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Finance and Development: The Case of Southern Italy

by R. Faini, G. Galli and C. Giannini



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FINANCE AND DEVELOPMENT: THE CASE OF SOUTHERN ITALY

by Riccardo Faini (*), Giampaolo Galli (**)
and Curzio Giannini (**)

Abstract

We look at the role of the financial sector in the context of the relatively backward regions of Southern Italy. Commercial banks in the South typically have higher operating costs and charge higher interest rates than Northern banks. Econometric analysis of a large set of individual loan contracts suggests that borrowers in the South are considerably riskier than in the rest of Italy; it also indicates however that risk accounts for only half of the 200 basis points average North-South interest differential. The rest is largely accounted for by differences in operating costs. We argue that these findings reflect a situation of informational monopoly by Southern banks on local firms, with external banks forced to resort to rationing practices to avoid attracting the worse borrowers. To support this interpretation, we analyse loan contracts of Southern firms who borrow at the same time from local and external banks and show that geographical proximity is a critical variable in the Italian loan market, especially in the South. We then turn to the issue of allocative efficiency and conclude that, largely because of lack of competition and small size, Southern banks tend to perform their screening function less efficiently than banks in the rest of Italy. We finally show that risk exerts a significantly larger effect on borrowing in the South and that firms showing a higher variance of earnings - often reflecting a higher propensity to undertake innovative projects - are more likely to be liquidity constrained in their investment decisions than elsewhere.

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1. Introduction¹

In 1962 in his pioneering work on the development of the Mezzogiorno, Hollis Chenery highlighted the fact that despite massive capital inflows the accomplishments of the Southern Italian economy had been in many respects disappointing and, at any rate, had not matched the performance of the North. Thirty years later, Chenery's judgment is not really open to dispute. Almost half a century of development policy, fostering large-scale transfer of income and capital to Southern Italy, has failed to narrow in any significant manner the output gap between North and South (Table 1).

To be sure, today's South is no longer poor: in per capita GDP, it fares no worse than the North in 1970 or Spain today; it is considerably better off than Ireland, Portugal and Greece (Table 2). In forty years it has undergone significant change, as witnessed by the fall in the share of agricultural employment from 49 to 16 per cent; local manufacturing has unambiguously taken off along the Adriatic coast and around Naples.

However, the fact remains that convergence has not been achieved, nor is it anywhere in sight. Investment has been high, but productivity in both the public and the private sectors has lagged behind. As a result, 36 per cent of the Italian population lives in a region that has become heavily dependent on public subsidies. This condition has become the source of increasing political strain, since socially painful central government budget cuts have become necessary to redress the public finances. A view broadly held

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THE SOUTH AND THE CENTRE-NORTH: MAIN INDICATORS
(per cent)

Table 1

	1951-60	1961-70	1971-80	1981-90	1990
SHARE OF SOUTH IN ITALIAN:					
- population	37.2	36.0	35.1	36.1	36.6
- GDP	24.4	24.1	24.1	24.7	24.7
- consumption	28.1	28.2	27.9	29.9	30.3
- fixed investment	26.1	29.0	31.2	29.0	26.9
SOUTH/CENTRE-NORTH					
- GDP per capita	54.5	56.6	58.6	58.2	56.7
- consumption per capita	66.2	70.0	71.4	75.4	75.1
INVESTMENT/OUTPUT					
South					
- whole economy	22.4	25.6	26.0	24.5	22.0
- industry	14.7	20.6	24.5	22.8	22.0
Centre-North					
- whole economy	20.3	20.0	18.2	19.7	19.6
- industry	21.3	16.9	13.8	17.4	18.6
NET IMPORTS/GDP					
- South	15.4	17.9	20.0	20.8	20.3
- Centre-North	-2.8	-4.8	-3.9	-5.2	-6.0
- Italy	1.6	1.8	1.8	1.2	.5
UNEMPLOYMENT RATE					
- South	9.1	6.4	9.6	16.3	19.7
- Centre-North	6.8	4.5	5.2	7.6	6.5
EMPLOYMENT SHARES					
South					
- agriculture	49.1	35.9	27.3	18.1	15.6
- industry	23.1	29.1	29.3	23.4	21.8
- private services	18.4	22.3	26.7	38.2	41.5
- public sector services	9.4	12.7	16.7	20.3	21.0
Centre-North					
- agriculture	31.1	18.6	10.4	8.4	6.9
- industry	34.5	40.9	41.3	34.6	33.1
- private services	24.4	28.8	33.1	40.3	43.1
- public sector services	9.5	11.7	15.2	16.7	16.9

Sources: Istat and Svimez (various years).

Note: In 1987, Italian national accounts underwent a substantial revision. Columns 1-3 of the table refer to the old accounts, columns 4-5 to the revised accounts. The main change concerns investment, which has been revised upward, especially in the Centre-North; employment statistics (but not the unemployment rate) now refer to standard labour units rather than number of employees.

by public opinion, and endorsed by reputable scholars², is that the money spent in the South has been a source of waste, has fed corruption and has nourished rather than curbed organized crime; it has perpetuated and aggravated a long history of dependency on external aid, rather than promote economic growth. Surely, government intervention in the South no longer commands the widespread intellectual support it enjoyed in the 1950s and 1960s, and is losing its political appeal.³

It is against this rather bleak background that the current debate on finance and development takes place in Italy.

In this area, the government has done much of what good economic theory used to suggest. The literature cited lack of long-term capital as a main constraint on growth in less developed areas (Gerschenkron, 1962; Goldsmith, 1969; Rybczynski, 1974); insufficient local savings and retained earnings, widespread uncertainty and risk aversion were deemed to hamper the agglomeration and channeling of long-term funds from savers to investors. In this perspective, it was necessary to promote the creation of a local financial structure and, above all, of Special Credit Institutions (SCIs); these were not very different from the Development Finance Institutions created in many developing countries with the support of the World Bank. The mandate of such institutions, created after the war, was soon substantially broadened to include the selection of projects eligible for public subsidies; a regulation was introduced

2. See Meldolesi (1990).

3. The abolition of the Ministry for the Mezzogiorno, with much of its apparatus of transfers and subsidies, is proposed in a referendum, promoted by members of a broad spectrum of political parties. In addition, Northern resentment, even separatism, latent for many years, is now a concrete political problem; it threatens, if not the integrity of the Italian state, the electoral base of the main political parties.

Table 2

GDP per capita in Europe

EUR 12 = 100 (1)

Italian Regions			European Countries		
1	Lombardia	137.3	1	Luxembourg	125.4
2	Valle d'Aosta	132.9	2	Denmark	113.7
3	Emilia Romagna	127.7	3	Germany	113.5
4	Trentino A. A.	121.6	4	France	109.2
5	Piemonte	120.7	5	United Kingdom	105.3
6	Liguria	120.4	6	Netherlands	104.5
7	Lazio	120.2	7	Italy	104.4
8	Veneto	119.0	8	Belgium	100.7
9	Toscana	116.4	9	Spain	74.0
10	Friuli V. G.	115.0	10	Ireland	64.2
11	Marche	110.0	11	Greece	54.3
12	Umbria	95.0	12	Portugal	53.7
	CENTRE-NORTH	123.7		EUR 12	100.0
13	Abruzzo	87.6			
14	Sardegna	77.1			
15	Molise	75.3			
16	Puglia	73.6			
17	Sicilia	70.1			
18	Campania	68.7			
19	Basilicata	61.5			
20	Calabria	58.7			
	MEZZOGIORNO	70.7			

Source: Guglielmetti and Padovani (1989).

(1) Purchasing power parities (1987).

fixing the interest rate that SCIs could charge on subsidized loans.

Our analysis starts from the consideration that external aid has been massive and capital scarcity is not (or, at least, is no longer) the key problem (Section 2). We must thus confront the "productivity puzzle", which is at the centre of much current literature on development, not only in Italy (see, among others, Lucas, 1990, and Greenwald and Stiglitz, 1991). Total factor productivity is unambiguously lower in the South, even in private manufacturing. This brings up a long list of problems, ranging from still deficient infrastructure and the inefficiency of government services to issues of market structures, increasing returns, localized learning etc.; it also suggests the possibility of policy-induced distortions. The questions that we ask focus on the role of finance. Can inefficiencies of the financial sector be legitimately added to the list? And, if so, to what extent can they be attributed to inadequate policies?

In order to assess these issues, we document the unhappy state of finance in today's Mezzogiorno, stressing the role of a large body of regulation, in tune with good old theories, that until recently has been a major factor in segmenting the banking markets, hampering competition and efficiency (Section 3). We then analyze the functioning of the system, building on a number of contributions that have gone well beyond the traditional "channeling" approach. Influential works by McKinnon (1973) and Shaw (1973) have argued that a system of directed credits and low interest rates discourages lending for riskier and longer maturity projects, impedes competition within the financial sector and plays a role in credit rationing with no guarantee that credit will be granted to the more productive projects.⁴ More

4. McKinnon (1973) also argues that financial repression discourages saving and investment; we do not pursue this approach here since, as we shall see, capital scarcity is not at issue in the Italian case.

recently, the traditional approach has been criticized by a number of scholars (see, for instance, Stiglitz, 1989, and Hellwig, 1991), on the grounds that it does not deal with informational problems and misses the crucial function of financial institutions, i.e. the allocation of capital to the most productive uses. If informational and other market imperfections are substantial, as is often the case in less developed regions, then the simple availability of capital at the macro level may not be sufficient to promote development. What matters is that capital be channeled to firms and projects with high social rates of return. In this spirit, we perform a number of tests to assess the allocative efficiency of Southern financial markets (Section 4).

In Section 5, we bring the evidence together and offer our view on what ought to be done to enhance the contribution of the financial system to the development process.

Table 3

MAIN AGGREGATES OF PUBLIC SECTOR FINANCES BY REGION (1988)

	South			Centre-North			Italy		
	(a)	(b)	(c)	(a)	(b)	(c)	(a)	(b)	(c)
Total expenditure	9.2	73	34	10.4	46	66	10.0	53	100
Current expenditure	8.2	65	33	9.4	42	67	9.0	48	100
personnel	3.2	25	44	2.3	10	56	2.6	14	100
welfare	3.0	24	34	3.4	15	66	3.2	17	100
contrib. to prod. activities	0.3	3	40	0.3	1	60	0.3	2	100
interest payments	0.5	4	11	2.2	10	89	1.6	8	100
Capital expenditure	1.0	8	39	0.9	4	61	1.0	5	100
public investments	0.8	6	35	0.8	4	65	0.8	4	100
investment subsidies	0.3	2	53	0.1	1	47	0.2	1	100
Total revenues	4.8	38	22	9.7	43	78	7.9	42	100
direct taxation	1.4	11	20	3.2	14	80	2.6	14	100
indirect taxation	1.5	12	29	2.1	10	71	1.9	10	100
social security contributions	1.1	9	16	3.5	15	84	2.6	14	100
Total balance	-4.4	-35	78	-0.7	-3	22	-2.1	-11	100
Primary balance (1)	-4.0	-31	296	1.5	8	-196	-0.5	-3	100
Current balance	-3.5	-27	110	0.2	1	-10	-1.1	-6	100

Sources: Micossi and Tullio (1991) and Scandizzo (1991).

(a) Current values (million lire) per capita; (b) perc. ratios to GDP; (c) perc. shares in national totals.

(1) Total balance, net of interest payments.

2. The "dependent region" model

The economic condition of the South can be described in terms of what has often been called the "dependent region" model. Its key features are large government transfers, high wages and consumption, low productivity and persistent external deficits. A few numbers suffice to give an idea of the size and persistence of these phenomena.⁵

2.1 Regional development policy and transfers

The engine of the model is government transfers. The fact is that the overall primary deficit of the Italian public sector is the resultant of a much larger deficit in the South and a surplus in the Centre-North.

As is shown in Table 3, in 1988 the excess of non-interest spending over total public sector revenues was 31 per cent of regional GDP in the South and minus 8 per cent in the Centre-North. In fact, for at least three decades the primary public sector deficit in the South has been no less than 20 per cent of the region's gross product (Banca d'Italia, 1989). Since interest spending is of course a consequence of primary deficits, this accounting implies that the formation of the entire Italian public debt, now 104 per cent of GDP, can be imputed to the excess of primary spending over revenues in the South.

Transfers are largely the result of the automatic functioning of the tax and social security systems coupled with the lack of financial autonomy for local authorities. But other factors, more directly linked to regional development policy are also important, notably labour and capital subsidies, exemptions from corporate taxes and

5. For a broader overview of the structure and performance of the economy of the Mezzogiorno see Banca d'Italia (1990), D'Antonio (1988), Graziani (1984), Marzano and Murolo (1985) and Sylos-Labini (1985).

special public works programmes.

A glance at the main items of the government budget, displayed in Table 3, highlights these points. Four facts stand out. The share of personnel spending in the South is 44 per cent of the national total, outstripping the regional share of both GDP (25 per cent) and population (36 per cent). Expenditure on social benefits is three times as great as social security contributions, while in the rest of the country the two items are roughly in balance; this is in part the result of labour subsidies (in the form of reduced social security contributions) that now amount to some 20 per cent of labour costs in manufacturing (see Bodo and Sestito, 1991).⁶ The South's share in direct taxation (20 per cent) is smaller than its share of GDP because of progressivity and, more importantly, regional exemptions from corporate taxes on new investment. The ratio of capital spending to GDP in the South is twice as high as in the Centre-North, as a result of efforts in two areas of regional policy: public works infrastructure - a key objective of regional policy since the inception, in 1951, of the "Cassa per il Mezzogiorno" - and financial subsidies to investment; the latter, introduced in the 1960s, now reduce the cost of long-term capital in Southern manufacturing by about 40 per cent.

The macroeconomic consequences of government transfers have been high local consumption and a persistent regional trade deficit (Table 1). Total per capita consumption is 75 per cent of that of the Centre-North, much higher than the comparable figure for GDP (57 per cent).

Investment has also been high, but its poor productivity has curbed the growth of potential output. The trade balance has therefore been in the red since the 1950s; the deficit expanded significantly in the 1960s and has since

6. Other factors are the higher incidence of irregular and unemployed workers and more generous welfare policies (see F. Padoa-Schioppa, 1990).

oscillated around 20 per cent of the area's GDP (Table 1). As of 1990, Italy's national deficit (6 trillion lire, 0.5 per cent of GDP, by the ESA definition) was resultant of a deficit of 65 trillion in the South and a surplus of 59 trillion in the Centre-North.

In principle, a trade deficit may be considered natural in a less developed area, if imported saving is put to productive use. What is striking about the Mezzogiorno, however, is that the external deficit has persisted for decades, and nothing suggests any impending reversal. It is quite clear that the external deficit reflects the permanent weakness of the productive structure and continuous dependence on external aid.

2.2 The productivity puzzle

A large body of research has demonstrated that the North-South productivity gap cannot be accounted for by the different composition of output, either by sector of activity or by size and property structure of firms (see, among others, Svimez, 1991, and Banca d'Italia, 1990). Some of the key numbers are reported in Table 4: labour productivity in private manufacturing is about 20 per cent lower than in the rest of the country. The capital productivity gap is wider, value added per unit of productive capital being only about half as much in the South as in the Centre-North. The high capital/output ratio measured from firms' balance sheets is no surprise in view of the national accounts data, which show that the ratio of gross investment to output has always been much higher in the South, both in the industrial sector and in the whole economy (see Table 1). The contribution of direct investment flows from outside the area has been essential: about 60 per cent of total manufacturing employment is with firms whose main operations are not in the

South.⁷ Cumulating net additions to the capital stock, Galli and Onado (1990) have computed a theoretical North-South output gap assuming equal efficiency of investment and equal factor proportions in the two areas. In this exercise, per capita GDP in the South should be between 75 and 80 per cent of that of the rest of the country, depending on assumptions concerning depreciation rates and the initial distribution of the capital stock in 1951. The difference between this figure and the actual ratio of 57 per cent is accounted for by lower total factor productivity and higher capital intensity of Southern production. The capital/labour ratio in Southern manufacturing (as is implied by the first two rows of Table 4) is 1.6 times higher than in the Centre-North. Differences of this order of magnitude are found in almost all sectors of activity and size categories of private firms. They can be attributed to the system of subsidies, which strongly favours capital intensiveness (see Siracusano and Tresoldi, 1990; Galli and Onado, 1990; Dini, 1989).⁸

Various other indicators confirm the low productivity of the Southern private sector. For instance the turnover of inventories is much lower, indicating less efficient storage and production methods (see Siracusano-Tresoldi, 1990). More important, corporate profits (including subsidies) in the South appear to be lower for local firms and only slightly higher for large multiregional firms.

What are the reasons? Why has productivity failed to catch up in spite of large-scale investment? A recurrent explanation in the Italian literature is lack of economic infrastructure (transportation, water, electricity, telecommunications, etc.). Yet while this argument certainly contains more than a grain of truth (see Biehl, 1986), it is not entirely convincing. Public investment in infrastructure

7. See Giannola (1986).

8. As we have noted, subsidies cut the cost of capital by about 40 per cent and the cost of labour by 20 per cent.

Table 4

THE PRODUCTIVITY GAP IN THE PRIVATE SECTOR
(percentages)

	South		Centre-North		South/C.N.	
	Non-financial firms	Manufacturing	Non-financial firms	Manufacturing	Non-financial firms	Manufacturing
A.						
value added per employee (1)	47.9	44.3	57.7	53.9	83.0	82.2
value added/net plant and equipment.....	83.0	92.4	151.0	185.0	55.0	49.9
labour costs per employee (1)	28.7	28.0	33.8	33.0	84.9	84.8
labour costs/value added	59.9	63.2	58.6	61.2	102.2	103.3
debt servicing/financial debt.....	13.3	13.2	14.2	14.9	93.7	88.6
B.						
long term debt with intermediaries/value added	120.8	88.9	66.0	55.7	183.0	159.6
short term debt with intermediaries/value added	70.1	52.6	44.0	36.0	159.3	146.1
equity/value added	123.1	131.5	86.1	85.7	143.0	153.4
debt/equity	118.2	80.5	102.2	85.6	115.6	94.0
bonds/total liabilities	0.7	0.5	1.5	1.5	46.6	33.3

Source: Galli and Onado (1990), based on 1987 data of Company Accounts Data Service.
(1) Millions of lire.

has been substantial, at least since the 1950s, and although programmes have resulted in much waste, the South does now offer several sites where firms could settle with little disadvantage as the gap with the rest of the country is not very large. The recent trade performance of the Asian NICs has shown that the importance of transportation costs can easily be overstated.

Rigidities in the labour market provide a more convincing explanation. Labour subsidies and income transfers have made it politically feasible for the trade unions to impose, since the early 1970s, equal pay scales throughout the economy. Wages have thus been made unresponsive to local labour market conditions and to productivity differentials between regions and between firms; the lower cost of labour per employee in the South is entirely due to social security contribution relief for employers. At the same time, the expansion of employment in the public sector and increasing transfers to households have impaired labour mobility, another key ingredient in a properly functioning market economy (see Attanasio and Padoa-Schioppa, 1991; Micossi and Tullio, 1991); rent controls, introduced on a large scale in the late 1970s, have also impaired mobility by virtually drying up the rental market for housing. Finally, political constraints on hirings and lay-offs are much more stringent in the South than elsewhere, not only for public enterprises but also in the private sector.

The inefficiency of the public administration places a large burden on existing firms. A disproportionate share of managers' time and energy is devoted to dealing with public officials; acts that should be immediate and practically automatic (from a licence to the repair of a telephone line) often take years; bribes and parallel markets are widespread; lawyers and accountants flourish.

The main inefficiency is probably related to the administration of justice, not only in connection with the fight against organized crime (which itself is an enormous

burden and risk for firms in some areas of the South); much more generally, property rights are less well established and guaranteed than elsewhere in the country: it may take a decade and huge costs for a creditor to see his claim recognized in court.

Another factor may be returns to agglomeration. There are several reasons why proximity to an area with an established and diversified network of industries may enhance productivity. The main one is that information (about technologies, markets, prospective entrants into the industry, etc.) circulates much more easily. Acquiring it is thus much less costly and time-consuming than elsewhere. For this reason (not just because of transport costs) it may be easier to diversify suppliers and clients and adopt more efficient models of specialization. In fact, Southern firms are often highly dependent on a single supplier or a single customer; also, they are typically more vertically integrated than Northern firms, which may again be related to geographical isolation.

Apart from these generally recognized causes of the failure of Southern private-sector productivity to catch up, the rest of this paper addresses possible explanations specifically inherent in the field of finance.

3. The state of finance in the Mezzogiorno

The fundamental fact to emerge from a large body of research is that the financial industry of the South differs considerably from that of the rest of Italy (see, in particular, Banca d'Italia, 1989 and 1990; Messori and Silipo, 1991). In spite of rapid change in the 1980s, it is still not clear that the relative backwardness of the South is less marked in the financial sphere, than in the rest of the economy. Apparently the South's being an integral part of a wider monetary area subject to common fiscal and financial

regulations and the gradual liberalization of markets in the last decade have not been sufficient to bring about the expected convergence in financial conditions.

In the present section we document the most obvious regional disparities in the financial behaviour of households, firms and banks; we also provide a brief account of the regulatory framework. This exposition is a useful background to the more complex matter of the reasons for the differences and their effects on the economy.

3.1 Households and firms

Table 5 shows the composition of households' financial wealth. In the South, almost three-fourths of the total consists of bank and postal deposits, as against less than half in the North. The chief financial innovation of the 1980s (the development of a huge securities market to fund Italy's rapidly growing public debt) has had relatively little impact on the investment habits of Southern households, in spite of enormous interest rate differentials (up to 600 basis points) between T-bills and deposits of the same maturity. As a consequence, the ratio of bank deposits to GDP has remained quite stable in the South while falling by more than 13 percentage points in the North.

As regards firms, the main interregional differences stem from the productivity gap. Ratios of financial stocks (debts, equity, liquid assets etc.) to real economic flows (value added, sales, profits etc.) are much higher in the South because it takes twice as much physical capital to produce a unit of value added (see Table 4, Panel B).

Debt/equity ratios are not far from unity in both areas, but the sources of equity finance differ, with government grants playing an important role in the South and the stock market playing no role at all. Partly because of their smaller size, Southern firms are virtually absent from the stock market and account for less than 3 per cent of the

Milan Stock Exchange. Bonds are a minor source of finance in the North and a negligible one in the South. Because financial subsidies apply only to long-term debt, this item is more important in Southern balance sheets, at the expense of short-term bank loans.

Table 5

THE FINANCIAL ASSETS OF HOUSEHOLDS

	South		Centre-North	
	1980	1987	1980	1987
Bank deposits	64.1	47.1	65.5	39.6
Postal deposits	30.7	24.6	8.3	5.3
Securities	5.2	23.1	26.2	48.0
Investment funds	-	5.2	-	7.1
TOTAL	100	100	100	100

Source: Banca d'Italia (1989).

Overall, the bond and the stock markets are not very important in either area of the country and are virtually irrelevant in the South; the main sources of finance are retained profit and loans from financial intermediaries.

3.2 The efficiency gap in the financial industry

Five distinctive features have characterized the system of financial intermediaries in Italy essentially since the banking reform of 1936; some of them have had different implications for the functioning of the system depending on region.

1) Separation between banking and commerce. Banks are generally not allowed to purchase the shares of commercial firms or to have any direct stake in their management. The reverse relation (firms holding bank shares) is subject to strict limits.

2) Distinction between short and long-term banking. Commercial banks (CBs) are generally not allowed to operate on maturities beyond 18 months, on either the liability or the asset side; only in the bond market are they allowed (and at times have been obliged) to hold assets with longer maturities. Special Credit Institutions (SCIs) operate in the long end of the market: they have traditionally been viewed as the key intermediaries for investment finance.

3) A large body of regulations to ensure the stability of the system, through barriers to entry. The rules have included a virtual ban (until 1985) on establishing new banks, regulations on branch openings and transfers (subject to authorization until 1990) and restrictions on lending by small and medium-sized banks outside the geographical area in which their branches are located. Lending ceilings, used intermittently in the 1970s and part of the 1980s as a tool of monetary policy, have also tended to limit competition (see Cottarelli et al., 1986).

4) Public ownership of banks. Directly or indirectly, the public sector controls most Italian banks, including the largest ones, and their directors are designated by political authorities.

5) Fragmentation, especially in short-term banking. Italy has more than a thousand banks; very few are large by European standards; most are very small, often with just one or two branches.

The rationale behind the first two types of regulation was to avoid the entanglement of credit institutions with the corporate sector and maturity mismatching, which were viewed as key causes of the banking crises of the interwar period. Likewise, the third type of restriction was aimed at bolstering stability during post-war reconstruction (see Banca d'Italia, 1947) by preventing the proliferation of banks and branches that occurred after the first world war and eventually resulted in a huge number of failures (3,000 banks, two-thirds of the total disappeared, between 1927 and 1947). For many years, this philosophy was not questioned even by market-oriented economists: the system had indeed proved quite stable and, above all, capable of financing the rapid growth achieved by the economy during the "Italian miracle".

The fourth feature, i.e. public ownership, is largely the legacy of the wave of failures of private banks in the interwar period, perpetuated by the prohibition on opening new banks.

Except for the first one, the above restrictions have become less rigid over time. In line with the Second EC Banking Directive, the financial industry has been gradually liberalized. Proposals to attenuate the distinction between short and long-term banking have reached the political agenda, as German universal banks will be allowed to operate in the domestic market starting in January 1993. Steps towards privatization have been taken, although a recent law enshrines the principle that the government should generally maintain 51 per cent of the shares of the banks that it currently owns. The fragmentation of the system, also largely a historical heritage, has been perpetuated by fiscal problems and a number of legal provisions, now being phased out, that made mergers and acquisitions virtually impossible.

The regulatory environment for special credit institutions differs somewhat by geographical region and their structure and operating features have been affected by

the Southern development programme. In fact, three main SCIs operating in the South (accounting for 17 per cent of the national market) were created in the 1950s as part of the programme, and the Cassa per il Mezzogiorno still holds a majority stake in them. Investment subsidies are a major area of overlap between regional policy and financial intermediation. A firm investing in the South acquires entitlement to the subsidies when it is granted a loan on an eligible project by an authorized SCI. The interest rate on subsidized loans is fixed by the government.

Research conducted at the Bank of Italy (Galli and Onado, 1990; Sabbatini, 1990) has shown that the regulatory environment, the interference of regional policy objectives and the property structure of Southern SCIs have impaired efficiency and made the institutions more like bureaucratic apparatuses than banks. Their operating costs are much higher (several folds!) than those of Northern SCIs, mostly because of the larger share of staff classified as "managers"; productivity is lower (for instance, the number of borrowers per employee is 65, against 76 in the rest of Italy) and net income is lower (0.47 per cent of total resources, against 0.69 in the rest of Italy, on average from 1980 to 1988). Additional problems were a higher share of bad loans and a lower level of equity, a direct consequence of low profits.

As regards commercial banks, the regulatory environment is uniform nationwide. There is no significant North-South disparity in the availability of banking structures (number of banks and bank branches); the degree of concentration, as measured by the Herfindahl index is only slightly higher in the South (see Table 6). However, many of the rules cited earlier have impeded competition and fostered the geographical segmentation of the market: this has permitted the development of substantial interregional differences in banks' operating features.

Table 6

**THE AVAILABILITY OF BANKING STRUCTURES
(1988)**

	South	Centre- North
Number of special credit institutes.....	22	69
Number of commercial banks.....	317	784
Number of bank branches.....	3,652	11,795
Ratio to bank branches of:		
population.....	5,742	3,092
GDP.....	64.3	63.4
bank deposits.....	35.3	41.4
Concentration index (1)	0.17	0.15

Source: D'Onofrio and Pepe (1990).

(1) Herfindahl index computed on the basis of bank loans in each of the 95 provinces of Italy; the index ranges between 0 and 1, with the latter value indicating a situation of monopoly.

The key differences, emerging again in studies conducted at the Bank of Italy (Ciampi, 1984; Marullo Reedtz, 1990; Banca d'Italia, 1990), can be summarized as follows:

- The main Southern banks operate in clearly defined, distinct territories; medium-sized banks, which have proved to be the most dynamic in the North, are virtually absent; most banks are very small, many one-branch operations, owing in part to the past policy of authorizing the opening of only tiny local banks (rural and artisans' banks).

- Operating costs, as a share of total resources, of the banks with headquarters in the South (about 300, accounting for 68 per cent of total bank lending in the South) are about 20 per cent higher than those of the banks located elsewhere in the country. The gap is accounted for mainly by differences in physical productivity.

- Average loan quality is considerably worse for Southern banks. Bad loans make up about 14 per cent of the total, compared to 8 per cent in the rest of the country (see Table 7).

- A number of relatively new activities that have proved lucrative for Northern banks (foreign currency lending, securities dealing, consumer credit, etc.) have developed quite slowly in the South.

- The lending rates charged by Southern banks are higher than the national average by about 2 percentage points (see Section 4 below), while deposit rates are roughly the same.

- Net profits, and hence equity, are considerably lower than in the Centre-North.

The last decade has witnessed a number of significant changes. Efficiency has increased, thanks to deregulation, the increased presence of Northern banks and the growing competitive pressure exerted by the burgeoning market for Treasury securities. Two developments in particular warrant mention. The first is that the share of Southern branches belonging to Northern banks, which for 30 years was stable at around 14 per cent, has now risen to over 21 per cent (see Table 8). The second is that the gap in terms of unit costs (though still a substantial 20 per cent, as noted) has actually been halved from the 40 per cent differential registered at the end of the 1970s (see Figure 1).

Overall, despite recent progress, Southern banks are still considerably less efficient and more fragile financially. Perhaps surprisingly, it cannot really be said that the banking sector is more "advanced" than the rest of

the Southern economy: in particular, the productivity gap is of the same order of magnitude as in manufacturing. It would rather appear that given the partial segmentation in industry, banks have closely mirrored the problems of their local environment.

Table 7

BAD LOANS/TOTAL LOANS
(percentages; 1988)

Location of bank	Location of borrower		TOTAL
	South	Centre- North	
South	16.0	8.2	14.0
Centre-North	12.0	7.8	8.2
TOTAL	14.3	7.9	8.9

Source: Onado et al. (1990).

Table 8

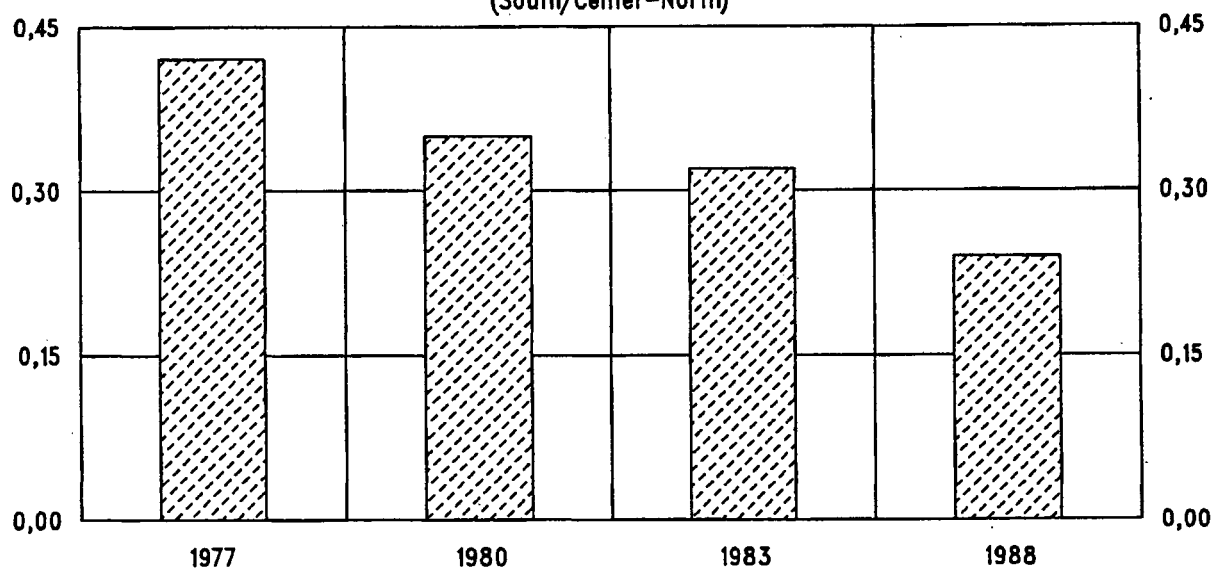
DISTRIBUTION OF BANK BRANCHES BY AREA
(percentages)

	South			Centre-North		
	1951	1978	1988	1951	1978	1988
Southern banks	85.5	85.8	78.7	1.4	1.7	1.7
Other banks	14.5	14.2	21.3	98.6	98.3	98.3
TOTAL	100	100	100	100	100	100

Source: D'Onofrio and Pepe (1990).

BANKS' OPERATING EXPENSES/TOTAL RESOURCES
(South/Center-North)

Fig. 1



Source: Galli and Onado (1990).

4. Informational imperfections in financial markets: are they greater in less developed regions?

The relative inefficiency of the financial system in the Mezzogiorno would not be of major concern if intermediaries did not have a crucial role in allocating saving and resources or if, notwithstanding their low productivity, Southern banks performed this role no differently from other banks. This is what we try to assess here, building on the literature that stresses the informational aspects of financial intermediation. According to this literature (see Hellwig, 1991, for a recent survey), given widespread informational asymmetries, intermediaries are most useful either because they can monitor borrowers more efficiently (Diamond, 1984) or because, by establishing long-term relations with their customers, they can enlarge the information set available to the market, thereby helping to overcome imperfections. However, customer relations cut both ways: while enlarging the information set available to the lender, they also expose the borrower to the risk of being "informationally captured" by its bank (Sharpe, 1990); the latter may exploit the monopoly power implicit in the informational advantage it has acquired over its competitors. This outcome is more likely the wider the bank's information advantage (i.e. the greater the extent of informational imperfections), the slower the reaction speed of "exploited" borrowers (i.e. the lower their "mobility"), and the heavier the weight the bank attaches to current as opposed to future profits. Customer relations, then, cannot be taken unambiguously as the sign of efficient resource allocation. Especially in the context of underdevelopment, they may signal inefficiencies and may be coupled with widespread credit rationing.

Our inquiry into these issues starts with an analysis of why lending rates are higher in the South. Higher risk, while an important factor, turns out to be only part of the

story. In the South: i) information problems are particularly heavy and customer mobility low; ii) local banks are "informationally" sheltered: outside banks, less informed, have to resort to rationing practices in various forms; iii) the allocative efficiency of the banking system is lower: in particular, it appears that innovative firms (those that carry high risk and high yield) tend to be excluded from external finance and must rely more heavily on retained earnings.

Table 9

LENDING RATES(1)
(geographical distribution of banks and of operations)

Area of bank	Area of operations		
	South	North	Total
South.....	15.84	13.56	15.13
North.....	14.96	13.31	13.46
Total.....	15.36	13.32	13.62

Source: Central Credit Register, September 1988.

(1) Interest rate on short-term lending in lire to resident customers. Geographical distribution of operations is based on the location of the bank's branch issuing the loan. Geographical distribution of banks is based on the location of the banks' headquarters.

4.1 Why are lending rates so much higher in the South?

Figure 2 plots the average rate on bank loans in each of the 95 provinces of Italy against per capita GDP. The two variables are quite clearly correlated. The interest rate differentials between the richest and the poorest provinces can be as large as 400 basis points. The average North-South differential of 200 basis points is hence the result of a much more pervasive phenomenon. As is shown in Figure 3, the differential has persisted over a long period of time. And, surprisingly, no regulation has ever kept individuals or firms from borrowing outside their local areas: a large number of banks have always been allowed to lend throughout the national territory. Moreover, Northern banks hold a 32 per cent share of the Southern loan market; as is shown in Table 9, the average rate they charge in the South (14.96 per cent) is considerably lower than that charged by local banks (15.84 per cent).

On the basis of a cross section of bank lending rates referring to 1988 (Figure 2), D'Amico et al. (1990) have found that the average North-South differential is explained mainly by GDP per capita (accounting for 53 per cent of the differential) and by a variable that controls for the composition of lending in terms of size and economic sector of borrowers.⁹ Small borrowers, which are more risky nation wide, have a larger weight in the South; mainly for this reason the composition variable explains a significant portion (34 per cent) of the North-South differential.¹⁰

9. D'Amico et al. (1990) have disaggregated the data into 264 cells according to the size and sector of activity of the borrowers. The average national rate in each cell has then been weighted with the share of lending pertaining to that cell in each province.

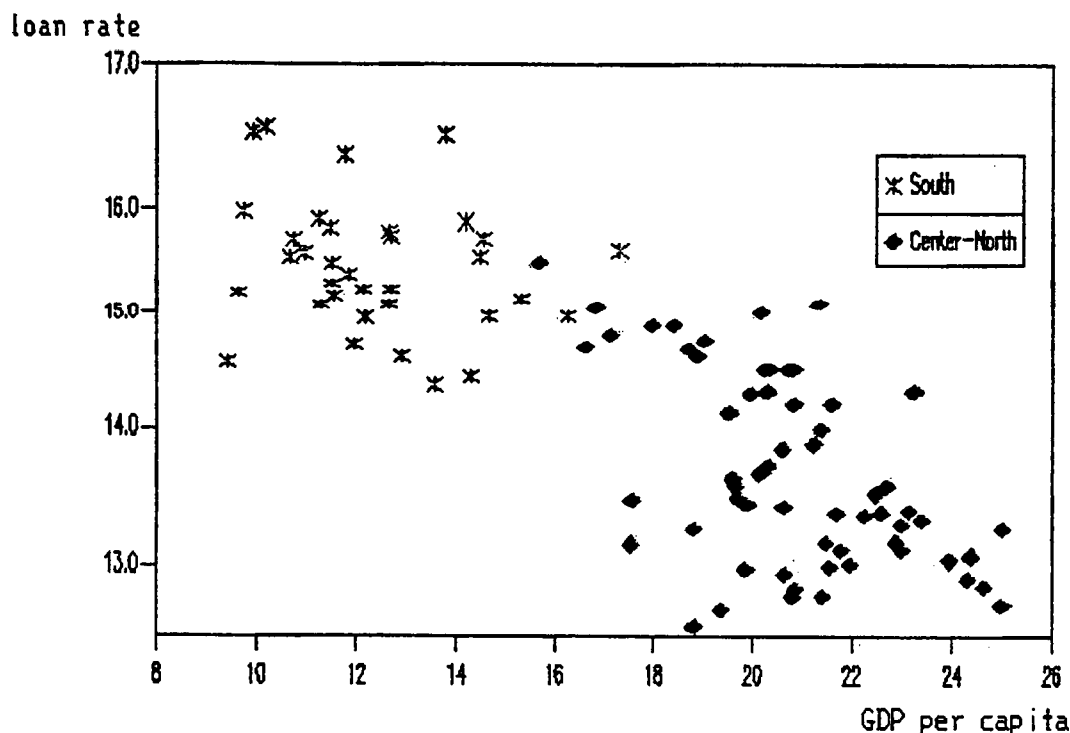
10. Their preferred regression is the following:

$$\text{LR} = 15.2 + 0.9 \text{ COMP} - 0.11 \text{ GDP} + 0.03 \text{ BL} + 0.01 \text{ HERF} - 1.8 \text{ DUAG}$$

(25.7) (7.6) (6.6) (2.6) (1.8) (1.8)

Fig. 2

**LOAN RATES AND GDP PER CAPITA
IN THE 95 PROVINCES OF ITALY**



Source: Central Credit Register.

Note: interest rates on banks' loans in lire to domestic borrowers. Geographical distribution of operations is based on the location of the bank's branch issuing the loan.

$\bar{R}^2 = 0.845$; standard error = 0.43; no. of observations = 95

where:

LR = average lira lending rate charged by bank branches located in the province;

COMP = composition effect, computed on the basis of economic sector and size of borrowers;

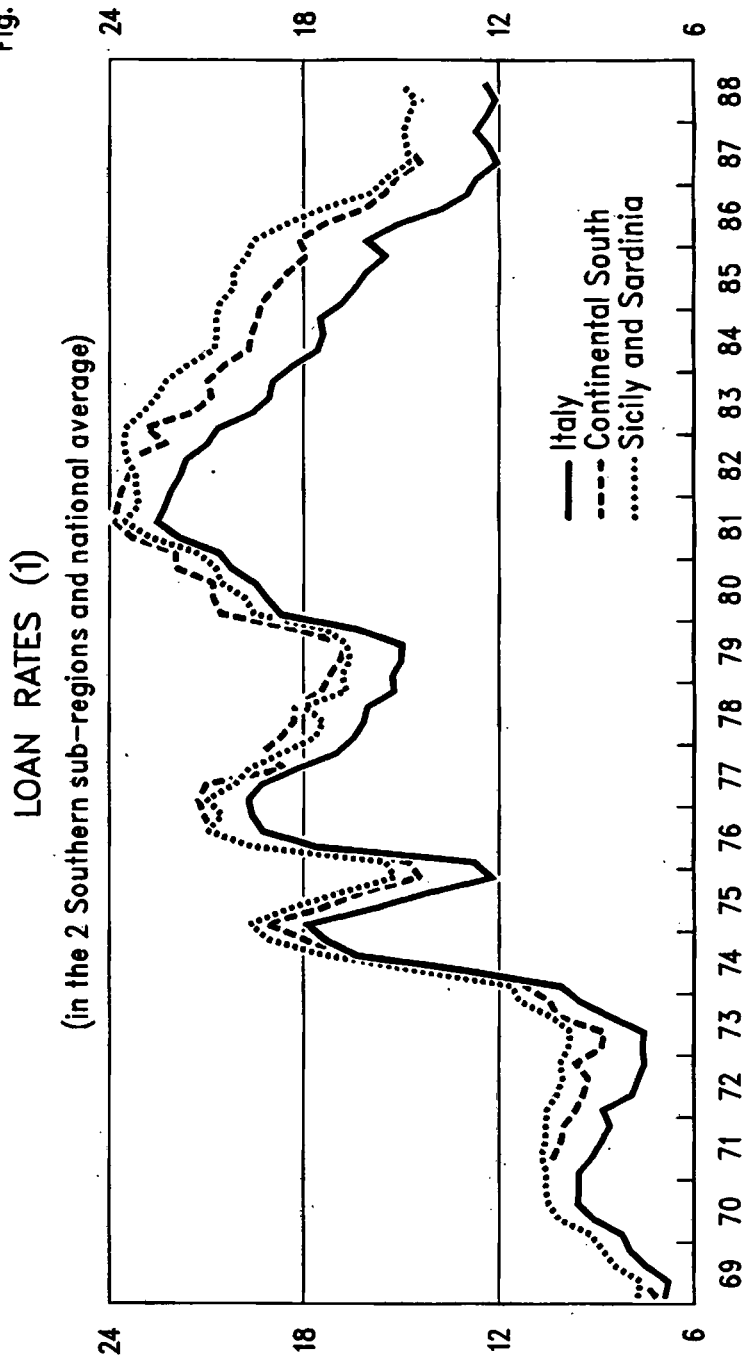
GDP = GDP per capita in each province;

BL = ratio of bad loans to total loans reported by local branches;

HERF = Herfindahl index for each province computed on the basis of bank loans reported by local branches;

DUAG = dummy variable for the province of Agrigento (Sicily).

Fig. 3



Source: D'Amico, Parigi and Trifilidis (1990).

(1) Interest rates on banks' loans in lire and in foreign currency to domestic customer. Geographical distribution of operations is based on the location of the bank's branch issuing the loan.

Bad loans, an imperfect measure of risk, explain 11 per cent of the differential. The Herfindahl concentration index is barely significant and explains no more than 2 per cent; a simple version of a "structure-performance" model does not account for regional disparities, essentially because, as we have already noted, the degree of concentration is comparatively uniform.

This regression confirms that GDP is an important variable, even after controlling for the sector and size of borrowers: thus a textile manufacturer of a given size is likely to be charged a higher rate if most of his borrowing is done in a poor province.

To gain further insight, we considered data on individual loans. The data-set comprises observations on 35,711 contracts (amount and interest rate) between 76 banks and 9,127 firms in a single year (1988). Each bank-firm relation appears only once, implying that on average each firm had dealings with 4 banks; a few firms having relations with a single bank have been eliminated (see Appendix 1 for further details on the data and the methodology).

Table 10 reports results based on a simple analysis of variance, corresponding to the following regression:

$$r_{ij} = \alpha + \sum_i \beta_i b_i + \sum_j \gamma_j f_j \quad (1)$$

where: r_{ij} = interest rate on an individual overdraft credit from bank i to firm j ;
 b_i = dummy variable for bank i ;
 f_j = dummy variable for firm j ;
 α, β, γ are parameters.

We therefore regress the price of individual loans on a constant and on 75 dummy variables for banks and 9,126 dummy variables for firms. This analysis allows us to attribute the variation in observed interest rates to two separate effects: those resulting from differences between banks and those resulting from differences between firms. The β_i coefficients are non-zero if different banks (because,

say, of different costs or monopoly power) charge different interest rates to identical firms; the γ_j coefficients inform us about the characteristics of the firms, holding constant those of the banks.

The regression has a fairly low R^2 (0.639), which means that a large part of the variance is not explained either by the characteristics of the banks or by those of the firms. Other important factors, which we address in the next Section, affect the specific relation that develops between each bank and its customers.

The basic result is that the differential is due, more or less in equal proportion, to different characteristics of both banks and firms. The first column in panel A of Table 10 shows the difference between the average coefficients of banks located in the Northern regions of the country (roughly, north of Florence) and those of banks located respectively in the central and Southern regions: rates charged by Southern banks are 1.26 percentage points higher than those charged by Northern banks to identical firms. For comparison, note that the differential between the Centre and the North, although statistically significant (there are more than 26,000 degrees of freedom), is only 0.44 percentage points.

Quite clearly this reflects higher costs and, possibly, greater market power of Southern banks.

To assess the role of operating costs, we have run another regression, replacing the banks' dummies with a number of numerical variables capturing banks' characteristics: in addition to costs, we have introduced various balance-sheet ratios (see Appendix 1). The basic result is that operating costs alone explain almost the entire within-banks variation: with only this variable included (instead of 75 banks' dummies) the uncorrected R^2 and the standard error are virtually the same as those of the previous regression (see regressions 1 and 2 in Table A1).

Table 10

ANALYSIS OF BANK'S AND FIRMS' FIXED EFFECTS (1)

(Dependent variable: bank rates on overdraft loans)

Differences between the average coefficients of South or Centre
and those of the North

A. Entire sample

	Banks (β coefficient) i	Firms (γ coefficients) i
Centre-North	0.44	0.54
South-North	1.26	1.05

B. Small firms (less than 20 employees)

	Entire sample	Manufact.	Engin.	Text.
Centre-North	0.54	0.62	2.10	0.18
South-North	1.03	0.91	0.86	3.20

C. Intermediate firms (20 to 200 employees)

	Entire sample	Manufact.	Engin.	Text.
Centre-North	0.49	0.48	0.02*	0.48
South-North	0.95	0.96	0.96	1.40

D. Large firms (above 200 employees)

	Entire sample	Manufact.	Engin.	Text.
Centre-North	0.38	0.36	0.11	0.44
South-North	0.50	0.31	0.33	0.37*

Notes: $R^2=0.639$; Standard Error=1.54; Mean of dependent variable=13.83;
Number of observations=35,711; Number of firms=9,127; Number of banks=76

(1) Both the banks' (β_i) and the firms' (γ_i) coefficients are significant at the 1 per cent level, according to an F test. All t tests for differences with the North are significant at the 1 per cent level, except those marked with *.

Concerning firms, our results show that those located in the South are charged higher rates, regardless of the location of the bank from which they borrow. The second column in panel A of Table 10 shows that the average South-North difference is 1.05 percentage points. Quite clearly banks view Southern firms as riskier. The higher riskiness is only partly accounted for by differences in size and sector. Panels B, C and D replicate the analysis of panel A focusing on different sizes and sectors of activity.¹¹ The North-South differences are larger for small firms, as one would expect given the greater market power that banks wield in their regard. But sizable differences also show up with respect to medium-sized and large firms and, within those, individual sectors of activity (of which only a few are displayed in the table). These results confirm those of previous research based on firms' accounts (Siracusano and Tresoldi, 1988; D'Amico et al., 1990). The variability of various measures of profitability (ROI, ROE, net income/sales etc.) has been shown to be unambiguously higher in the South for the different classes of firms and over time. To this evidence, we add that of Table 11 on rates of mortality, derived from the files of the social security system.¹² The figures of the table represent the number of employees belonging to firms that fell out of the file in a given year divided by total initial number of employees covered. The mortality rate, so computed, is 4.8 per cent in the continental South against 3.8 in the North-East and 3.5 in the North-West of Italy.

11. The regression is the same as for panel A, but the tests refer to subsets of the firms' coefficients. Note that, because of composition effects, the value of the average differential is not the average of the differentials displayed in the individual subsets of the sample; in general, average differentials turn out to be larger than those of any subsample.

12. We thank A. Gavosto of the Banca d'Italia for collecting these data and making them available to us.

In conclusion, there is no doubt that Southern firms (even those of equal size and operating in the same sector) are generally riskier. Risk, however, accounts for only half the interest rate differential; the rest must be attributed to higher costs of banks and less competition.

Table 11

MORTALITY RATES OF FIRMS (*)
(percentages)

North-West	3.8
North-East	3.5
Centre excluding Lazio	4.3
Lazio	4.6
Continental South	4.8
Sicily and Sardinia	4.6

(*) Ratio between the number of employees belonging to firms that fell out of social security files and the total initial number of employees in each year; average of 1984-89.

4.2 Information and geography in financial markets

The previous Section presents two interesting facts. The first is that different banks are able to charge the same borrower significantly different rates, mainly reflecting their operating costs. The second is that the residual variance of the regression in which banks' and firms' specific effects are fully taken into account is high.

Both these facts strongly suggest that informational problems are of great importance in the Italian banking market. This finding is of course neither new nor entirely specific to Italy. The extensive literature on customers' relations builds on the notion that, even in an integrated monetary area, there are two layers in financial markets. In

the upper layer, one finds the textbook case of perfectly mobile capital: securities issued by governments or other large borrowers, wholesale banking, etc. In the lower layer, there are bank loans, as well as deposits, which appear to be quite sticky. Here the particular relation that develops between the lender and the borrower is of paramount importance and may be heavily influenced by geographical considerations.

Greenwald and Stiglitz (1991) argue that information problems are likely to be magnified by the fragmented institutional and economic environment that typically characterizes underdeveloped regions. Indeed, as we have seen, Southern firms are generally younger, smaller and riskier. In such circumstances it may take quite a lot of time and effort for a bank to gather enough information to determine the class of risk in which borrowers actually belong. In the absence of repeated interactions, banks will charge higher rates or resort to rationing practices of the kind exposed by Stiglitz and Weiss (1981). Most importantly, they may offer a lower quality credit facility, entailing the risk for the firm of not receiving finance when it is most needed or having to borrow very short-term.

Stable customer relationships (hence low mobility) are the natural result. To some extent they may be beneficial, in that they allow the bank to acquire more information about the firm. However, as Sharpe (1990) shows, the firm risks being "informationally captured" by its bank, which may exploit the monopoly power conferred by its informational advantage over other banks.

The conjecture to test may thus be articulated as follows: i) information problems are particularly heavy in the South, and stable customer relations tend to prevail; ii) the informational advantage of local banks shelters them from outside competition: outside banks tend to practice rationing; iii) because of low competitive pressure and low customer mobility, local banks can indulge in monopolistic

behaviour and raise lending rates in line with operating costs.

In the end, the purpose is to assess the impact of information problems on the efficiency of intermediaries in performing their selection function.

That outside banks engage in credit rationing is already signaled by the size distribution of bank customers in the South. In our sample, firms that are very large by Italian standards (1,000 or more employees) account for about 50 per cent of outside banks' total lending in the South, against 17 per cent for Southern banks.¹³

To explore the matter further, we have performed two experiments.

From the same data set used for the regression in the previous Section, we have taken a sample of firms on the basis of the following criteria: i) location in Sicily; ii) lines of credit with at least one Southern (in practice, Sicilian) and one outside bank (headquartered in the North or in the Centre of Italy); iii) Southern bank credit lines accounting for at least 30 per cent of total borrowing. In short, we are examining firms that borrow both from local and from outside banks and for which local banks are not marginal. The latter proviso ensures that we are not considering small loans on which firms might more readily accept uncompetitive terms (in order, say, to maintain an open channel with a bank or the power group it may represent). The resulting sample is made up of 150 firms, for which we computed the unweighted average interest rate paid to local and to outside banks, the average utilization rate of lines of credit, the average incidence of each relation on the total amount of funds borrowed; we also break the sample down by firm size (see Table 12).

13. In the terminology of Keeton (1979), this may be interpreted as evidence of "type 1" rationing.

Table 12

CREDIT MARKET INDICATORS FOR SICILIAN FIRMS

Category of firms	Northern Banks				Centre Banks				Southern Banks			
	Average interest rate	Relative size of the loan (1)	Utiliz. rate (2)	Unauthor. overdraft (3)	Average interest rate	Relative size of the loan (1)	Utiliz. rate (2)	Unauthor. overdraft (3)	Average interest rate	Relative size of the loan (1)	Utiliz. rate (2)	Unauthor. overdraft (3)
Small firms	15.9	0.24	74.8	6.1	16.1	0.26	70.7	6.0	16.5	0.49	60.4	5.3
Medium firms	15.1	0.20	64.1	3.8	15.0	0.16	78.1	6.1	15.8	0.42	61.4	1.2
Large firms	13.9	0.11	39.3	9.5	14.3	0.21	51.4	13.3	14.2	0.38	41.3	0.2
Total Sample	15.3	0.21	65.5	5.3	15.2	0.19	73.3	8.9	15.9	0.44	59.5	1.3

Source: see Appendix 1.

(1) Weight of each loan on total borrowing of the firm; averages of individual firms.

(2) Percentage of credit actually utilized.

(3) Unauthorized overdraft as a percentage of total lines of credit.

This test confirms that simultaneous borrowing from local and outside banks is done at different rates. The North-South differential in this sample is more than half a percentage point. Nevertheless, Southern firms get the bulk of their finance from local banks. Note that the share of borrowing from each outside bank is not negligible (on average about 20 per cent), which suggests that the rates charged by these banks are not dumping rates to facilitate the penetration of a new market.

Whether or not this is evidence of "type 2" rationing behaviour by the outside banks is debatable. Utilization rates are certainly higher with these banks: 66 and 73 per cent, respectively, with banks located in the North and Centre as against 44 per cent with local banks. Yet while this is not a small difference, it remains unclear why firms do not borrow close to 100 per cent with outside banks and use lines of credit with local banks as buffers for short-term swings in their financing needs. To a certain extent, this may be due to the averaging out of individual positions. To obtain a more precise indicator of excess demand for credit, we have also computed for each category of firm the ratio between the total amount of unauthorized overdraft credit observed for that category and the total lines of credit outstanding: the higher the ratio, the greater the incidence of "rationed" positions with respect to the category's total demand for credit. Values are considerably higher for Northern and Centre banks (on average 5.3 and 8.9 per cent respectively) than for Southern banks (1.3 per cent); this is true for all classes of firms we considered (Table 12).¹⁴

The second experiment attempts to explain the bank-firm specific residual variance of the regression run in

14. A greater intensity of rationing in the South has been pointed out also by Pittaluga (1991), who however does not discriminate between Northern and Southern banks.

Section 4.1. Rates charged on individual loans are regressed on two sets of dummy variables (firms' and banks' specific effects) and a number of additional regressors to capture the variation that does not depend on the characteristics of either bank or firm per se but is specific to a particular bank-firm relationship.

The additional regressors include the past duration of a contract, credit line utilization rates, measures of geographical proximity, and measures of the importance of the bank for the firm and of the firm for the bank (see Appendix 1 and Table A1).

An interesting finding concerns one particular measure of geographical proximity: a dummy variable set at 1 when the province of the borrower coincides with that of the bank's headquarters and zero otherwise. The coefficient of this variable is close to 1 and statistically highly significant in the South. Elsewhere it is very low and not significant.

Taken literally, this result suggests that geographical proximity matters much in the South but not elsewhere. When a Southern bank lends to a local firm, it charges almost 1 percentage point more than its average lending rate to firms of the same risk class (as measured, unambiguously, by the firm and bank dummy variables). This is consistent with the notion that Southern firms are "informationally captured"; most likely it is in the interest of the firm, rather than the bank to maintain the relation; otherwise rates would be lower, not higher.

Another variable, the market share of the bank in the borrower's province (WBP in Table A1), potentially measures geographical proximity; the fact that its coefficient is barely significant (and, if anything, has a negative sign) suggests that being a local bank is different from being an outside bank with local branches; only the former seem to enjoy additional market power. This may explain why penetration by outside banks has been so slow. In the last

decade, the Bank of Italy has adopted efficiency standards in evaluating applications for new branches: as a result, the share of Southern branches pertaining to outside banks has risen from 14 to 21 per cent; however, their share of the lending market has increased by just 1.5 percentage points (from 30.7 to 32.2 per cent).

Further evidence of the relative stickiness of the Southern loan market is displayed in Table 13. The data of the Central Credit Register allow us to reconstruct the pattern of change in borrowers' relationships with their banks (as in Ciocca et al., 1984). Five cases are considered, depending on whether the borrower has, in a given year: i) established at least one business relation with a new bank, without breaking off any existing ones (increase without substitution); ii) established more new relations than broken off old ones (increase with substitution); iii) broken off at least one relation, without establishing a new one (decrease without substitution); iv) broken off more relations than established new ones (decrease with substitution); v) replaced old with new relations (substitution without increase or decrease).

The table shows that borrowers' mobility is significantly lower in the South than elsewhere, in all years considered and for all types of change. The lack of similar data for other countries makes it impossible to say whether the mobility of Italian borrowers is "high" or "low", but one point is worth underscoring: the two forms of mobility that presumably best reflect retaliatory behaviour on the part of borrowers (increase and decrease with substitution) are almost negligible (0.35 and 0.26 per cent respectively in the Southern area in 1988).

On the whole, the evidence suggests that informational problems are important, especially in the less developed regions. Southern banks have both the technical opportunity and the economic incentive to extract monopoly rents from their customers, because of their relative

Table 13

**DISTRIBUTION OF CUSTOMERS ACCORDING TO CHANGES IN BUSINESS
RELATIONSHIPS WITH COMMERCIAL BANKS**

Type of variation	Number of customers as a percentage of total customers (1)								
	1 9 8 2			1 9 8 5			1 9 8 8		
	North	Centre	South	North	Centre	South	North	Centre	South
Increase without substitution	17.26	15.77*	15.16*	17.13	16.05	14.68*	13.17	12.73	11.81*
Increase with substitution	1.40	1.10	0.87	0.98	0.90	0.50*	1.01	0.63	0.35*
Decrease without substitution	7.31	6.82	6.34*	6.94	6.50	5.88*	7.38	6.80	5.95*
Decrease with substitution	0.71	0.51	0.49*	0.53	0.50	0.33*	0.57	0.44	0.26*
Substit. without incr. or decr.	3.89	3.31	3.25	3.13	2.90	2.52	3.22	3.04	2.05*
Total variation	29.47	27.95	26.58*	28.21	27.29	23.85*	24.76	24.22	20.40*

Source: Central Credit Register data on about 350,000 individual borrowers based on loan account headings.

(1) An asterisk indicates values which are significantly different at the 1 per cent level from those of the North. To allow for different cell sizes, the comparison of means has been carried out on the basis of Tukey's studentized range test.

inefficiency, the extent of their informational advantage, and the relative immobility of their customers. Even in the absence of institutional barriers, informational problems limit the ability of external banks to compete in Southern credit markets. Most likely, when entering a local market in the South, outside banks have to resort to various forms of rationing to avoid getting the worst borrowers.

4.3 Screening and resource allocation

Ultimately, the most important question concerns the ability of financial markets to perform their screening function, in light of the regulatory framework.

The evidence set forth in Section 4.2 on the stability of customer relationships and the low mobility of borrowers suggests that informational problems are heavier in less developed regions. On this basis alone, it may be argued that screening is less efficiently performed. The linkage between information and screening has been clarified by the theoretical literature initiated by Stiglitz and Weiss (1981). While that article focused on credit rationing, subsequent work (De Meza and Webb, 1988; Hillier and Ibrahimo, 1991) has stressed the consequences of informational asymmetries on the allocation of resources.

As we view it, the bottom line is that when banks are not "well" informed, credit may be misallocated, in both possible senses: some bad projects are financed and some good ones are not. Two simple inequalities capture the essential aspects of the problem:

$$x \geq \frac{(1+p)}{p} \quad (2)$$

$$x \geq \alpha \frac{(1+p)}{p} + (1-\alpha)(1+r) \quad (3)$$

where x is the unit return on a project (if the project is successful, p is the risk-free rate of interest, p is the

probability of success of the project, r is the bank lending rate and α the share of equity financing (and $1-\alpha$ the amount borrowed from the bank). The project is assumed to have a binomial distribution: the return is x with probability p or zero with probability $1-p$.

Inequality (2) is the condition for social optimality. The project should be undertaken if its expected return, $x \cdot p$, is greater than the risk-free interest factor $(1+r)$.

The second inequality gives the condition under which the firm will be willing to apply for the loan at interest rate r : the expected rate of return on the project net of interest costs, $[x-(1-\alpha)(1+r)] \cdot p$, must be sufficient to cover the cost of own funds, evaluated at the risk-free rate.¹⁵

The two inequalities would coincide and no inefficiency would arise if the bank rate on each project were fixed according to the following criterion:

$$(1+r) = \frac{(1+p)}{p} \quad (4)$$

The inefficiency stems from the assumption that the bank does not know the probability of success, p (at least for some borrowers or groups of borrower) and hence cannot fix the lending rate according to the optimal criterion.

Exactly how the lending rate is determined depends on the definition of a full equilibrium model of the credit market. Even without defining such model, a number of interesting propositions follow from the observation that r is some fixed number, greater than the risk-free rate and independent of the specific risk characteristics of the project. In Figure 4 the SE (socially efficient) line represents equation (2) (taken with the equal sign); all projects above this line are socially efficient and should be

15. It is assumed that the loan is indispensable, as the own resources of the firm are insufficient to cover the cost of the (fixed size) project.

financed. Likewise, the SS (self-selection) line represents equation (3); all firms with projects lying above this line will apply for a loan.

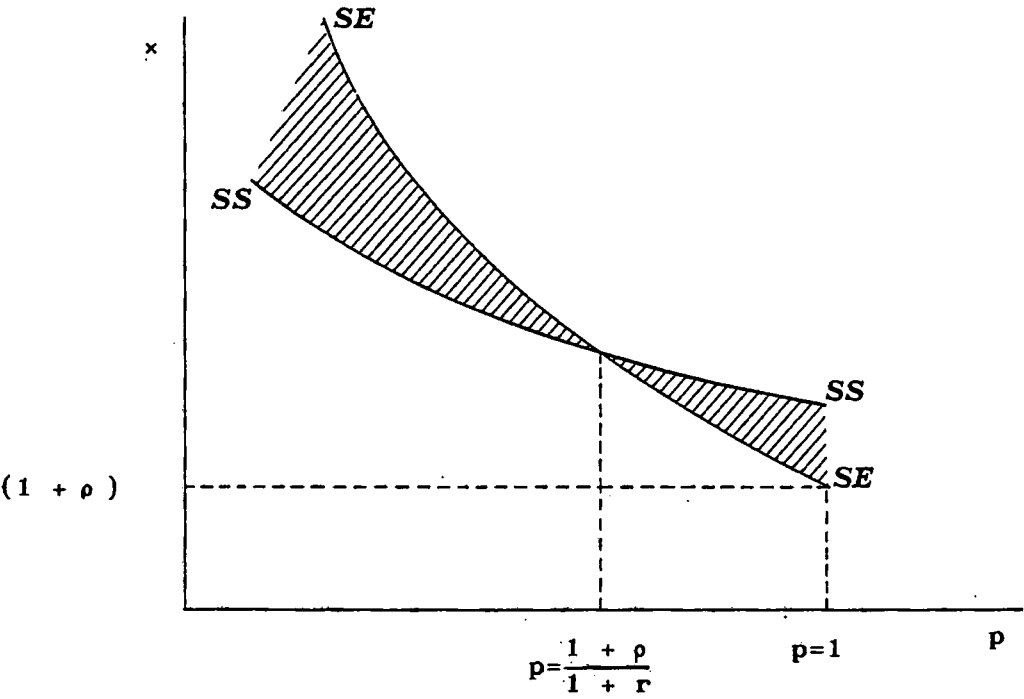
The shaded areas identify the two types of inefficiency. The lower right corresponds to the underinvestment case analyzed by Stiglitz and Weiss (1981): i.e. projects with low return in case of success and low risk (high p). The reason why firms contemplating such projects do not apply for loans is essentially that, given their low risk, the interest rate charged by the bank is too high. The upper-left identifies cases of overinvestment (De Meza and Webb, 1988). Firms in this area seek financing even though the expected return, $x \cdot p$, is lower than the risk-free interest factor. They do so because they can transfer part of the risk to the bank: for these high-risk, high-return projects, the lending rate is too low. Firms proposing these projects are "liars": they know their high risk but do not tell the bank. This is not true of the Stiglitz-Weiss firms, which may honestly try to persuade the bank of their low riskiness but fail to allay the bank's suspicions.

Note that adjusting the lending rate does not solve the problem as long as the bank fails to differentiate among individual projects: for instance, a higher rate merely shifts SS upward and increases the number of deserving projects that are excluded.

The share of debt financing (the parameter $1-\alpha$) is important: self-evidently, when borrowing is small (α is large), the inefficiency stemming from asymmetric information between the borrower and the lender is reduced. In the limiting case in which α is one (one hundred per cent equity) there is no inefficiency.¹⁶

16. At least on the implicit assumption that equity finance is not affected by agency problems. This is not a bad assumption when describing local firms in which owner coincides with manager and the alternative to bank financing is retained earnings, not external equity.

Fig. 4



While our description has focused on self-selection, the model also accounts for moral hazard. Suppose, for instance, that a firm can choose between a low-risk project falling in the lower shaded area and a high-risk one in the upper area: it will obviously choose the latter, at the expense of the bank and of social efficiency.

The general conclusion is that lack of information may result in too much money being invested in high risk projects and too little in safe projects. Empirically, this argument is rather appealing, helping to reconcile the widespread complaint that Southern firms are denied access to credit (because it is too costly or rationed) with the high ratio of bad loans by Southern banks. But this is certainly only part of the story. Information problems may manifest themselves in many other ways. One is simple misjudgment by the bank: bad projects are deemed deserving or vice versa. Nor is asymmetry the only source of informational inefficiency: it may be that both the bank and the borrower equally misjudge the merits of the project. Even shying away (as we do) from a Schumpeterian view of the bank, we have no doubt that the intermediary has an important role in elucidating the borrower as to his project's likelihood of success. Charlatans, of which - we agree with Stiglitz (1991) - there is an infinite supply, are yet another problem. The charlatan may be in good faith and truly believe that his project is a surefire success. The efficient bank certainly cannot content itself with what the loan applicant believes: it must assess what he can actually do.

These, of course, are universal problems; the question is whether their consequences are more disruptive in economically less developed areas. We have thus run an experiment, based on the postulate that if screening is efficient different banks should tend to converge toward a common evaluation of a given firm or project. They should therefore tend to charge similar interest rates, or at least rank firms in more or less the same order. If screening is

inefficient, there is a strong likelihood that banks will reach differing judgments on the merits of a given firm.

Our testing procedure is based on the residuals of the cross-section regression performed in Section 4.1, with lending rates on the left-hand side and firms' and banks' fixed effects on the right-hand side. In principle, the residuals would be zero if all banks had the same evaluation of individual firms, i.e. if they had the same relative ordering and the exact numerical position of firms on the risk scale. In other words, the lending rates charged to the same firm should be the same, except for a scale factor reflecting differences between banks in costs and possibly in general market power. We have already seen that the residuals are far from negligible: we now want to ascertain whether they are larger in the South.

Table 14 (Panel A) gives the average of the absolute values of the residuals for different locations of firms and banks. Considering the marginal means for banks (the last column), we see that the residuals (given, like interest rates, in percentage points) are considerably larger in the South (1.22 against 0.85 in the North). The reported t-statistics (17.4) testing for the difference between these two means, is significant at the 1 per cent level. This confirms the presumption that screening is impaired by informational problems in the South. The surprising new feature of this table is that the residuals do not differ greatly between firms of different areas. The means are 0.97 for firms located in the South, 0.98 for those of the Centre and 0.88 for those of the North. Moreover, correcting for size class of bank, residuals of Southern firms are no larger than those of other firms. Rather, in each column, i.e. for each type of firm, residuals increase as we move from Northern and Central to Southern banks. Taken literally, this indicates that Southern firms are no harder to screen than others; it is Southern banks that perform the screening less efficiently. We are inclined to take this result with some

caution in the light of possible problems in extrapolating from our sample to the entire population (see Appendix 1). Indeed, the results about firms change somewhat when we consider homogeneous subsections. Panels B and C of Table 14 reflect the same tests as in panel A, but taking the residuals pertaining to a specific size category of firms (20-200 employees) and, within it, two specific industries (engineering and textiles). Again, we find that the residuals are significantly larger for Southern banks: for instance, in the textile sector (panel B), they come to 1.75 percentage points against 0.84 for Northern banks, with a t test of 6.7. Looking at differences across firms (i.e. along the rows), we find that the residuals are generally somewhat larger for Southern firms, but at a much lower level of significance than for banks: in the textile sector, the marginal mean for firms (the last row of Panel B) is 1.38 in the South and 0.89 in the North, with a t of 2.9. The difference is significant only at the 5 per cent level and results exclusively from the behaviour of Southern banks; in fact, in the first two rows of the table (relating to banks of the North and of the Centre), differences between firms are small, not statistically significant, and in one case of the wrong sign.

On the whole, these tests suggest that screening might be more difficult in the South; for sure, they indicate that the difficulties are aggravated by certain specific features of the financial system.

Table 14

Absolute value of the residuals of regression 1 of section 4.1;
means by area of banks and firms

A) ENTIRE SAMPLE

Banks	Firms						Total
	North		Centre		South		
North	0.84	21,505	0.90	1,568 (2.7)	0.90	744 (1.7*)	0.85 23,817
Center	0.99	4,818 (10.4)	0.98	4,274 (2.6) (0.7*)	0.93	648 (0.7*) (1.2*)	0.98 9,740 (12.2)
South	1.27	956 (13.9)	1.32	453 (7.8) (0.7*)	1.08	745 (3.8) (3.2)	1.22 2,154 (17.4)
Total	0.88	27,279	0.98	6,295 (7.6)	0.97	2,137 (4.2)	0.90 35,711

B) INTERMEDIATE FIRMS (1); TEXTILE SECTOR

Banks	Firms						Total	
	North		Centre		South			
North	0.84	1,225	0.83	125 (0.1*)	0.93	32 (0.3*)	0.84	1,382
Center	1.10	230 (3.7)	1.03	291 (1.7*) (0.7*)	1.06	10 (0.5*) (0.1*)	1.06	531 (4.3)
South	1.24	28 (2.2)	2.2	17 (5.1) (2.0)	2.5	51 (2.3) (2.4)	1.75	96 (6.7)
Total	0.89	1,489	1.02	433 (2.3)	1.38	93 (2.9)	0.92	2,009

Tab. 14 (continued)

C) INTERMEDIATE FIRMS (1); ENGINEERING SECTOR

Banks	Firms						Total
	North		Centre		South		
North	0.92	1,704	0.96	59 (0.4*)	0.92	16 (0.1*)	0.92 1,779
Center	1.13	454 (3.8)	1.02	184 (0.3*) (1.2*)	1.16	19 (0.5*) (0.2*)	1.10 657 (3.8)
South	1.19	80 (2.4)	1.74	29 (3.0) (2.0)	1.23	33 (1.8*) (0.1*)	1.32 142 (4.3)
Total	0.97	2,238	1.08	272 (1.7)	1.11	68 (1.0)	0.98 2,578

Source: see Appendix 1.

(1) 20 to 200 employees.

Note:

- in the upper left corner of each cell, cell means are reported;
- in the upper right corner of each cell, the number of observations in the cell is reported;
- t statistics for comparison with the North are in parenthesis; comparisons along the columns are reported on the left of each cell; comparisons along the rows are reported on the right of each cell. An asterisk indicates that the test is not significant at the 5 per cent level.

4.4 Evidence from corporate behaviour

Providing a direct quantitative assessment of the real consequences of the numerous inefficiencies which, as we have documented so far, plague the financial sector in the South is a most challenging task. In what follows, we take a simple but indirect route. We look first at the determinants of corporate borrowing and ask whether there are significant differences in the pattern of financial choices between Southern and Northern firms. We focus in particular on the impact of the system of subsidized credit applying to long-term loans issued by Special Credit Institutions in the South. The so called "financial repression" hypothesis holds that a system of directed credits and administrative interest rates may discourage lending for riskier and longer maturity loans and contribute to widespread credit rationing and misallocation of resources (McKinnon, 1973; Shaw, 1973).

We rely on an econometric analysis based on a sample of balance-sheet data for 2,132 small firms located in both Northern and Southern Italy over the period 1982-87. Sample characteristics and methodology are described in Appendix 2 and, in greater detail, in Bonato *et al.*, (1991). Here it is enough to say that we rely throughout on market rather than book values of both long-term debt and physical capital stock. The intent is to identify significant differences in the pattern of corporate borrowing and investment between firms located in the North and those in the South, focusing in particular on the role of financial constraints and risk.

Initially, we consider long-term debt and follow the literature in assuming a simple partial adjustment mechanism. The equilibrium debt/sales ratio for firm i at time t ($B_{i,t}^*$) is a linear function of its determinants. The latter include risk factors (measured by the volatility of earnings), tax considerations (proxied both by the effective tax rate for the firm and the ratio of taxable earnings to fiscal depreciation, with the latter measuring the importance of

non-debt tax shields), liquidity (i.e. cash-flow), the share of fixed assets (to capture Myers' effect) and the ratio of the aggregate stock market index to the CPI. Whenever appropriate, the variables are normalized by the level of sales. We expect greater earnings volatility to reduce corporate borrowing on two accounts, namely the larger probability of financial distress and the more limited value of debt as a tax shields.¹⁷ A greater share of fixed assets should be associated with more debt to the extent that it indicates lower discretionary investment possibilities (Myers, 1977). Similarly, profitable firms (i.e. those with large ex-post tax liabilities) with limited non-debt tax shields should rely to a greater extent on borrowing. The impact of cash-flow, by contrast, is ambiguous: greater cashflow may reduce the need for external finance, but may also signal greater long-run profitability and be used as collateral for further borrowing. Finally, the stock market index, though not directly relevant for most Southern firms, is included, as it is typically found to exert a negative and significant effect in many empirical debt studies (MacKie-Mason, 1988; Taggart, 1977). In estimation, we distinguish between time-varying and time-invariant determinants of debt. We also control for dynamic panel data biases (see the Appendix for details).

Column 1 in Table 15 presents the estimates from the first-stage regression on the time-varying determinants of debt. The ratio of physical capital to sales has a significant impact on long-term debt, whereas no significant

17. To distinguish between the risk and the tax effects of greater earnings volatility, we include in the list of regressors the ratio of earnings volatility (STDE) to a measure of non-debt tax shields, i.e. earnings divided by depreciation allowances (E/DEPR). In this way, we should capture the fiscal effect of STDE (larger volatility makes debt less palatable as a tax shield; this effect will be more pronounced if the firm can rely on alternative tax shields).

Table 15

**The determinants of corporate borrowing
(time-variable determinants, small firms)**

Dep. Var.: (B/Y)

	Long-term debt	Short-term debt
Constant	-0.005 (2.93)	0.003 (1.51)
(B/Y) _{t-1}	0.574 (13.1)	0.569 (38.9)
(CF/Y) _t	-0.083 (0.17)	-4.46 (1.98)
(K/Y) _t	0.276 (3.06)	11.1 (1.76)
SMI _t	0.0007 (1.99)	--
Wald χ^2	328.8 (4)	1,559.9 (3)
Sargan χ^2	5.45 (6)	13.3 (9)
AR2	-0.843	-1.54

Legend:

B: financial debt (long-term or short-term)
Y: sales
CF: cash-flow
K: capital stock
SMI: stock market index

Note:

T-statistics are shown in parentheses. The AR2 test is distributed as a standard normal variable. Numbers in parentheses after χ^2 tests are degrees of freedom. See Appendix 2 for further detail. The regression on long-term debt is reproduced from Bonato et al. (1991).

cash-flow effect is found. Presumably, the various conflicting effects of larger cash-flow on debt offset one another. The results of the second-stage regression on time-invariant factors are presented in the first column of Table 16. All variables have the expected sign, including our indicators of the tax position of the firms.

The only variable for which a significant difference between Northern and Southern firms could be detected is our measure of risk (STDE in Table 16). As expected, this varies inversely with corporate borrowing; its effect is significantly stronger in the South than in the North. Even a locational dummy (taking a value of one for firms located in Southern Italy) turned out not to be significant and was therefore dropped from the equation.

The strong negative impact of risk on outstanding debt in the South apparently supports the claim that interest rate regulation on long-term borrowing crowded out riskier projects. This test of the financial repression hypothesis is considerably more direct than tests found in the literature, which focus on the relationship between investment (or growth) and time deposit interest rates (Fry, 1988) or on differences in borrowing patterns as a function of firm size (Tybout, 1984). Yet the larger role of risk in the South could be predicated on other factors. We accordingly look further at borrowing decisions, and now focus on short-term debt. The results of the first stage regression are presented in Table 15 (column 2). The most noticeable result is that cash-flow now has a significant, negative impact on short-term debt. The greater availability of internal finance is reflected in lower demand for short-term rather than long-term debt. Turning to the second stage regression, we find again that tax and risk considerations play a significant role (column 2, Table 16). More important, risk, as measured by the standard deviation of earnings, is once again the only variable with a significantly different coefficient between Northern and Southern firms; and it has a

Table 16

The determinants of corporate borrowing
(time-invariant determinants, small firms)

Dep. Var.: individual firms' effects from Table 16

	Long-term debt	Short-term debt
Constant	-0.943 (4.54)	-2.40 (8.38)
τ	0.63 (1.30)	2.81 (4.37)
E/DEPR	0.209 (8.54)	0.370 (10.07)
Y'	1.58 (2.94)	2.24 (3.10)
STDE	-7.581 (2.98)	-3.85 (1.12)
STDE/(E/DEPR)	-1.745 (1.49)	-2.944 (1.61)
STDES	-13.27 (1.96)	-28.99 (2.54)
Φ	62.6	67.4

Legend:

τ : effective tax rate (corporate taxes/taxable earnings)
 E: earnings
 DEPR: depreciation allowances
 Y': growth rate of sales
 STDE: standard deviation of earnings normalized by sales
 STDES: STDE * DUMSUD
 DUMSUD: dummy variables for firms located in the South
 Φ : percentage of correct predictions

Note:

T-Statistics are shown in parentheses. See Appendix 2 for further detail. The regression on long-term debt is reproduced from Bonato et al. (1991).

larger impact in the South. This result concerning short-term debt shows that at the very least interest rate regulation is not the only factor at work.

Searching for other factors, one might posit that bankers in the South are more risk-averse. However, this explanation does not fully square with the fact that default rates are much higher in the South (see Table 7), an indication that banks in the South have indeed taken considerable risk (Fazio, 1985; Galli and Onado, 1990). Another possibility is that risk has a larger effect in the South because Southern entrepreneurs lack collateral to back their demand for finance. The firm's assets are not deemed to be a sufficient collateral by banks because of capital losses and liquidation costs in the event of default. Weak law enforcement in particular may significantly raise liquidation costs. In principle, collateral (for which we are not able to control in our estimates) should affect both the level of debt and the impact of risk on borrowing.¹⁸ The first effect did not show up in our estimates, since the locational dummy proved to be insignificant: differences in the availability of collateral between Northern and Southern Italy might be

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18. Consider the simple case in which projects are successful with probability p and return x or unsuccessful with probability $1-p$ and returns equal to zero. All projects yield by assumption the same average return. Lower values of p therefore signal riskier projects. The true value of p is known both to the entrepreneur and to the bank. In a competitive equilibrium we have:

$$1 + r = (1+p)/p - (1-p)/p(C/B)$$

where r and p indicate respectively lending and deposit rates and B and C denote the loan and the collateral. A large amount of collateral is associated with a lower r and, as a result, greater borrowing. Similarly a lower value of p , i.e. a riskier project, would call for a higher interest rate. The extent of the effect on r of a decline in p varies inversely with the availability of collateral.

present, but they certainly do not play a decisive role.¹⁹ Finally, it could be claimed that the availability of subsidized loans and investment grants in the South exacerbated risk-taking behaviour by local entrepreneurs and may therefore account for an overly prudent attitude by local bankers.²⁰

None of the previous approaches provides a totally satisfactory explanation of why risk has a more marked effect on corporate debt in the South. We are therefore left with the initial argument, namely that risk just matters more in a relatively backward economy. This simple statement of course leaves unanswered whether this state of affairs subsists because banks in the South perform their screening tasks less efficiently or, alternatively, because information about borrowers and their projects is simply more difficult to evaluate in a developing area.²¹ We believe that our previous

19. Notice also that the impact of collateral is not unambiguous. As shown by Stiglitz and Weiss (1981), entrepreneurs with more collateral may also be less risk averse. On this issue, however, see also Bester (1985).

20. In a Stiglitz-Weiss set-up, however, investment subsidies lead to an improvement in the pool of applicants and feebler adverse selection effects. This is because in this model the marginal project is the best, i.e. the least risky, project. An investment grant therefore draws into the applicant pool new, less risky entrepreneurs. This by itself should improve the average return to the banks' portfolio and force the interest rate down. Less credit demand from each individual entrepreneur (who can rely at least partly on government financial help) would work in the same direction. At the same time, though, the number of applicants would go up, putting upward pressure on the lending and the deposit rates.

21. Slightly more formally, let us suppose that banks observe the volatility of firm's earnings, i.e. they know STDE. The latter, however, is only a noisy measure of the true risk (σ_i) for firm i , i.e. $\sigma_i = \text{STDE}_i + \varepsilon_i$ where ε_i is a stochastic term. It could then be argued that the variance of ε_i is larger in the South. This would explain why STDE exerts a larger effect on debt in the South, but would still leave unanswered the question of why the variance of ε_i is larger.

results allow us to cast some light on this issue. In Section 4.3 we found indications that Southern borrowers are not significantly more difficult to screen than those of other regions and concluded that bank inefficiencies, i.e. less well developed screening capabilities, were important. The results of this Section show that these factors have a substantial impact on corporate balance sheets and compound the difficulties of small, relatively risky firms in getting their projects financed.

The bias against riskier projects would not be a matter of concern if this type of project also yielded low social return. Suppose, however, that banks can distinguish, on the basis of observable characteristics, between say n groups of potential borrowers. Within each group, borrowers are observationally indistinguishable. If the observed average characteristics of any group lead the bank to believe that it is relatively risky, then this group may be rationed or redlined. The argument of both Stiglitz and Weiss (1981) and Cho (1986) is that such groups may be the most productive ones, i.e. those with highest average returns. In what follows, we take a closer look at this possibility. Our approach is very simple; we estimate an unrestricted investment function where the decision to invest is assumed to depend on output growth, the real cost of capital, the availability of cash flow and lagged debt. We interpret a significant value of the coefficient of cash flow to imply that firms are willing to undertake investment projects, but can only do so if internal finance is available.²² Such

22. Larger cash flows may indicate an improvement in the firm's future profitability and therefore lead to higher investment. A positive coefficient for the cash-flow variable does not therefore necessarily capture the existence of a financial constraint on investment (Fazzari et al., 1988), despite the fact that we try to control for other possible determinants of investment. Our results, however, do not merely indicate that cash flow matters, but suggest that it matters more for riskier firms. Therefore, even if the cash-flow

projects are likely to be characterized by relatively high expected returns; otherwise the firm would not be willing to finance them internally. We then ask whether cash-flow effects on investment are more significant for riskier firms. We find that this is indeed the case (Table 17). We interpret this as indicating that high-risk firms in the Mezzogiorno are endowed with profitable investment projects, which sometimes cannot be undertaken because of the lack of internal funds. This finding is consistent with the previous result that high-risk firms are at a disadvantage in the markets for long-term and for short-term credit alike. In the estimation, the Arellano-Bond procedure was used to allow for the dynamic structure of our specification. We also experimented with both gross and net investment to avoid any spurious correlation that may arise from the fact that our definition of cash-flow availability includes additions to depreciation funds and may be therefore correlated with gross investment. Our results proved quite robust with respect to this modification. Overall, therefore, we feel justified in concluding that the financial system in the South shows a bias against high-risk, high-yield projects.

coefficient is a biased indicator of the importance of financial constraints, it could still be argued, on the assumption of a constant bias, that such constraints are more important for riskier firms.

Table 17

Cash flow and investment
(149 small firms in the South)

Dep. Var.: $(I/Y)_t$

	Coefficient	t-statistics
$(I/Y)_{t-1}$	0.487	2.47
ccap	-0.174	-1.34
Y'	0.233	3.37
$(B/Y)_{t-1}$	-0.007	-1.79
$(K/Y)_{t-1}$	-0.334	-4.27
$(CF/Y)_{t-1}$	0.503	1.77
Wald χ^2	30.82 (6)	
Sargan χ^2	11.1 (11)	

Legend:

I: investment
 B: financial debt
 Y (Y'): sales (growth rate)
 CF: cash flow * DUMR
 ccap: cost of capital
 DUMR: dummy variable for high-risk firms
 K: capital stock

Note:

Numbers in parentheses after χ^2 tests are degrees of freedom.

5. The implications for financial policy

The evidence set forth points to some rather clear conclusions about the nature of the South's relative backwardness and the role of finance. First of all, it is hard to deny that the experience of the Italian Mezzogiorno includes countless examples of government failure; it should be a potent antidote to the belief that wholesale infusions of capital are a panacea for the ills of underdevelopment. Efforts to sustain the South have been massive. Transfers have ranged between 20 and 30 per cent of the area's GDP for decades. Almost every conceivable measure has been attempted to promote growth, ranging from infrastructure and public works to industrial subsidies, tax exemptions, special projects for enterprise creation and training; the objectives of regional policy have shaped the strategies of large government-owned enterprises and affected financial markets and intermediaries in some of their key structural features. Investment has taken place at very high rates, attracted by subsidies rather than by market conditions; moreover, a large share of investment (more than half) has been undertaken by outside firms.

As much of modern development theory suggests, the crux of the matter is the efficiency of investment. Our evidence clearly indicates that the poor performance of the Southern economy is to be imputed to low total factor productivity. As we have argued, this observation calls into question a long list of possible explanations, from agglomeration economies and increasing returns to the inefficiency of government services (including law enforcement). It strongly suggests the possibility of policy-induced structural distortions, especially in the labour and the financial markets. There is little doubt that labour subsidies and other income transfers bear a large responsibility for the rigidities in the labour market. Labour mobility, which was massive until the 1960s, has

virtually ceased. Wages have been made almost completely unresponsive to local labour market conditions and to productivity differentials between regions or firms. Political constraints on hiring and dismissal have been considerably more stringent in the South than elsewhere in Italy, also for private firms.

Concerning finance, this paper has provided ample evidence of the operating and allocative inefficiencies that have developed in the South, under the regulatory regime that has prevailed until very recently. To be sure, the old regime had solid motivations in both economic theory and experience. The protection of local banks, the promotion of specialized regional institutions, interest subsidies and interest rate ceilings were essential ingredients in a global development strategy aimed at overcoming the lack of saving and of long-term capital, which were perceived as the key obstacles to growth. On another ground, barriers to entry and slack competition have helped prevent any repetition of the disruptive bank crises that had marked the interwar period; and they did not keep Italy from achieving among the highest economic growth rates in the Western world for many years.

These motivations now appear outdated. For one thing, low productivity, not lack of capital, is the key impediment to growth in today's Mezzogiorno. And for another, experience has shown that stability and efficiency are not necessarily conflicting goals; with appropriate prudential regulation, they may reinforce each other if efficiency leads to lower costs and better quality of assets.

We have shown that financial intermediaries' operating costs are higher in the South, while productivity, profits and own capital are lower. The gaps are wider for special credit institutions, which have been more heavily affected by the regional development programmes; interest rate regulation on subsidized loans is only one of the several factors that have impaired competition in the Southern market for long-term credit.

The environment in which Southern banks operate is unquestionably more difficult. Our analysis of the lending rates of commercial banks and the evidence on firms' profits and balance sheets demonstrate that risk is certainly greater in the South. Yet we have also shown that risk can explain no more than half the observed rate differential. The rest must be attributed to less competition and higher bank costs.

There are persuasive indications that informational problems are heavier, leading to more intense rationing, captive relations between banks and firms, poorer screening. Some of this evidence is worth recalling. First, Southern firms that borrow simultaneously from local and outside banks do so at different rates; the cost of credit from outside banks is systematically and significantly lower. Certain data (concerning the size distribution of customers and rates of utilization of lines of credit) suggest that outside banks resort more to rationing practices. Building on the asymmetric information literature, we attribute this to the presumption that they are less well informed about local firms. The latter may hence be "informationally captured" (viz. Sharpe, 1990) by their local banks. This presumption is reinforced by our analysis of customer mobility: direct evidence on individual loan contracts shows that Southern firms are less likely to break off a business relation with a bank or to open a new one.

Relevant indications also emerge from a cross-section regression explaining interest rates charged on individual loans as a function of firms' and banks' specific effects. In an ideal efficient market, the variance of lending rates should be fully explained by differences in risk between firms; instead we find that banks' effects are significant (mainly capturing differences in operating costs) and, more importantly, that the bank and firm effects combined explain little more than half of the observed variance. The residual variance may depend essentially on two factors: differences in banks' assessments of individual firm risk (coupled with

the limited mobility of borrowers) and specific bank-firm interactions leading to stable customer relations. These factors operate nationwide. In the South, however, the residual variance is larger, especially when the comparison is between banks rather than firms. We take this as indirect yet rather strong evidence of lower screening efficiency on the part of Southern banks.

Moreover, in an attempt to capture bank-firm interactions (using such variables as past duration of loan contracts, measures of geographical proximity and of the importance of the bank to the firm and viceversa), we have found that one special gauge of geographical proximity (coincidence of the borrower's province with that of the headquarters of the bank) has a significant positive coefficient only in the South: Southern banks tend to charge such local borrowers much higher rates than those it charges on average to other firms with identical risk characteristics. Quite interestingly, another potential indicator of geographical proximity (share of a bank's branches in the province of the borrower) is not significant: we interpret this evidence as suggesting that being a local bank is different from being an outside bank with local branches; only the first case seems to give rise to additional market power. This fact may explain why penetration by more efficient outside banks has been extremely slow in the last decade, despite a substantial increase in the number of their branches located in the South.

The final piece of evidence derives from econometric analysis of corporate behaviour, suggesting that high-risk high-return firms are more likely to suffer credit rationing in the South than elsewhere. In an investment equation, cash-flow constraints are considerably more stringent for risky firms. In short and long-term debt equations, risk has more significant negative effects in the South.

Overall, there is good cause to complain about the

state of finance in the Mezzogiorno. Banks have certainly not performed the Schumpeterian role of promoting large-scale development projects. And the same goes for special credit institutions, even though these were created specifically to perform this function on behalf of the public sector. Intermediaries have also displayed shortcomings in such less ambitious but nonetheless important tasks as screening and monitoring. At best, they have played the role of followers, providing finance when it was demanded in the private and especially in the public sector.

What can be done to redress this situation? Which specific features of the regulatory system should be changed?

In our view, one feature of overriding importance concerns competition. Slack competitive pressure affects not only costs and prices but also the "quality" of the banking product. In this regard, financial liberalization (which started slowly in the early 1980s and has recently accelerated) will prove to be of major benefit to the efficiency of entire Southern economy, not just the financial system; more will come with the full implementation of the Second Banking Directive, which will allow Community banks to operate everywhere in Europe on the basis of home country regulation. Our analysis of customers' relations and of the role of outside banks does suggest, however, that structural change will be a very lengthy affair unless measures are taken to make the ownership of banks more easily contestable. As we have seen, geographical proximity to the borrowers is of paramount importance: since it is hard to envisage a massive increase in the number of bank branches in the South (which would imply very high adjustment costs for both outside and local banks), the only practicable way for outside banks to exert additional competitive pressure is by purchasing branches and local banks.²³ This requires appropriate fiscal rules as well as political decisions

23. On this point, see Vives (1991).

concerning the property structure of public banks; in particular, we favour the elimination of any provision that reserves to the government 51 per cent of the shares of the banks that it currently owns.

Similar decisions are also needed to enhance bank size. Theory clearly points to the importance of size and economies of scale in screening and monitoring (Diamond, 1984). There is little doubt that tiny banks with just a branch or two are in a poor position to evaluate customers. They have contacts with very few firms, are not aware of the alternatives, cannot set up the technical structure for efficient screening and monitoring and cannot diversify to an appropriate extent. In addition, the fragmented structure of the Italian banking system, especially in the South, leaves ample room for reducing costs through economies of scale (Conigliani et al., 1991; Grillo, 1987). And since most banks are public, policy decisions are needed to remedy the situation.

Another questionable feature of the current system is the separation between commercial banks and special credit institutions, which may impair financial intermediaries' ability to perform a key aspect of loan selection: matching firms and projects. The commercial banker knows the firm, which is typically also a depositor and has a continuing business relationship, while the special credit banker knows the investment projects that are submitted to him intermittently, i.e. when a new investment is undertaken. Thus, neither is in the best position to evaluate the suitability of a given project for a given firm. This problem has been more pervasive in the South: elsewhere, the connections between short and long-term banking have been closer, because of special agreements or direct property ties. Furthermore, it can be argued that economies of scope between the two types of institutions are more relevant in less developed regions, where a global view of market opportunities is at once more urgently required and less

readily obtainable.

The final feature on which we focus is the system of financial subsidies, which greatly impairs the efficiency of the special credit institutions. On the one hand, it burdens them with functions and responsibilities, including legal ones, that are typical of government (judging whether a project is eligible for subsidies); on the other it tends to relieve them of the main responsibility of the banker: evaluating the economic merits of a project. Administered interest rates on subsidized loans, besides impairing competition among intermediaries, also downgrade the screening function of the institutions. When the interest rate is fixed exogenously by a government agency, the banker will only be concerned with the lower tail of the distribution of returns: he has to make sure that bad outcomes have a low probability and that the risk is covered by collateral. As we have seen, risky projects tend to be rejected, regardless of expected returns. As a consequence, what is sometimes called "development finance" (relating to projects with high return and high risk) is virtually nonexistent: new product and technology ideas, growth-oriented firms, etc. have little or no access to long-term capital. This is a most unfortunate situation. Development needs development finance, for at least two reasons. First, in an area that is totally open to external trade, local firms cannot grow simply by copying what is done in mature areas. They must generate new ideas, in terms of technology, organization, products etc.: in a word, they must take risks. Second, in the Mezzogiorno, and presumably in the less developed areas of other industrial countries, firms are either very large (typically outside or public corporations) or very small (typically, the local firms). While efficiency does not always grow in direct proportion to size, it is clear that very small firms may not be able to develop the technical structures, marketing organization and so on that are required to survive and, a fortiori, to prosper.

Moreover, expanding a firm's size usually requires a discontinuous jump with the financing of new projects that are large compared to the existing concern. Once again, risk-taking emerges an important feature of development.

While other financial institutions, such as merchant banks and venture capital companies, may be better suited for this task and should certainly be encouraged, the most important changes nevertheless concern the traditional intermediaries, which still account for the lion's share of finance.

In conclusion, our view is that government intervention in the South should be revised and, in many areas, reduced. The financial system also requires thoroughgoing transformation, for which liberalization and increased competition are necessary but not sufficient conditions.

Appendix 1. Interest rate regressions

1.1 Structure of the sample

The data used in Sections 4.1, 4.2 and 4.3 derive from three different sources: the Centrale dei Bilanci (Company Accounts Data Service), the Centrale dei Rischi (Central Credit Register) and the Financial Statistics of the Bank of Italy.²⁴ The first source publishes standardized figures on the balance sheets of about 30,000 Italian firms. The second, which is a section of the Bank of Italy's Statistical Department, collects data on individual transactions undertaken by banks. The data cover the amount of individual loans larger than 80 million lire and the interest rate charged. While loan sizes are reported by all Italian banks, interest rate data are provided, on a voluntary basis, by 79 banks only, which account for about 70 per cent of total bank lending. Since the explanation of interest rate differentials was our main objective, we decided to concentrate on this smaller data-set. The third source contains data on the balance sheets of financial institutions and on their branch networks.

We have collated the three sources by bank and by firm, proceeding as follows. We first extracted from the Company Accounts Data Service a balanced sample (over the period 1982-88) of about 15,000 firms. We then eliminated firms whose data were incomplete, missing or unavailable for our purposes of interest rate studies. More precisely, we excluded firms if: a) the wage bill was lower than 100 million lire; b) net interest expenses, ordinary depreciation allowances, liquid assets, financial debt or net capital were non-positive.

24. Data collected by the Bank of Italy on individual banks and customers are subject to a legal provision forbidding their publication; for this paper, they have been handled only at the central bank by authorized persons.

The resulting sample of about 10,000 firms was then collated with the other two sources. We then concentrated on overdraft lending. We eliminated observations pertaining to very small loans, excluding: a) lines of credit smaller than 5 million lire; b) actual utilized credit (yearly average of daily figures) of less than 500,000 lire. The reason for these cuts was to control for "spurious" interest rates resulting, in particular, from the practice of including among interest expenses - from which the figures on interest rates are worked out - commissions and fees payable by customers even if they are not borrowing or are borrowing very small amounts.

To further control for noise (which would bias especially our variance experiments), we also eliminated observations for which the interest rate was either higher than 25 per cent or 3 points lower than the rate on 3-month Treasury-bills. Finally, in order to make the ANOVA experiments meaningful, we eliminated a few firms with only one bank relation.

The resulting sample consists of 35,711 "contracts", which summarize the dealings between 9,127 firms and 76 banks; each bank-firm interaction appears only once, meaning that on average firms have relations with 3.9 banks. For each firm, we know the interest rate and the actual amount borrowed for each outstanding overdraft loan, plus detailed information on the company's balance sheet. For each bank, we also have information on overall deposits, loans, bad loans, compulsory reserves, branches (by province) and market shares (also by province).

Almost all firms (98 per cent) are in the private sector. By sector, the bulk of the sample consists of manufacturing firms (60 per cent), followed by enterprises in the distributive trades and services (20 per cent), in transport and communications (7 per cent), and in mining (4 per cent).

The average interest rates by area of banks and firms

are the same as those of the entire Credit Register sample, except for the cell corresponding to the lending of Southern banks to Northern firms for which there are (in the real world and, a fortiori, in our sample) very few observations: here our sample exceeds the population interest rate by 1.6 percentage points.

1.2 Econometric estimates

The results are shown in Table A1. Regression 1 is the ANOVA experiment commented on at length in Section 4.1.

In regression 2 the BANK dummy has been replaced with the ratio of operating costs to deposits. As can be seen, operating costs alone account for almost all the variance explained by the BANK dummy: the R^2 in this case is 0.606 and standard error is 1.61. We then added balance-sheet ratios (regression 3). All variables are significant and carry the correct sign: an increase in compulsory reserves, in bad loans, or in total lending (each divided by deposits) has the effect of increasing the interest rate charged to the borrower. The deposit variable (capturing the effects of bank size), although significant, contributes very little to the explanatory power of the equation. The lending-to-deposit ratio allows for the fact that banks with below-average lending have an incentive to lower interest rates in order to increase the proportion of loans in the overall portfolio: in this case we also included a quadratic term, which turned out to be negative. Overall, however, balance-sheet ratios add little to the effect of operating costs: the R^2 increases only from 0.606 to 0.618.

In regression 4 the rates charged on individual loan contracts are regressed on the two sets of dummy variables (firms' and banks' specific effects) that appear in regression 1 and, in addition, a number of regressors designed to capture the variation that does not depend on the characteristics of either the bank or the firm but is

specific to a particular bank-firm relationship.

Although several of these variables are statistically very significant, the unexplained variance is reduced only marginally relative to the regression on the bank and firm individual dummy variables alone (regression 1). The uncorrected R^2 increases from 63.9 per cent to 65.3; the standard error is reduced from 1.54 to 1.51. This standard error (measured in percentage points) strikes us as being still very large, suggesting that, aside from possible noise in data collection, we are still far from having a satisfactory empirical explanation of specific bank-firm relations. It should be noted in this regard that collateral, possibly an important variable in this regression, is missing for lack of data: different rates may be charged to the same firm because of different choices by both the firm and the bank with respect to collateral. Note, however, that the specific effects of firms or banks (such as total assets of the firm, personal wealth of the entrepreneur, average degree of collateralization of a bank's loans) cannot be used in the regression, as they are already captured by the relative dummies.

Four variables turn out to be statistically significant. The first, and most interesting, is the LS variable (local to local in the South), which has a coefficient of 0.81 and is significant at the 1 per cent level.

As noted in the text, the LT variable has instead a very low coefficient (0.023) and is not statistically significant.²⁵ The WBP variables (weight of the bank in the borrower's province) is barely significant and has, if anything, a negative sign, suggesting that being a local bank is

25. Given the parametrization of this regression, the coefficient of LT measures the effect of the local-to-local variable in the Centre-North. The effect in the South is given by the sum of the coefficients of LT and LS.

different from being an outside bank with local branches.²⁶

The WBF variable (weight of the bank for the firm) is also a possible gauge of customer relationships. Prima facie, its negative sign might be interpreted as the result of banks' more careful screening and monitoring of the firms that are highly dependent on them, hence a greater willingness to charge them lower rates. But this is hardly convincing, as the WFB variable (weight of the firm for the bank) is not significant and has a positive sign in two of the three areas of the country; if anything, one would expect banks to be particularly careful when monitoring firms to whom they extend a loan which is large in relation to the size of the bank, not the firm. We are hence inclined to interpret the negative sign of the WBF variable simply in terms of the demand function for credit (firms borrowing more where the cost is lower, other things being equal).

Another variable potentially measuring the importance of customer relations (the DUR variable) is not significant. Of the remaining significant variables in this regression, VOLAT has a simple interpretation: its positive sign may stem from banks charging higher rates when the utilization of lines of credit is volatile, complicating their short-run liquidity management. However, the negative sign of UTR (the utilization rate) is puzzling, as one would expect rates to be higher when firms draw larger shares of their lines of credit. It might be that the size of the facilities is seldom revised by banks, so that utilization turns out to depend essentially on the behaviour of demand, yielding a negative correlation with interest rates.

Column 5 offers a highly concise summary of the previous results concerning operating costs, balance-sheet ratios and bank-firm specific interactions. There is little

26. The WBP variable is significant (at the 4 per cent level) only in the Centre; its negative sign might be explained in terms of the demand function for loans (lower rates leading to higher market shares).

variation in the coefficient values: the banks' coefficients (variables 2-7) are very close to those of regression 3, while those relating to bank-firm interactions (variables 8-17) are close to those of regression 4.

Table A1

INTEREST-RATE REGRESSIONS (1)
 (dependent variable: interest rate on bank advances)
 Number of observations: 35,711

VARIABLES (description in the next page)	Regression 1	Regression 2	Regression 3	Regression 4	Regression 5
	R ² = 0.639 SE = 1.54	R ² = 0.606 SE = 1.61	R ² = 0.618 SE = 1.58	R ² = 0.653 SE = 1.51	R ² = 0.632 SE = 1.55
1. Banks' dummies (BANK)	 (42.13)			 (35.03)	
2. Operating costs/deposits (OP)		19.32 (26.67)	11.88 (11.51)		9.77 (9.58)
3. Lending/deposits (L)			19.43 (17.32)		19.18 (17.22)
4. (Lending/deposits) ² (LSQ)			-16.10 (-17.87)		-15.76 (-17.66)
5. Bad Loans/deposits (BD)			4.08 (18.21)		4.15 (18.88)
6. Compulsory reserves/dep (ROB)			10.93 (15.02)		10.12 (14.03)
7. Deposits (DEP)			0.007 (5.80)		0.005 (3.85)
8. Weight of the firm for the bank (WFB) North Centre South				2.40 (1.34) -6.84 (-1.96) 2.57 (0.56)	
9. Weight of the bank for the firm (WBF) North Centre South				-1.76 (-21.5) -1.56 (-9.69) -2.07 (-8.87)	-1.62 (-23.68)
10. Weight of the bank in the province of the borrower (WBP) North Centre South				-0.002 (-1.06) -0.005 (-2.07) -0.007 (-1.05)	
11. Weight of the borrower's province for the bank (WPB) North Centre South				-0.001 (-0.01) 0.075 (0.41) -1.090 (-1.01)	
12. Duration of relation (DUR) North Centre South				-0.02 (-0.93) -0.08 (-1.77) 0.06 (0.12)	
13. Volatility of utilized credit (VOLAT)				1.22 (11.48)	1.42 (13.09)
14. Utilization rate (UTR)				-0.19 (-14.22)	-0.21 (-15.58)
15. Relative size of the firm and the bank (SIZEFB) North Centre South				-0.006 (-0.06) 0.089 (0.60) 0.367 (0.87)	
16. Dummy "local-to-local" (LT)				0.023 (0.63)	
17. Dummy "local-to-local in the South" (LS)				0.81 (3.26)	1.15 (8.06)
18. Dummy "Northern bank-Southern firm" (DNS)				0.024 (1.82)	

(1) All regressions include dummy variables (FIRM) capturing firm-specific effects; in all cases these dummies proved jointly significant at the 1 per cent level. T-statistics (or F-statistics where appropriate) are shown in parentheses.

List of variables used in table A1

Name	Description
<u>Numerical variables</u>	
OP	Ratio of bank operating costs to deposits.
L	Lending-to-deposits ratio.
LSQ	Lending-to-deposits ratio squared.
BD	Ratio of bad loans to deposits.
ROB	Compulsory reserves as a percentage of total deposits.
DEP	Total deposits.
WFB	Ratio of a firm's loan to total loans of the bank.
WBF	Ratio of a firm's loan to total borrowing of the firm.
WBP	Ratio of the number of the bank's branches in the province to total branches in that province.
DUR	Number of years for which the particular bank-firm relationship is observed without interruption in the sample.
VOLAT	Volatility of utilized credit, as proxied by the ratio between average and end-of-period loan.
UTR	Ratio of utilized credit to the total line of credit.
SIZEFB	Ratio of the bank's total deposits to the firm's value added.
<u>Dummy variables</u>	
BANK	Dummy for bank-specific effects.
FIRM	Dummy for firm-specific effects.
LT	Local-to-local dummy: it takes a value 1 if the headquarters (not the branches) of the bank are located in the same province in which the borrower resides.
LS	Same as LT, but refers only to southern provinces.
DNS	It takes a value of 1 when a bank located in the North or in the Centre lends to a borrower located in the South.

Appendix 2. Corporate borrowing and investment regressions

The empirical analysis of Section 4.4 is based on a sample of 2,132 firms' balance-sheet data from the Company Accounts Data Service. We only consider small manufacturing firms, i.e. those with sales of 1-10 billion lire in 1982. We also exclude firms whose data are incomplete, missing or unreliable; specifically, if: a) the capital and the depreciation accounts do not square; b) sales grow on average at a rate higher than 100 per cent or decrease on average by more than 50 per cent; c) assets and liabilities do not square; d) the firm has been involved in a merger and/or acquisition operation; e) we find non-positive values for the capital stock, the number of employees, the level of financial debt. We compute the capital stock at replacement cost. We use 1982 as a benchmark year (in 1982 Italian firms were allowed to update the capital stock valuation in their balance sheet) and the perpetual inventory method subsequently. We rely on market rather than book value of long-term financial debt. In computing the market value, we use the Brainard et al. (1980) procedure, allowing for some specific features of debt issues in Italy, in particular for the fact that debt is reimbursed progressively until maturity.

In the estimation of eq. (1), with $B_{i,t}^*$ replaced by a linear function of its determinants, we allow for the fact that because of the short time-span covered by our sample, fixed-effect estimation would result in biased and inconsistent coefficients (Nickell, 1981). We follow Arellano and Bond (1991) and take the first differential of the original equation to remove the firm's fixed effect. We then use a generalized method of moments approach²⁷ with the dependent variable lagged twice as an instrument. This leaves

27. The estimation package for dynamic panel data (DPD) was developed by Arellano and Bond (1988).

just four observations for each firm. Under these circumstances, it is difficult to believe that factors such as the tax position of the firm or its riskiness will vary significantly over our sample period. We therefore follow a two-step estimation strategy. First, we regress the debt/sales ratio on its time-variable determinants. Then, using the estimated coefficients, we compute the individual firm effects. In the second step, we regress the individual firm effect on the time-invariant determinants of borrowing. At this stage we use both a standard OLS procedure and a logit specification where the probability for a given firm that its fixed effect is larger than the sample median is taken to be a logistic function of the time-invariant determinants of borrowing. The two approaches yield very similar results. The tables report only the results of the second procedure. To capture the effect of other time-varying factors we use both a trend (i.e. a constant in the first-difference specification) and a set of time dummies. The latter, however, are found to have little explanatory power.

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