European Financial Integration: Some Lessons from Italy*

Introduction

Increasing banking competition in Europe is being spurred by European Community directive No. 77/780, which mandates that national governments create conditions for free entry into national credit markets by 1990 (see, for instance, Bank of Italy, 1986a). While the new legislation allows for a period of transition in Denmark, France, Greece, Ireland, and Italy, there is little doubt that markets for deposits and loans will be much more open and contestable for several years to come. Banks, as well as nonbank financial institutions, have already begun positioning themselves in markets heretofore closed; strategic mergers and acquisitions are clearly visible throughout Europe.

In order to appreciate how increased competition will affect European banking markets, we study the Italian experience in the recent past. The oligopolistic structure of the Italian banking system has been acknowledged by several economists, notably Biscaini *et al.* (1972), Monti *et al.* (1983), Marzano (1984), and Verga (1984). The Governor of the Bank of Italy has called for more competition, especially in the South (Ciampi, 1985). Nomisma (1987) found that the degree of concentration of the banking system increased between 1979 and 1984. Recently, banking market structure has received widespread public attention. For example, Senator Minervini pro-

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posed that existing regional differences in both deposit and loan interest rates be eliminated by making it illegal for financial institutions to pay (charge) different rates on deposits (loans) when lenders (borrowers) are similar. This suggestion is now incorporated into Article 8 of Law No. 64 of 1986. The Bank of Italy has recently launched the third stage of a policy aiming at expanding the number of bank branches to improve the efficiency of financial intermediation. The policy did not include establishing new banks until very recently.

In this paper we propose an oligopolistic model with price discrimination that is consistent with four well-known traditional features of the Italian banking system, namely 1) absence of entry of new banks; 2) higher loan rates in the Mezzogiorno; 3) lower deposit rates in the Mezzogiorno; and 4) net flows of bank funds from the Mezzogiorno to the northcentral region. While the existence of each of these features is generally recognized, we know of no model that represents them collectively.[1] Our static partial-equilibrium framework permits a fixed number of banks to operate in two regions. The two regions differ in terms of the elasticities of demand for loans and supply of deposits. The banks are assumed to be quantity adjusters in each of the two regional markets, which achieve noncooperative equilibria. In one market, which resembles the Mezzogiorno, both demand and supply are interest inelastic relative to the other market. Interregional flows of funds are assumed to be limited to flows controlled by banks. We believe this assumption can be justified by known characteristics of the Italian banking system.

While the focus is on Italy, similar patterns exist elsewhere. For example, interest rates in decaying urban centers and suburban regions in the U.S. are quite different and there are interest rate differences in geographical regions of other countries. It is likely that similar patterns occur elsewhere in the EEC.

The first section briefly describes some institutional characteristics of the Italian banking system. The second section considers regional variations in interest rates and financial services in Italy. It illustrates the existence of regional interest rate differences and

[1] We are aware that alternative explanations exist, particularly those focusing on the differential degree of riskiness of loans in the two regions. Reasons why we do not find this type of explanation very convincing are briefly discussed in the text along with other hypotheses in Section II.

reports institutional features that suggest how difficult it is to move funds across regions outside of the banking system. The third section provides a theoretical description of multiregional banking market equilibrium, when entry to the banking industry is proscribed and interregional flows are limited. We present results for both a monopolistic bank and an oligopolistic banking system. The focus is on regional levels of deposits and loans, regional deposit and loan interest rates, regional flows of funds, and bank profitability. The final section concludes by summarizing our results and commenting on their relation to Italian financial policy and economic development.

I. The banking system in Italy

In this section we present some background characteristics of the Italian banking system that underlie our approach. We emphasize two features of Italian banking markets: the strong separation between borrowing and lending functions and prohibitive barriers to entry.

The core of Italian legislation on banking is the 1936 Law on the reorganization of the banking system. Its main objective was to ensure separation between banking institutions and the real sector of the economy.[2] One of the key features of the 1936 Banking Law is the sharp distinction between the borrowing and lending functions of a credit institution. Commercial banks were to collect deposits and make short-term loans. Special Credit Institutions were to borrow in capital markets and make long-term loans. The distinction is weaker today than it was in 1936, but it is nevertheless influential. In this paper we are only concerned with commercial banks.[3]

While the number of credit institutions in Italy has been

[2] The Italian literature on the subject is vast. A recent brief introduction to the subject is CARANZA, FRASCA, and TONIOLO (1986), and the references therein.

[3] The Italian banking system consists of a wide variety of financial institutions: public-law credit institutions, banks of national interest, "regular" commercial banks, savings banks, and cooperative people's banks. A number of other institutions exist that specialize in lending to farmers or craftsmen. Also, there are subsidiaries of foreign institutions. Data available since the 1936 Banking Law show that the numbers of public law credit institutions and banks of national interest have been roughly constant over time and that the numbers of other types of banks have decreased. Banks of national interest and savings banks have been

decreasing steadily since the end of World War II, the number of branches in operation has nearly doubled.[4] This process was actively encouraged by the Bank of Italy and received full government support on 23 June 1966 when the *Comitato Interministeriale per il Credito e il Risparmio* (CICR)[5] effectively banned entry into the Italian banking system "to ensure the stability and security of private savings." (Bank of Italy, 1986a, p. 2). Efficiency and competitiveness concerns would be dealt with through the regulators' ability to grant existing banks permission to open new branches.

The Bank of Italy is relying heavily on establishing new branches and redistributing ownership of existing ones. A national branch plan was announced in July 1985 consistent with a policy of "stimulating banks to greater efficiency and increasing the supply of banking services where necessary." (Bank of Italy, 1986b, p. 136). The plan, approved by the Bank in June 1986, authorized the setting up of over 500 new branches and the relocation of 96 existing branches on the basis of "projected customer demand for banking services and the banks' need to expand." (Bank of Italy, 1987, pp. 148-9). The present paper contends that a policy of allowing new branches and barring new autonomous banks does not improve efficiency and competitiveness. Nomisma would appear to support our contention when it reports that banking market concentration increased when previous branch expansion plans of the Bank of Italy were undertaken in 1978 and 1982 (Nomisma, p. 59).

II. Regional banking markets

Table 1 reports percentages of Italian bank branches, loans, deposits, employment, output, and population that are located in the Mezzogiorno in recent years.

losing market shares of deposits and loans to regular commercial banks and cooperative banks. Finally, the ratio of loans to deposits shows a general decline over time, up to 1983, with the exception of the banks of national interest. See MONTI *et al.*, 1983.

[4] The number of credit institutions has fallen from 1,393 in 1946 to 1,109 in 1987, while the number of branches has increased from 7,237 to 13,705. Historical data can be found in TAMAGNA and QUALEATTI (1978), SAVIGNANO (1983), and CIAMPI (1985). Data for 1984 and onward are in BANCA D'ITALIA, Bollettino Statistico, various issues.

[5] The 1966 decree did not deny entry to foreign banks, which have been establishing branch offices all along for business related to import-export activities. In 1971 and 1976 the CICR authorized chartering of new rural and handicraft banks.

The shares of population, employment, and GDP have been constant over time. Credit institution branches, loans, and deposits have grown more rapidly in the Mezzogiorno than in the rest of the country. Deposits have grown much faster than loans, although both are small relative to the Mezzogiorno's share of GDP. Since 1970 the Mezzogiorno's shares of the nation's branches and GDP are about equal.

TABLE 1

INDICATORS OF THE EVOLUTION OF THE RELATIVE POSITION OF THE MEZZOGIORNO OVER TIME

Year	[1] Credit Institutions Branches	[2] Loans	[3] Deposits	[4] Employed	[5] GDP	[6] Population
1950	19.5	13.0	12.4	33.2	24.1	37.22
1960	19.9	14.1	13.9	32.0	23.6	36.79
1970	23.0	14.8	15.1	30.0	23.7	35.51
1980	n.a.	14.4	18.0	30.2	24.1	35.62
1981	24.0	15.4	18.4	30.3	24.4	35.46
1985	24.0	17.0	20.2	31.1	n.a.	36.21
1986	24.3	17.0	20.5	30.9	n.a.	36.34
1987	23.4	17.7	20.9	30.3	n.a.	36.45

Note: Figures in columns 1-6 are % of Mezzogiorno relative to the national total. 1987 figure in column 1 is computed out of a definition of "branch" which, beginning 1987, also includes branches previously not accounted for. However, there is no *a priori* reason to believe that the regional distribution of these branches ought to differ markedly from that obtained according to the "old" definition.

Deposits do not include Post-Office deposits. Ideally, one ought to account for the shift from P.O. deposits to bank deposits over time, which may have been more extensive in the Mezzogiorno.

Sources: Columns 1-3: SAVIGNANO (1983) for data up to 1981, and BANCA D'ITALIA, *Supplemento al Bollettino Statistico*, n. 22, 30 giugno 1986 and n. 23, 15 giugno 1988 and *Bollettino Statistico*, n. 1-2, gennaio-giugno 1987. Columns 4-5: SVIMEZ, *Studi SVIMEZ*, XXXVIII, n. 1, gennaio-marzo 1985, for data up to 1981, and ISTAT, *Bollettino mensile di statistica*, n. 4, aprile 1987, p. 166, for later data on employment. Column 7: ISTAT, *Annuario statistico italiano*, various years. Data for 1950 and 1960 are from the Census of the Population, 1951 and 1961 respectively. Data for 1987 are as of October of that year.

The decline in the number of institutions following the 1966 policy that banned entry of new banks did not alter trends in their regional distribution. The number of branches in the Mezzogiorno was increasing more rapidly both before and after 1966. The percentage of all Mezzogiorno branches that are public-law credit institutions and banks of national interest combined has declined markedly in the last 35 years. Nevertheless, these banks continue to be twice as frequent among Mezzogiorno branches than they are among branches in the North. There has been rapid growth in the

number of cooperative and commercial bank branches in the Mezzogiorno.[6]

A. Changes in bank balance sheets

A large fall in the loan/deposit ratio (and corresponding rise in the security/deposit ratio) is the most conspicuous change in the Italian banking system in the last two decades. Two demand-side explanations have been proposed for this change. First, between 1967 and 1971 the uncertain political situation and the commitment by the Central Bank to stabilize the price of government securities induced banks to increase their holdings of securities. Second, between 1973 and 1976 commercial banks were constrained to invest in securities. (Monti *et al.*, 1983).[7]

In the early 1970s the household sector's net financial savings went mostly into bank deposits, which credit institutions then used to purchase government securities, especially short-term Treasury bills. Toward the end of the decade high interest rates on securities and preferential tax treatment of them generated a movement of the public away from bank deposits toward direct purchase of government securities. This tendency was reinforced by the monetary policies of the 1980s (Fazio, 1986, pp. 110-112). Because of this change in household behavior, the share of government securities in household portfolios has risen from 13.2% in 1975 to 29.6% in 1985; the share of cash, bank deposits and post-office deposits has fallen from 59.5% to 43.5% in these years (Italian Treasury, 1987, pp. 138-9).

The change in the ratio of loans to deposits appears to have been particularly concentrated in the Mezzogiorno. Before the change,

[6] A more detailed breakdown of the evolution of institutions and branches over time can be found in TAMAGNA and QUALEATTI (1978), and from the authors for the more recent period.

[7] A complementary explanation by the same authors rests partly on "the fact that, when rates rise, there is a heavier burden on the banks from that part of their balance sheet which is (or is constrained to be) invested in assets whose remuneration is practically nil (the compulsory reserve), or structurally lower and less variable than the rates on loans (long term securities)" (p. 187). The same authors also point out that in 1981 the existing legislation on credit ceillings was revised to exempt banks from credit quotas for small denomination loans. While this revision appears to have been adopted to shield small firms from the contractionary effects of credit controls, according to the author the 1981 revision actually reduced the effectiveness of controls across the board, because banks increasingly began to divide large loans to large firms into many small loans (p. 185).

TABLE 2

LOAN/DEPOSIT RATIOS AT THE NATIONAL AND REGIONAL LEVELS

Year	National	South	Gap
1950	74.8	78.2	3.4
1960	72.8	74.0	1.8
1970	67.0	65.7	–1.3
1980	51.2	40.9	–10.3
1981	53.4	44.6	–8.8
1985	57.2	46.8	–10.4
1986	57.4	48.1	–9.3
1987	58.3	49.4	–8.9

Sources: A. SAVIGNANO (1983) for the years prior to 1985; BANCA d'ITALIA, *Supplemento al Bollettino statistico: Aziende di Credito*, n. 16, 21 aprile 1986; *Bollettino Statistico* n. 1-2, 1987, and *Supplemento al Bollettino Statistico: Aziende di Credito, Statistiche settoriali e territoriali*, n. 23, 15 giugno 1988.

credit institutions operating in the South lent a larger share of their deposits than northern institutions, as can be seen in Table 2. By 1980 banks in the South were lending 10% less of their deposits than the national average. Banks appear to have responded to the constraint to buy securities by financing their purchase with southern deposits. Why? An interpretation is that with the expansion of securities markets and rising interest rates, deposits were siphoned from northern banks more than they were from southern banks; deposit supply was more elastic in the North. The rapid growth in the supply of securities induced banks to begin to engage in price discrimination. To test this hypothesis, time series data about the ownership of government securities by region are required, but unavailable. In their absence, we cite four independent facts that could be understood if depositors at large banks in the North were relatively more able to purchase Treasury securities that paid high rates of interest.

First, we can report that the share of total bank-intermediated funds in the ten largest Italian banks fell from 60.0 to 54.0% between 1972 and 1981 (Monti *et al.*, 1983, p. 232). Most deposits of large banks are booked in the North. Second, at the end of 1986 the ratio of loans to deposits was the same for large and small banks in the Mezzogiorno, and lower for small banks than large in the North. Small banks in the North have higher loan/deposit ratios than banks in the South (Table A.5). Third, the continuing credit ceilings after 1973 induced banks to offer new services to the public as a way of

overcoming the consequences of disintermediation. One of these new services was to provide secondary market services as a dealer in government securities, a source of considerable commission fees (Fazio, 1986, p. 14*). These new bank activities were first offered by large banks in the North. Finally, in 1983, households in the Mezzogiorno held 12.8% of their total wealth in financial instruments, against 21.1% in the northcentral region (Fazio, 1985, p. 30*).

B. Regional variations in loan and deposit interest rates

Quarterly data on average loan and deposit interest rates are available for five large regions since the first quarter of 1969. The data reveal the existence of large regional differences in interest rates paid on deposits and charged on loans. Several hypotheses have been proposed to explain why such differences exist. Savignano (1983) has suggested that the smaller size of deposit accounts in the South may be a reason for the lower rates of interest paid on deposits there, just as the smaller size of firms in the South may partly account for higher rates charged on loans. The argument is that there are large setup costs associated with servicing accounts. These fixed costs must be covered in equilibrium and, therefore, interest rates on small deposit (loan) accounts are lower (higher) than on large accounts. We accept that the average cost of servicing small accounts is higher, but show below that the argument does not explain regional variations.

Other explanations of the existence of interest rate differentials on loans focus on the different degree of riskiness of similar loans in the two regions. There is more than one reason why we do not feel this approach is very interesting in our case. First, we are interested in explaining the pattern of loan *and* deposit interest rate differentials, and the degree of loan riskiness has little role in explaining the latter if deposits are collected competitively. Second, supporters of the risk-differential hypothesis make their point in light of data published by the Bank of Italy on the ratio of bad loans by geographical area, which would be in the Mezzogiorno twice the national average (*Il Sole 24 Ore*, 21 March 1989). There are several problems with this measure, one of which appears to be very important. Bank of Italy (Central Risk Office) only collects data on loans of eight million lire or more, while it collects data on *all* bad loans. Since numerator and denominator of the ratio are drawn from different populations, it is necessary to determine the extent to which

small loans in the North are "similar" to those in the South before the ratio can be interpreted unambiguously. It is also rather remarkable that in March 1988 — the last month for which data of this kind are available — Sicily, one of the major regions of the Mezzogiorno, had a ratio of bad-to-total loans of 12.9% *versus* a national average of 12.1% (*Il Sole 24 Ore*, 21 March 1989).

Tables A.1 through A.3 present descriptive statistics for loan rates, deposit rates, and their difference for different periods. They are reported for the entire period for which data are available and several subperiods, defined by major economic and/or domestic monetary policy events. The cut-off dates we use for defining subperiods are the start of the fourth quarters of 1973 and 1979. The first accounts for both the first oil shock and the introduction by the Italian monetary authority of widespread quantitative credit controls; the second allows for possible effects of the second oil shock and, possibly, the effects of the EMS agreements on domestic credit markets. A summary of the tables follows:

1. *Loan interest rate differentials.* Mean and median loan rates have been consistently higher in the Mezzogiorno than in the North in all subperiods. For the entire period, 1969:I - 1987:IV, the median loan rate was 200 basis points higher in the mainland South than in the Northwest. Between 1969 and 1973 this difference was 140 basis points; it rose to 190 basis points after the 1973 oil shock. The dispersions of loan rates around their means are similar in different regions in the subperiods. Loan rate differentials are even more pronounced when the Islands, as opposed to the mainland South, are compared to the Northwest.

2. *Deposit interest rate differentials.* The first part of Table A.2 shows that both the mean and median deposit rates were very similar in different regions before the first oil shock. Between the first and second oil shock deposit rates in the Northwest rose about 50 basis points more than in the mainland South and about 100 basis points more than in the islands of Sicily and Sardinia. After the second shock the differential in favor of the Northwest widened further relative to the mainland South. The dispersion of deposit interest rates appears to be similar across regions, although somewhat smaller in the Mezzogiorno.

3. *Differences between loan and deposit interest rates.* Higher loan rates in the Mezzogiorno relative to the rest of the country resulted in higher mean and median spreads before the first oil shock. Except for the Islands, in each region the differential widened steadily over time. The mean spread in the Northwest was about 150 basis points less than in the South before the first oil shock. Between 1973 and 1979 this gap widened to about 250 basis points, and it has been about 175 basis points between 1979 and 1987.

If the efficiency of financial intermediation is measured by the difference between lending and deposit interest rates, Italy has been increasingly poorly served by banks and the Mezzogiorno has been served worst of all. In the Mezzogiorno the mean or median difference between loan and deposit interest rates has widened from about 5.5% before the first oil shock to more than 8% after 1979.

FIGURE 1

LOAN INTEREST RATES IN THE NORTHWEST (SOLID LINE)
AND IN THE SOUTHERN MAINLAND

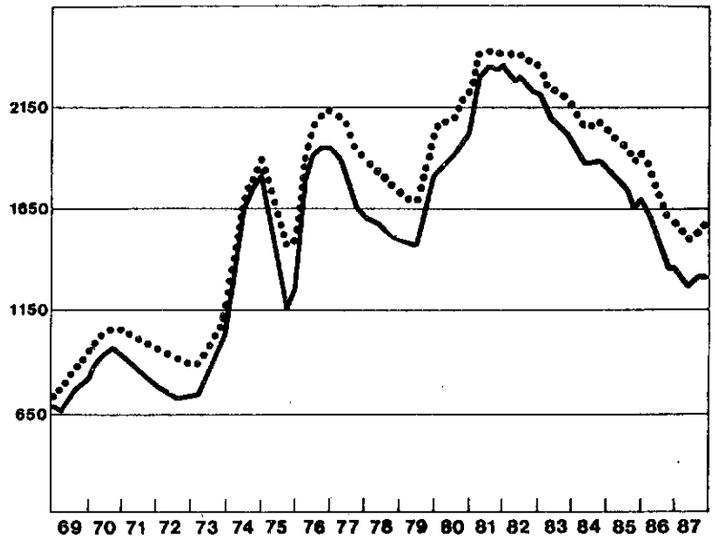
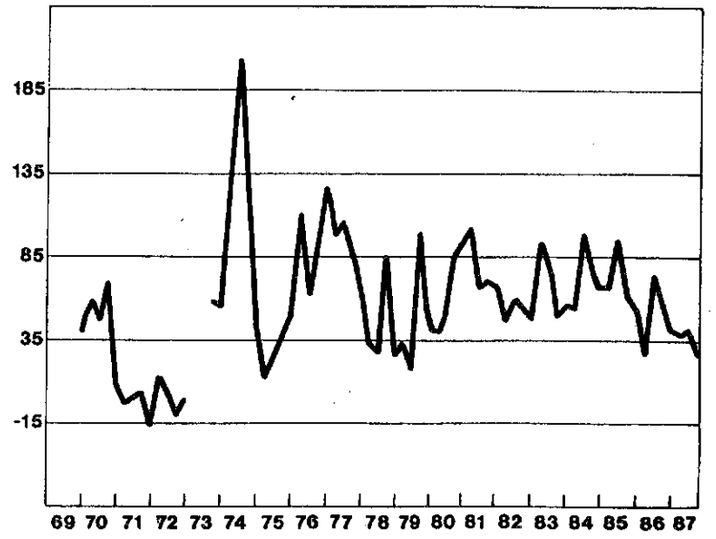


Figure 1 shows loan interest rates in the northwest region (including Milan) and those in the southern mainland over time. The persistence of higher rates in the Mezzogiorno is clearly evident as is the tendency for the gap to widen as interest rates fall.

Figure 2 is a plot of the difference in deposit rates between the Northwest and the southern mainland. The persistently higher deposit rates in the Northwest are evident. The plot has a slight uptrend until 1985. Two segments are of special interest. The first is the spike corresponding to 1974, when the difference in deposit rates reaches over 180 basis points. In August 1973 credit controls were first introduced. Banks bid aggressively for funds in the North, but not in the South. The second is the swell in the period 1975 through the end of 1977. During this period Treasury securities were first widely sold to the nonbank public. Evidently, the banks responded to disturbances by increasingly discriminating against depositors in the South. Figure 3 is a plot of the difference in loan interest rates between the Northwest and the mainland South. Along with Figure 2, it shows very clearly how banks distributed the burden of credit ceilings across regions.

FIGURE 2

DIFFERENCE BETWEEN DEPOSIT RATES
IN THE NORTHWEST
AND THE SOUTHERN MAINLAND



Note: Data on deposit interest rates at the regional level are not available for the year 1969 and the first three quarters of 1973.

FIGURE 3

DIFFERENCE BETWEEN LOAN INTEREST RATES
IN THE NORTHWEST AND SOUTHERN MAINLAND

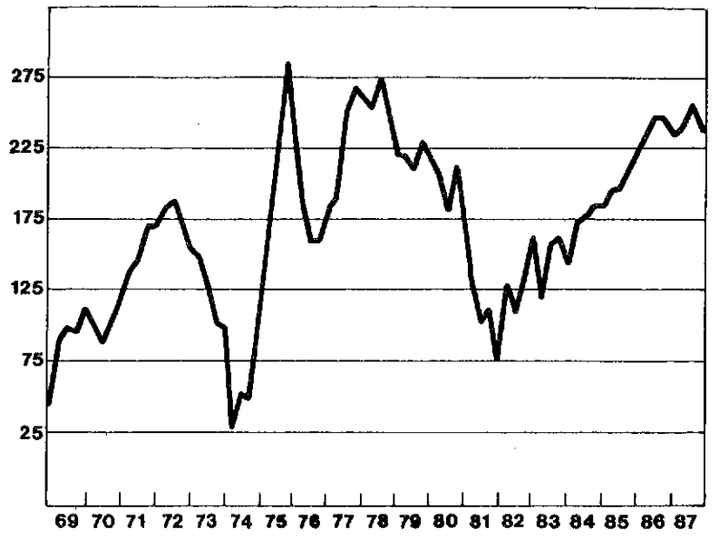
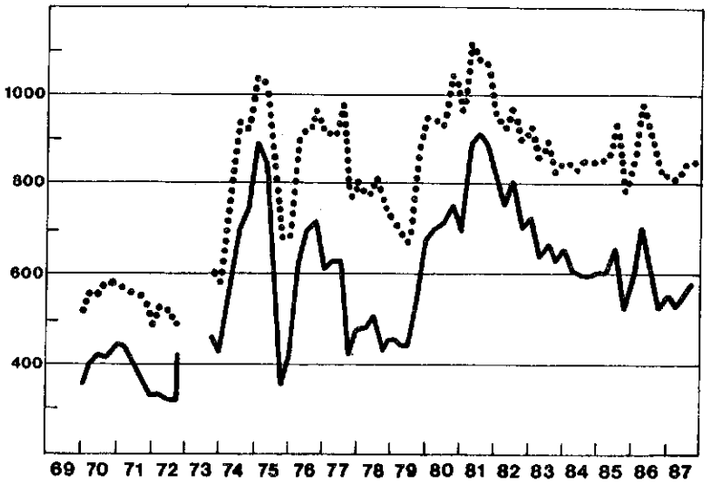


FIGURE 4

SPREAD BETWEEN LOAN INTEREST RATES
AND DEPOSIT INTEREST RATES IN THE NORTHWEST
AND THE SOUTHERN MAINLAND (DOTTED LINE)



Note: Deposit interest rates are not available at the regional level for some quarters. Consequently, same interest rate spreads could not be computed for those quarters.

Figure 4 is a plot of the spread between loan and deposit rates in the two regions, the Northwest (solid line) and the southern mainland (dotted line). The spread in the South is always higher and the difference has widened over time. Since 1982 the spread in the Northwest has been narrowing, but the spread in the mainland South has not.

C. *Regional variations in the spread between loan and deposit interest rates: explanations in the literature*

We now briefly consider two recent articles that examine why regional variations exist in the difference between loan and deposit interest rates.[8] The Governor of the Bank of Italy has recently addressed the issue of geographical differences in lending and

[8] Since the focus of our attention is on *regional* interest rate variations, we report only briefly on the debate about the dynamics of the average national difference between loan and deposit rates. MONTI *et al.* (1983, p. 187) point out that "the differential between average rates paid and those received has shown a clear tendency to grow when there was a general rise in rates and to fall when rates were dropping". One of the explanations offered by the authors rests on the different structure of loan and deposit markets: Banks tend to adjust rates on loans faster than those on deposits, whichever direction the market is moving, thus increasing bank profits in an environment of rising rates. ONADO (1986) finds that the high-inflation years were associated with high profitability of the banking sector owing, among other things, to rising interest margins. MARULLO REEDTZ and PASSACANTANDO (1986) also report significant increases in interest margins over the period 1974-85. MARZANO (1984) focuses on the hypothesis that the spread between loan and deposit rates is a function of the level of nominal interest rates; he reports a positive correlation between the two variables for the post-1969 years.

The widely recognized difference in the speeds of adjustment of loan and deposit interest rates is seen as resulting from two different sources: The economic policy environment and the lower flexibility of deposit interest rates relative to loan interest rates. Causes for the latter are the oligopolistic structure of the banking system in Italy and the claim that increases in loan rates only apply to variable rate loans, whereas higher deposit rates must be paid on all deposits (MARZANO, 1984, p. 151). The last seems irrelevant because adjustable rate loans are widespread in Italy at least since 1980. Also there exists simple documentary and anecdotal evidence that rates on deposits with Italian credit institutions vary widely in a market. Both size of deposit account and depositor characteristics determine deposit interest rates (see, for instance, VACIAGO, 1986, and MONTI *et al.*, 1983, p. 188). In an attempt to secure stable and permanent depositors many credit institutions offer "privileged" conditions to public-sector employees, including above-average interest rates on checkable deposits with payroll direct-deposit.

For the period 1973-1984 MARZANO (1984) suggests as an additional explanation for variations in the spread between loan and deposit interest rates the imposition of administrative credit controls on banks. Apparently his argument is that credit ceilings and securities investment requirements respectively drive interest rates on bank loans up and interest rates on securities down. Since bank income available to pay interest on deposits is a weighted average of the rates on loans and securities, the effect of restrictive administrative controls is to widen the spread. Ceilings and restrictions change elasticities of effective demand. Furthermore, the effects of credit ceilings on interest rate spreads should differ depending on whether the ceiling is binding. COTTARELLI *et al.* (1987) have attempted to identify periods when ceilings were binding, and found a more marked oligopolistic behavior by banks during those periods.

borrowing rates (Ciampi, 1985). He points out that the differential between lending and deposit rates is "structurally wider" in the Mezzogiorno, primarily owing to the higher interest rates charged on loans to customers residing in the South. The *reasons* for the higher costs of borrowing in the South, "attenuated somewhat for southern firms by the higher proportion of subsidized lending in the South", are 1) greater risk, as documented by the higher proportion of bad debt-to-loan ratios in the Mezzogiorno; 2) higher operating costs; and 3) lower degree of competition within the banking system in the region.

Monti *et al.* (1983, p. 188) point out that the market for bank deposits in Italy is not a transparent one, and that it is often the case that deposits of comparable size get substantially different returns, "especially in certain regions". In general, however, a positive correlation exists between size of deposit and rate of return. The same source points out what they call the "structurally greater intermediation differential in the southern areas". While it is not clear what is meant by "structurally", much of the difference is due to rates on loans. Monti *et al.* also point out that loan size is a very large determinant of the rate charged by commercial banks, and that the first derivative of the rate with respect to loan size is negative and large (p. 188).

A breakdown of interest rates on loan by type of borrower (national data only, no regional disaggregation available) shows that the category "imprese individuali", *i.e.* small nonfinancial firms, are charged the highest rates throughout the period under investigation. This particular group of borrowers is effectively excluded from subsidized loan programs. In the remainder of this section we compare the relation between interest rates and loan sizes across regions.

The hypothesis that loan size is an important determinant of the interest rate charged a borrower is widely accepted. Its justification is that bank costs are inelastic with respect to loan size, so that a higher interest rate on smaller loans is necessary for banks to break even. We have no quarrel with this hypothesis. However, we reject an extension of it that purports to account for high loan interest rates in the Mezzogiorno using the fact that small firms are relatively more prevalent in the South. The extension proposes that regional differences in the size distribution of firms account for higher average loan interest rates in the Mezzogiorno.

Data recently published by the Central Risk Office of the Bank of Italy provide evidence about this extension. The data are quarterly averages of rates charged nonfinancial private borrowers in five regions. The period of observation is 1984: IV to 1987: IV. Data about the number of loans granted in each region by size of loan are also available. We begin by discussing the size distribution of loans.

TABLE 3

RATIO OF NUMBER OF LOANS IN THE NORTHWEST TO NUMBER OF LOANS IN THE MAINLAND SOUTH BY LOAN SIZE

Loan Size	[1] Up to 99	[2] 100-249	[3] 250-499	[4] 500-999	[5] 1.0-4.99	[6] 5.0-9.99	[7] 10.0-49.9	[8] 50.0-Above	[9] Total
1984: IV	4.2	4.2	3.6	3.3	3.6	4.9	5.5	8.8	3.9
1985: I	4.2	4.0	3.4	3.2	3.6	5.0	5.4	8.0	3.8
1985: II	4.4	4.0	3.4	3.2	3.5	5.0	5.2	8.4	3.8
1985: III	4.4	4.0	3.4	3.2	3.4	4.5	5.1	8.2	3.7
1985: IV	4.9	4.2	3.5	3.2	3.4	4.8	5.1	7.9	3.9
1986: I	4.3	4.0	3.4	3.2	3.3	4.6	5.2	8.4	3.7
1986: II	4.4	4.0	3.3	3.1	3.3	4.6	5.2	8.6	3.7
1986: III	4.3	4.0	3.4	3.1	3.3	4.5	4.9	8.8	3.7
1986: IV	4.8	4.2	3.4	3.2	3.4	4.7	4.9	9.1	3.8
1987: I	4.3	4.0	3.4	3.1	3.3	4.7	4.7	9.5	3.7
1987: II	4.5	4.0	3.3	3.1	3.3	4.4	5.0	9.4	3.7
1987: III	4.0	3.9	3.3	3.1	3.3	4.4	5.1	9.0	3.6
1987: IV	4.8	4.2	3.4	3.2	3.4	4.4	5.2	8.4	3.8

Note: Loan sizes are in millions of current lire for columns 1-4, and billions of current lire for columns 5-8. Column 9 reports overall averages.
Sources: BANCA D'ITALIA, *Supplemento al Bollettino Statistico, Aziende di Credito: Tassi di interesse*, various issues up to n. 21, 2 giugno 1988.

On average, the heavily industrialized Northwest receives slightly fewer than four loans for each loan granted in the mainland South. In Table 3 it is apparent that the Northwest receives relatively more small and large loans than does the mainland South. There is no tendency for loans in the South to be disproportionately small. Interest rates charged on loans are clearly higher in the South than they are in the Northwest as was evident from Figure 1. Table 4 shows that this pattern holds even when size of loans is held constant. Further, the ratio of loan interest rates in the South to those in the Northwest has tended to increase over time for each loan-size interval. Interest rates charged on the largest loans generally show less regional variation than those charged on other sizes of loans. In

TABLE 4

RATIO OF INTEREST RATES CHARGED ON LOANS IN THE NORTHWEST TO THOSE CHARGED IN THE MAINLAND SOUTH BY LOAN SIZE

Loan Size	[1] Up to 99	[2] 100-249	[3] 250-499	[4] 500-999	[5] 1.0-4.99	[6] 5.0-9.99	[7] 10.0-49.9	[8] 50.0-Above	[9] Total
1984: IV	.95	.94	.95	.94	.94	.93	.95	.95	.91
1985: I	.97	.95	.93	.93	.93	.94	.94	.95	.91
1985: II	.95	.93	.93	.93	.93	.94	.95	.95	.90
1985: III	.94	.94	.93	.92	.92	.95	.93	.93	.90
1985: IV	.85	.90	.91	.92	.91	.93	.93	.96	.89
1986: I	.91	.92	.91	.90	.90	.92	.93	.99	.88
1986: II	.85	.91	.91	.90	.89	.91	.91	.96	.87
1986: III	.81	.90	.89	.89	.88	.90	.90	.94	.85
1986: IV	.78	.89	.90	.89	.90	.91	.90	.94	.85
1987: I	.85	.90	.89	.89	.89	.90	.88	.94	.85
1987: II	.84	.87	.88	.88	.88	.90	.88	.93	.84
1987: III	.84	.85	.86	.87	.87	.88	.86	.91	.83
1987: IV	.82	.85	.88	.88	.89	.90	.87	.91	.85

Note: Loan sizes are in millions of current lire for columns 1-4, and billions of current lire for columns 5-8. Overall averages reported in column 9 fall sometimes below the lowest size-specific average in a given quarter. We cannot account for what is clearly an index number problem. It is not clear what averaging method was used by the source in computing overall interest rate averages on loans.

Sources: BANCA D'ITALIA, *Supplemento al Bollettino Statistico, Aziende di Credito: Tassi di interesse*, various issues up to n. 21, 2 giugno 1988.

the last three years regional interest rates on loans have been diverging sharply, after allowing for variations in loan size.

III. A model of noncooperative market behavior with regional price discrimination

In this section we present a simple model that is consistent with four basic features of the Italian banking system. The features are 1) higher loan interest rates in the Mezzogiorno, 2) lower deposit interest rates in the Mezzogiorno, 3) net flows of bank funds from the Mezzogiorno to the North, and 4) absence of entry of new banks.

A necessary condition for regional differentials in loan and deposit interest rates is that there be limited arbitrage opportunities for business firms and individuals. Large enterprises undoubtedly do

engage in arbitrage by borrowing funds where they are cheap and using the proceeds in their facilities throughout Italy. Smaller firms with single sites or multiple sites, but only in one region, cannot effectively engage in arbitrage, so this condition is likely to be met. At least until 1985 there were no significant nonbank lenders that provided arbitrage services between markets in the North and South.

Our starting point in constructing the model is the belief that the elasticities of demand for loans and supply of deposits are higher in the northcentral region than in the Mezzogiorno. The financial markets in the northcentral region are largely concentrated in the major financial centers of Milan and Rome where large Italian firms have headquarters and offices of large foreign firms are located. Only Naples in the Mezzogiorno has similar enterprises, but they tend to be subsidiaries of corporations with main Italian financial offices in the northcentral region. Large firms effectively have considerable freedom to borrow from or place deposits in Italian banks or in financial institutions elsewhere in the EEC. They tend to have access to Eurocurrency markets. As a result, interest rates on deposits and loans theoretically are narrowly confined to a range around LIBOR, once allowance has been made for international variations in expected rates of inflation. In the Mezzogiorno, there are few large firms that must borrow from banks. Small firms everywhere are less able to gain access to Eurocurrency markets. With fewer close substitutes available to depositors and borrowers, demand and supply elasticities in the Mezzogiorno are likely to be lower.

In the model we assume that there are n identical banks with branch offices located in both regions. Each is assumed to be playing a noncooperative game and, in addition to the usual sort of Cournot quantity-adjusting equilibrium, recognizes the possibility of discriminating between the two regional markets for deposits and loans. Because all banks are identical, their portfolios are identical.[9] Therefore, no interbank trading of funds occurs, but each bank may transfer funds between its branches in the two regions.

[9] The assumption that all banks are identical is, of course, very strong. We do not think it misleads and it enormously simplifies analysis by allowing us to ignore bank interest rate cross elasticities, which are nonzero when banking services are differentiated. Local banking markets are heterogeneous and some banks operate in only one region; we cannot incorporate such detail. There is an interbank funds market that establishes a uniform marginal value of bank funds across Italy. In the static framework considered in the paper, that market should allow a noncooperative equilibrium to emerge which is similar to that discussed in the text, so long as most large banks operate in both regions.

Several of the authors cited in the preceding section report that regional interest rate differentials widen when interest rates are increasing. A dynamic model that permits customers in the northcentral region to adjust more rapidly or to have lower transactions costs can account for such patterns. In this paper attention is restricted to static models, since our goal is to explain persistent long-term regional interest rate differentials.

Other authors report that differentials tend to be larger when the overall level of interest rates is higher. This pattern could result either from nonlinear demand and supply curves with appropriate relative convexities or from the presence of other variables in demand and supply functions that are correlated with interest rates. For convenience of exposition, we do not attempt to incorporate nonlinearities and other correlated variables in our framework. Available time series do not allow us to distinguish this argument from that in the preceding paragraph.

It is convenient to work with a highly simplified portfolio. Intrabank funds purchased equal intrabank funds sold and, therefore, are netted out of the consolidated account. A bank's balance sheets for the consolidated enterprise and branches in one of the regions are:

Consolidated Enterprise		*Branches in a Region*	
Loans	Deposits	Loans Intrabank funds sold	Deposits Intrabank funds purchased

Regional banking industry loan demand and deposit supply functions are assumed to be linear. Hereafter the northcentral region is denoted by the subscript "1" and the Mezzogiorno by "2".

$$(1) \qquad \begin{aligned} L_j &= \alpha_j - \beta_j r_j \qquad j = 1,2 \\ D_j &= \delta_j + \gamma_j i_j \qquad j = 1,2 \end{aligned}$$

where all parameters are positive, L_j and D_j are the demand for loans and supply of deposits, respectively, in region j, r_j and i_j are the interest rates on loans and deposits in region j, and it is assumed that $\alpha_j > \delta_j$. If $i_j > 0$, in a world of certainty it is never rational for a bank to hold idle cash. Using lower-case letters to represent loans and deposits at a bank's branches, a bank's profit is given by:

$$(2) \qquad \pi = \sum_{j=1}^{2} r_j l_j - \sum_{j=1}^{2} i_j d_j.$$

A. A single monopoly bank

It is convenient to begin by analyzing a monopoly, since its maximizing behavior will also be the behavior observed if all banks cooperate. Imposing the balance sheet constraint, its profits are given by:

$$(3) \qquad \Pi = \sum_{j=1}^{2} l_j \left(\frac{\alpha_j - l_j}{\beta_j}\right) - \sum_{j=1}^{2} d_j \left(\frac{d_j - \delta_j}{\gamma_j}\right) + \lambda \left(\sum_{j=1}^{2} d_j - \sum_{j=1}^{2} l_j\right).$$

First-order conditions for profit maximization are:

$$(4) \qquad l_j = \frac{\alpha_j - \beta_j \lambda}{2}, \; d_j = \frac{\delta_j + \gamma_j \lambda}{2}, \; j = 1,2 \text{ and } \Sigma d_j = \Sigma l_j.$$

Second-order conditions are trivially satisfied by the specification of the problem. By inspection of (4), it is apparent that the solution to this system will generally result in regional variations in deposit and loan interest rates and nonzero interregional funds flows. Sufficient conditions for there to be no interregional flows of funds are that the supply of funds be perfectly elastic and that the interest rate on deposits be the same in each region, i. Then (3) becomes

$$(5) \qquad \Pi = \sum_{j=1}^{2} l_j \left(\frac{\alpha_j - l_j - \beta_j i}{\beta_j}\right)$$

and the first-order conditions become

$$(6) \qquad l_j = \frac{\alpha_j - \beta_j i}{2}, \; j = 1,2.$$

When these conditions are not satisfied, the direction of funds flows between regions cannot be inferred from the loan market. Funds can flow from high to low loan interest rate regions,

depending upon the shadow price of funds, λ, and marginal cost and revenue functions. From (4), the j^{th} area is a net lender of funds if

$$\delta_j - \alpha_j + \lambda (\gamma_j + \beta_j) > 0.$$

To depict the Italian banking market pattern, we require for funds flows:

$$(7) \qquad \begin{aligned} \delta_2 - \alpha_2 + \lambda (\gamma_2+\beta_2) &> 0 \\ \delta_1 - \alpha_1 + \lambda (\gamma_1+\beta_1) &< 0 \end{aligned}$$

and for interest rates:

$$(8) \qquad \frac{\alpha_2-l_2}{\beta_2} > \frac{\alpha_1-l_1}{\beta_1}, \quad \frac{d_1-\delta_1}{\gamma_1} > \frac{d_2-\delta_2}{\gamma_2}.$$

Substituting for l_j and d_j from (4) into (8) and simplifying yields:

$$(9) \qquad \frac{\alpha_2}{\beta_2} > \frac{\alpha_1}{\beta_1} \text{ and } \frac{\delta_2}{\gamma_2} > \frac{\delta_1}{\gamma_1}.$$

Eliminating λ from 7 gives

$$(10) \qquad \frac{\alpha_1-\delta_1}{\gamma_1+\beta_1} > \frac{\alpha_2-\delta_2}{\gamma_2+\beta_2}$$

which is a sufficient condition for funds to flow from the Mezzogiorno to the northcentral region.

Configurations of parameters satisfying inequalities (9) and (10) are necessary and sufficient to generate the regional patterns of interest rates and funds flows that are observed in Italy when the assumptions of this model are valid. An important question for the Mezzogiorno (and other similar regions) is how the presence of price discrimination and interregional flows affects the supply of loans to the region. When the bank does not discriminate in deposit markets, $\lambda = i_j$. In this case with linear loan demand functions, Mrs. Robinson (1933) showed that the total volume of lending in the two markets is unchanged by price discrimination in the loan market and that with

discrimination a larger amount is lent in the market with the higher elasticity of demand. An analogous argument applies to the amount of deposits raised by a monopsonist in both regions when the bank does not discriminate in loan markets. The question can be approached by assuming that there are no interregional funds flows, so that a bank's lending in each market must be financed by deposits raised in that market. If no interregional flows are permitted, a bank's branches in a region are self-financing and the situation is called a "stand-alone" case. In this case interregional price discrimination is impossible. However, relative to the perfectly competitive ideal, the volume of loan funds in each region is reduced by the presence of monopoly power in the loan market and further reduced when monopsony power is exploited in the deposit market. We assume that banks always use all market power they have, although noncooperatively when more than one bank exists.

A self-financing bank branch in any region equates its marginal cost in the market for deposits with its marginal revenue in the market for loans. Because of the balance sheet identity, the quantities are the same in each market. Setting $l_j = d_j = q_j$ and using (1) to obtain first-order conditions, we have for each region:

$$(11) \qquad q_j = \frac{\gamma_j\alpha_j+\delta_j\beta_j}{2(\beta_j+\gamma_j)} \qquad j = 1,2.$$

The question then becomes: are there values of the eight parameters satisfying inequalities (9) and (10) that allow loans in the Mezzogiorno under price discrimination to be smaller than the quantity determined for the Mezzogiorno using (11)? We do not attempt to answer this question formally. Instead in Table 5 we report numerical examples that allow comparisons of loans in the Mezzogiorno when price discrimination is allowed and when branches are required to be self-financed.

Table 5 successively reports parameters defining nine experiments, results when banks are allowed to discriminate interregionally, results when branches are constrained to equate loans and deposits, and maximum profits obtainable under the two regimes. With the exception of a control experiment (experiment 1 in which the two regional markets are assumed to be identical), interregional discrimination always yields higher profits than in the case where

TABLE 5

MONOPOLY BANK WITH AND WITHOUT REGIONAL DISCRIMINATION

Item	1	2	3	4	5	6	7	8	9
				I Experiment Parameters					
Northcentral									
Alpha1	3000	3000	4000	4000	4000	3000	4000	4000	4000
Beta1	.7	.8	.9	1.1	1.1	.7	1.1	.9	.9
Gamma1	.5	.4	.5	.8	.7	.5	.7	.5	.5
Delta1	−1000	1	−1500	−1500	−1500	−1000	−1500	−1000	−1500
Mezzogiorno									
Alpha2	3000	2000	3000	2000	3400	2000	2000	2000	2000
Beta2	.7	.7	.4	.4	.4	.4	.4	.4	.4
Gamma2	.5	.5	.3	.3	.3	.3	.3	.3	.3
Delta2	−1000	100	−100	−100	−100	−100	−100	−100	−100
				II Discrimination Results					
Northcentral									
Loans	333	684	157	392	20	376	328	479	371
Deposits	333	409	274	419	510	303	314	345	155
Loan rate	3.81	2.90	4.27	3.28	3.62	3.75	3.34	3.91	4.03
Deposit rate	2.67	1.02	3.55	2.40	2.87	2.61	2.59	2.69	3.31
Mezzogiorno									
Loans	333	286	681	415	980	358	392	324	276
Deposits	333	560	564	388	490	432	406	457	493
Loan rate	3.81	2.45	5.80	3.96	6.05	4.11	4.02	4.19	4.31
Deposit rate	2.67	.92	2.21	1.63	1.97	1.77	1.69	1.86	1.98
				III Stand-Alone Results					
Northcentral									
Quantity	333	500	232	408	319	333	319	393	232
Loan rate	3.81	3.13	4.19	3.27	3.35	3.81	3.35	4.01	4.19
Deposit rate	2.67	1.25	3.46	2.39	2.60	2.67	2.60	2.79	3.46
Mezzogiorno									
Quantity	333	446	614	400	700	400	400	400	400
Loan rate	3.81	2.22	5.96	4.00	6.75	4.00	4.00	4.00	4.00
Deposit rate	2.67	1.25	2.38	1.67	2.67	1.67	1.67	1.67	1.67
				IV Bank Profitability					
Discrimination	.762	1.746	2.389	1.294	3.573	1.327	1.172	1.452	1.202
Stand Alone	.762	1.372	2.368	1.293	3.096	1.313	1.171	1.413	1.101

branches are required to stand alone. Experiments 6, 7, 8, and 9 illustrate profiles of interest rate differentials and regional funds flows that are similar to those in Italy. In each of these experiments "Mezzogiorno" loan volume is smaller and deposit volume is larger in the discrimination regime than when branches stand alone. Not surprisingly, when the net flow of loans (deposits) to one region is positive, the interest rate on loans (deposits) is lower in that region relative to the stand-alone regime. However, one cannot infer the direction of funds flow from the regional loan interest rate differential. Marginal interest costs and revenues in the two regions are identical in each discrimination experiment, but observable average interest rate differentials are large.

Identical borrowers and depositors in the two regions face different interest rates, whether interregional funds flows are permitted or not. We now examine whether regional differences in interest rates are increased or decreased by allowing the monopoly bank to shift funds interregionally. If an optimizing stand-alone branch makes more loans in the Mezzogiorno than the same branch does when the monopoly bank is discriminating optimally, it must be the case that the stand-alone constraint is binding. This implies that the opportunity cost of not being able to shift funds from the Mezzogiorno is positive. After funds are shifted from the Mezzogiorno, loan and deposit interest rates in the northcentral region are lower than they were when northcentral branches were standing alone. Similarly, loan and deposit rates in the Mezzogiorno are higher after interregional flows are introduced. Allowing the bank to transfer funds from high to low loan interest rate regions *increases* regional differences in loan interest rates. Allowing it to transfer funds from high to low deposit rate regions similarly would *increase* regional differences in deposit interest rates, as can be seen from experiments 3, 4, and 5. Shifting funds from a low to a high loan (deposit) interest rate area reduces differences in loan (deposit) interest rates.

If Italy had a single monopoly bank and the assumptions of this model were valid, we could conclude that price discrimination had increased regional loan interest rate differences and reduced regional differences in deposit interest rates. Imposing a ban on interregional shifts of funds by the bank would increase the welfare of borrowers (entrepreneurs?) in the Mezzogiorno and reduce the welfare of its depositors. The opposite effects would be felt in the northcentral region. Requiring that depositors everywhere in Italy receive the same rate of interest on deposits would have the effect of increasing the welfare of both borrowers and depositors in the Mezzogiorno and of worsening the welfare of both in the northcentral region, relative to the stand-alone regime. Both regulations would reduce the bank's profitability.

B. Multiple identical banks

Because of our assumption that all banks are identical, we can rather easily extend the discussion to a situation where there are, say, five banks who play Cournot strategies. Table 6 reports results for a representative bank corresponding to the last three sections of Table 5. The nine experiments are generated by using the same market parameters as are shown in the first section of Table 5. As might be expected, individual bank profits are sharply reduced by having competitors. Aggregate deposits and loans in each region rise considerably relative to the monopoly case. Banking industry profits declined uniformly across experiments by 5/9; an individual bank's profits in the oligopoly case is 1/9 of that in the monopoly case. (The uniformity is a consequence of the assumed linearity of demand and supply curves.) In every experiment industry loans and deposits rose by 2/3 and loans and deposits at an individual bank fell by 2/3 as the number of bank increased from one to five. These results can easily be obtained formally for the control experiment case by equating expressions for marginal cost and revenue and solving for a quantity. In all experiments regional differentials in loan and deposit interest rates fell by 2/3 as the number of banks rose from one to five. The amount of funds shifted by the banking industry also increased by 2/3 as the number of banks increased from one to five, in order to preserve balance sheet identities.

Increasing the number of banks in this symmetrical fashion does not alter the patterns of net regional claims or the policy conclusions in the preceding subsection. While interregional claims actually increase with the number of banks, interest rate differentials are reduced. Banking industry assets and liabilities increase in proportion to $2n/(n+1)$ where n is the number of identical banks. The reduction in interest rate differentials relative to the monopoly case is $(n-1) / (n+1)\%$. Whether or not interregional claims are allowed, quasi-rents (profits) for a representative bank are $[2 / (n+1)]^2$ of those of a monopoly bank.

Finally, in the stand-alone case it is important to notice that an increase in the number of competitors does not necessarily reduce interest rate differentials in loan or deposit markets. Comparing stand-alone results for experiments 8 or 9 in Tables 5 and 6 shows that regional interest rate differentials may actually increase when the number of banks increases from one to five, if interregional flows are banned.

TABLE 6

FIVE-BANK OLIGOPOLY WITH AND WITHOUT REGIONAL DISCRIMINATION

Item	1	2	3	4	5	6	7	8	9
				I Experiment Parameters					
Northcentral									
Alpha1	3000	3000	4000	4000	4000	3000	4000	4000	4000
Beta1	.7	.8	.9	1.1	1.1	.7	1.1	.9	.9
Gamma1	.5	.4	.5	.8	.7	.5	.7	.5	.5
Delta1	−1000	1	−1500	−1500	−1500	−1000	−1500	−1000	−1500
Mezzogiorno									
Alpha2	3000	2000	3000	2000	3400	2000	2000	2000	2000
Beta2	.7	.7	.4	.4	.4	.4	.4	.4	.4
Gamma2	.5	.5	.3	.3	.3	.3	.3	.3	.3
Delta2	−1000	100	−100	−100	−100	−100	−100	−100	−100
				II Discrimination Results - Representative Bank					
Northcentral									
Loans	111	228	52	131	7	125	109	160	124
Deposits	111	136	91	140	170	101	105	115	52
Loan rate	3.49	2.33	4.15	3.04	3.61	3.39	3.14	3.56	3.76
Deposit rate	3.11	1.70	3.91	2.75	3.36	3.01	2.89	3.15	3.52
Mezzogiorno									
Loans	111	95	227	138	327	119	131	108	92
Deposits	111	187	188	129	163	144	135	152	164
Loan rate	3.49	2.18	4.66	3.27	4.42	3.51	3.37	3.65	3.85
Deposit rate	3.11	1.67	3.47	2.49	3.06	2.73	2.59	2.87	3.07
				III Stand-Alone Results					
Northcentral									
Quantity	111	167	77	136	106	111	106	131	77
Loan rate	3.49	2.71	4.02	3.02	3.15	3.49	3.15	3.72	4.02
Deposit rate	3.11	2.08	3.77	2.73	2.90	3.11	2.90	3.31	3.77
Mezzogiorno									
Quantity	111	149	205	133	233	133	133	133	133
Loan rate	3.49	1.80	4.94	3.33	5.58	3.33	3.33	3.33	3.33
Deposit rate	3.11	1.29	3.75	2.56	4.22	2.56	2.56	2.56	2.56
				IV Bank Profitability					
Discrimination	.085	.194	.266	.144	.397	.147	.130	.161	.133
Stand Alone	.085	.181	.263	.143	.344	.146	.130	.157	.122

IV. Summary and interpretation

The Italian banking system is a complex mechanism that is both profitable and important for allocating funds. The discussion pres-

ented in sections I and II provides strong support for a hypothesis that banking markets are imperfectly competitive and that pronounced regional differences exist in interest rates on loans and deposits.

Before 1970 interest rates on deposits were controlled by a banking cartel. Interest rates on long-term bonds were pegged at low rates by monetary authorities. Little empirical evidence exists about regional variations in deposit and loan rates before 1970.

During the 1970s the rate fixing arrangements were abandoned and several important policies changed Italian banking markets. Lending ceilings were imposed on banks. Large deficits compelled the government increasingly to issue securities to bank and then to nonbank investors. Treasury bills paid high interest rates that, unlike rates on deposits, were exempt from taxation. Bills were issued in relatively large denominations, which caused the supply of deposits in the more affluent northcentral region to become relatively more elastic than in the Mezzogiorno. Apparently as a consequence of these and other institutional changes, the ratio of loans to deposits fell at banks throughout Italy, but fell substantially more in the Mezzogiorno. Further, during this decade interest rates on deposits fell in the Mezzogiorno relative to those elsewhere in Italy and interest rates on loans rose in the Mezzogiorno relative to those elsewhere in Italy. These changes have not been reversed in the 1980s. We consider and reject some explanations for regional differences in bank portfolios and interest rates that have appeared in the literature about Italian banks.

In section III a simple two-region oligopoly model with price discrimination is proposed that is capable of representing the basic features of the Italian banking market. An assumption of the model is that oligopolists are quantity adjusters and do not cooperate. Only banks are allowed to transfer funds interregionally. The resulting Cournot-style noncooperative equilibrium is defined by assumed demand functions for loans and supply functions of deposits in the two regions. The model is studied with and without allowing interregional flows and with different numbers of banks. The principal results from the model are as follows. First, when the regional pattern of interest rates and flows is as in Italy, allowing banks to shift funds causes regional differences in loan interest rates to widen and differences in deposit interest rates to diminish. Second, in regions like the Mezzogiorno depositors gain and borrowers lose when banks shift funds interregionally. Third, increasing the number of autonomous banks causes bank profits to fall and, if interregional flows of funds are permitted, regional differences in interest rates to decrease.

The model is, of course, quite different in appearance from the reality of Italian banking markets. Nevertheless, we believe it captures the sense of what has been going on in Italy. It matters little whether banks explicitly transfer funds from their Mezzogiorno branches to those in the northcentral region or do so implicitly through security markets. Using security markets, a bank can comply with loan quotas or engage in price discrimination by having branches in the Mezzogiorno hold relatively more of the bank's securities. The effects are the same — *i.e.* low loan/deposit ratios in the South and high ratios in the North.

We have not attempted to explain formally how Italian banks managed to move from the controlled interest rate regime of the 1960s to the noncooperative price-discriminating equilibrium of the 1970s and 1980s. The emergence of a large supply of government securities that were especially appealing to affluent individuals is part of the story. The introduction and maintenance of credit controls and loan ceilings is a second. A third part is the linkages and relationships that are reported to exist between major banks and many small banks throughout Italy. One can imagine a hypothetical number of identical independent competing banks that would give a market outcome similar to that in Italy. We believe that number to be on the order of five or ten, not the 1000 or so institutions that are listed in official sources. Policies of the Bank of Italy that ban entry and encourage branch expansion no doubt help to foster anticompetitive relationships. Among its many other goals, the Bank wants a stable and profitable banking industry. Simulations in the preceding section indicate that price discrimination can importantly improve bank profitability.

Finally, we have not attempted to address the question of whether economic development of the Mezzogiorno was impaired by the market practices we have studied. If the model correctly represents the situation, then costs of borrowing from banks have been kept artificially high in the Mezzogiorno, relative to a stand-alone situation or to what would have obtained with more competitors. Similarly, the spread between loan and deposit rates would be lower with more competitors. However, banks are only a small part

of the development process. Large credit subsidization and other development programs for the Mezzogiorno have accompanied price discrimination in banking markets. Price discrimination has operated to lower borrowing costs in the North and to increase rewards for saving in the South. A two-region model with real and financial sectors is needed to determine how real economic growth in the Mezzogiorno is affected by banking practices.

In 1992 European monetary unification is likely to increase competition in Italian banking markets. If competition increases, our model predicts that regional interest rate differentials and the spread between loan and deposit rates in the Mezzogiorno will shrink. Over the longer run, anticompetitive structures in banking markets are likely to reappear. Policies promoting entry and competition may be necessary to maintain efficient banking markets.

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APPENDIX

TABLE A. 1

LOAN RATES BY REGION OVER TIME

	Italy*	North-west	North-east	Central	South-Mainland	South-Islands
1969: I-1987: IV						
Median	16.13	15.93	16.23	16.19	18.12	17.67
Mean	15.39	15.09	15.37	15.31	16.77	16.88
Standard dev.	5.14	5.08	5.17	5.26	5.18	4.91
Minimum	6.81	6.64	6.76	6.80	7.20	7.23
Maximum	23.85	23.55	24.00	24.22	24.49	23.57
1969: I-1973: II						
Median	8.10	7.91	8.13	7.95	9.33	10.14
Mean	8.26	8.05	8.27	8.13	9.33	9.75
Standard dev.	.90	.94	.88	.88	.98	1.05
Minimum	6.81	6.64	6.76	6.80	7.20	7.23
Maximum	9.66	9.59	9.61	9.52	10.60	10.70
1970: I-1972: IV						
Median	8.73	8.46	8.86	8.59	10.00	10.50
Mean	8.69	8.47	8.72	8.53	9.87	10.31
Standard dev.	.74	.84	.65	.78	.57	.41
Minimum	7.56	7.22	7.64	7.27	8.94	9.19
Maximum	9.66	9.59	9.61	9.52	10.60	10.70
1973: IV-1979: III						
Median	16.05	15.85	16.16	16.01	17.74	17.54
Mean	15.80	15.63	15.81	15.55	17.46	17.51
Standard dev.	2.78	2.81	2.76	2.84	2.94	2.58
Minimum	9.51	9.34	9.44	9.30	10.44	11.37
Maximum	19.71	19.53	19.66	19.64	21.27	21.00
1979: IV-1987: IV						
Median	19.29	18.85	19.22	19.32	20.79	21.05
Mean	19.19	18.74	19.13	19.27	20.55	20.51
Standard dev.	3.31	3.34	3.49	3.45	2.89	2.74
Minimum	13.13	12.62	12.82	13.16	14.99	15.09
Maximum	23.85	23.55	24.00	24.22	24.49	23.57
1973: IV-1987: IV						
Median	17.90	17.58	17.66	17.56	19.34	19.67
Mean	17.76	17.43	17.73	17.71	19.25	19.25
Standard dev.	3.51	3.47	3.58	3.68	3.27	3.04
Minimum	9.51	9.44	9.34	9.30	10.44	11.37
Maximum	23.85	23.55	24.00	24.22	24.49	23.57

Source: BANCA D'ITALIA, *Bollettino Statistico*, various issues.

TABLE A. 2

DEPOSIT RATES BY REGION OVER TIME

	Italy*	North-west	North-east	Central	South-Mainland	South-Islands
1970: I-1972: IV						
Median	4.69	4.59	4.56	4.92	4.54	4.59
Mean	4.71	4.68	4.56	4.86	4.50	4.61
Standard dev.	.41	.45	.37	.45	.32	.29
Minimum	4.11	4.01	4.03	4.26	4.07	4.21
Maximum	5.35	5.46	5.22	5.52	4.93	5.01
1973: IV-1979: III						
Median	10.18	10.36	10.37	9.97	10.07	9.18
Mean	9.69	9.96	9.97	9.71	9.25	8.35
Standard dev.	2.09	2.22	2.30	2.18	2.15	1.81
Minimum	4.75	4.90	4.49	4.82	4.32	4.47
Maximum	12.92	13.34	13.85	14.71	12.09	10.60
1979: IV-1987: IV						
Median	12.52	12.46	12.70	12.56	11.79	11.51
Mean	11.99	12.04	12.39	11.88	11.43	11.34
Standard dev.	2.51	2.52	2.73	2.35	2.46	2.22
Minimum	7.30	7.30	7.37	7.37	6.94	7.43
Maximum	15.34	15.39	16.30	14.86	14.90	14.30
1973: IV-1987: IV						
Median	11.00	11.38	11.21	11.20	10.67	10.04
Mean	11.02	11.16	11.37	10.97	10.52	10.08
Standard dev.	2.59	2.59	2.81	2.51	2.56	2.53
Minimum	4.75	4.90	4.49	4.82	4.32	4.47
Maximum	15.34	15.39	16.30	14.86	14.90	14.30

Source: BANCA D'ITALIA, *Bollettino Statistico*, various issues.
Note: National weighted-averages for deposit rates are provided by source for the entire sample period. However, regional average deposit rates are not published for 1969 and the first three quarters of 1973. This has resulted in our inability to present descriptive statistics for some periods for both deposit rates and loan/deposit spreads (Table A. 3).

TABLE A. 3

SPREADS BY REGION OVER TIME

	Italy*	North-west	North-east	Central	South-Mainland	South-Islands
1970: I-1972: IV						
Median	4.07	3.89	4.26	3.83	5.49	5.67
Mean	3.98	3.79	4.17	3.67	3.37	5.69
Standard dev.	.37	.45	.35	.38	.34	.35
Minimum	3.45	3.19	3.61	3.01	4.83	4.96
Maximum	4.46	4.41	4.64	4.13	5.83	6.49
1973: IV-1979: III						
Median	5.88	5.42	5.67	5.89	8.08	9.06
Mean	6.11	5.67	5.84	5.84	8.21	9.17
Standard dev.	1.43	1.49	1.18	1.39	1.36	1.86
Minimum	3.97	3.49	4.16	2.88	5.73	6.79
Maximum	9.01	9.02	8.15	8.65	10.55	12.25
1979: IV-1987: IV						
Median	7.10	6.65	6.49	7.04	8.31	8.09
Mean	7.20	6.69	6.73	7.28	8.51	8.11
Standard dev.	1.06	1.09	1.00	1.21	.78	.65
Minimum	5.67	5.18	5.30	5.50	7.31	6.68
Maximum	9.52	9.17	8.88	9.89	10.17	9.90
1973: IV-1987: IV						
Median	6.79	6.24	6.28	6.65	8.08	7.99
Mean	6.74	6.26	6.34	6.69	8.09	7.87
Standard dev.	1.33	1.36	1.16	1.43	1.13	.99
Minimum	3.97	3.49	4.16	3.47	5.23	5.88
Maximum	9.52	9.17	8.88	9.89	10.17	10.72

Source: BANCA D'ITALIA, *Bollettino Statistico*, various issues.