BANK INTERNATIONALIZATION AND EXPORT PROPENSITY: AN ANALYSIS ON ITALIAN PROVINCES

Enrico Beretta, Silvia Del Prete and Stefano Federico^{*}

1. Introduction

This paper belongs to the wide literature on the 'real' effects of finance (King and Levine, 1993; Rajan and Zingales, 1998, Demirguc-Kunt and Levine, 2001). We focus on a financial aspect that has not received much attention so far, i.e. bank internationalization (foreign branches, representative offices abroad); using data on Italian provinces, we empirically assess whether it fosters export propensity.

In theory, banks with structures in foreign countries could boost firms' exports in two ways. First, there is an 'information' function. Thanks to their knowledge of foreign markets, banks could advise their customers about business opportunities abroad and foreign regulations. They could also contribute to the screening and monitoring of the foreign importer. The second function has a financial and operative nature. Banks may provide financial support to export and payment services, easing the transaction between the exporting firm and the foreign importer. In both cases, banks that are active in the foreign country are likely to provide better and more complete services.

Various sources suggest that bank internationalization is empirically relevant for exports. First, the distribution of exports by destination area is surprisingly close to the distribution of Italians banks' foreign branches and representative offices abroad. The evidence is less clear for foreign subsidiaries, but simply because they are largely located in countries with favourable taxation or less strict financial regulation (Figure 1).

Second, a survey on the largest Italian banks shows that their foreign structures are mainly active in supporting firms' internationalization.

Bank of Italy, Branch of Genoa, Research Unit. Although this paper is the result of all the coauthors' joint work, Enrico Beretta mainly contributed to section 2, Silvia Del Prete to section 3 and Stefano Federico to sections 1 and 4. We thank Giovanni Ferri, Giorgio Gobbi, Massimo Omiccioli, Alberto Pozzolo, Luigi Federico Signorini and participants at the XXIV Aisre and Bank of Italy-Università di Bologna conferences for very useful comments and suggestions. We are solely responsible for any errors.

Activities such as access to financial markets, expanding banking in the foreign country or taking advantage of favourable taxation rules are less important than providing assistance to customers when they export or invest abroad (Istituto Affari Internazionali, 2000).

Finally, a large empirical literature has established a link between finance and economic performance. We mention only two studies that are most closely related to the spirit of our work. Using bilateral trade data, Becker and Greenberg (2003) find that higher levels of financial development are associated with increased exports. Furthermore, the effect of financial development is more important when sunk costs of export are larger, as the need for finance is higher. Portes and Rey (1999) focus instead on cross-country portfolio investments. They show that the presence of banks' branches in a foreign country increases the investment

Figure 1



Distribution of export and banks' foreign network by geographical area (2000)

(a) Percentage distribution of foreign branches, foreign subsidiaries, representative offices abroad and exports. EMU: Euro area (excluding Luxembourg); RE: other European Countries; NA: North America; SA; Southern and Central America; J: Japan; C: China; RA: Rest of the Asia; F: Luxembourg, Switzerland and 'tax havens'; RW: rest of the world.

flows towards the same country and explain this result by saying that banks' branches transmit special information on investment opportunities in the foreign country.

Our analysis is interesting under various profiles. The first relates to the remarkable changes in Italian banks' foreign structures in the last decade (Table 1). In addition to restructuring their branch offices abroad, Italian banks have significantly expanded in Central and Eastern Europe (De Bonis *et al.*, 2000).

Table 1

Foreign branches, subsidiaries and representative offices

	Branches	Representative offices	Subsidiaries
1991	105	207	n.a.
1992	107	207	39
1993	109	201	41
1994	106	205	43
1995	107	209	43
1996	102	183	47
1997	103	194	45
1998	101	192	57
1999	98	144	58
2000	94	130	66
2001	91	125	76

Source: Based on data from Bank of Italy.

Second, this study adds new evidence to the literature on finance and local development by trying to investigate the role of bank internationalization on provincial export activity. Italy's exports have been studied from a territorial perspective in many studies and much attention has been given to the role of districts (Viesti, 1995; Conti and Menghinello, 1995; Bronzini, 2000a). A second line of research has focused on the link between finance and local growth. In a long-run analysis, Cosci and Mattesini (1997) find that economic growth is higher in more financially developed provinces (in terms of more branches and higher ratio of loans to value added). Analogous measures of financial development positively

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influence provincial exports, according to Bronzini (2000b). Nevertheless, to our knowledge, there are no studies to examine whether exports are fostered by bank internationalization. Furthermore, we also look at other potential factors, such as the presence of industrial districts or groups, that may replace or reinforce the information and financial support provided by banks.

Our analysis may be affected by a problem of endogeneity, which makes it very hard to identify a clear direction of causality from bank internationalization to export propensity. The potentially endogenous relationship between financial and real variables is common to all the literature on finance and growth. To address this problem we perform robustness analyses with instrumental variables and sample splits, in line with previous works.

Our results should, however, be taken with caution: the positive relationship that we find should not be strictly interpreted as evidence of causality but, more carefully, as a correlation between the two phenomena.

The remainder of the paper is organized as follows. Section 2 describes our data and variables, while the empirical results are reported in section 3. Section 4 concludes.

2. Data and variables

2.1 The observation unit

The observation unit for the empirical analysis is the province. It is the smallest geographical unity for which we have a wide range of financial and real variables and it has been employed in many studies of local economic growth.

Using the province rather than firm-level data allows us also to control for information spillovers. For example, if there are close and repeated contacts among firms in a given area, banks' knowledge of a foreign market may be transferred from customers to other firms in the same area. This would favour export propensity, not only of the banks' customers but of the whole area. The dataset includes yearly data on 103 provinces¹ from 1993 to 2001. In the remaining part of the section we present the variables used in the econometric analysis. Summary statistics are in Table 2.

Summary statistics					
	Mean	St. dev.	Median	Q1	Q3
Dependent variable					
EXPORT	19.0	11.2	19.8	10.2	27.2
Financial variables					
BANKINT ⁽¹⁾	7.4	3.4	7.0	4.8	9.5
BANKPROV	0.5	0.2	0.5	0.3	0.6
Real variables					
DISTRICT	26.6	32.8	11.7	0	46.8
GROUPS	52.4	21.1	55.7	37.7	64.7
LISTED	0.3	1.7	0	0	0

Table 2

Source: Based on data from Bank of Italy, CB, Istat. The table reports summary statistics for the pooled sample (1993-2001).

 $^{(1)}$ Summary statistics for BANKINT are on the weighted sum of branches and representative offices abroad, without taking logs.

2.2 Export propensity

For each province the ratio between exports and sales of firms headquartered in the province (EXPORT) is used. Firm data are taken from Centrale dei Bilanci (CB), which includes the balance sheets of a number of firms (between 22,000 and 26,000 firms for our analysis). Alternatively, we could have used data on external trade from Istat, which cover the universe of Italy's exports and so are more complete than CB. Many reasons explain our choice.

¹ Eight provinces were created in 1995, so that between 1993 and 1995 we have 95 provinces.

First, while CB data are based on firms' headquarters, Istat export data refer to firms' plants. It is plausible that firms are more likely to develop close relationships with banks near their headquarters, rather than their plants. This should be especially true as far as crucial choices, such as penetrating new foreign markets, are concerned, while it is less important for daily or routine activity, where proximity to plants might be more relevant.

Second, Istat provincial data, which can be used as scale-factor for exports (turnover or value added), do not give any analytical detail on sectors, whereas this detail can easily be obtained from CB data. This is a great advantage because in the robustness analysis we will indeed estimate regressions by sector.

Finally, Istat data do not include any information on sales detailed by province, while value added is available only from 1995 to 2001. Data from CB allow us to use a longer time-period.

In any case, CB exports are sufficiently representative of Istat exports as they amount to 55-60 per cent of the latter in every year. The correlation, by province and sector, between the two variables is very high (greater than 90 per cent). The correlation between CB export propensity and Istat exports on value added, by province, is also quite high (60 per cent between 1995 and 2000).

Export propensity has averaged 19 per cent, gradually increasing over time (from 13 per cent at the beginning of the 1990s to more than 20 per cent in 2001). There are big geographical differences, even within regions, that apparently are not fully explained by the classic North-South divide or by the degree of development (Figure 2). The ratio between exports and turnover is higher in the specialized goods sector; there are no major differences among the other sectors (traditional, scale and high technology goods).

2.3 Bank internationalization

For a given bank internationalization can be measured by its foreign branches, its foreign subsidiaries (i.e. banks in which it has a controlling share) and its representative offices abroad. To build our measure we exclude foreign subsidiaries. The reason is that their geographical distribution suggests taxation motives matter much more than business services. In 2000, for example, 37 per cent of Italy's foreign subsidiaries were located in very small countries, known for a very favourable tax régime.

Figure 2

Ratio between export and turnover of Italian manufacturing firms (2000)



Our bank-level measure is then the sum of branches and representative offices, for which the source of data is Siotec (a census of banks managed by the Bank of Italy). Considering both forms allows us to take into account banks' financial services as well as their information function on the foreign country.

To get a province-level measure, however, a further step is necessary. We take the weighted average of the bank-level indicators, where the weights are each bank's market share in the province (in terms of loans plus deposits). Formally:

$$BANKINT_{i,t} = \sum_{b} \ln \left[\left(BRANCHES_{b,t} + OFFICES_{b,t} \right) * \left(\frac{LOANS_{b,i,t} + DEPOSITS_{b,i,t}}{\sum_{b} \left(LOANS_{b,i,t} + DEPOSITS_{b,i,t} \right)} \right) \right]$$

where b, i and t are respectively bank, province and year and the sum is taken over all banks with branches in province i. Between 1993 and 2001 the weighted sum of branches and offices (without taking logs) has a mean of 7.4 and a median equal to 7.

2.4 Other variables

Together with bank internationalization our regressions include other variables that are likely to influence export propensity. First, it is favoured by the presence of bank branches in the province (BANKPROV). Using Siotec data we therefore calculate the number of branches per capita in each province. On average there are 0.47 branches for every 1,000 people. The number has risen sharply over time (from 0.40 in 1993 to 0.54 in 2001). The cross-section variability is also high: branches per capita are five times higher in provinces at the top of the distribution compared to provinces at the bottom.

Second, the dependent variable should be positively related to firm size as there are sunk costs to selling abroad (Bugamelli and Infante, in this volume); we therefore include a control for firm size. Using data from Cerved,² for every province we calculate the share of large firms' total assets on all firms' total assets.³ We then build a dummy variable, which equals 1 for observations (province-years) in the top 25th percentile and 0 for the remaining observations (FIRM SIZE).

The literature also shows that industrial districts are strong exporters (Bronzini, 2000a; Bugamelli and Infante, in this volume). We therefore include a measure of districts' presence (DISTRICT). Using municipality-level data from the Istat 1996 census and Sforzi classification of districts, for each province we have:

$$DISTR_{i} = \frac{\sum_{mdis} EMPLOYMENT_{mdis}}{\sum_{m} EMPLOYMENT_{m}} * 100$$

where m are all the municipalities in province i, mdis are only the district municipalities in the same province, and EMPLOYMENT is manufacturing employment. Because of limited data availability the variable is time-invariant. This measure is equal to zero for many provinces. The median value is 11.6 per cent and the first quartile is zero. There are, however, provinces where districts have a strong importance, raising the mean value to 26.5 per cent.

Industrial groups are another factor that could enhance exports, by spreading information about foreign markets among the affiliates and by creating internal capital markets. The indicator we employ is the percentage ratio between sales by firms belonging to groups and total sales in the province (GROUPS); data come from CB. Confirming the pervasiveness of group structures in Italy, the average is quite high (above 50 per cent).

Finally, we include a measure of firms' listings on foreign markets (LISTED). The idea is that going public in a stock exchange is often a way

² Cerved is a database that includes the balance sheets of a large number of firms: for our purposes we employ data on manufacturing companies (between 81,000 and 118,000 every year, excluding those declaring zero turnover or zero assets).

³ Large firms are defined as firms with at least 250 employees.

to enhance a firm's reputation in the foreign country, and possibly ease its export penetration (Pagano *et al.*, 2002). Furthermore, the choice to go public abroad allows the firm to gather information about the country, thus lowering the benefits related to bank internationalization. The variable is the percentage ratio of sales by firms listed abroad and total sales in the province; data are once more taken from CB. As the number of firms listed abroad is low, the index is non-zero for only a few provinces.

3. Empirical analysis

3.1 The baseline specification

In this section we test the hypothesis that banking internationalization fosters export propensity. Exploiting the time series nature of our data, we estimate the following equation for the period 1993-2001:

$$\begin{split} EXPORT_{i,i} &= \gamma_0 + \gamma_1 BANKINT_{i,i} + \gamma_2 BANKPROV_{i,i} + \gamma_3 FIRMSIZE_{i,i} + \gamma_4 DISTRICT_i + \gamma_5 GROUPS_{i,i} + \gamma_6 LISTED_{i,i} + \\ &\sum \gamma_a DUMMYAREA_a + \sum \gamma_y DUMMYYEAR_j + \varepsilon_{i,i} \end{split}$$

where i and t are province and year, respectively. We expect a positive sign on all regressors as they all should increase firms' access to foreign markets (see previous section). The set of year-dummies is supposed to control for exogenous sources of change in export propensity, such as a rise in world trade or tariff reductions. The set of area-dummies (North West, North East and Centre) should control for differential patterns across Italy.

3.2 Main results

The first two columns of Table 3 report the results for our baseline specification, using respectively random and fixed effects. In theory, fixed effects would be preferable as our sample includes the universe of Italian provinces. Unfortunately, using fixed effect implies dropping DISTRICT, because the variable is time-invariant, as well as the area dummies. Moreover, the Hausman test tells us that random estimates are consistent and efficient: so our preferred specification involves using random effects.

As a preliminary attempt to reduce endogeneity all the variables on the right appear with a one-year lag.

In both regressions all variables have the expected sign, with the exception of GROUPS, which is negative, although not always significant. The coefficient on bank internationalization (BANKINT) is positive and significant. This is not the only financial variable that matters for export propensity. Branches per capita (BANKPROV) is even more significant.

Table 3

Baseline and IV specifications				
	GLS		2SLS – IV (Instrument: Bank size)	
	Random effects	Fixed effects	Random effects	
BANKINT	2.56** (1.22)	2.66* (1.41)	3.43* (2.03)	
BANKPROV	17.09***	18.06***	17.76***	
FIRM SIZE	1.33**	1.17*	1.31**	
DISTRICT	0.04	-	0.04	
GROUPS	-0.03	-0.06**	-0.03	
LISTED	(0.02) 0.32	(0.02) 0.21	(0.02) 0.32	
	(0.28) 5.52**	(0.32)	(0.28) 5.18*	
NORTH WEST	(2.71) 8 96***		(2.75) 0.21***	
NORTH EAST	(2.97)	-	(2.97)	
CENTRE	6.55** (2.61)	-	6.37** (2.60)	
Observations	895	895	895	

Source: Based on data from Bank of Italy, CB, Istat. Regressions include a set of year dummies and a constant, whose coefficients are not reported. Three stars (***) denote significance at the 1 per cent level; two stars and one star respectively at the 5 and 10 per cent level.

There is no evidence of a district effect. This result, which is not in line with previous literature, is easily explained, however. Districts are specialized in a few sectors, but here we are estimating export propensity for the whole manufacturing industry. When, later in the paper, we run separate regressions by sector, the results will be markedly different.

Export propensity seems to be enhanced by the presence of large firms (FIRM SIZE),⁴ while LISTED does not seem to matter. Here, there is probably a collinearity effect, given that firms listed abroad will normally be very large firms. Furthermore, LISTED is non-zero for a very small number of observations.

Finally, the set of area dummies shows that despite controlling for many variables and for province-specific effects, there is still evidence of a lower export propensity in the South.⁵

The problem of endogeneity in our specification could imply a reverse causality in the relationship between bank internationalization and export propensity that we are testing. For example, the positive coefficient on bank internationalization could not be evidence of its effect on export, but could derive instead from the fact that banks choose to go abroad in order to follow their (exporting) customers. This would still imply a positive relationship between bank internationalization and export propensity, but the causal direction would be reversed.

A way to tackle endogeneity is to use instrumental variable (IV) estimation. Commonly used instruments are past values of the endogenous variable. However, implementing such a method raises a problem with our data related to the fact that there have been wide changes in both Italian banks' foreign branches and representative offices (see again Table 1) and the internal banking structure (following a big wave of national mergers and acquisitions). As a result, BANKINT autocorrelation over time declines: the correlation between the variable at time t and time t-10 is about 30 per cent lower than between time t and t-1. This is what makes long lags not good instruments, and also explains why BANKINT does not

⁴ The results are unchanged if we use a continuous measure of firm size (share of assets in firms with at least 250 employees on total firms' assets).

⁵ In unreported estimates additional variables were added to the regressions: bank concentration (measured by the Herfindahl index) and average firm leverage. None of them was significant.

turn out to be significant in an unreported regression with its 10-year lagged value as instrument.

We have therefore looked for bank variables correlated with internationalization but not with export propensity. Using bank-level data we ran a probit analysis to identify the determinants of bank internationalization and found that bank size is a major factor.⁶ The result is in line with other studies, such as Focarelli and Pozzolo (2000) on cross-border shareholdings. Our new instrument is therefore a provincial measure of bank size (total assets), for which we have followed the same weighting scheme as for BANKINT (see section 2.3). Like the other variables the instrument is lagged one year. The third column of Table 3 shows that bank internationalization is positive and significant at the 10 per cent level. The results on the other variables are unchanged with respect to the baseline regression.

3.3 Differential effects of bank internationalization

For a further investigation we test our baseline regression in a sample splitting analysis by sector, trying to see whether there are sector-specific effects. In the same spirit we also introduce interaction variables, both in the baseline regression and in the sector-splitted specifications. This allows us to search for differential effects of the internationalization of the Italian banking system between groups of firms. At the same time, both approaches represent attempts at reducing the problem of endogeneity, as suggested in previous studies on finance and export (see Becker and Greenberg, 2003).

In the first case the idea is that if bank internationalization is important for export, it will be relatively more important for firms belonging to sectors who need the support of banks most. There is indeed evidence suggesting that sectors are not equally dependent on banks' support (see the work on financial dependence by Rajan and Zingales, 1998).

We have chosen the Pavitt classification: traditional goods, goods with economies of scale, specialized goods and high-technology goods. It has two advantages: first, it captures well Italy's specialization pattern;

⁶ The analysis has been carried out for the years between 1990 and 2001 and for the whole Italian banking system.

second, it is not too detailed, so that a sufficient number of observations in every province-year is preserved. To improve the precision of our estimates, together with the dependent variable, the regressors, where feasible (GROUP, LISTED), have also been recalculated at the province-Pavitt level.

Table 4 reports the results of regressions by sector. BANKPROV is significant in all sectors, with the exception of high tech; districts have a positive effect in particular in the specialization and technological products sectors and, although the significance is lower, in traditional goods.

Table 4

Split by sector					
	GLS (Random effects)				
	Traditional	Scale	Specialized	High tech	
BANKINT	-2.29	2.50*	2.14	5.53*	
	(1.48)	(1.52)	(2.08)	(3.09)	
BANKPROV	13.68**	23.12***	16.87**	19.25	
	(5.76)	(6.13)	(8.48)	(12.60)	
FIRM SIZE	3.35***	-0.01	2.21	2.98	
	(0.98)	(0.87)	(1.53)	(1.96)	
DISTRICT	0.06*	-0.00	0.13***	0.15***	
	(0.03)	(0.03)	(0.04)	(0.05)	
GROUPS	0.09***	0.01	0.09***	0.01	
	(0.02)	(0.02)	(0.02)	(0.03)	
LISTED	0.21	0.47	-2.89	-33.05	
	(0.24)	(0.47)	(11.26)	(51.11)	
NORTH WEST	-1.46	3.18	8.28**	10.48*	
	(3.17)	(2.98)	(3.63)	(5.83)	
NORTH EAST	-3.61	4.93	14.17***	11.42*	
	(3.46)	(3.25)	(3.98)	(6.28)	
CENTRE	1.14	2.30	7.90**	0.24	
	(3.04)	(2.82)	(3.32)	(5.54)	
Observations	895	885	861	716	

Source: Based on data from Bank of Italy, CB, Istat. Regressions include a set of year dummies and a constant, whose coefficients are not reported. Three stars (***) denote significance at the 1 per cent level; two stars and one star respectively 5 and 10 per cent level.

BANKINT is significant in the scale and in the high-technology sectors. Both sectors exhibit a high degree of product differentiation and complexity; by raising the sunk costs and up-front investments necessary to export, these features could well explain why the two sectors are relatively more dependent on bank support.

There are two reasons why bank internationalization does not seem to matter in the traditional goods sector. First, export in this sector is likely to require fewer banking services, in terms of information collection, screening and consultancy. Second, there are other channels that can favour firms' exports: districts and group structures seem especially relevant, and they are probably a substitute of banks for those services. The second reason also explains the small importance of bank internationalization for the sector of specialized goods.

Using interaction variables we then test the hypothesis that bank internationalization does not matter at the same level for all firms. For example, since exporting implies sunk costs, small firms or firms located in less developed areas need more financial and information support from banks in order to export. This is why small firms, whose knowledge and experience of foreign markets is presumably smaller than that of large companies, should extract more benefit from banking internationalization. In the same line of reasoning, banks' support could be more important for southern firms, facing higher costs than their Centre-North counterparts in terms, for example, of slower judicial procedures, insufficient physical infrastructures and higher crime rates.

To evaluate both ideas, we have calculated two interaction variables, given by the product of BANKINT and, respectively, FIRM SIZE and the SOUTH dummy. However, the results on the interaction variables are generally not significant and are therefore not reported.⁷ Summing up, there is no evidence of differential effects between small and large firms, nor across geographical areas. This result does not allow us to solve decisively the problem of endogeneity, which could affect our regressions.

For a similar purpose we have built other two interaction variables between BANKINT and, respectively, DISTRICT and GROUPS. Here, we would expect a negative sign on the interaction variables, assuming that firms belonging to a district or to a group would need bank internationalization relatively less than other firms. The hypothesis is that those companies enjoy external economies thanks to the close network of contacts among them, which reduces the costs of acquiring information or financing exports. Once again, in both cases we find no evidence of a significantly differential effect of bank internationalization.

4. Concluding remarks

The main idea of this paper is that bank internationalization might encourage export as banks' foreign branches and representative offices provide financial and information support to the exporting firm. This hypothesis has been tested using data on Italian provinces between 1993 and 2001. The empirical analysis suggests that there is a positive relationship between bank internationalization and export propensity, although not always significant in robustness checks. The effect seems to be concentrated in the scale and high-technology sectors, presumably reflecting the greater need for banks' support in more complex and product-differentiated markets.

Overall, our analysis should be taken as preliminary evidence of the possibility of multiple channels through which finance can have real effects. While previous work has generally paid attention only to the number of local branches or the amount of available credit as financial factors able to favour firms'exports, we suggest that the nature of the intermediary, its knowledge and presence on foreign markets may also play a positive role. As with the literature on finance and growth there are potential endogeneity concerns, so that our results should be taken with caution. In particular, it is hard to understand from our data whether the direction of causality goes only from bank internationalization to export propensity or whether there is instead a two-way relationship. These aspects clearly suggest that further work is needed on this topic.

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