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Italy—Assessing Competition and Efficiency in the Banking System

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Abstract

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The paper assesses the degree of banking competition and efficiency in Italy─over time as well as compared to that in other countries, such as France, Germany, Spain, the United Kingdom, and the United States. The paper finds competition in the Italian banking sector has intensified in loan and deposit markets in recent years, but banks still operate in a high-cost, high-income system, particularly with respect to retail/services, and efficiency gains have yet to fully materialize. The degree of competition falls within the range of estimates for a set of comparator countries. Greater contestability should act as a powerful force to drive banks to become more competitive and efficient. Competition policy will also continue to be an important consideration, both in enforcing Italy's antitrust laws and in ensuring that the procedures for dealing with weak banks and other merger and acquisition reviews focus on stability and competition objectives.

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ITALY—ASSESSING COMPETITION AND EFFICIENCY IN THE BANKING SYSTEM[1]

A. Introduction and Key Findings

1. **The Italian banking system has been subject to deep structural transformation in the last two decades.** Consolidation and privatization have permitted economies of scale in the production and distribution of services and increased risk diversification. These forces have led to lower costs and, undoubtedly, higher efficiency. However, to ensure that lower costs are passed through to households and firms, greater efficiency must be accompanied by a similar strengthening in the competitive environment in the banking sector.

2. **This paper assesses the degree of banking competition and efficiency in Italy─over time as well as compared to that in other countries.** Given the inherent difficulty of assessing competition from a single perspective, it relies on five main approaches: (i) indicators based on market structure, such as various concentration measures (Section B); (ii) contestability and cost indicators, including foreign bank ownership, bank retail prices and switching costs (Section C); (iii) profitability indicators (Section D); (iv) empirical efficiency estimates based on a panel of individual banks (Section E); and (v) market power indicators, such as Lerner and Panzar-Rosse indices (Section F). Whenever possible, we assess competition on an individual country basis and across time.

3. **The paper finds competition in the Italian banking sector has intensified in loan and deposit markets in recent years, but banks still operate in a high-cost, high-income system, particularly with respect to retail/services, and efficiency gains have yet to fully materialize.** The paper also finds the degree of competition falls within the range of estimates for a set of comparator countries. Cross-country indicators─both based on profit margins as well as on revenue elasticity─suggest the existence of monopolistic competition, as in other comparator banking sectors. However, there also are indications that competition has not been fully reflected in the pricing of services provided. More specifically, Italian banks incur significantly higher expenditures than other European banks and are only marginally more effective in generating higher revenue. These findings suggest a banking system that has undergone significant restructuring in recent years, but where efficiency gains have yet to fully materialize.

4. **To secure efficiency gains, it will be important to ensure that markets are fully contestable.** Greater contestability should act as a powerful force to drive banks to become more competitive and efficient. Competition policy will also continue to be an important consideration, both in enforcing Italy's antitrust laws in the banking sector and in ensuring that bank merger and acquisition reviews focus on stability and competition objectives.

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[1] Prepared by Paulo Drummond (EUR), Andrea M. Maechler (MFD) and Sandra Marcelino (FIN). The material presented in this paper was originally prepared as background for the Italian Financial Sector Assessment Program (FSAP) that took place in 2004-2005. The paper abstracts from financial sector developments in 2006 which could affect the conclusions of part of the paper.

B. Consolidation and Concentration

5. **In the late 1990s, the banking industry underwent rapid consolidation, but it remains relatively small compared to other EU member countries** (Figures 1 and 2)**.** Between 1995 and 2004, the number of institutions declined by a third (from 854 to 572 banks). The average size of banks (net of mutuals and foreign branches) more than doubled over this period from to € 5.5 billion to € 13.5 billion for all banks. At the end of 2004, net of mutuals, sector included 135 banks (Table 2 and Figure 2).

6. **The consolidation process led to an increase in concentration, but one that was more moderate than experienced elsewhere.** Market structure indicators, such as the Herfindhal-Hirschman Index (HHI)[2] or the share of total bank assets held by the three, five, and ten largest institutions suggests a degree of concentration that is larger in Italy than in Germany, and the UK, but lower than in France (Table 2 and Figure 3).[3] Concentration at the national level has increased (the largest five bank groups accounted for 46 percent of total assets at end-2004, compared with 37 percent a decade earlier). But after rising by more than 80 percent since 1990, the ratio of the number of branches to total population is now close to the EU average. According to the Bank of Italy (BI), this development has contributed to greater competition in provincial and regional markets, as evidenced by the rise in the average annual shift in deposit and lending market shares. The average number of banks in provincial markets is estimated to have increased from 27 to 30 in the last decade, and reached 35 at the end of 2004.[4] The HHI for the provincial deposit market declined by around 12 percent from the peak it reached in 1999, falling back to the levels recorded in the mid-1990s. In regional lending markets, the index declined by 20 percent between the end of the 1990s and 2004.

7. **The economic impact of greater concentration depends on many factors.** To shed light on this issue, a number of recent papers have estimated the price effect of mergers and acquisitions in Italy in the 1980s and the 1990s. For example, Focarelli et al. (2002) account for the pricing policies of merged banks, and provide some evidence that bank mergers can allow for better risk pricing through informational benefits (i.e., closer correspondence between the price of loans and the default risk of each firm). Sapienza (2002) explores the trade-off between efficiency gains and greater market power associated with mergers and finds that in-market mergers generate higher efficiency gains than do out-of-market mergers.

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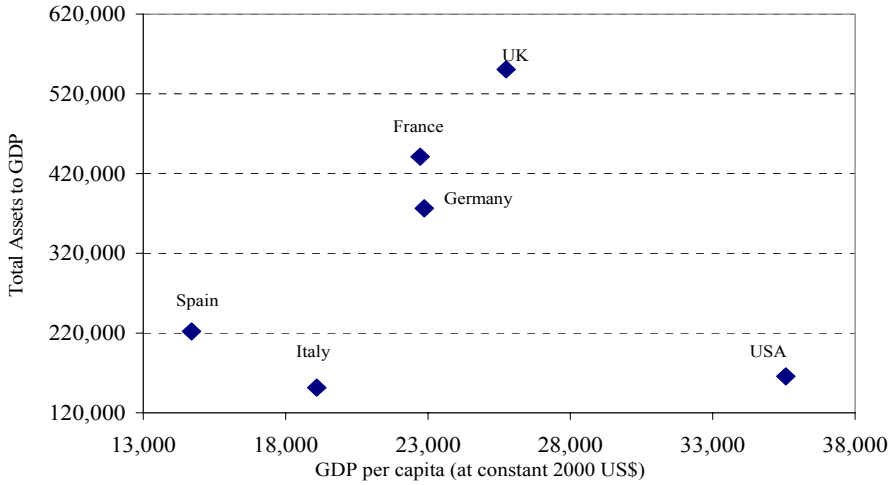
[2] The Herfindhal-Hirschman Index (HHI) is the sum of squares of the market shares of all firms in a sector (HF = Σ_i (share$_i$)^2, i = 1, ...,N).

[3] Unless specified otherwise, cross-country bank data is drawn from the BankScope database (see Box 1 for description of sample selection). Although BankScope data presents some significant drawbacks, such as, for example, imperfect cross-country statistical harmonization, it is one of the few datasets that provides individual bank-specific data for a large set of country over time and one of the most commonly used datasets in empirical bank research. Bank-specific data allows us, for example, to focus on the systemically important banks (i.e., top 10 or top 50 banks) of the countries under study.

[4] To monitor competition in small geographical areas, the Bank of Italy uses, as unit of analysis, 100 provinces for the deposit market and 20 regions for the loan market. This breakdown helps monitor competition even in the narrowest geographical markets.

Figure 1. Banking Sector Size and per capita GDP, end-2003



Source: World Development Indicators *(World Bank)* : per capita GDP for 2003 (at constant 2000 US$).

Figure 2. Banking Sector: Total Loans and Stock Market Capitalization, end-2004

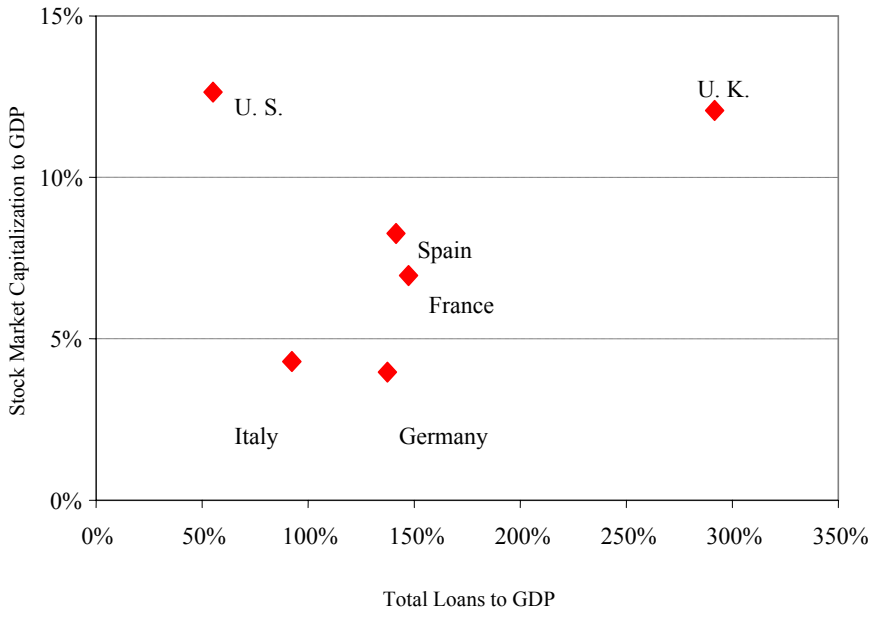


Table 1. Evolution in Average Scale of Italian Banks on Consolidated Basis 1/
(In millions of euros)

	1995	1998	2001	2004
Average scale				
All institutions	1.6	2.1	3.0	3.4
of which : Mutuals	0.1	0.1	0.2	0.3
Average assets All institutions (net of mutuals)	**5.5**	8.2	12.0	**13.5**
Number of banks				
All institutions	854	734	614	572
of which : Mutuals	612	552	469	437
All institutions (net of mutuals)	242	182	145	135
Total assets (end of period)				
All institutions	1,391	1,553	1,828	1,944
of which : Mutuals	52	68	85	116
All institutions (net of mutuals)	1,339	1,485	1,742	1,829

Source: Bank of Italy
1/ Excludes branches of foreign banks and banks in special administration or compulsory liquidation.

Table 2. Selected Countries: Market Concentration Indicators

	France		Germany		Spain		Italy		UK		US	
	1998	2004	1998	2004	1998	2004	1998	2004	1998	2004	1998	2004
HHI 1/	398.8	681.7	245.3	282.9	854.4	1188.1	488.7	542.2	339.5	493.3	116.7	157.0
% change		70.9		15.3		39.1		11.0		45.3		34.6
CR3 2/	0.25	0.36	0.17	0.19	0.46	0.51	0.30	0.34	0.21	0.26	0.11	0.12
CR5 3/	0.36	0.51	0.27	0.27	0.57	0.59	0.42	0.46	0.31	0.41	0.16	0.19
CR10 4/	0.59	0.75	0.46	0.46	0.74	0.71	0.64	0.63	0.54	0.65	0.28	0.34

Source: Bankscope.
1/ Herfinddahl-Hirschman Index by total assets.
2/ 3-firm concentration ratio is computed as the share of total assets of three largest banks.
3/ 5-firm concentration ratio is computed as the share of total assets of five largest banks.
4/ 10-firm concentration ratio is computed as the share of total assets of ten largest banks.

Focarelli et al. (2002) find the performance of banks is affected by whether consolidation takes place through mergers or acquisitions. They provide some evidence that mergers tend to increase profitability, including through a more efficient use of capital. Acquisitions also tend to improve profitability, generally by raising the quality of the acquired bank's loan portfolio. While this literature has helped shed light on the price impact of bank mergers, it does not aim at providing an assessment of bank consolidation on the degree of competition in the Italian banking system.

C. Contestability and Costs Indicators

Foreign ownership

8. **Italy illustrates how fragmented─along national lines─the EU banking market still is.** In line with some other large countries, the presence of foreign banks is concentrated primarily in investment banking and remains very limited in retail banking. So far, foreign take-overs have proven difficult to carry out, prompting scrutiny by the European competition and single market authorities. At end-2004, 7 percent of total bank assets were owned by foreigners, similar to the share in other large western European countries (Table 3), except that in Italy no major bank is majority foreign-owned.[5] At end-2004, foreigners were majority owners in two medium-size banks (with total assets below € 20 billion) and 13 smaller banks (with total assets below € 7 billion), accounting in total for only 2.5 percent of total bank assets.

Costs of banking services

9. **The pricing data suggest relatively high costs of banking in Italy.** According to one international survey, the average price of basic banking services (adjusted for local consumption patterns) appears to be among the highest in Europe (Table 4). This survey, however, does not provide a comprehensive cost estimate for basic banking services and should be interpreted with caution. Adjusting for joint-ownership of current accounts and the higher implied average balances, as well as the remuneration of accounts, another study found that the average price of holding a current account in Italy is still some 23 percent higher than the average for the EU countries surveyed.[6] The high cost of services does not seem to be associated with delivery of high quality services: a survey on the quality of financial services in Europe─measured by consumers' assessments of aspects such as the quality of information provided by banks, the ease of settling disputes with banks, the extent to which they trust banks' advice, and use of internet for banking services─suggests

[5] Partly, this is due to the high fragmentation in Italian banks' ownership structure. In Italy, banks are controlled by shareholders' agreements, rather than large majority shareholders. Indeed, at present no major Italian bank is majority owned by a single shareholder.

[6] Mercer Oliver & Wyman (2004). The countries included in the survey were Belgium, France, Germany, Italy, the Netherlands, Spain, and the U.K.

dissatisfaction with the quality of services in Italy.[7] These findings suggest a low level of competition in the services provided by Italian banks in the retail sector.

Table 3. Foreign-Ownership in Banking Sector

	Banks with some foreign-ownership 5/		Banks with majority foreign-ownership		Banks with minority foreign-ownership 6/	
	1999	2004	1999	2004	1999	2004
			(number of banks)			
Italian banks						
Total number of banks	10	12	13	15	3	5
of which : mega 1/	3	4	-	-	-	-
of which: large 2/	1	1	2	-	-	-
of which: medium 3/	2	3	-	2	-	-
Foreign-owned assets to total assets			(in percent of total assets)			
Individual data					-	-
mega 1/	14.9	25.0	0.0	0.0	0.0	0.0
large 2/	1.2	1.8	2.0	0.0	0.0	0.0
medium 3/	1.2	2.0	0.0	1.8	0.0	0.0
small 4/	0.6	0.5	0.6	0.7	0.2	0.5
Total foreign-owned assets/total bank sector a	17.9	29.2	2.6	2.5	0.2	0.5
Foreign branches						
Total number of foreign branches			57	60		
of which : mega 1/			-	-		
of which: large 2/			-	-		
of which: medium 3/			-	3		
of which: small 4/			57	57		
Assets owned by foreign branches/total bank sector assets			4.0	4.5		

Source: Bank of Italy.
1/ Bank with total assets above 45 EUR millions.
2/ Bank with total assets between 20 and 45 EUR millions
3/ Bank with total assets between 7 and 20 EUR millions
4/ Bank with total assets below 7 EUR millions.
5/ Includes banks for which shareholding is less than 15 per cent.
6/ Includes non controlled banks for which shareholding is greater than 15 per cent.

Table 4. Selected Countries: Cost of Banking Services

	Italy	United States	Spain	France	Germany	U.K.
Annual Cost of Core Banking Services, in euro 1/	113	93	81	89	98	65

Source: CapGemini et al. World Retail Banking Report (2005).
1/ Price of banking services are adjusted for local consumption patterns.

[7] European Commission (2004), Public Opinion in Europe: Financial Services Report B.

Switching costs

10. **Switching costs can provide additional insight into the degree of banking competition**. In this area, the Italian authorities are concerned that high switching costs hamper competition. The BI, jointly with the Competition Authority, has initiated an investigation regarding banking costs and depositors' mobility in local markets. The BI surveyed a representative sample of 300 branches on the costs actually incurred by customers who closed their current accounts. Preliminary results suggest an average cost of closing a current account of €34, with wide variation among banks (from €0 to €100). This suggests that for some banks, high switching costs can hamper customers' mobility or help keep customers captive, to the detriment of a more competitive environment. Cross-country comparisons on switching costs, however, are not available.

11. **Persistently high operating profits, coupled with high revenues and/or high costs, are frequently associated with non competitive behavior.** Relative to banks in other large industrial countries, Italian banks could fit this profile. For example, focusing on the top 50 banks, Italian banks enjoy relatively high operating income, surpassed only by US banks (Figure 4).[8] However, because of high operating expenses, the net operating profit of Italian banks is only slightly higher than that of UK and Spanish banks (Figures 5 and 6). In this exercise we focus as much as possible our figures on the 50 largest banks in the countries under examination, as they are most likely to drive (or hamper) competition in their domestic markets. The overall trends, however, may be slightly different when looking at the entire banking sector.[9]

12. **The profitability of banks in Italy underwent two very distinct phases in the 1980s and 1990s, which has been interpreted as evidence of intensified competition in the banking industry in recent years** (Ciocca, 2005)**.**

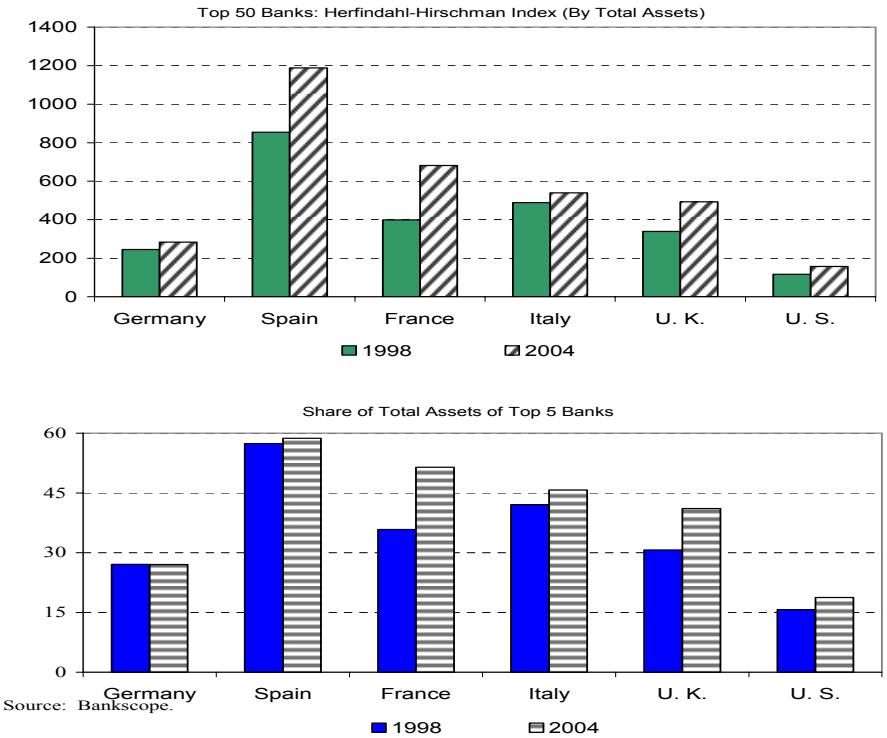
- In the 1980s, the industry was highly inefficient but profitable, suggesting low levels of competition. Despite rising labor costs (in real terms) and low (albeit rising) productivity (assets per employee), profit rates, remained high (double digit) until the end of the decade.

- In the 1990s, the degree of inefficiency was greatly reduced, and productivity increased steadily and rapidly, by just under 4 percent annually. In the meantime, the

[8] Ideally, we would also want to control for banks' off-balance sheet activities, as an increasing volume of banks' activities is no longer recorded on their balance sheets. One example is derivative transactions or securitizations, which are shifted to third parties in an effort to reduce banks' on-balance sheet risks. Owing to data limitations, this is not possible. This shortcoming needs to be borne in mind when comparing standard cross-country indicators that are computed as a share of banks' total assets. For example, the inability to account for off-balance sheet activities helps explain, at least in part, the relatively poor performance of US banks in some of the profitability indicators, which are measured against on-balance sheet assets, and omit US banks' large off-balance sheet activities.

[9] For example, at the aggregate level, 2005 ECB data suggests Italian banks to have a lower cost-to-income ratio than their French and German counterparts, whereas their ROA and ROE were both lower than UK banks.

Figure 3. Selected Countries: Concentration Indices, 1998 and 2004



Source: Bankscope.

Figure 4. Selected Countries: Top 50 Banks, 2004 Operating Revenues
(In percent of total assets)

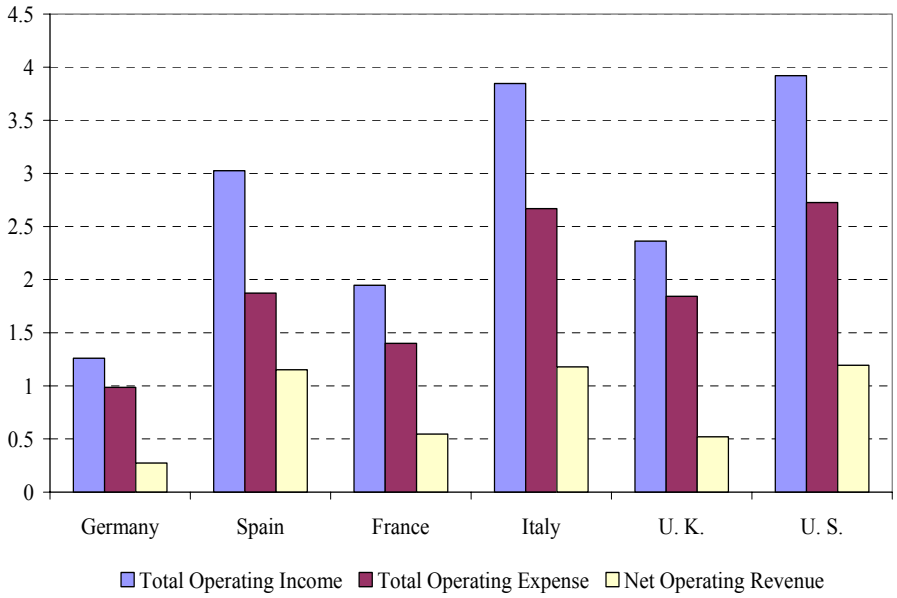
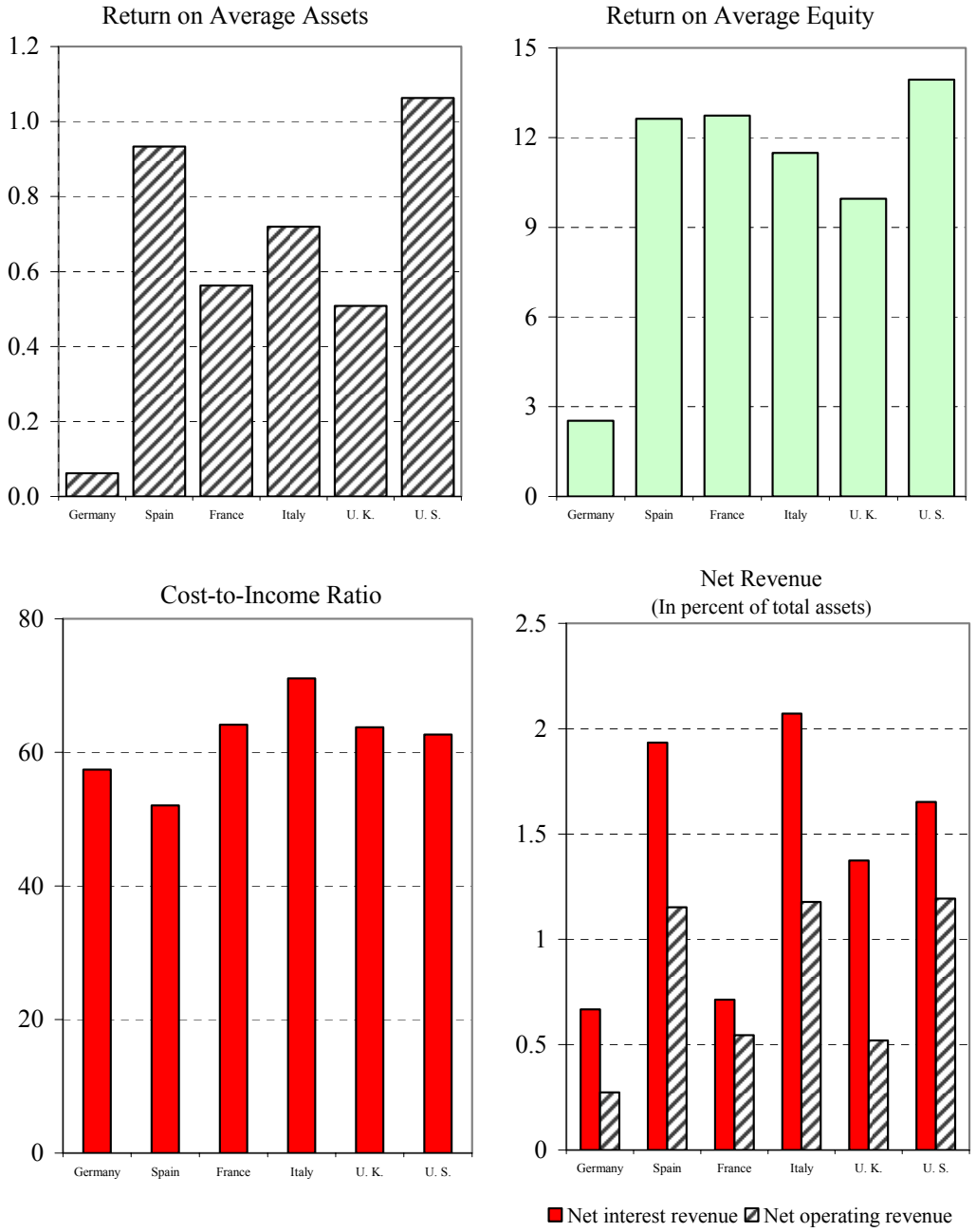
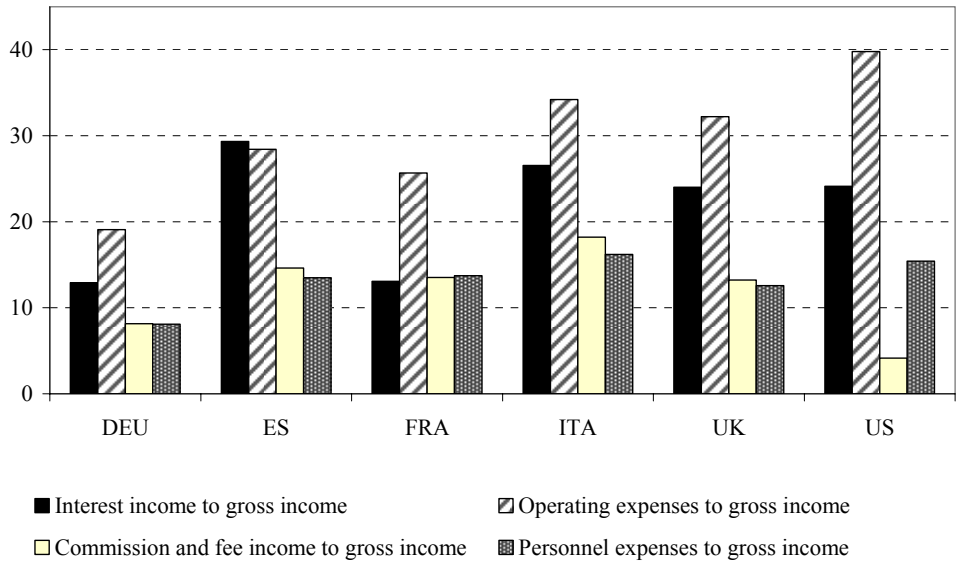


Figure 5. Top 50 Banks: Profitability Indicators, end-2004



Source: Bankscope.

Figure 6. Top 50 Banks: Indicators of Efficiency, 2004



Source: Bankscope.

growth of labor costs moderated sharply. However, the rate of profits declined steadily, to close to zero by the mid-1990s. Only later in the decade, driven by banks' continued efficiency gains, did profit rates recover.

13. **Return on equity components can help identify determinants of banks' performance.** To help shed light on how much of the change in profitability was due to improved efficiency, risk exposure, or other factors, it is possible to decompose the return on equity (ROE) for banks as follows (Table 5):

$$\text{ROE} = \frac{\text{Net profit}}{\text{Equity}} = \frac{\text{Net profit}}{\text{Operating profit}} \times \frac{\text{Operating profit}}{\text{Gross income}} \times \frac{\text{Gross income}}{\text{RWA}} \times \frac{\text{RWA}}{\text{Total assets}} \times \frac{\text{Total assets}}{\text{Total own funds}} \times \frac{\text{Total own funds}}{\text{Equity}}$$

$$\frac{\text{Operating profit}}{\text{Gross income}} = 1 - \frac{\text{Administrative costs}}{\text{Gross income}} = 1 - \text{Efficiency ratio}$$

Table 5. ROE Decomposition, 1994–2004 1/

	ROE (a)*(b)*(c)*(d)*(e)*100	Net profit/ operating profit (a)	Operating profit/ gross income (b)=1-(f)	Gross income/ Risk Weighted Assets (c)	Risk Weighted Assets/ Total assets (d)	Total assets/ capital and reserves (e)	Efficiency ratio 2/ (f)
				1994			
Limited company banks 1/	0.015	0.001	0.309	0.056	0.606	13.962	0.691
Major	-0.497	-0.035	0.277	0.047	0.705	15.364	0.723
Large	-1.131	-0.079	0.346	0.058	0.517	13.894	0.654
Medium	2.160	0.140	0.322	0.063	0.532	14.231	0.678
Small	-0.038	-0.003	0.336	0.074	0.530	11.265	0.664
Cooperatives	4.264	0.222	0.350	0.080	0.557	12.289	0.650
Mutuals	9.559	0.587	0.335	0.118	0.432	9.526	0.665
All banks 3/	1.121	0.073	0.317	0.060	0.593	13.487	0.683
				1999			
Limited company banks 1/	9.057	0.431	0.405	0.056	0.641	14.539	0.595
Major	12.327	0.549	0.434	0.048	0.734	14.775	0.566
Large	11.367	0.439	0.410	0.063	0.584	17.253	0.590
Medium	6.906	0.382	0.376	0.059	0.540	15.181	0.624
Small	3.490	0.192	0.368	0.071	0.571	12.204	0.632
Cooperatives	6.633	0.356	0.377	0.060	0.657	12.525	0.623
Mutuals	5.830	0.509	0.309	0.075	0.574	8.555	0.691
All banks 3/	8.488	0.425	0.396	0.057	0.640	13.811	0.604
				2004			
Limited company banks 1/	9.909	0.555	0.403	0.053	0.570	14.812	0.597
Major	9.499	0.563	0.401	0.050	0.587	14.390	0.599
Large	13.122	0.562	0.460	0.058	0.462	18.922	0.540
Medium	11.462	0.563	0.408	0.049	0.563	18.100	0.592
Small	8.432	0.528	0.375	0.059	0.603	11.864	0.625
Cooperatives	7.480	0.564	0.374	0.049	0.670	10.791	0.626
Mutuals	7.505	0.625	0.331	0.058	0.617	10.115	0.669
All banks 3/	9.414	0.560	0.395	0.052	0.582	13.939	0.605

Source: Bank of Italy

1/ "Major" banks are those with total balance-sheet items in excess of 45 billion euros, "large" banks are those with total balance-sheet items between 20 and 45 billion euros, "medium banks" are those with total balance-sheet items between 7 and 20 billion euros, "small" banks have total balance-sheet items amounting to less than 7 billion euros.

2/ The efficiency ratio is given by overall administrative costs divided by gross income.

3/ Not including branches of foreign banks. Data refer only to banks that have submitted income statement reports and provided information about the number of banking staff.

14. **The steady improvements in efficiency in the second half of the 1990s suggest that improved competition was likely at play.** Between 1994 and 2000, the efficiency ratio improved by some 12 percent. The ROE decomposition (Table 5) suggests that in the same period major and large banks had the ability to generate more value added per unit of assets adjusted for the risk assumed. All banks shifted toward more risky activities.

15. **Over the last five years, however, banks' efficiency gains stagnated, and, except for major banks, profitability continued to improve, suggesting that competitive pressures may have receded, at least in some segments of the banking sector**. An important factor behind banks' rising ROE was the improved quality of their loan portfolios, reflected in a higher net profit ratio. This reduction in NPLs, however, was largely driven by temporary tax incentives, and remained short-lived. In the case of major banks, despite

higher income ratios, profits declined as a result of higher administrative costs (efficiency losses). This suggests that lower competitive forces among major banks may have allowed these banks to generate higher income without creating corresponding efficiency gains.

16. **However, simple comparisons of profitability, revenue, and cost indicators do not provide sufficient information to assess the operational effectiveness of Italian banks relative to other banks.** For a fair comparison of banks' effectiveness, size, regulatory environments, input costs, and business models need to be held constant. The next section complements the analysis above by controlling for the impact of such exogenous effects on various profitability indicators. A description of the data used for this analysis is provided in Box 1.

Box 1. Data Sources

The data used to compute the analysis come from *Bankscope*, a comprehensive database containing harmonized detailed balance sheets and income statements of individual banks across countries. This database allows a reasonably consistent cross-country comparison of banking systems. To avoid double-counting of banks within the country selected, our data is based on consolidated statements, when available.

The data set covers six large countries over a seven-year period from 1998 to 2004. In particular, it includes a total of over 3,500 large banks (i.e., banks with total assets greater than US$1 billion) in France, Germany, Italy, Spain, the United Kingdom, and the United States. Table 6 lists the number of banks represented each year for each selected country. Sample statistics are presented in Table 7, at the end of the paper.

Table 6. Selected Countries: Banks Coverage, 1998–2004

	1998	1999	2000	2001	2002	2003	2004
France	691	688	687	679	680	657	456
Germany	103	97	99	105	108	108	100
Italy	251	299	298	301	295	280	217
Spain	200	208	206	209	216	217	160
United Kingdom	218	217	218	221	229	229	183
United States	909	952	928	927	899	854	700
Total banks	2,372	2,461	2,436	2,442	2,427	2,345	1,816

D. Efficiency Estimates

Cross-country profitability differences

17. **We start by examining whether Italian banks earn profits that are statistically different from those of banks in other countries.** As a first approximation, we concentrate on differences between countries rather than variations over time. We estimate a pooled

weighted least squares regression using the between-effect estimator, controlling for bank and country specific variables and including country dummies to capture cross-country differences.[10] In particular, we run the following regression:

$$D_{ijt} = \mu_t + \beta_1(\overline{BkS_{ijt}}) + \beta_2(HHI_TA_{jt}) + \beta_3\left(\overline{Macro_{jt}}\right) + \beta_4\left(FO_{jt}\right) + \beta_5\left(\overline{CD_j}\right) + e_{it} \quad (1)$$

where the subscripts represent, respectively, individual bank *i*, country *j*, and year *t*. The dependent variable (D_{ijt}) represents profits, which are measured as the net interest margin (interest income minus interest expense over total assets)[11] and as operating profits to total assets (operating income minus operating expenses). μ_t represents the time fixed effects. The vector of bank-specific variables (BkS_{ijt}) is expressed as a share of total assets and includes: gross income, total equity, total loans, loan loss provisions, total banks deposits, customer deposits plus money market funds, and, in some regressions, operating expenses. To control for the level of asset concentration in the banking sector, we include the *Herfindahl-Hirschman Index* (HHI_TA_{jt}), which is computed as the sum of the squares of the shares of total assets (expressed in percentage) held by each bank in the respective countries.[12] $Macro_{jt}$ is a vector of macroeconomic variables and includes per capita GDP, inflation, Treasury-bill rates, and GDP growth. We also include a dummy equal to one if a bank is majority foreign-owned (FO_{ijt}) and zero otherwise and a vector of country dummies (CD_j). The results are presented in Tables 8 and 9.

18. **In this simple framework, our results suggest that the net interest margins operating profits of Italian banks do not appear to be, on average, statistically different from those of the other banks included in the sample.** This is shown in Column 1, where the coefficient on the dummy variable for Italian banks (*itad*) is not statistically significant. However, the data suggest some interesting cross-country differences. In particular, we find

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[10] In a cross country time series analysis, the between-effect estimator is equivalent to taking the mean of each variable for each country across time and running the regression on the collapsed dataset of means. The regression specification should be considered as a reduced form to account for differences in the sample averages of bank and country specific factors, rather than a structural model of profitability. See Kerasulu (2005) for a similar application to Chilean banks (IMF Country Report No.05/316).

[11] Determinants for interest margins are analyzed in Demirgüç-Kunt and Huizinga (1999). Girardone, Molyneux and Gardener (2004) examined the cost efficiency of Italian banks over the 1993-1996 period and found evidence of cost efficiency gains with significant differences between banks.

[12] In particular, $HHI = \sum\left(s_{ij} \cdot 100\right)^2$, where s_{ij} represents total assets of bank *i* in country *j* as a share of country *j* total bank assets. By construction, *HHI* has an upper value of 10,000 in the case of a monopolist bank with a 100 percent share of the market; the index tends to zero in the case of a large number of banks with very small market shares. In practice, markets in which the *HHI* is below 1,000 are considered as "loosely concentrated," between 1,000 and 1,800 as "moderately concentrated," and above 1,800 as "highly concentrated."

that Italian banks exhibit significantly higher net interest margins than German banks (Column 3). Italian banks, however, do not seem to be able to maintain this advantage as they generate an overall lower level of operational profits than their German counterparts. Thus, while Italian banks make good returns on their lending business, they lag behind German banks in generating net revenues from non interest based activities. The picture is reversed in the case of Spanish banks, which earn higher net interest margins than Italian banks but lower overall operating profits (Column 5). Moreover, our results suggest that the average Italian bank earns a level of profits that is broadly in line with its French counterpart (Column 2).

Effects of bank characteristics on revenue generation and cost control

19. **Next, we compare the ability of Italian banks to control costs and generate revenues relative to banks in other large countries**. In this framework, we allow variables to change across banks and across time, while controlling for bank characteristics[13]:

$$\begin{aligned} X_{it} &= \mu_i + \mu_t + \beta_1 \ln TA + \beta_2 (\ln TA)^2 + \beta_3 (II/TA) + \beta_4 (NCFTR/TA) \\ &+ \beta_5 (PE/TA) + \beta_6 (TL/TA) + \beta_7 (LLP/TA) + \beta_8 (TCD/TA) + \beta_9 (TEQ/TA) + \\ &\beta_{10} (FO) + \beta_{11} (HHI_TA) + \beta_{12} (\overline{CD_i}) + e_{it} \end{aligned} \tag{2}$$

where the dependent variable X_{it} is, respectively, operating expenses to total assets (*OpE/TA*), operating income to total assets (*OpI/TA*), and net operating profits to total assets (*Opp/TA*). μ_i captures the individual fixed effects, while μ_t represents the time fixed effects. Explanatory variables include interest income to operating income (*II/TA*), net commission and fee income to total assets (*NCR/TA*), personnel expense to total assets (*PE/TA*), total loans to total assets (*TLN/TA*), total customer deposits to total assets (*TCD/TA*), and total equity to total assets (*TEQ/TA*). We also include a dummy equal to one if the bank is majority foreign-owned and zero otherwise (*FO*), the country-specific HHI (as a share of total assets) as a concentration proxy, and a vector of country dummy variables (*CD*). The results are presented in Tables 10, 11, and 12.

20. **To account for the identified heteroscedastic error structure and a first-order autocorrelation process, we fit our panel data using a generalized least squares (FGLS) regression.** Our data failed to reject the null hypothesis of no first-order autocorrelation based on the Wooldridge panel test. After finding that a random effects model was not an appropriate model structure for our data (based on both the Breusch and Pagan Lagrangian multiplier test for random effects and the Hausman specification test), we switched to a panel FGLS model. This model structure allows us to control for cross-country differences, something that would not have been possible under a simple fixed effects model, while correcting for first-order autocorrelation and testing for the presence of heteroscedasticity. Iterated GLS produce maximum likelihood estimates, which make it possible to use a

[13] Brunner et al. (2004) implement a similar approach to examine the relative profitability of German banks relative to French, Italian, UK, and Spanish banks for the 1997-2001 period.

likelihood ratio test to test the null hypothesis of a homoscedastic error structure. Our results supported the presence of heteroskedasticity, a result that was confirmed by the modified Wald test for groupwise heteroskedasticity conducted in our fixed effect regression models.

21. **Our results suggest that Italian banks incur significantly higher expenditures than other European banks and generate lower revenues than other banks, except for French banks, which earn even lower revenues than Italian and German banks.** When we allow for variables to change across banks and across time, and after controlling for characteristics that affect banks' ability to generate revenue and control costs, Italian banks have a statistically higher level of operating expenses to total assets and lower operating income to total assets than the other banks included in the sample (Column 3). Columns 4 to 6 compare the costs and revenues of Italian banks to, respectively, those of German, French, and US banks. Overall, the combination of higher expenses and lower revenues translates into lower net operating profits for Italian banks, after controlling for banks' characteristics. This situation could indicate a low-competition environment, where banks are not pressured to reduce their costs to compensate for low income margins.

22. **In Italy, foreign banks are relatively more profitable that domestic banks owing to their ability to better manage their cost structure (Column 1).** This contrast with foreign banks in Germany and France, where foreign banks' higher income capacity is fully offset by their higher operating expenditures (Column 4 and 5). These differences can be indicative of lower competition in Italy than in other markets. Moreover, while the degree of banks' asset concentration in the sector, as measured by *HHI*, appears to be statistically significant, its impact is negligible for the countries under study.

Productive efficiency

23. **It may not be sufficient to control for a bank's profile (i.e., in terms of balance sheet structure and profit and loss accounts) to assess its productive efficiency**. For example, a bank may have relatively higher personnel costs than other banks and yet be more efficient, if these costs help provide high-value-added services that require a highly qualified staff. Alternatively, a bank's profitability may be lower because it faces less pressure to use its inputs efficiently. Thus, it is important to control for endogenous factors that affect banks' ability or motivation to generate higher revenues and/or manage costs more effectively.

24. **A stochastic "best practices" frontier approach is a useful tool to assess banks' efficiency.** This approach estimates indirect levels of revenues and costs for a given level of output and for given input prices, while allowing a number of other factors to affect total factor productivity.[14] One must specify a functional form for the efficiency frontier. A

[14] The underlying assumption of this approach is that banks in the sample face a common technology (in terms of factor productivity) and the same degree of competition. Clearly, this is an imperfect assumption, as the capital-labor mix may depend on a wide range of local conditions, such as regulations, taxation, business model, financial market development, etc. Nevertheless, this approach has been used in a number of similar cross-country analyses (Bonaccorsi di Patti and Hardy, 2005; Brunner et al., 2004; and Decressin, 2005).

common approach in the literature, and the one adopted here, is to use the translog specification:

$$X_{it} = \mu_i + \mu_t + \sum_{j=1}^{4} \phi_j Z_{ijt} + \sum_{j=1}^{2} \alpha_j \log y_{ijt} + \sum_{j=1}^{3} \beta_j \log p_{ijt}$$
$$+ \frac{1}{2} \sum_{j=1}^{2} \sum_{k=1}^{2} \eta_{jk} \log y_{ijt} \log y_{ikt} + \frac{1}{2} \sum_{j=1}^{3} \sum_{k=1}^{3} \phi_{jk} \log p_{ijt} \log p_{ikt} + \sum_{j=1}^{2} \sum_{k=1}^{3} \rho_{jk} \log y_{ijt} \log p_{ikt} + e_{it} \quad (3)$$

where X_{it} is either revenues (operating income to total assets) or costs (operating expenses to total assets) for bank i in year t; the individual fixed effects (μ_i) capture relative measures of management effectiveness across banks groups, while the time fixed effects (μ_t) represent technological progress and aggregate shock. Z_{it} is a vector of exogenous variables (total customer deposits to total liabilities, total bank deposits to total assets, loan loss provisions to total assets, equity to total assets, total assets to number of employees, a dummy equal to one for majority foreign-owned banks, and the country-specific *HHI*) that affects efficiency but not the estimate frontier. These variables are intended to proxy for bank differences in the business model and in the regulatory environment. y_{ijt} and y_{ikt} are bank output as a share of total assets (loan and other earning assets); and p_{ijt} and p_{ikt} are a bank input price as a share of total funding (personnel expense, interest expense, and total operating expense net of personnel expense); e_{it} is an error term. The results are presented in Tables 13 and 14. For clarity, we do not provide the full set of results and focus on country-specific effects captured by the country dummies.

25. **According to our estimates, Italian banks are less effective than the other banks included in our sample in managing costs and generating higher revenues** (Column 1 of Tables 13 and 14). This results holds over a broad range of specifications. Again, our results suggest some cross-country differences. For example, the performance of Italian banks in terms of managing costs and earning income is broadly in line with that of German banks (Column 2 in Tables 13 and 14), but lags behind that of French and US banks (Columns 3 and 4 in Tables 13 and 14). These results are consistent with our earlier findings.

26. **Our empirical estimates suggest that overall Italian banks are less efficient than the other banks included in our sample.** While they appear to earn broadly similar (or lower) income than their French and German counterparts, their inability to achieve a comparable cost structure results in an overall lower profit performance. Next, we explore the extent to which this lower efficiency can be related to lower competition in the Italian banking sector.

E. Market Power

Lerner index

27. **One approach to assess the degree of competition is to examine the differential between the prices that banks charge for their services and the marginal costs they**

incur to provide these services. [15] This measure is referred to as the *Lerner Index*. A high margin would suggest a high level of market power and hence, a lower degree of competition in the banking sector. Recent studies based on this approach suggest a degree of deviation from pure competition for the banking market in Italy similar to that for the euro area.

28. **Angelini and Cetorelli (2003) calculate the Lerner index for the Italian banking industry from 1984 to 1997**. They find that starting in 1993, the index shows a significant decline in market power in Italy. Among the main difficulties inherent in the study, though, is the fact that changes in profit margins reflect not only the degree of competition in the market, but general economic conditions. For instance, the profit margin decline starting in 1993 was also associated with the increase in loan riskiness following the recession that year.

29. **Cetorelli and Violi (2003) estimate Lerner Indices for Italy, Germany, France and the euro area, annually, for the period 1995–2000**. They find that the Lerner index for Italy was not statistically different from the estimate for the euro area in 1995, but that since then deviations of prices from marginal costs increased more rapidly in Italy than in the euro area. By 2000, the Lerner index in Italy was about one-third higher than for the euro area. This recent trend, which reflects more than proportional cost reductions in Italy, could be associated with a fall in the price elasticity of the demand for financial products, as banking services, and particularly fee-based services, increased. However, combined with our earlier finding of Italian banks' relatively high costs, it could also suggest the tapering-off of competitive pressures in the domestic banking sector.

Panzar-rosse index

30. **Market power can also be measured by the extent to which changes in factor prices are reflected in revenues** (Panzar and Rosse,1987; hereafter, P-R)**.** With perfect competition, an increase in factor prices (say, deposit interest rates) induces no change in output (assets) but a proportional change in output prices (i.e., under a perfectly elastic demand assumption). Instead, with monopolistic competition, or with potential entry leading to contestable markets, revenues would increase less than proportionally, as the demand for banking products facing individual banks is less than perfectly elastic.

31. **A number of studies in recent years have extended the P-R methodology to banking**. Based on a reduced-form equation of revenue at the individual bank level, market power is inferred from the *H-statistic*, which measures the extent to which changes in factor prices are reflected in banks' revenue. If the market is perfectly competitive an increase in factor prices would raise revenues equiproportionally and the H-statistic should assume a value equal to 1. On the other hand, in the "intermediate" case of monopolistic competition, the H-statistic assumes a value between 0 and 1, with an increase in input prices leading to a

[15] Prices measured as the sum of total interest income and income from services, in proportion to total assets.

less than proportional increase in revenues, as the demand for bank products facing individual banks is inelastic (Box 2).[16]

Box 2. Interpretation of *H*-statistic

The *H*-statistic is computed as follows:

$$H = \sum_{j=1}^{J} \alpha_j$$

Where

$H \leq 0$ Monopoly equilibrium: each bank operates independently as under monopoly profit maximization conditions (*H* is a decreasing function of the perceived demand elasticity) or perfect cartel.

$0 < H < 1$ Monopolistic competition free entry equilibrium (*H* is an increasing function of the perceived demand elasticity).

$H \geq 1$ Perfect competition. Free entry equilibrium with full efficient capacity utilization.

32. **Our initial P-R estimates are based on the following specification:**

$$\log R_{it} = \eta_i + \sum_{j=1}^{J} \alpha_j \log W_{it}^{j} + \sum_{k=1}^{K} \beta_k \log X_{it}^{k} + \delta_{jt}(HHI_TA) + \rho_{jt}(FO) + e_{it} \qquad (4)$$

where R_{it} is the ratio of gross interest revenue to total assets (proxy for output price of loans); W_{it} is a three-dimensional vector of factor prices: (i) personnel expense to total liabilities plus total deposits (proxy for input price of labor); (ii) interest expense to total deposits and total funding (proxy for input price of deposits); and (iii) other operating and administrative expenses to total assets (proxy for input price of equipment and fixed capital); X_{it} is a vector of exogenous and bank-specific variables (total equity to total assets, total loans to total assets, nonperforming loans to total customer loans, total deposits to total deposits plus money market funds plus other funding, interbank deposits to total deposit and money market funds, customer deposits to total deposits and money market funds, and total assets to number of employees); the *HHI* is a measure of concentration of the banking systems; and *FO* represents majority foreign-owned banks.

[16] The P-R method is not an ideal measure of competition as it is based on four strong assumptions: (i) banks are operating at their long-run equilibrium; (ii) the performance of the banks is influenced by the actions of other market participants; (iii) the cost structure is homogeneous; and (iv) the price elasticity of demand is greater than unity. Excellent discussions on underlying assumptions are found in Bikker (2004) and Bikker and Haaf (2002).

33. **Our results suggest the existence of monopolistic competition in all countries and that the degree of competition among banks in Italy is broadly in line with that in other large industrialized countries.** There are, though some interesting cross-country differences**.** According to Table 15, Italian banks face a degree of competition slightly lower than Spanish and French banks but higher than US banks. These results are robust across a range of specifications, except in the case of Germany and the UK, which seem more sensitive to the model specification. The first row in Table 15 lists the cross-country H-statistic based on a simple revenue and cost function, which includes only the vector of factor prices (W_{ijt}). The second row includes a limited set of exogenous variables that are intended to capture differences in business models and regulatory environment (loan-to-asset ratios, nonperforming loan-to-asset ratios, equity-to-asset ratios, foreign ownership, and the *HHI*).

34. **These results are also robust to alternative specifications of the revenue function.** In particular, non interest revenue of banks has been increasingly significant in recent years across a number of countries in Europe, including Italy. Our alternative specification of banks' revenue function captures the impact of costs on total revenues, not only interest revenues. The specification also includes the ratio of interest-to-noninterest income among the regressors to account for the different elasticity of demand for the relevant associated financial services. The alternative specification is as follows:

$$\log RT_{it} = \eta_i + \sum_{j=1}^{J} \alpha_j \log W_{it}^{j} + \sum_{k=1}^{K} \beta_k \log X_{it}^{k} + \delta_{jt}(HHI_TA) + \rho_{jt}(FO) + e_{it} \qquad (5)$$

where RT_{it} is the ratio of gross total revenue to total assets (proxy for output price of loans); and the vector X_{it} includes the ratio of interest-to-noninterest income.

35. **The P-R specification based on total revenues confirms our initial assessment of the degree of competition in the Italian banking system.** As banks have entered an era of low interest rates, their interest income has been declining while "other income" has risen. This has lowered the ratio of interest to non interest income. Our estimates suggest this has been associated with higher, not lower, revenues. This reflects in part how banks have adapted under the new low interest rate environment. This alternative specification suggests Italian banks face a degree of competition similar to that in Germany or Spain, and somewhat higher than that in France.

36. **Our results are consistent with similar estimates reported in the literature.**[17] De Bandt and Davis (2000) estimate a P-R model for Italy, France and Germany for the period 1992–96 and find that banking markets in these countries were characterized by monopolistic competition. They found the H statistic significantly above zero but significantly below one in each one of the countries, with differences across countries not

[17] For similar studies including Italy in their datasets, see Molyneux et al. (1994), Coccorese (1998), Bikker and Groeneveld (2000), Bikker and Haaf (2002), De Bandt and Davis (2000), Brunner et al. (2004). Other recent applications include Belaish (2003) for Brazilian banks, Claesens and Laeven (2004) for a large set of industrialized and emerging countries, Gelos and Roldos (2002) for emerging markets, Hempell (2002) for Germany, Hondroyannis et al. (1999) for Greek banks, and Kerasulu (2005) for Chilean banks.

statistically significant. Similarly, Brunner et al. (2004) estimate a P-R model for an expanded set of countries (including Spain and the U.K.) for the period 1997–2001. They confirm the existence of monopolistic competition in all countries and find the degree of competition among banks in Italy comparable to that in Germany and Spain. Banks in these countries would appear to face more competition than French or U.K. banks.

37. **Overall, our results suggest that while competition in the Italian banking sector falls within a range of estimates for comparator markets, it tends to be on the weaker side.** A final step in our analysis is to explore possible links of this outcome to Italy's institutional framework and in particular, what implications its competition framework may hold for financial stability.

F. Competition Policy and Financial Stability

38. **Neither the theoretical nor the empirical literature is conclusive on the relationship between competition and stability, and the claim that competition is inherently dangerous for the stability of the financial system (the "charter-value" hypothesis) is largely dismissed (Box 3).**[18] Rather, the impact of competition on financial stability seems to depend on the specific cases and circumstances and whether a change in competition (merger or concentration) is associated with an increase or decrease in risk in the banking system (Group of Ten, 2001). This helps explain why various G-7 and EU countries have given quite different weights to the relative role of the competition and supervisory authorities in merger review decisions.

39. **The debate over the right institutional framework for competition and financial stability in the banking sector has not been resolved.** While many countries apply a general competition regime to the banking sector, large differences exist in the way they enforce this regime in the banking sector, and in particular, the role given to the bank supervisors. To ensure consistency across all sectors, a general tendency has been to give competition authorities the responsibility to enforce antitrust laws on an economy-wide basis, including in the banking sector, in consultation with the bank supervision authority. Antitrust laws aim at providing an open and competitive system, without unjustified restrictions on entry, exit, and ownership changes. In banking, competition authorities typically focus on ensuring that greater concentration through mergers and acquisitions or greater market power through cartel-like agreements, such as agreements in payment system services and tie-in agreements, do not impede competition.

40. **In Italy, until the approval of the Savings Law at the end of 2005, the ultimate authority to apply competition law in the banking sector resided within the central bank, which is also the national bank supervisor.** Under this framework, the Italian antitrust authority was entrusted with enforcing the 1990 Competition Act across all sectors of the economy except in the banking sector. However, BI's joint responsibility for enforcing

[18] Excellent literature reviews can be found in Carletti and Hartmann (2002), Canoy et al. (2001), and Northcott (2004).

Box 3. Competition and Stability: Key Findings of the Literature

The literature does not seem conclusive on the relationship between competition and financial stability. The net impact of consolidation on bank risk appears to depend on the specific case and circumstances (Group of Ten, 2001) and many forms of competition do not seem to endanger financial stability (Canoy et al. 2001), suggesting that there is no clear-cut trade-off between competition and stability (Carletti and Hartmann, 2001).

Theoretical literature

Many papers based on the "charter value" hypothesis find a negative trade-off between competition and stability. While competition is important for efficiency, by reducing the present value of monopoly rents of holding a bank charter, it also lowers the opportunity cost of bankruptcy and promotes bank instability by encouraging banks to behave less prudently (Keeley, 1990; Edwards and Mishkin, 1995; Hellman et al, 2000). Theory suggests, however, that there are policy options that ensure that banks behave prudently, even in a competitive market. For example, regulatory capital requirements and optimal forbearance policies help mitigate risk-taking behavior, regardless of the competitive structure of the market (Repullo, 2003; Nagarajan and Sealey, 1995). Risk-adjusted deposit insurance premiums help mitigate the trade-off between competition and banks' lower incentives to screen loans (Shaffer, 1998; Cordella and Yeyati, 2002). Similarly, an active rescue merger policy that facilitates the takeover of troubled banks by healthy ones, combined with temporary entry restrictions, could maximize the benefits of lower risk-taking by incumbent banks, while minimizing the long run costs associated with greater market power in a restricted market (Perotti and Suarez, 2002).

A more recent strand of literature suggests that stronger competition does not necessarily worsen stability. Sometimes, increased loan competition can reduce asset risk-taking (Boyd and De Nicoló; 2005; Caminal and Matutes, 2002) or increase the ability of the interbank market to insure against liquidity shocks (Carletti et al., 2004). Matutes and Vives (1996) point out that self-fulfilling expectations of depositors imply multiple equilibriums, regardless of market structure. Based on a wide range of modeling forms, Allen and Gale (2004) conclude that the competition-stability nexus is highly sensitive to the spatial position of branches and other particular details of the models (Allen and Gale, 2004).

Empirical literature

If mergers allow for greater risk diversification, increases in market power through concentration would be associated with lower risk and higher bank stability. Recent empirical studies support this hypothesis, at least for more recent data (Craig and Santos, 1997). In the same vein, based on a panel data on 79 countries, Beck, Demirgüç-Kunt, and Levine (2003) find that crises are less likely in competitive and concentrated banking systems.

Other studies, however, find that larger U.S. banks are not necessarily associated with lower insolvency risk (De Nicoló, 2000) or a lower probability of failure (Boyd and Runkle, 1993). Boyd and Graham (1996) argue that this may be because large banks' implicit too-big-to-fail protection leads them to greater leverage. One study finds evidence that systemic risk through interbank linkages in the large and complex US banking organizations has increased in the last decade (De Nicoló and Kwast, 2001), consistent with the theoretical prediction of Allen and Gale (2000). Thus, there appear to be various features of bank mergers, such as the creation of too-big-to-fail institutions, monitoring difficulties, lower money market liquidity, and organizational inefficiencies, that may increase the scope for instability, reversing the traditional charter value hypothesis (Carletti et al., 2004).

competition laws and maintaining the stability of the financial system had the potential to lead to conflicts. For example, short-term stability concerns might induce the supervisor to facilitate the merger of a weak bank without due consideration to its long-term competition implications. Such conflicts could be addressed in several ways, including by imposing compensatory antitrust measures on the merging bank, provided the existence of clear and transparent implementation procedures and adequate accountability mechanisms.[19]

41. **In an effort to improve transparency and accountability, the Savings Law transferred the responsibility for regulating and enforcing anticompetitive behavior in the banking sector to the antitrust authority.** In the area of merger reviews, the BI and the antitrust authority have been given shared responsibility for authorizing bank mergers and acquisitions (the BI on prudential grounds and the antitrust authority on competition grounds). This new institutional arrangement falls in line with that of other industrial countries (e.g., Canada, France, Germany, and Japan), where the role of supervisory agencies focuses on assessing possible prudential concerns, particularly with respect to the fit and proper rules, as opposed to reviewing bank mergers from a competition perspective (Table 5).

42. **Regardless of the role of bank supervisors in implementing competition policy, bank supervisors remain an important component in merger and acquisition reviews**. All G-7 countries and EU countries give a strong role to supervisory authorities in the review of bank mergers (Carletti and Hartmann, 2002).[20] This is partly because bank supervisors have the responsibility to grant (and withdraw) bank licenses and approve changes in banks' ownership structures, which gives them the authority to block a merger or impose compensatory conditions, at least on prudential grounds. Furthermore, their in-depth knowledge of the financial soundness of individual institutions becomes very valuable in crisis management, especially when helping coordinate the merger of a weak bank with a healthy one, which is how most bank instabilities are resolved.

43. **The main risk associated with the close involvement of bank supervisory agencies in merger reviews is that they may consider broader social and economic objectives, possibly at the expense of competition and, ultimately, financial stability.** For example, they may adopt a reluctant attitude toward cross-border bank mergers in order to promote "national champions," thereby reinforcing the too-big-to-fail problem at the national

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[19] A list of compensatory anti-trust measures applied by BI can be found in Table 2 in Trifilidis (2001).

[20] In France, for example, bank supervisors can impose particular conditions to ensure the financial soundness of the merging institutions, whereas in Germany, bank supervisors can block a merger on prudential grounds. In the United States, merger proposals are reviewed independently by the relevant supervisory agency and the competition authority (the U.S. Department of Justice). When the two reach different conclusions, the case is brought to court and the merger cannot be completed until the case is tried and a judgment is reached.

level and, ultimately, jeopardizing both competition and financial stability.[21] However, allocating the responsibility for enforcing competition law in the banking sector to the national competition authority, does not in itself guarantee that bank merger decisions are free of political influence. In Canada, Germany, and the UK, the Minister of Finance has the ultimate authority to overturn a blocking decision by the competition authority.

44. **The role of supervisors can be further blurred by the relatively common use of "merger rescue" provisions that allow supervisors to coordinate a takeover or a merger of a failing bank instead of going through a potentially costly public liquidation.** In a strict sense, such provisions should not harm competition but permit a more cost-effective use of public resources. The idea is that when a bank is liquidated, most of its business may go to one main competitor, generating a similar increase in concentration as with a coordinated merger, while incurring a higher public cost in terms of deposit insurance funds and other safety net provisions.

45. **In particular, a broader notion of the "merger rescue" can allow authorities to consider other social or economic objectives, which may conflict with their primary goal of promoting financial stability and enforcing antitrust laws.** For example, bank supervisors may facilitate the merger of a weak bank in an attempt to maintain employment or certain services in a specific region, or promote the competitiveness of the banking sector, without considering the long-term competition implications. In some countries, such as Canada, Germany, South Africa, and the United States, the authorities (typically, the Minister of Finance or local state authorities) have the explicit power to block or approve a bank merger if it is in the public interest to do so. Other countries (e.g., Japan) and the EU Commission have developed a similar rescue merger concept in their case-law (Carletti and Hartmann, 2002).[22]

46. **In Italy, all bank mergers are required to receive the joint authorization from the BI and the antitrust authority.** This is consistent with Barros and Hoernig (2004), who find that decisions are least vulnerable to lobbying when the sectoral regulatory agency and the competition authority act independently of each other. Nevertheless, as suggested by the Governing Council of the ECB in its December 2005 Opinion on the Draft Law on Savings, in cases where the BI may need to recommend a merger for stability purposes, the antitrust authority should be entitled (but not forced) to authorize concentrations on stability grounds, with appropriate compensatory measures if necessary.

47. **To ensure the primacy of competition and stability objectives over other objectives, the procedures for dealing with weak banks, including closure policies and bidding mechanisms, should be specified clearly and implemented in a transparent way.** The mandates of the competition and supervisory authorities should be clearly and well

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[21] The potential vicious circle between "too-big-to-fail" and "national champions" is discussed in Vives (2001).

[22] Detailed country examples on the implementation of rescue merger provisions can be found in OECD (1996).

specified, as should be their accountability mechanisms. In Italy, as in other European countries, there are no formal bidding mechanisms and the criteria underlying purchase and assumption decisions are unclear.[23] Thus, for a successful implementation of merger reviews, the supervisory and antitrust authorities must have in place a clear and transparent decision-making process, appropriate resources and expertise to analyze a merger-impact on, respectively, stability and competition, and the utmost independence in forming their opinion.

[23] In the US, for example, after the large thrift crisis in the 1980s and with the passage of FDICIA in 1991, the resolution process for troubled banks and its bidding mechanisms are well specified. For excellent overviews, see FDIC (2003) and Walter (2004).

Table 7. Selected Countries: Sample Statistics, 2004
(In million euros, unless specified otherwise)

Variables	Description	Number of Observations						Mean (Standard Deviation)					
		France	Germany	Italy	Spain	UK	US	France	Germany	Italy	Spain	UK	US
ae	Other admin expenses	80	334	110	96	124	243	526	124	170	103	563	118
								(1,176)	(466)	(367)	(325)	(1,626)	(462)
cdb	Cash and due from banks	74	321	98	94	124	660	1,572	183	134	437	1,751	1,016
								(4,831)	(648)	(324)	(1,545)	(8,086)	(4,023)
cpi	Inflation	372	778	279	134	305	1654	2	2	2	3	1	3
								(0)	(0)	(0)	(0)	(0)	(0)
dwb	Deposits with banks	1	331	109	92	90	33	114	7,066	2,278	1,321	14,463	1,161
								(0)	(22,665)	(5,034)	(2,542)	(33,455)	(4,717)
gi	Gross income	216	456	156	100	173	653	2,015	1,174	944	967	2,560	1,952
								(6,098)	(3,949)	(2,213)	(3,232)	(7,221)	(6,439)
gllr	General loan loss reserves	43	4	58	0	1	0	313	139	18	0	859	0
								(551)	(244)	(41)	(0)	(0)	(0)
hhi_ta	Herfindahl-Hirschman Index (by total asse	372	778	279	134	305	1654	682	283	542	1,188	493	157
								(0)	(0)	(0)	(0)	(0)	(0)
ie	Interest expense	213	453	156	100	157	652	1,127	753	308	323	1,220	451
								(3,331)	(2,367)	(703)	(1,182)	(3,259)	(1,628)
ii	Interest income	215	455	156	100	158	649	1,433	981	653	711	2,005	1,161
								(4,166)	(3,136)	(1,454)	(2,320)	(5,546)	(3,892)
llp	Loan loss provisions	74	323	107	93	89	566	86	51	80	69	239	98
								(213)	(151)	(184)	(203)	(662)	(439)
llr	Loan loss reserves	36	11	136	46	93	588	1,385	2,722	411	533	524	213
								(2,613)	(3,854)	(1,336)	(1,190)	(1,416)	(768)
mmf	Total money market funding	70	106	91	20	74	571	12,972	4,578	980	2,398	16,670	5,914
								(24,505)	(15,130)	(3,342)	(5,325)	(36,261)	(21,638)
ncftr	Net commission, fee and trade revenue	206	443	154	97	147	415	395	118	204	189	650	272
								(1,390)	(858)	(586)	(700)	(1,888)	(1,049)
ne	Number of employees	56	288	106	35	113	562	5,464	1,948	4,276	9,586	10,449	7,358
								(12,822)	(6,277)	(10,490)	(24,953)	(31,025)	(25,924)
nea	Total non earning assets	83	334	110	96	150	661	9,232	1,691	2,459	1,589	6,382	4,117
								(23,163)	(10,895)	(7,387)	(6,876)	(18,373)	(14,903)
nim	Net interest margin 1/	82	334	110	96	136	615	2	2	2	2	1	3
								(2)	(0)	(1)	(1)	(0)	(0)
nir	Net interest revenue	215	456	156	100	169	653	316	228	345	388	747	703
								(1,008)	(929)	(783)	(1,152)	(2,580)	(2,524)
npl	Total problem loans	32	6	100	54	37	561	1,785	5,849	946	204	1,493	109
								(3,682)	(4,179)	(2,579)	(597)	(2,629)	(503)

Table 7. Selected Countries: Sample Statistics, 2004 (continued)

Variables	Description	Number of Observations						Mean (Standard Deviation)					
		France	Germany	Italy	Spain	UK	US	France	Germany	Italy	Spain	UK	US
oe	Other operating expenses	1	320	107	94	113	616	1	29	22	38	181	494
								(0)	(140)	(71)	(128)	(491)	(1,940)
oea	Other earning assets	83	333	110	95	142	661	48,940	15,527	5,128	5,586	24,946	15,704
								(108,379)	(49,253)	(11,794)	(20,045)	(63,548)	(57,781)
ooi	Other operating income	193	453	1	86	130	650	106	52	1	38	239	628
								(427)	(295)	(0)	(106)	(628)	(2,668)
ope	Total operating expense	82	334	110	96	141	616	1,272	344	542	391	1,302	1,037
								(2,926)	(1,275)	(1,179)	(1,197)	(3,896)	(3,642)
opi	Total operating income	216	456	156	100	174	653	786	395	549	604	1,453	1,502
								(2,660)	(1,737)	(1,350)	(1,921)	(4,619)	(5,041)
opp	Operating profits 2/	82	334	110	96	139	615	494	83	145	235	560	494
								(1,222)	(325)	(434)	(766)	(1,707)	(1,644)
pe	Personnel expenses	80	331	110	89	119	605	698	145	255	199	602	414
								(1,591)	(663)	(581)	(570)	(1,718)	(1,436)
ptp	Pre-tax profit	82	327	110	96	150	616	564	44	202	213	616	492
								(1,279)	(318)	(470)	(636)	(1,896)	(1,661)
rgdp	Real GDP growth	372	778	279	134	305	1654	2	2	1	3	3	4
								(0)	(0)	(0)	(0)	(0)	(0)
rgdppc	Real GDP per capita	372	778	279	134	305	1654	24,692	25,677	18,172	17,286	26,220	26,874
								(0)	(0)	(0)	(0)	(0)	(0)
ta	Total assets	83	334	110	96	150	661	88,461	28,811	20,013	20,620	65,234	33,602
								(192,076)	(83,867)	(44,795)	(66,866)	(165,581)	(103,047)
tbd	Total banks deposits	82	331	110	93	113	69	19,934	7,615	3,446	3,126	13,915	2,163
								(41,783)	(22,913)	(7,261)	(10,747)	(34,766)	(6,974)
tbill	T-bill rate	372	778	279	134	305	1654	2	2	2	2	4	1
								(0)	(0)	(0)	(0)	(0)	(0)
tcd	Total customer deposits	80	330	108	89	118	580	26,600	8,380	7,989	11,502	35,519	14,120
								(68,265)	(26,069)	(18,359)	(34,791)	(89,396)	(50,890)
tcl	Total customer loans	81	333	110	94	140	601	30,528	11,582	12,162	13,645	37,362	15,058
								(67,518)	(29,816)	(25,838)	(40,227)	(97,958)	(45,895)
td	Total deposits	82	333	110	95	137	604	45,886	15,874	11,289	14,186	45,097	13,936
								(104,399)	(44,578)	(24,465)	(44,735)	(110,673)	(50,219)
teq	Total equity	83	334	110	96	150	661	3,623	966	1,325	1,426	3,117	2,625
								(8,161)	(2,803)	(2,678)	(4,739)	(9,295)	(8,163)
tl	Total liabilities	83	334	110	96	150	661	84,837	27,846	18,688	19,195	62,117	30,977
								(184,208)	(81,491)	(42,175)	(62,139)	(157,020)	(95,621)
tln	Total loans-net	81	333	110	94	140	601	30,368	11,492	12,162	13,497	37,014	14,850
								(66,546)	(29,260)	(25,838)	(39,815)	(96,956)	(45,182)
tof	Total other funding	66	306	106	79	106	609	10,235	8,783	4,202	4,007	6,506	10,004
								(19,226)	(23,398)	(8,841)	(11,023)	(16,994)	(34,632)

Table 7. Selected Countries: Sample Statistics, 2004 (concluded)

Variables	Description	Number of Observations						Mean (Standard Deviation)					
		France	Germany	Italy	Spain	UK	US	France	Germany	Italy	Spain	UK	US
ae	Other admin expenses	80	334	110	96	124	243	526	124	170	103	563	118
								(3,682)	(4,179)	(2,579)	(597)	(2,629)	(503)
oe	Other operating expenses	1	320	107	94	113	616	1	29	22	38	181	494
								(0)	(140)	(71)	(128)	(491)	(1,940)
oea	Other earning assets	83	333	110	95	142	661	48,940	15,527	5,128	5,586	24,946	15,704
								(108,379)	(49,253)	(11,794)	(20,045)	(63,548)	(57,781)
ooi	Other operating income	193	453	1	86	130	650	106	52	1	38	239	628
								(427)	(295)	(0)	(106)	(628)	(2,668)
Ratios (in percent of total assets unless specified otherwise)													
gi_ta	Gross income	82	334	110	96	140	615	6.9	6.1	6.1	4.8	6.4	6.9
								(5)	(3)	(3)	(2)	(6)	(6)
ii_ta	Interest income	82	333	110	96	126	611	4.3	4.9	4.3	3.7	3.9	4.5
								(2)	(2)	(3)	(1)	(3)	(2)
llp_ta	Loan loss provisions	74	323	107	93	89	566	0.1	0.4	0.4	0.4	0.3	0.3
								(1)	(0)	(0)	(0)	(0)	(0)
ncftr_ta	Net commission, fee and trade revenue	81	324	109	93	120	402	1.5	0.8	1.3	0.8	2.0	0.9
								(0)	(0)	(0)	(0)	(0)	(0)
ope_ta	Total operating expenses	82	334	110	96	141	616	2.7	2.5	2.9	2.1	2.6	3.6
								(0)	(3)	(1)	(1)	(0)	(0)
opi_ta	Total operating income	82	334	110	96	141	615	3.8	3.0	3.6	3.1	4.2	5.5
								(5)	(3)	(1)	(1)	(6)	(6)
opp_ta	Total operating profits	82	334	110	96	139	615	1.1	0.5	0.6	1.0	1.6	1.9
								(0)	(1)	(0)	(0)	(0)	(0)
pe_ta	Personnel expenses	80	331	110	89	119	605	1.4	1.1	1.3	1.0	1.1	1.6
								(2)	(1)	(1)	(0)	(2)	(2)
tbd_ta	Total bank deposits	82	331	110	93	113	69	22.8	24.3	17.3	18.5	17.0	14.9
								(20)	(18)	(21)	(23)	(17)	(13)
tcdmmf_ta	Total customer deposits plus money market fu	78	330	108	90	132	648	46.2	54.8	43.7	61.4	56.6	69.2
								(25)	(25)	(21)	(22)	(30)	(23)
teq_ta	Total equity	83	334	110	96	150	661	8.3	5.7	9.1	7.2	12.7	10.4
								(12)	(8)	(8)	(4)	(19)	(8)
tln_ta	Total loans	81	333	110	94	140	601	47.0	56.8	63.3	68.4	49.6	62.7
								(29)	(20)	(22)	(22)	(32)	(17)
ta_ne	Total assets (in percent of number of	56	288	104	35	112	562	3,074.7	2,620.4	1,110.1	2,158.9	4,211.9	753.1
	employees)							(10,942)	(8,025)	(2,283)	(6,241)	(20,858)	(4,789)
tcd_tl	Total customer depsoits (in percent of	80	330	108	89	118	580	36.1	57.2	45.5	66.0	61.6	73.7
	total liabilities)							(28)	(28)	(22)	(23)	(28)	(21)

Source: Bankscope

1/ Interest income minus interest expense over total assets.

2/ Operating income minus operating expenses.

Table 8. Selected Countries: Panel Regression Results on Net Interest Margin Between Estimator with Weighted Least Squares
(Dependent variable: net interest margin)

Sample	All	France	Germany	US	Spain
	nim	nim	nim	nim	nim
ope_ta	0.247**	0.250**	0.250**	0.250**	0.250**
	(17.87)	(17.97)	(17.97)	(17.97)	(17.97)
tcdmmf_ta	0.016**	0.015**	0.015**	0.015**	0.015**
	(10.12)	(9.38)	(9.38)	(9.38)	(9.38)
tbd_ta	0.011**	0.010**	0.010**	0.010**	0.010**
	(5.85)	(5.38)	(5.38)	(5.38)	(5.38)
llp_ta	1.044**	1.032**	1.032**	1.032**	1.032**
	(14.40)	(14.21)	(14.21)	(14.21)	(14.21)
tln_ta	0.018**	0.017**	0.017**	0.017**	0.017**
	(14.90)	(14.74)	(14.74)	(14.74)	(14.74)
teq_ta	0.033**	0.034**	0.034**	0.034**	0.034**
	(7.32)	(7.36)	(7.36)	(7.36)	(7.36)
hhi_ta	-0.002*	-0.003+	-0.003+	-0.003+	-0.003+
	(2.33)	(1.72)	(1.72)	(1.72)	(1.72)
fo	0.06	0.102	0.102	0.102	0.102
	(0.34)	(0.58)	(0.58)	(0.58)	(0.58)
tbill	-0.054	0.123	0.123	0.123	0.123
	(0.78)	(1.10)	(1.10)	(1.10)	(1.10)
cpi	0.406**	-0.173	-0.173	-0.173	-0.173
	(2.77)	(0.77)	(0.77)	(0.77)	(0.77)
rgdp	0.205**	0.024	0.024	0.024	0.024
	(3.17)	(0.17)	(0.17)	(0.17)	(0.17)
rgdppc	0	0	0	0	0
	(1.64)	(0.93)	(0.93)	(0.93)	(0.93)
italy dummy	-0.146	0.862	1.521*	1.577	-1.913*
	(0.48)	(1.64)	(2.29)	(1.13)	(1.96)
germany dummy		-0.659*		0.056	-3.434*
		(2.16)		(0.07)	(2.41)
spain dummy		2.775*	3.434*	3.490+	
		(2.43)	(2.41)	(1.71)	
uk dummy		-0.771**	-0.112	-0.056	-3.546**
		(3.37)	(0.39)	(0.06)	(2.78)
usa dummy		-0.715	-0.056		-3.490+
		(0.72)	(0.07)		(1.71)
france dummy			0.659*	0.715	-2.775*
			(2.16)	(0.72)	(2.43)
Constant	0.018	-1.501	-2.16	-2.216	1.274
	(0.02)	(0.91)	(1.33)	(0.97)	(0.68)
Observations	8699	8699	8699	8699	8699
Number of obs	1658	1658	1658	1658	1658
R-squared	0.52	0.52	0.52	0.52	0.52

Absolute value of t statistics in parentheses
+ significant at 10%; * significant at 5%; ** significant at 1%

Source. Bankscope.

Table 9. Selected Countries: Panel Regression Results on Operating Profits to Total Assets
Between Estimator with Weighted Least Squares
(Dependent variable: operational profits to total assets)

Sample	All	France	Germany	US	Spain
	opp_ta	opp_ta	opp_ta	opp_ta	opp_ta
gi_ta	0.060**	0.061**	0.061**	0.061**	0.061**
	(8.37)	(8.32)	(8.32)	(8.32)	(8.32)
tcdmmf_ta	0.003+	0.002	0.002	0.002	0.002
	(1.66)	(1.36)	(1.36)	(1.36)	(1.36)
tbd_ta	-0.003+	-0.003	-0.003	-0.003	-0.003
	(1.69)	(1.59)	(1.59)	(1.59)	(1.59)
llp_ta	0.034	0.018	0.018	0.018	0.018
	(0.50)	(0.27)	(0.27)	(0.27)	(0.27)
tln_ta	0.004**	0.004**	0.004**	0.004**	0.004**
	(3.51)	(3.57)	(3.57)	(3.57)	(3.57)
teq_ta	0.051**	0.053**	0.053**	0.053**	0.053**
	(11.31)	(11.59)	(11.59)	(11.59)	(11.59)
hhi_ta	0.001	0.006**	0.006**	0.006**	0.006**
	(0.92)	(3.34)	(3.34)	(3.34)	(3.34)
fo	0.265	0.293+	0.293+	0.293+	0.293+
	(1.49)	(1.65)	(1.65)	(1.65)	(1.65)
tbill	-0.081	0.212+	0.212+	0.212+	0.212+
	(1.18)	(1.88)	(1.88)	(1.88)	(1.88)
cpi	0.003	-0.529*	-0.529*	-0.529*	-0.529*
	(0.02)	(2.32)	(2.32)	(2.32)	(2.32)
rgdp	0.199**	-0.16	-0.16	-0.16	-0.16
	(3.06)	(1.10)	(1.10)	(1.10)	(1.10)
rgdppc	0.000+	0	0	0	0
	(1.71)	(1.01)	(1.01)	(1.01)	(1.01)
italy dummy	0.089	-0.696	-1.286+	-4.301**	2.207*
	(0.30)	(1.32)	(1.94)	(3.06)	(2.24)
germany dummy		0.590+		-3.016**	3.492*
		(1.92)		(3.46)	(2.43)
spain dummy		-2.902*	-3.492*	-6.508**	
		(2.52)	(2.43)	(3.16)	
uk dummy		0.104	-0.486+	-3.502**	3.006*
		(0.45)	(1.66)	(3.77)	(2.33)
usa dummy		3.605**	3.016**		6.508**
		(3.56)	(3.46)		(3.16)
france dummy			-0.590+	-3.605**	2.902*
			(1.92)	(3.56)	(2.52)
Constant	-2.203**	-0.697	-0.107	2.909	-3.599+
	(2.66)	(0.42)	(0.07)	(1.27)	(1.91)
Observations	8702	8702	8702	8702	8702
Number of obs	1658	1658	1658	1658	1658
R-squared	0.21	0.22	0.22	0.22	0.22

Absolute value of t statistics in parentheses
+ significant at 10%; * significant at 5%; ** significant at 1%

Source: Bankscope.

Table 10. Cross-Sectional Time-Series FGLS Regression Allowing for Heteroskedastic Panels and Common AR(1) Coefficient for All Panels
(Dependent variable: operational income to total assets)

Sample	Italy opi_ta (1)	Non-Italy opi_ta (2)	All opi_ta (3)	Germany opi_ta (4)	France opi_ta (5)	US opi_ta (6)
logta	-0.119	0.226**	0.223**	0.152**	0.152**	0.152**
	(1.29)	(6.97)	(6.17)	(4.20)	(4.20)	(4.20)
logta_sq	0.005	-0.007**	-0.007**	-0.006**	-0.006**	-0.006**
	(0.97)	(3.78)	(3.58)	(2.77)	(2.77)	(2.77)
ii_ta	0.317**	0.179**	0.216**	0.218**	0.218**	0.218**
	(34.88)	(42.85)	(53.10)	(56.13)	(56.13)	(56.13)
ncftr_ta	0.885**	0.561**	0.635**	0.685**	0.685**	0.685**
	(61.48)	(50.65)	(65.83)	(79.04)	(79.04)	(79.04)
pe_ta	0.706**	1.419**	1.311**	1.241**	1.241**	1.241**
	(23.95)	(98.81)	(97.60)	(90.25)	(90.25)	(90.25)
tln_ta	0.014**	0.004**	0.007**	0.005**	0.005**	0.005**
	(18.17)	(12.69)	(19.42)	(16.33)	(16.33)	(16.33)
llp_ta	0.014	0.233**	0.188**	0.207**	0.207**	0.207**
	(0.62)	(25.09)	(21.56)	(24.33)	(24.33)	(24.33)
tcd_ta	0.013**	0.007**	0.007**	0.003**	0.003**	0.003**
	(11.68)	(23.60)	(21.65)	(10.61)	(10.61)	(10.61)
teq_ta	0.042**	0.154**	0.130**	0.087**	0.087**	0.087**
	(16.91)	(72.68)	(63.24)	(38.23)	(38.23)	(38.23)
fo	0.014	0.014*	0.012+	0.015*	0.015*	0.015*
	(0.69)	(2.16)	(1.79)	(2.27)	(2.27)	(2.27)
hhi_ta	-0.001**	-0.001**	-0.001**	-0.000**	-0.000**	-0.000**
	(5.05)	(27.13)	(24.89)	(10.71)	(10.71)	(10.71)
italy dummy			-0.295**	-0.124**	0.128**	-0.934**
			-13.8	-5.19	-5.48	-33.5
spain dummy				0.540**	0.792**	-0.270**
				-13.23	-21.14	-5.81
uk dummy				-0.301**	-0.049	-1.110**
				-8.07	-1.21	-28.05
germany dummy					0.252**	-0.809**
					-11.42	-41.1
france dummy				-0.252**		-1.062**
				-11.42		-38.78
usa dummy				0.809**	1.062**	
				-41.1	-38.78	
Constant	-0.772+	-2.533**	-2.606**	-1.791**	-2.043**	-0.981**
	-1.86	-16.97	-15.92	-11.01	-12.16	-5.9
Number of observations	1235	9713	10948	10948	10948	10948
Number of groups	234	1747	1981	1981	1981	1981
Largest groups size	7	7	7	7	7	7
Smallest group size	2	2	2	2	2	2
Average group size	5.28	5.56	5.53	5.53	5.53	5.53
rho	0.57	0.65	0.7	0.68	0.68	0.68
Log likelihood	-133.73	-2808.8	-3065.56	-2414.8	-2414.8	-2414.8
Wald chi2	11591.52	84647.51	68843.15	65979.35	65979.35	65979.35
Prob > chi2	0.00	0.00	0.00	0.00	0.00	0.00

Absolute value of z statistics in parentheses: + significant at 10%; * significant at 5%; ** significant at 1%

Source: Bankscope.

Table 11. Cross-Sectional Time-Series FGLS Regression Allowing for Heteroskedastic Panels and Common AR(1) Coefficient for All Panels
(Dependent variable: operational expenses to total assets)

Sample	Italy	Non-Italy	All	Germany	France	US
	ope_ta	ope_ta	ope_ta	ope_ta	ope_ta	ope_ta
	(1)	(2)	(3)	(4)	(5)	(6)
logta	-0.033	0.064**	0.046**	0.057**	0.057**	0.057**
	(0.52)	(3.84)	(3.02)	(3.44)	(3.44)	(3.44)
logta_sq	-0.001	-0.002**	-0.001+	-0.002**	-0.002**	-0.002**
	(0.27)	(2.73)	(1.72)	(2.82)	(2.82)	(2.82)
ii_ta	0.115**	0.013**	0.047**	0.045**	0.045**	0.045**
	(11.30)	(8.64)	(24.87)	(21.52)	(21.52)	(21.52)
ncftr_ta	0.200**	0.058**	0.058**	0.075**	0.075**	0.075**
	(11.99)	(11.94)	(11.05)	(12.27)	(12.27)	(12.27)
pe_ta	1.210**	1.635**	1.603**	1.601**	1.601**	1.601**
	(41.82)	(210.55)	(212.87)	(193.33)	(193.33)	(193.33)
tln_ta	-0.004**	-0.002**	-0.002**	-0.002**	-0.002**	-0.002**
	(5.90)	(14.72)	(9.65)	(8.59)	(8.59)	(8.59)
llp_ta	1.023**	1.008**	1.000**	1.006**	1.006**	1.006**
	(38.54)	(230.34)	(225.82)	(220.48)	(220.48)	(220.48)
tcd_ta	0.002**	0	-0.000*	-0.001**	-0.001**	-0.001**
	(2.67)	(0.70)	(2.56)	(7.59)	(7.59)	(7.59)
teq_ta	-0.001	0.037**	0.034**	0.021**	0.021**	0.021**
	(0.44)	(30.46)	(29.84)	(14.57)	(14.57)	(14.57)
fo	-0.063+	0.004	0.006	0.008*	0.008*	0.008*
	(1.87)	(1.23)	(1.63)	(2.14)	(2.14)	(2.14)
hhi_ta	-0.001**	-0.000**	-0.000**	-0.000**	-0.000**	-0.000**
	(5.30)	(16.35)	(19.01)	(2.87)	(2.87)	(2.87)
italy dummy			0.053**	0.053**	0.147**	-0.168**
			(3.70)	(3.45)	(9.82)	(9.56)
spain dummy				-0.017	0.076**	-0.238**
				(0.85)	(4.21)	(10.13)
uk dummy				0.036*	0.130**	-0.185**
				(2.05)	(7.09)	(9.69)
germany dummy					0.094**	-0.221**
					(8.70)	(20.44)
france dummy				-0.094**		-0.314**
				(8.70)		(22.30)
usa dummy				0.221**	0.314**	
				(20.44)	(22.30)	
Constant	1.064**	-0.317**	-0.365**	-0.330**	-0.424**	-0.109
	(3.27)	(3.84)	(4.99)	(4.09)	(5.09)	(1.32)
Number of observations	1238	9713	10951	10951	10951	10951
Number of groups	235	1747	1982	1982	1982	1982
Largest groups size	7	7	7	7	7	7
Smallest group size	2	2	2	2	2	2
Average group size	5.27	5.56	5.53	5.53	5.53	5.53
rho	-0.11	0.69	0.65	0.65	0.65	0.65
Log likelihood	-577.8	3543.95	3082.76	3132.79	3132.79	3132.79
Wald chi2	13626.34	277586.25	222955.32	172339.23	172339.23	172339.23
Prob > chi2	0.00	0.00	0.00	0.00	0.00	0.00

Absolute value of z statistics in parentheses: + significant at 10%; * significant at 5%; ** significant at 1%

Source: Bankscope.

Table 12. Cross-Sectional Time-Series FGLS regression Allowing for Heteroskedastic Panels and Common AR(1) Coefficient for All Panels
(Dependent variable: operational profits to total assets)

Sample	Italy	Non-Italy	All	Germany	France	US
	opp_ta	opp_ta	opp_ta	opp_ta	opp_ta	opp_ta
	(1)	(2)	(3)	(4)	(5)	(6)
logta	-0.245*	0.110**	0.143**	0.066*	0.066*	0.066*
	(2.40)	(3.51)	(4.78)	(2.28)	(2.28)	(2.28)
logta_sq	0.015**	-0.003	-0.004*	-0.001	-0.001	-0.001
	(2.66)	(1.55)	(2.35)	(0.85)	(0.85)	(0.85)
ii_ta	0.156**	0.144**	0.161**	0.141**	0.141**	0.141**
	(16.38)	(35.27)	(44.08)	(39.41)	(39.41)	(39.41)
ncftr_ta	0.686**	0.443**	0.502**	0.529**	0.529**	0.529**
	(31.52)	(42.44)	(54.63)	(54.95)	(54.95)	(54.95)
pe_ta	-0.371**	-0.169**	-0.224**	-0.225**	-0.225**	-0.225**
	(10.62)	(12.96)	(18.51)	(19.72)	(19.72)	(19.72)
tln_ta	0.012**	0.006**	0.008**	0.007**	0.007**	0.007**
	(12.58)	(19.88)	(26.60)	(24.98)	(24.98)	(24.98)
llp_ta	-0.896**	-0.753**	-0.754**	-0.748**	-0.748**	-0.748**
	(30.42)	(84.73)	(89.14)	(85.72)	(85.72)	(85.72)
tcd_ta	0.008**	0.007**	0.008**	0.004**	0.004**	0.004**
	(7.27)	(25.78)	(29.32)	(15.39)	(15.39)	(15.39)
teq_ta	0.045**	0.099**	0.091**	0.065**	0.065**	0.065**
	(11.16)	(52.80)	(53.63)	(37.15)	(37.15)	(37.15)
fo	0.055*	-0.003	-0.023**	0.009	0.009	0.009
	(2.11)	(0.49)	(3.84)	(1.45)	(1.45)	(1.45)
hhi_ta	0	-0.000**	-0.001**	-0.000**	-0.000**	-0.000**
	(0.05)	(19.51)	(29.73)	(7.73)	(7.73)	(7.73)
italy dummy			-0.314**	-0.249**	-0.081**	-0.818**
			(17.53)	(12.03)	(4.32)	(32.92)
spain dummy				0.453**	0.620**	-0.117**
				(12.82)	(20.17)	(2.90)
uk dummy				-0.352**	-0.184**	-0.921**
				(14.80)	(7.27)	(34.33)
germany dummy					0.168**	-0.570**
					(10.05)	(33.91)
france dummy				-0.168**		-0.737**
				(10.05)		(33.37)
usa dummy				0.570**	0.737**	
				(33.91)	(33.37)	
Constant	-0.505	-1.772**	-2.107**	-1.297**	-1.465**	-0.727**
	(1.04)	(11.99)	(15.02)	(9.63)	(10.52)	(5.28)
Number of observations	1235	9713	10948	10948	10948	10948
Number of groups	234	1747	1981	1981	1981	1981
Largest groups size	7	7	7	7	7	7
Smallest group size	2	2	2	2	2	2
Average group size	5.28	5.56	5.53	5.53	5.53	5.53
rho	0.48	0.64	0.63	0.6	0.6	0.6
Log likelihood	-499.32	-2183.56	-2846.81	-2292.52	-2292.52	-2292.52
Wald chi2	2401.13	16861.2	19390.6	22266.9	22266.92	22266.92
Prob > chi2	0.00	0.00	0.00	0.00	0.00	0.00

Absolute value of z statistics in parentheses: + significant at 10%; * significant at 5%; ** significant at 1%

Source: Bankscope.

Table 13. Cross-Sectional Time-Series FGLS Regression Allowing for Heteroskedastic Panels and Common AR(1) Coefficient for All Panels
(Dependent variable: operational expenses to total assets)

Sample	All	Germany	France	US
	opi_ta	opi_ta	opi_ta	opi_ta
	(1)	(2)	(3)	(4)
tcd_tl	0.004**	0.005**	0.005**	0.005**
	-14.38	-14.52	-14.52	-14.52
tbd_ta	0.001**	0.001**	0.001**	0.001**
	-3.99	-4.25	-4.25	-4.25
llp_ta	0.156**	0.161**	0.161**	0.161**
	-16.65	-17.9	-17.9	-17.9
teq_ta	0.040**	0.038**	0.038**	0.038**
	(17.22)	(15.50)	(15.50)	(15.50)
ta_ne	0.00	0.00	0.00	0.00
	(0.32)	(0.45)	(0.45)	(0.45)
hhi_ta	0.00	-0.000**	-0.000**	-0.000**
	(0.04)	(9.06)	(9.06)	(9.06)
fo	-0.015+	-0.013+	-0.013+	-0.013+
	(1.92)	(1.93)	(1.93)	(1.93)
italy dummy	-0.140**	0.01	-0.108**	-0.648**
	(6.40)	(0.40)	(4.49)	(15.58)
spain dummy		0.530**	0.412**	-0.128*
		(11.64)	(10.09)	(2.15)
france dummy		0.118**		-0.540**
		(5.95)		(13.65)
uk dummy		0.247**	0.128**	-0.412**
		(8.18)	(3.92)	(9.22)
usa dummy		0.658**	0.540**	
		(18.80)	(13.65)	
germany dummy			-0.118**	-0.658**
			(5.95)	(18.80)
Constant	2.308	1.42	1.53	2.07
	-1.2	(0.72)	(0.78)	(1.06)
Number of observations	6889	6889	6889	6889
Number of groups	1363	1363	1363.00	1363.00
Largest groups size	7	7	7	7
Smallest group size	2.00	2.00	2.00	2.00
Average group size	5.05	5.05	5.05	5.05
rho	0.59	0.64	0.64	0.64
Log likelihood	-1375.53	-1105.38	-1105.38	-1105.38
Wald chi2	57385.56	55427.19	55427.19	55427.19
Prob > chi2	0.00	0.00	0.00	0.00

Absolute value of z statistics in parentheses: + significant at 10%; * significant at 5%; ** sig

Source: Bankscope.

Table 14. Cross-Sectional Time-Series FGLS Regression Allowing for Heteroskedastic Panels and Common AR(1) Coefficient for All Panels
(Dependent variable: operational expenses to total assets)

Sample	All ope_ta (1)	Germany ope_ta (2)	France ope_ta (3)	US ope_ta (4)
tcd_tl	0.003**	0.002**	0.002**	0.002**
	(15.78)	(17.17)	(17.17)	(17.17)
tbd_ta	0.003**	0.002**	0.002**	0.002**
	(12.36)	(10.35)	(10.35)	(10.35)
llp_ta	0.996**	0.998**	0.998**	0.998**
	(557.22)	(436.63)	(436.63)	(436.63)
teq_ta	-0.029**	-0.027**	-0.027**	-0.027**
	(29.96)	(41.21)	(41.21)	(41.21)
ta_ne	0.000**	0	0	0
	(6.02)	(0.85)	(0.85)	(0.85)
hhi_ta	0	-0.000*	-0.000*	-0.000*
	(0.78)	(2.07)	(2.07)	(2.07)
fo	-0.003*	-0.005*	-0.005*	-0.005*
	(2.39)	(2.09)	(2.09)	(2.09)
italy dummy	0.063**	0.01	0.025**	-0.046**
	(3.65)	(1.31)	(3.90)	(3.57)
spain dummy		-0.003	0.013	-0.059**
		(0.23)	(1.26)	(3.45)
france dummy		-0.015**		-0.071**
		(3.05)		(5.81)
uk dummy		0.018*	0.033**	-0.038**
		(2.35)	(4.01)	(2.81)
usa dummy		0.056**	0.071**	
		(4.90)	(5.81)	
germany dummy			0.015**	-0.056**
			-3.05	-4.9
Constant	3.204**	5.067**	5.052**	5.123**
	-5.44	-9.54	-9.5	-9.65
Number of observations	6889	6889	6889	6889
Number of groups	1363	1363	1363	1363
Largest groups size	7	7	7	7
Smallest group size	2	2	2	2
Average group size	5.05	5.05	5.05	5.05
rho	0.94	0.45	0.45	0.45
Log likelihood	8887.97	7508.42	7508.42	7508.42
Wald chi2	499098.41	675260.15	675260.15	675260.15
Prob > chi2	0.00	0.00	0.00	0.00

Absolute value of z statistics in parentheses: + significant at 10%; * significant at 5%; ** significant a

Source: Bankscope.

Table 15. Selected Countries: Panzar-Rosse H-Statistics, 1998–2004 FGLS Regressions with Heteroskedastic Panels and Common AR(1) Coefficient

Specification	H-statistic	Italy	Spain	Germany	UK	France	US	Max	Min.
(1)	H-statistic	0.71	0.77	0.69	0.80	0.74	0.56	0.80	0.56
	Ranking	4	2	5	1	3	6		
(2)	H-statistic	0.73	0.81	0.85	0.70	0.76	0.60	0.85	0.60
	Ranking	4	2	1	5	3	6		

Source: Bankscope.

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