more output in the domestic market, 10 percent less in the close by European market and 12 percent less in the more

far away destinations[19] than predicted by their characteristics such size, productivity and labour composition. This family bias is however smaller for larger and highly productive firms. If a family firm has a total factor productivity above the 90th percentile of the distribution then the negative effect in the European market is totally compensated while if a firm has a productivity above the 95th percentile then also the bias on the more far away markets disappears[20].

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[19] These percentages are derived from the coefficients on the family dummy and on the family dummy interacted with the destinations fixed effects in Table 5, column 4. The same back of the envelope calculations for column 3 of Table 7 yield a positive 6%, and a negative 9.5% and 14% difference for the domestic, EU and RoW markets respectively.

[20] From column 4 of Table 5 these are the corresponding levels of logTFP that make the family bias disappear. For the specification where we control for employment, to have the EU15 effect disappear we need the firm to have more than 46 employees and more than 72 employees to have the RoW bias disappear, these values correspond to the 65th and 75th percentiles of the employment distribution respectively.

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Appendix A1

Table A1.1 Distribution by sector

Ateco (2 digit)		Share of family firms (%)	Av. number of empl.
15	food and drink industries	77.62	72.03
16	tobacco industry	80.00	42.07
17	textile industry	81.52	102.59
18	manufacturing of clothing articles; preparation and dyeing of fur coats	86.55	124.43
19	manufacturing and tanning of leather; manufacture of travelling articles, bags, leather straps and footwear	89.69	75.59
20	wood and wooden and cork products, except furniture; manuf. of straw articles and plaiting mat.	88.18	56.19
21	manufacturing of paper paste, paper and paper products	81.94	96.89
22	publishing, printing and reproduction of recorded supports	81.02	93.82
23	manufacture of coke , petroleum refineries, treating of nuclear fuels	71.43	165.41
24	manufacture of chemical products and synthetic and artificial fibres	68.81	155.38
25	manufacture of rubber articles and plastic materials	80.36	115.38
26	manufacture of products of the working of non metalliferous mineral	81.36	113.63
27	production of metal and manufacture of metallic products	74.49	157.74
28	manufacture and working of metal products, except for machinery and plants	83.00	62.69
29	manufacture of mechanical machinery and equipment, including installation, assembly, repair and maintenance	76.41	146.83
30	manufacture of office machinery, processors an data processing systems	81.88	153.08
31	manufacture of electric machinery and equipment nec	74.45	155.57
32	manufacture of radio and television equipment and equipment for communications	75.21	211.12
33	Manuf. of medical equipment, precision equipment, optic instruments and clocks	73.36	195.90
34	manufacture of motor vehicles, trailers and semi-trailers	72.29	330.87
35	manufacture of other means of transport	65.56	423.61
36	furniture manufacture; other manufacturing industries	83.37	86.91
37	collection and preparation for recycling	50.00	92.90
Total		*79.40*	*118.18*

Table A1.2 Premium regressions: Leverage

	Dependent Variables							
	Leverage	Leverage	Leverage	Leverage (no Bonds)	leverage (no Bonds)	Leverage (no Bonds)	Credit constraint (dummy)	Credit constraint (dummy)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Family	-0.020	-0.022	-0.021	-0.020	-0.022	-0.021	0.006	0.001
	[0.003]***	[0.003]***	[0.003]***	[0.003]***	[0.003]***	[0.003]***	[0.003]**	[0.003]
TFP index		-0.016	-0.015		-0.017	-0.016		-0.028
		[0.002]***	[0.003]***		[0.002]***	[0.003]***		[0.002]***
Cr constr.			0.058			0.059		
			[0.006]***			[0.006]***		
Constant	0.471	0.238	0.153	0.472	0.239	0.154	0.020	0.015
	[0.028]***	[0.058]***	[0.050]***	[0.028]***	[0.058]***	[0.050]***	[0.006]***	[0.006]**
Obs.s	31072	30812	29995	31072	30812	29995	33003	30605
R-squared	0.05	0.06	0.06	0.05	0.06	0.06	0.01	0.01

Notes: All estimations include two-digit industry dummies, size controls and time dummies.
Robust standard errors in brackets
*significant at 10%; ** significant at 5%; *** significant at 1%;

Table A1.3 Distribution of sales by destination.

*Destination of sales (share of firms) **	*Variable*	*Shares of Sales by Destination* Obs	Mean	Std. Dev.	Min	Max
EU and RoW (47.19%)	***Share of sales to EU***	15753	24.72	18.87	0.00	99.00
	Share of sales to RoW	15753	20.55	19.43	0.00	98.01
	Share of domestic sales	15753	54.73	27.36	0.00	100.00
Only EU -and home (15.64%)	***Share of sales to EU***	5221	24.78	25.76	0.00	100.00
	Share of sales to RoW	5221	0.00	0.00	0.00	0.00
	Share of domestic sales	5221	75.22	25.76	0.00	100.00
Only RoW - and home (4.98 %)	***Share of sales to EU***	1663	0.00	0.00	0.00	0.00
	Share of sales to RoW	1663	28.64	29.46	0.10	100.00
	Share of domestic sales	1663	71.36	29.46	0.00	99.90

***** 32.19% of firms sell only at home

Table A1.4: Firm Characteristics by Destination of sales

	Not Exporters			**Exp to EU and ROW**			**Exp only to Eu**			**Exp only to ROW**		
	Obs	*Mean*	*Std. Dev.*	*Obs*	*Mean*	*Std. Dev.*	*Obs*	*Mean*	*Std. Dev.*	*Obs*	*Mean*	*Std. Dev.*
Family	10743	0.85	0.35	15739	0.76	0.43	5219	0.82	0.38	1663	0.81	0.39
Sh of Indep. Man.	10735	0.14	0.27	15727	0.29	0.36	5215	0.20	0.31	1662	0.20	0.31
Employment	10745	48.96	149.59	15753	156.61	496.26	5221	82.24	195.30	1663	66.01	128.10
TFP_index	9882	0.83	0.41	14779	1.00	0.54	4772	0.90	0.47	1508	0.86	0.44
Leverage	9702	0.17	0.20	14659	0.23	0.19	4729	0.21	0.20	1499	0.21	0.19
Var of profits(t, t-3)	8607	36.18	314.68	13086	51.73	330.83	4186	48.09	231.34	1327	51.55	232.38
Sh of cr. constrained firms	10574	0.05	0.23	15464	0.04	0.20	5140	0.04	0.20	1636	0.05	0.21
Age	10649	24.63	76.14	15580	28.40	67.76	5144	16.70	437.26	1624	26.19	21.39
White blue sh.	10525	0.57	3.70	15653	0.63	2.48	5183	0.49	1.65	1642	0.58	1.01

Table 4 Benchmark equation

	Dep. Var.: Value of sales to j (EU, RoW, Home)			
	(1)	(2)	(3)	(4)
EU dummy	-1.331	-1.281	-0.542	-0.553
	[0.014]***	[0.016]***	[0.004]***	[0.004]***
RoW Dummy	-1.674	-1.620	-0.748	-0.761
	[0.017]***	[0.020]***	[0.005]***	[0.006]***
Lnempl	0.013	0.006		
	[0.001]***	[0.001]***		
Lnempl*EU	0.200	0.187		
	[0.003]***	[0.004]***		
Lnempl*RoW	0.233	0.219		
	[0.004]***	[0.004]***		
Lntfp		0.030	-0.053	-0.048
		[0.003]***	[0.003]***	[0.003]***
Lntfp*EU		0.071	0.256	0.246
		[0.010]***	[0.010]***	[0.010]***
Lntfp*RoW		0.077	0.303	0.290
		[0.012]***	[0.012]***	[0.012]***
Share of foreign ownership				-0.001
				[0.000]***
Share of foreign ownership*EU				0.002
				[0.000]***
Share of foreign ownership*RoW				0.003
				[0.000]***
Lnage	0.028	0.023	0.023	0.024
	[0.002]***	[0.002]***	[0.002]***	[0.002]***
Skill share	-0.001	-0.001	-0.001	-0.001
	[0.001]	[0.001]	[0.001]	[0.001]
Empl in R&D	0.013	0.013	0.013	0.013
	[0.000]***	[0.000]***	[0.000]***	[0.000]***
Constant	2.262	2.330	2.651	2.246
	[0.112]***	[0.111]***	[0.111]***	[0.149]***
Size dummies	No	No	Yes	Yes
Observations	97585	90580	90586	90184
Pseudo Rsq	0.1749	0.1751	0.1638	0.1648

Notes:
Columns (1) to (4) report the coefficients for the regressors as estimated by Poisson maximum likelihood estimator;
All estimations include two-digit industry dummies and time dummies.
Robust standard errors in brackets *significant at 10%; ** significant at 5%; *** significant at 1%;

Table A1.5 Family and Trade (additional controls)

	Dep Var: Value of sales to j (EU, RoW, Home)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
EU dummy	-0.461	-0.340	-0.518	-0.564	-0.459	-0.463	-0.344	-0.449
	[0.010]***	[0.017]***	[0.020]***	[0.020]***	[0.018]***	[0.018]***	[0.022]***	[0.030]***
RoW Dummy	-0.628	-0.636	-0.888	-1.020	-0.625	-0.634	-0.633	-0.865
	[0.012]***	[0.012]***	[0.014]***	[0.016]***	[0.022]***	[0.023]***	[0.022]***	[0.030]***
Family	0.066	0.038	0.010	-0.003	0.099	0.094	0.074	0.018
	[0.007]***	[0.006]***	[0.005]**	[0.005]	[0.020]***	[0.020]***	[0.019]***	[0.019]
Family*EU	-0.164	-0.078	-0.054	-0.016	-0.185	-0.177	-0.103	-0.038
	[0.020]***	[0.019]***	[0.019]***	[0.019]	[0.033]***	[0.033]***	[0.032]***	[0.032]
Family*RoW	-0.212	-0.192	-0.123	-0.028	-0.235	-0.220	-0.221	-0.062
	[0.024]***	[0.025]***	[0.024]***	[0.024]	[0.040]***	[0.041]***	[0.040]***	[0.040]
Lntfp	-0.041	-0.023	0.006	0.014	-0.082	-0.084	-0.064	-0.050
	[0.005]***	[0.004]***	[0.004]*	[0.004]***	[0.011]***	[0.011]***	[0.010]***	[0.010]***
Lntfp*EU	0.199	0.123	0.088	0.079	0.185	0.187	0.107	0.092
	[0.015]***	[0.015]***	[0.014]***	[0.014]***	[0.023]***	[0.023]***	[0.020]***	[0.020]***
Lntfp*RoW	0.242	0.252	0.156	0.124	0.227	0.231	0.223	0.169
	[0.018]***	[0.019]***	[0.018]***	[0.017]***	[0.028]***	[0.028]***	[0.027]***	[0.026]***
Lntfp*family	-0.006	0.001	0.002	0.003	-0.053	-0.051	-0.044	-0.040
	[0.005]	[0.005]	[0.004]	[0.004]	[0.014]***	[0.014]***	[0.014]***	[0.013]***
Lntfp*family *EU	0.060	0.048	0.049	0.047	0.080	0.078	0.071	0.066
	[0.015]***	[0.014]***	[0.014]***	[0.014]***	[0.023]***	[0.023]***	[0.022]***	[0.021]***
Lntfp*family *RoW	0.054	0.043	0.045	0.046	0.075	0.071	0.069	0.067
	[0.019]***	[0.019]**	[0.018]**	[0.017]***	[0.029]***	[0.029]**	[0.028]**	[0.027]**
Credit constraint	-0.003	-0.027			0.035	-0.032		
	[0.006]	[0.014]*			[0.023]	[0.046]		
Credit constraint*EU	-0.033	0.076			-0.036	0.081		
	[0.022]	[0.040]*			[0.040]	[0.070]		
Credit constraint*RoW	-0.010	0.189			-0.014	0.191		
	[0.027]	[0.046]***			[0.050]	[0.085]**		
Credit const.*family		0.029				0.079		
		[0.015]*				[0.051]		
Credit const.*family *EU		-0.138				-0.142		
		[0.047]***				[0.083]*		
Cr. const.*family *RoW		-0.253				-0.257		
		[0.056]***				[0.102]**		
Listed			0.018				-0.044	
			[0.008]**				[0.053]	
Listed*EU			-0.038				0.040	
			[0.026]				[0.055]	
Listed*Row			0.059				0.225	
			[0.030]**				[0.064]***	
Sh of indep management				-0.028				-0.143
				[0.004]***				[0.017]***
Sh of indep manag.*EU				0.111				0.183
				[0.015]***				[0.027]***
Sh of indep manag.*RoW				0.272				0.434
				[0.017]***				[0.032]***
Constant	2.627	2.591	2.258	2.219				
	[0.112]***	[0.115]***	[0.144]***	[0.144]***				
Firm FE	No	No	No	No	Yes	Yes	Yes	Yes
Observations	88756	88756	89668	90151	88755	88755	89668	90151

Notes:
All estimations include controls (not reported) for Age of the firm, workers' skill ratio, employment in R&D, Share of foreign ownership (also interacted with destination dummies) in addition to size dummies two-digit industry dummies and time dummies.
Robust standard errors in brackets * significant at 10%; ** significant at 5%; *** significant at 1%,

Appendix A2: Sample Description

Capitalia's Observatory on Small and Medium Size Firms conducts every three years a survey on a representative sample of Italian firms. In this paper we use a dataset obtained by merging the three most recent waves of the survey, 1998, 2001 and 2004. The three surveys include respectively 4497, 4680 and 4277 firms.

The sample is selected with a stratified design on location, industrial activity and size for all firms with less than 500 employees. While all firms with more than 500 employees are included in each wave.

We removed from the sample firms with inconsistencies or missing values on all the variables of interests. In addition, the first and the last percentiles have been used as lower and upper thresholds for the trimming procedure to exclude the extreme values.

The following table describes the structure of the unbalanced panel of 7363 firms that is been used in the estimations.

Table A2.1 Structure of the sample

Years (survey)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	*tot*
2003-01	1726	1353	626				252	*3957*
2000-98		1353	626	654	760			*3393*
1997-95			626	654		1992	252	*3524*
Balance Sheet	2003-1992	2003-1992	2003-1992	2000-1992	2000-1992	1998-1992	2003-1992	

Appendix A3: Family firm definition

Inspecting those 547 firms that are managed by the founder and/or the family but have no private ownership we find that 198 firms are for more than 95% owned by service (or public) firms, 188 firms are for more than 95% owned by banks or financial institutions and 187 firms are for more than 95% owned by foreign firms/individuals. Looking at the distribution by size there is not a clear pattern being those excluded firms evenly distributed across size classes.

Table A3.1 Distribution of firms and ownership by size.

	N. of firms	Share of firms	Share of firms owned for more than 95% by		
			Foreign firms/Individuals	Financial institutions/Banks	Service firms
Less than 20 employees	77	0.13	0.31	0.52	0.17
Between 21 and 50 employees	113	0.20	0.35	0.43	0.22
Between 51 and 250 employees	172	0.30	0.29	0.31	0.39
Between 251 and 499 employees	103	0.18	0.26	0.26	0.47
More than 500 employees	109	0.19	0.40	0.22	0.38
Total	574	1.00	0.32	0.33	0.35

Table A3.2 shows some of the main regressions where the family dummy includes also those 574 firms and the results are substantially unchanged.

Table A3.2 Family and Trade (alternative definition of family)

	Dep Var: Value of sales to j (EU, RoW, Home)					
	(1)	(2)	(3)	(4)	(5)	(6)
EU dummy	-0.460	-0.623	-0.333	-1.128	-0.458	-0.449
	[0.009]***	[0.011]***	[0.017]***	[0.031]***	[0.017]***	[0.018]***
RoW Dummy	-0.621	-0.875	-0.620	-1.375	-0.620	-0.611
	[0.011]***	[0.014]***	[0.012]***	[0.037]***	[0.021]***	[0.022]***
Family	0.065	0.033	0.043	0.068	0.058	0.113
	[0.004]***	[0.006]***	[0.006]***	[0.010]***	[0.013]***	[0.020]***
Family*EU	-0.113	-0.126	-0.093	-0.314	-0.115	-0.208
	[0.010]***	[0.020]***	[0.019]***	[0.036]***	[0.018]***	[0.033]***
Family*RoW	-0.172	-0.153	-0.217	-0.426	-0.174	-0.264
	[0.013]***	[0.024]***	[0.025]***	[0.043]***	[0.023]***	[0.040]***
Lntfp	-0.042	-0.006	-0.022		-0.107	-0.078
	[0.003]***	[0.004]	[0.004]***		[0.008]***	[0.010]***
Lntfp*EU	0.234	0.137	0.120		0.228	0.173
	[0.010]***	[0.015]***	[0.015]***		[0.017]***	[0.022]***
Lntfp*RoW	0.271	0.147	0.244		0.264	0.211
	[0.012]***	[0.018]***	[0.019]***		[0.020]***	[0.027]***
Lntfp*family		-0.003	0.001			-0.055
		[0.004]	[0.005]			[0.014]***
Lntfp*family *EU		0.062	0.051			0.092
		[0.015]***	[0.014]***			[0.023]***
Lntfp*family *RoW		0.057	0.050			0.089
		[0.018]***	[0.019]***			[0.029]***
Credit constraint			-0.032			
			[0.014]**			
Credit constraint*EU			0.085			
			[0.040]**			
Credit constraint*RoW			0.213			
			[0.045]***			
Credit const.*family			0.035			
			[0.015]**			
Credit const.*family *EU			-0.147			
			[0.047]***			
Cr. const.*family *RoW			-0.280			
			[0.055]***			
Lnempl				0.024		
				[0.002]***		
Lnempl*EU				0.151		
				[0.006]***		
Lnempl*RoW				0.170		
				[0.007]***		
Lnempl*family				-0.016		
				[0.002]***		
Lnempl*family *EU				0.079		
				[0.007]***		
Lnempl*family *RoW				0.095		
				[0.009]***		
Constant	2.159	2.289	2.187	2.216	.	
	[0.150]***	[0.145]***	[0.160]***	[0.112]***		
Firm fixed effects	NO	NO	NO	NO	YES	YES
Observations	90505	90505	89077	97490	90183	90183

Notes:
Coefficients for the regressors as estimated by Poisson maximum likelihood estimator; All estimations include controls (not reported) for Age of the firm, workers' skill ratio, employment in R&D, Share of foreign ownership (also interacted with destination dummies) in addition to size dummies (except for columns 6 and 7) two-digit industry dummies and time dummies.
Robust standard errors in brackets * significant at 10%; ** significant at 5%; *** significant at 1%,

Appendix A4: Measure of Total Factor Productivity

The measure of productivity used in this paper is Total Factor Productivity obtained as difference between the actual output and the one predicted by means of sectoral (by two-digit industry) production function estimations. Under the assumption of Hicks neutral Cobb Douglas technology we use logarithmic approximation of the value added[21] production function where number of workers and capital stock are inputs. To solve the well known simultaneity bias[22] we proxy for unobserved productivity shocks with material inputs as suggested by Levinsohn and Petrin (2003)[23]. The dataset does not include information on physical quantities so we use the nominal values of output or inputs. Therefore we make use of yearly deflators from ISTAT (2005) "Conti Economici 1970-2004. For output we have sectoral wholesale price deflators while for capital and materials we use sectoral input price deflators.

Finally to compare productivity across firms, we construct a TFP Index dividing, for each firm, the exponential value of TFP by the respective year, industry and class size average.

[21] Calculated as gross output net of services and material costs.
[22] Marschak and Andrews (1944).
[23] We also tried using the separate information on Investments as a proxy as suggested by Olley and Pakes (1996) but given that this methodology is valid only when firms report non-zero investments this would imply a severe truncation of our sample.