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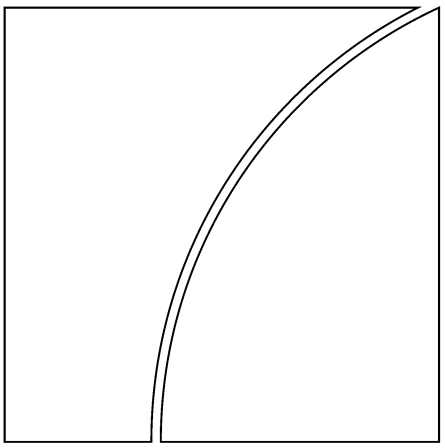

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Should banks be diversified? Evidence from individual bank loan portfolios

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Abstract

We study empirically the effect of focus (specialization) vs. diversification on the return and the risk of banks using data from 105 Italian banks over the period 1993–1999. Specifically, we analyze the tradeoffs between (loan portfolio) focus and diversification using a unique data set that is able to identify individual bank loan exposures to different industries, to different sectors, and to different geographical regions. Our results are consistent with a theory that predicts a deterioration in bank monitoring quality at high levels of risk and a deterioration in bank monitoring quality upon lending expansion into newer or competitive industries. Our most important findings are that industrial loan diversification reduces bank return while endogenously producing riskier loans for all banks in our sample (this effect being most powerful for high risk banks), sectoral loan diversification produces an inefficient risk–return tradeoff only for high risk banks, and geographical diversification results in an improvement in the risk–return tradeoff for banks with low levels of risk. A robust result that emerges from our empirical findings is that diversification of bank assets is not guaranteed to produce superior performance and/or greater safety for banks.

JEL Classification: G21, G28, G31, G32
Keywords: Focus, Diversification, Monitoring, Bank risk, Bank return

1 Introduction[1]

Should financial institutions (FIs) and banks be focused or diversified? What is the effect of focus and diversification on the quality of the loan portfolio of FIs and banks? Does diversification, based on traditional portfolio theory wisdom, lead to greater safety for FIs and banks? In this paper, we undertake an empirical investigation of these questions. The evidence we present suggests that, in contrast to the recommendations of traditional portfolio and banking theories, diversification of bank assets is not guaranteed to produce superior return performance and/or greater safety for banks.

There are several reasons why the focus vs. diversification issue is important in the context of FIs and banks. First, FIs and banks can enjoy a great deal of flexibility in achieving either focus or diversification compared to ordinary firms by investing or disinvesting financial claims (loans) in certain industries and markets. In contrast, a standard corporation has a somewhat limited choice in expanding its product range and the transaction costs of adjusting its portfolio of real–sector activities may be high. In addition, FIs face several (often conflicting) regulations that create incentives either to diversify or focus their asset portfolios, such as the imposition of capital requirements that are tied to the risk of assets, branching and asset investment restrictions, etc. Hence, from an economic as well as a policy standpoint, it is interesting to ask if FIs and banks benefit from diversification of their loan portfolio to more industries and countries.

Finally, the very nature of an intermediary's business activities makes the question of focus versus diversification an interesting economic issue to explore. FIs and banks act as "delegated monitors" in the sense of Diamond (1984). The very act of performing this delegated monitoring function renders them "special" on the lending side in that they have (at least some form of) information monopoly over the firms they lend to, as noted by Fama (1980, 1985), and James (1987), and as modelled by Rajan (1992) and Sharpe (1990). The downside risk of borrowing firms translates into the riskiness of the loans held by FIs and banks. The quality of banks' and FIs' delegated monitoring thus directly affects the

[1]We acknowledge the Interbank Deposit Protection Fund of Italy (FITD) and the Italian Bankers' Association for providing us with the data set employed in this paper, to Cristiano Zazzara and Marco Pellegini for their help in acquisition, translation, and understanding of this publicly available data set, and the Bank for International Settlements (BIS) for provision of data on stock market indices for Italy. We thank Linda Allen, Mike Fishman, Robert Hauswald, Philip Lowe, Mitch Petersen, Paola Sapienza, Henri Servaes, and the seminar participants at London Business School, Rutgers, INSEAD, Cambridge, Indian Institute of Management (IIM) – Ahmedabad, IIM – Bangalore, London School of Economics, Oxford, BIS, ICICI Research Centre (India) and Federal Reserve Bank of Chicago Conference on Bank Structure and Competition, for very useful comments. This paper is part of a project carried out when Viral Acharya visited the BIS during July 2001. Iftekhar Hasan acknowledges the support of Bank of Finland. The views expressed are exclusively those of the authors.

endogenous quality of their loans and in turn their default risk. However, due to equityholder–creditor conflicts, incentives to monitor are affected by the extent of debt in the FI's capital structure and the downside risk of the firms to whom the FI lends.[2]

For the sake of illustration, consider the extreme case where the FI's debt level is extremely high so that all benefits from monitoring accrue only to creditors (e.g., uninsured depositors and providers of borrowed funds). In this case, bankowners (equityholders or managers assumed to be fully aligned with equityholders) have little "incentive to monitor." In general, the FI's underinvestment in monitoring will be more severe the greater its debt or leverage or in banking terminology the lower its capital ratio(s). All else being equal, this implies that the FI's underinvestment in monitoring will be more severe the greater its downside risk of failure. Under such an incentive structure, can FIs and banks monitor their loans effectively as they expand into different industries and segments of the loan markets? How does the decision to be focused or diversified affect their monitoring incentives and the endogenous quality, i.e., the risk and the return, of their loans?

To this end, we examine data on the asset and loan portfolio composition of individual Italian banks during the period 1993–1999. The choice of Italian banks is driven by the availability of detailed data on the industrial, sectoral, and geographical composition of their balance-sheets. By contrast, in the United States, publicly available data on bank loan portfolios is restricted to call reports which do not contain such "fine" asset decompositions.[3] In particular, U.S. regulators do not provide a breakdown of individual (or aggregate) bank lending to specific industries or industrial sectors. Instead, the general level of disaggregation is highly "macro" in nature, e.g., household sector loans, commercial and industrial loans, etc. We obtain results that are sufficiently strong and robust to warrant a closer look at the wisdom of simply advocating banks to diversify as much as possible, and suggest a more careful assessment needs to be made of the costs and benefits of diversification in banking in general.[4]

[2]For example, a survey of bank defaults by the Office of the Comptroller of the Currency in 1988 examining defaulted banks in the preceding decade established that the asset quality of these banks played an important role along with internal controls in determining their financial health (OCC, 1988).

[3]In fact, the production of greater information by Italian banks occurred following a major crisis in the banking system in the early 1990s.

[4] While there are natural differences between the banking sectors of any two countries, there are several dimensions along which the Italian banking system is similar to that in the U.S.: (1) Unlike other banking systems in Continental Europe, Italy has a large number of banks (about 850 at the beginning of our sample) giving rise to a less concentrated banking system like that of the U.S. (2) The branching restrictions on banks in Italy were removed in 1990 as they were in the U.S. in the mid 1980s. (3) There has been a wave of consolidation in the banking system in 1990s mirrorring that in the U.S. (4) The banking system comprises of a few very large banks and a large number of medium-to-small sized banks as in the U.S. In addition, the risk levels of Italian banks in our sample exhibit economically significant variability, from being very safe to being very risky, which lends an element of robustness and generality to our results. Finally,

Some of these issues have been examined at a theoretical level in a recent paper by Winton (1999). Specifically, Winton presents a theoretical framework to investigate the merit to FIs and banks of the proverbial wisdom of not putting all your eggs in one basket. The essence of Winton's model lies in understanding that the quality of bank loan portfolios is *endogenous*: it is determined, in part, by the levels of monitoring induced by a change in the bank's focus or diversification.[5] Winton's model provides a number of testable empirical hypotheses which we use to frame the empirical tests below. These hypotheses are central to the focus versus diversification debate in banking and we discuss them below:

H.1 The relationship between bank return and diversification is non–linear in bank risk (inverted U–shaped). To be precise, diversification across loan sectors helps a bank's return most when loans have moderate exposure to sector downturns (downside risk)[6]; when loans have low downside risk, diversification has little benefit; when loans have sufficiently high downside risk, diversification may actually reduce returns.

INSERT FIGURE 1 HERE.

From traditional portfolio theory, we know that diversification increases the central tendency of the distribution of a loan portfolio. However, as Winton (1999) notes, when debt is risky and high enough compared to this central tendency, diversification can in fact increase the probability of default. For the sake of illustration, Figure 1 plots the cumulative probability function for two normal distributions with different standard deviations and with a common mean of zero. If the level of debt is to the left of zero (under a suitable scale), e.g., at x = −1, then a decrease in standard deviation, by reducing the likelihood of events in the left tail of the distribution (the "default" states), reduces the probability of default.

although Italy differs from the U.S. in that many of its banks are state-owned, our results are found to hold (see Section 4.3) for both the privately-owned and the state-owned samples of banks. These stylized facts and the use of Italian banking data to address other important economic issues such as the benefit of relationship banking (Degatriache et al., 2000) and the effect of bank mergers on loan contracts (Sapienza, 2002a) lead us to believe that our results would generalize to banking sectors of other countries, includng the U.S.

[5]Winton motivates the issue by comparing the following two advices: *"It's the part of a wise man to keep himself today for tomorrow and not venture all his eggs in one basket"* by Miguel de Cervantes (Don Quixote de la Mancha, 1605), and, *Behold the fool saith "Put not thine eggs in one basket" - which is but a manner of saying, "Scatter your money and attention"; but the wise man saith "Put all your eggs in one basket and watch that basket"* by Mark Twain (Pudd'nhead Wilson, 1894).

[6]By portfolio "downside risk," we mean the likelihood that the portfolio return will be lower than a given threshold (e.g., level of deposits in the bank's capital structure), an event that constitutes a "default." An alternative measure of downside risk, and one that is employed in the paper due to its greater measurability, is the losses on the loans that constitute the portfolio. We have verified the robustness of our results with several other measures of bank risk, both expected and unexpected, as we discuss later.

However, if the level of debt is to the right of zero, e.g., at x = 1, then a decrease in standard deviation, by reducing the likelihood of events in the right tail of the distribution (the "no-default" states), in fact increases the probability of default. The left skewed nature of a typical loan portfolio's return distribution implies that the level of debt, in fact, may not need to be too high for this effect to arise.

An additional impact bolstering this hypothesis (H.1) arises from the interaction of the perverse effect of diversification on bank risk and the bank's monitoring incentives. The conflict of interest between bankowners and bank creditors (similar to the equityholder vs. creditor conflicts first described in Jensen and Meckling, 1976, and Myers, 1977) implies that an increase in the probability of default reduces the incentives of bankowners to monitor their loans. If the loan portfolio has high downside risk, then an improvement in loan monitoring and, in turn, in loan quality produces greater benefits to the creditors than to the bankowners. Since the cost of monitoring is borne by the bankowners (the residual claimants), it follows that if the loan portfolio has high downside risk, then an increase in diversification leads to weaker incentives for bankowners to monitor loans. This, in turn, leads to lower bank returns giving rise to hypothesis H.1.

H.2 A bank's monitoring effectiveness may be lower in newly entered and competitive sectors, and thus, diversification can result in a poorer quality of loans, i.e., an increase in the downside risk of the bank's loan portfolio.

There are three reasons why this might arise. First, banks may lack the monitoring expertise in lending to a new sector when learning costs are present. Second, when the loan sector to which banks migrate is already being supplied with credit by other banks, the new bank entrants may be subject to adverse selection and a "winner's curse" effect. This suggests that diversification could lower returns on bank loans and increase the risk of failure to a greater degree when the sectors into which the bank expands are subject to greater competition. Third, diversification can cause a bank to grow in size, subjecting it to agency–based scale inefficiencies discussed in the corporate finance literature.[7]

Broadly speaking, these hypotheses reflect the view that a bank's credit risk depends on its monitoring incentives (and effectiveness) as well as on its degree of portfolio diversification. Thus, diversification *per se* is no guarantee of a reduced risk of failure. By the same token, regulatory requirements to diversify are no assurance of greater banking system safety or stability.[8]

[7]We discuss the research that relates the effects of competition on bank loan quality as well as the recent corporate finance literature on agency–based scale inefficiencies in Section 2.

[8]For example, in the U.S., regulations restrict a bank's lending to any one counterparty to a maximum of 15% of that bank's capital.

Overall, our results provide strong support for these two hypotheses. We measure focus using the Herfindahl index for a bank's (i) non-financial and housing loan portfolio (I–HHI), (ii) overall asset sector portfolio (A–HHI), and (iii) geographical portfolio (G–HHI).[9] Thus, a decrease in HHI implies an increase in diversification and a reduction in focus. We reject the hypothesis that increased diversification (reduced focus) improves risk–adjusted bank returns on average, measured either as return on assets, return on equity, stock return (wherever the bank is publicly traded), and market–adjusted or beta–adjusted stock return. Further, we find that this relationship between focus and bank return is non–linear in the risk of the bank and may in fact be U–shaped as implied by hypothesis H.1 above. Specifically, increased industrial diversification appears to decrease return for all levels of bank risk, the decrease being the least for moderate risk levels and the greatest for high risk levels. Increased asset sectoral and geographic diversification, on the other hand, increases return at moderate levels of risk, but reduces return at very high levels of risk. While we proxy for bank risk using a bank's doubtful and non–performing loans to assets ratio, our results are qualitatively robust to other measures of bank risk as explained later in the paper.

We test hypothesis H.2 by examining endogenous loan quality (risk) and treating risk as a dependent variable that is affected by the extent of focus (diversification). Our empirical results suggest that increased focus in terms of industrial sector or asset sectoral exposure (high values for I–HHI and A–HHI) improves loan quality (reduces risk), whereas geographical focus (G–HHI) affects loan quality adversely. Further, we find evidence that when banks enter as lenders into "newer" industries or industries where they had less exposure before (as measured by a decrease in industrial focus, i.e., a time-series reduction in I–HHI), there is a contemporaneous deterioration in a bank's loan quality (increase in its risk).[10] This deterioration is greater, the greater the competition for loans that the entering bank faces for lending to the "new" industry. The results underscore the importance of "watching the basket" of loans and the advantages to banks from specialization. We also conduct several robustness checks by: (i) employing alternative measures of bank risk, (ii) conducting a simultaneous equations estimation of the return and risk effects resulting from focus (diversification), (iii) treating focus measures as endogenous variables, and (iv) separating the sample into state–owned and private banks.

From the combined results on bank loan return and risk, we conclude that increased industrial loan diversification results in an inefficient risk–return tradeoff for the (Italian)

[9]The Herfindahl index is the sum of the squared weights corresponding to a bank's exposure to different industries, sectors, or geographical areas. A higher value of the index corresponds to greater focus or lower diversification.

[10]We use the qualifier "newer" for industries in the sense that previous exposures of the bank to these industries had been lower or non–existent, rather than being newer in the sense of technological changes produced by the industries.

banks in our sample, and sectoral diversification results in an inefficient risk–return tradeoff for banks with relatively high levels of risk. Geographical diversification on the other hand does result in an improvement in the risk–return tradeoff for banks with low or moderate levels of risk.

These results have important and direct implications for the optimal size and scope of a "bank". While traditional banking theory based on a delegated monitoring argument recommends that it is optimal for a bank to be fully diversified across sectors or "projects" (see, for example, Boyd and Prescott, 1986), our results suggest that there are diseconomies of scope that arise through weakened monitoring incentives and a poorer quality loan portfolio when a risky bank expands into additional industries and sectors. This complements the agency theory based analysis of the boundaries of a bank's activities as proposed in Cerasi and Daltung (2000), Stein (2002) and Berger et al.(2001).[11] It also suggests that the optimal industrial organization of a banking sector might be one with several focused banks, an outcome that may also be attractive from an aggregate risk or a systemic risk standpoint as noted by Acharya (2001) and Shaffer (1994).

From a normative standpoint, our results sound a cautionary note to the adoption of regulatory mechanisms that encourage bank–level portfolio and/or activity diversification, or attempt to measure credit portfolio risk through traditional diversification measures. Our results also help explain the empirically documented phenomenon of DeLong (2001), who finds that bank mergers which are activity *and* geography focusing produce superior economic performance to those that diversify. Finally, our paper is the first to employ a measure of industrial and sectoral focus (or diversification) for bank loan portfolios. It is also the first to point out a potentially important and undocumented economic, and perhaps in turn a micro–level, difference between bank diversification achieved through industrial or asset sectoral exposures and bank diversification achieved through geographic expansions.

In Section 2 of the paper, we provide a brief overview of the related corporate finance and banking literature. Section 3 describes our data. Section 4 formalizes the hypotheses, H.1 and H.2, and presents our empirical results. Section 5 provides a discussion and concludes.

[11] We believe that the agency theories based on conflicts across firm segments proposed in corporate finance to explain the poor performance of conglomerates cannot completely explain the perverse effect of diversification on bank returns and risk. A bank's lending to different industries is much more centralized than is the operation of a typical conglomerate's operating segments. Stein (2002) and Berger et al.(2001), however, tie incomplete contracting to the inability of large banks to process "soft" information about their borrowers. This potentially leads to diseconomies of scale for FIs and banks.

2 Related Literature

The issue of focus versus diversification of a firm's business activities has been at the heart of a large body of recent corporate finance literature. The broad evidence seems to suggest that diversification destroys value (at least for some firms) leading to what is popularly known as the "diversification discount."[12] Several theories have been proposed to explain this phenomenon such as managerial risk-aversion (Amihud and Lev, 1981), agency problems between managers and shareholders (Denis, Denis and Sarin, 1997, and Cornett et al., 2001), the inefficiency of internal capital markets (Scharfstein and Stein, 2000), and power-struggles between different segments of a firm (Rajan, Servaes and Zingales, 2000). Some of these studies have also attempted to link their theories to the cross-sectional variation in diversification discounts and premia.[13]

This latter issue, however, has not been addressed thoroughly in the context of financial institutions and banks. This is primarily because it has been difficult to obtain bank-level (cross-sectional) portfolio data and construct measures of industrial and geographical diversification that are as "fine" or "micro" as those employed in this paper. Using somewhat coarser measures, Hughes, Lang, Mester and Moon (1996), Saunders and Wilson (2001), and Berger and DeYoung (2001) examine geographical diversification. Caprio and Wilson (1997) examine cross–country evidence for a relationship between on–balance sheet concentration and bank insolvency. Klein and Saidenberg (1998) present portfolio simulations demonstrating that multi–bank bank holding companies hold less capital and do more lending, on average, than their pro forma "pure–play" benchmark banks. Berger, Demsetz and Strahan (1999) find that consolidation in financial services industry has been consistent with greater diversification of risks on average but with little or no cost efficiency improvements. DeLong (2001) examines the merger of financial firms in the U.S. and finds that bank mergers that are focusing in terms of geography and activity produce superior economic performance relative to those that are diversifying.

[12]The diversification discount is measured as the average of the difference between the value of a merged or a diversified firm and the sum of the values of stand-alone firms corresponding to the acquired firms or the merged business segments. Lang and Stulz (1994) show that diversified firms in the U.S. have poorer firm performance (Tobin's q) compared to pure–play firms. Comment and Jarrell (1995) and Berger and Ofek (1995) document that diversification discount in the U.S. is in the range of 12.7% to 15.2%. Lins and Servaes (1999) provide evidence for Germany, Japan, and the U.K.

The issue of there being a discount on average is, however, disputed. Campa and Kedia (2000) and Villalonga (2001) econometrically model the endogenous choice of firms (to be focused or diversified) and document that the average discount is much lower than previously estimated. Graham, Lemmon and Wolf (2002) document that diversification often involves acquisition of discounted industry segments. Maksimovic and Phillips (2002) provide evidence that the discount is consistent with profit maximization by a conglomerate.

[13]For example, see Rajan, Servaes and Zingales (2000).

Finally, in addition to Winton (1999), several papers have discussed the adverse effect of competition on bank loan quality. These include Gehrig (1998), Dell'Arricia, Friedman, and Marquez (1999), Boot and Thakor (2000), and Hauswald and Marquez (2002) for theory, and Shaffer (1998) for empirical results.

3 Data

3.1 Data sources

Data for the industrial, asset, and geographic decompositions of the portfolios of Italian banks in our study are taken from the regulatory reports submitted by these banks to the Bank of Italy, the Italian Bankers' Association (ABI), and the Interbank Deposit Protection Fund of Italy (FITD). The latter is the Italian equivalent of the U.S. Federal Deposit Insurance Corporation (FDIC). Our sample starts with a base of 105 primarily commercial banks that reported their asset portfolio and other data during the entire 1993–1999 period. A complete list of the banks and the ones that are traded publicly during our sample period is shown in Appendix A. These 105 banks constitute over 80 percent of the total banking assets of Italy.[14] In terms of size, 8 of these banks are "very large" (as defined by the Bank of Italy), 7 are "large," 15 are "medium," and the remaining 75 are "small." In terms of geographical scope of banking activities, 8 of these banks are "national," 18 are "regional," 14 are "intra–regional," 10 are "local," and the remaining 55 are "provincial." Finally, 34 of these banks are publicly traded and 62 of them were state–owned at the beginning of 1993.[15] Further description of the Italian banking sector can be found in Degatriache et al. (2000) and Sapienza (2002a) as well as in Footnote 4.[16]

For each bank, data is available to calculate the following portfolio decompositions:

1. A disaggregated industrial sector decomposition based on each bank's top five industrial sector exposures with a sixth exposure comprising of the sum of the remaining exposures, where the exposures could be to any of the 23 industries among: (1) Agricultural, Forestry, and Fishing products, (2) Energy products, (3) Iron and non–iron

[14] A few of the banks in our sample undertook acquisitions of other banks. The data set, however, does not provide any details as to which were these acquiring banks and which banks they acquired.

[15] We are very grateful to Paola Sapienza for supplying us the state–ownership dummy for our sample based on her work on Italian banks in Sapienza (2002b).

[16] Industry perspectives on the developments of the Italian banking system can also be found in BNP Paribas (2001) and Goldman Sachs (2001). Three clear trends are apparent over our period of study: an increase in domestic branching (following the liberalization of branching in 1990), an increase in merger and acquisition activity (although Italy remains one of the least concentrated banking systems in Europe), and a decline in the importance of state–owned banks.

Material and Ore, (4) Ores and products based on non-metallic minerals, (5) Chemicals, (6) Metal products, apart from machinery and means of conveyance, (7) Agricultural and Industrial machinery, (8) Office, EDP Machinery, and others, (9) Electric material, (10) Transport, (11) Food products, Beverages, and Tobacco-based products, (12) Textile, Leather, Shoes, and Clothing products, (13) Paper, Publishing, and Printing products, (14) Rubber and Plastic products, (15) Other Industrial products, (16) Construction, (17) Services trade and similar, (18) Hotel and Public firms products, (19) Internal Transport services, (20) Sea and Air Transport, (21) Transport related services, (22) Communication services, and (23) Other Sales related services. Note that in aggregate these exposures (collectively defined in the data as Non–financial and Household exposures) constitute the dominant part of each bank's portfolio.

2. A broad asset sector decomposition based on exposures to (1) Sovereigns, (2) Other governmental authorities, (3) Non–financial corporations, (4) Financial institutions, (5) Households, and (6) Other counterparties.

3. A geographical decomposition of all credits (other than those to Financial Institutions) based on exposures to (1) Italy, (2) Other countries of the European Union (EU), and (3) Other countries (rest of the world).

Note that the size of bank lending to a particular sector, industry, or geographical region in our data set is net of loans that are already classified as either doubtful or non–performing.

The Financial Statement variables and capital structure variables are obtained from the Bank of Italy and Bankscope data bases. Stock market data items for the 34 banks that are publicly traded were taken from the Datastream and Milan Stock exchange information bases on Italian Banks. A few banks had to be discarded from the sample due to missing values of relevant variables, e.g., doubtful and non–performing loans.

3.2 Construction of Herfindahl indices

We measure focus (diversification) by employing a Hirschman Herfindahl Index (HHI) measure. HHI is the sum of the squares of exposures as a fraction of total exposure under a given classification. In our case, we construct three different kinds of HHI's, which consist of Industrial and Household sector HHI, more simply referred to as Industrial sector HHI (I–HHI), Broad Asset sector HHI (A–HHI), and Geographic HHI (G–HHI).

I–HHI is based on the 5 top industries where loans were made for each bank. The 6th exposure considers the rest of the industrial loan portfolio. For the 6th exposure, we employed two conventions: first, where the 6th exposure is treated as a separate "hypothetical" industry, and second, where the 6th exposure is treated as being equally divided among the

remaining 18 industries. Our results were not sensitive to this choice. Hence, we report results with I–HHI computed using the 6th exposure as a hypothetical industry. Thus, if the proportional exposures to six industries are X_1, X_2, X_3, X_4, X_5, and X_6, respectively, then I–HHI equals $\sum_{i=1}^{6}(X_i/Q)^2$, where $Q = \sum_{i=1}^{6} X_i$. Note that the HHI has a maximum of 1 when all loans are made to a single industry.

A–HHI is the sum of the squared exposures (measured as a fraction) in the form of sovereign loans, other governmental loans, non-financial sector loans, financial sector loans, household sector loans, and other loans.

G–HHI is the sum of the squared exposures (measured as a fraction) to Domestic (Italian) loans, European Union loans, and Rest of the World loans.

3.3 Balance-sheet and Stock market variables

We employ the following (annual) variables obtained from the balance–sheet and stock market data for the banks in our sample over the period 1993–1999.

Return measures:

1. ROA: return on assets measured as Net Income / Assets.
2. ROE: return on equity measured as Net Income / Equity.
3. SR: stock return measured as the return over the current year, i.e., as the return from the end of previous year to the last day of the current year.
4. BSR: market or beta–adjusted stock return measured as the residual from a one–factor market model which employs MIB General, a weighted arithmetic average of all stocks listed on the Milan Stock Exchange (Borsa Valori di Milano) as the market and where the beta is computed for each year using the daily return series over the previous year.

Risk measures:

- DOUBT, the doubtful and non–performing assets ratio measured as Doubtful and Non–performing Loans / Assets. (Note that this can be interpreted as capturing the level of expected losses).

  In addition, we also seek to establish the robustness of our results with the following measures of unexpected losses:

- STDDOUBT: the standard deviation of DOUBT for each bank during the sample period 1993–1999.
- STDRET: the annualized stock return volatility for each publicly traded bank based on daily stock return data.

Control variables:

1. SIZE: asset size of the bank (in million dollars calculated using the spot exchange rate between USD and Italian Lira at the point of measurement).
2. EQRATIO: capital ratio of the bank measured as Equity (Book–Value) / Assets, the equivalent of the bank's Tier 1 capital ratio. This is essentially equivalent to one minus (book–value) debt to assets ratio for the bank.
3. BRRATIO: branch ratio measured as Number of Bank Branches / Assets. Note that this is simply the inverse of a measure of average branch size.
4. EMPRATIO: employee ratio measured as Number of Employees / Assets.

INSERT TABLES 1 AND 2 HERE

Table 1 presents the univariate statistics (mean, median, standard deviation, minimum, and maximum) for these variables and for Herfindahl indices for all the banks over the sample period of 1993–1999. Note that the mean (median) bank's size is about 12 billion (3 billion) USD, the mean (median) capital ratio is 8.732% (8.113%), and the mean (median) ratio of doubtful and non–performing loans to assets is 5.234 (3.199). The average industrial and asset sectoral focus measures (I–HHI and A–HHI) are low suggesting a significant degree of diversification in these areas. However, the average geographical focus (G–HHI) is quite high capturing the fact that most banks in our sample lent to domestic Italian firms.[17]

Table 2 completes the descriptive statistics by presenting the correlation matrix among these variables. As Table 2 illustrates, the three measures of focus, I–HHI, A–HHI, and G–HHI, are not highly correlated. The correlation between I–HHI and A–HHI is 0.26, between I–HHI and G–HHI is -0.31, and between A–HHI and G–HHI is -0.02. This suggests the possibility that the effects of these different diversification measures on bank risk–return performance may be different. Further, there is significant variation in all the variables we employ and the correlations suggest a relationship between return measures (ROA, ROE, and SR) and the balance-sheet control variables (SIZE, BRRATIO, EMPRATIO).

[17]The 1990s were a particularly difficult period for many Italian banks and industries (see BNP Paribas, 2001, Goldman Sachs, 2001, and Sapienza, 2002a, b). Goldman Sachs (2001) and Sapienza (2002a, b) also provide corroborating evidence on the level of geographical focus of Italian banks during this period.

4 Effect of Focus on Bank Performance

To study the overall effect of a bank's focus (diversification), we study its effect on both bank return and bank risk. We study these effects both separately and simultaneously recognizing their interdependence. If focus produces an increase in bank return and a decrease in bank risk, then we interpret this result as implying that focus improves bank performance, and thus, by implication that increased diversification would decrease bank performance. On the other hand, if focus results in a decrease in bank return and an increase in bank risk, then we conclude that focus weakens bank performance, i.e., increased diversification would improve bank performance. When bank return and bank risk either both increase or both decrease, the overall effects on bank performance are ambiguous and cannot be determined without taking a stand on what constitutes an "efficient" risk–return tradeoff. We conduct several robustness checks including (as noted above) a simultaneous equations estimation of the return and risk effects resulting from focus (diversification) and treating focus measures as endogenously determined variables.

4.1 Test of hypothesis H.1: Effect of focus on bank returns

The hypothesis H.1 stated in the Introduction in terms of bank diversification is restated below in terms of focus.

H.1: The relationship between bank returns and focus is non–linear and U–shaped in bank risk. To be precise, when loans have low exposure to sector downturns (downside risk), focus has little impact for a bank's returns; focus affects a bank's returns most adversely when loans have moderate downside risk; when loans have sufficiently high downside risk, focus may actually enhance a bank's returns.

Before examining the non–linear relationship between bank returns and focus as a function of bank risk, we first consider the linear regression below to understand the average relationship between bank returns and focus.

$$\text{Return}_t \;=\; \alpha_0 + \alpha_1 * \text{I–HHI}_t + \alpha_2 * \text{A–HHI}_t + \alpha_3 * \text{G–HHI}_t + \epsilon_t. \tag{4.1}$$

The null hypothesis we want to test is that diversification is better for bank returns ("Don't put all your eggs in one basket"), i.e., by implication that focus is harmful to bank returns:

$$\alpha_1 < 0,\ \alpha_2 < 0,\ \alpha_3 < 0. \tag{4.2}$$

As noted earlier, Return_t is proxied by four variables: (i) return on assets–ROA, (ii) return on equity–ROE, (iii) stock return–SR, and (iv) market or beta–adjusted stock return–BSR. The regressions are run by pooling observations across all banks and across all years.

In addition, we employ the following control variables for each bank: log of its size–SIZE, its equity to assets ratio–EQRATIO, its branch to assets ratio–BRRATIO, and its employment expense to assets ratio–EMPRATIO. Finally, we adjust returns for risk by employing the risk measure DOUBT, the ratio of its doubtful and non–performing loans to assets, also as an explanatory variable. Time–dummies are introduced for 1994 through 1999 to control for any temporal fixed effects. Similarly, bank fixed effects are introduced to ensure that pooling of time–series observations for an individual bank with cross–sectional observations across banks does not generate spurious statistical significance.

The effect of focus (diversification) on bank returns may not be captured completely through a contemporaneous relationship. If information about a bank's decision to focus or diversify is publicly available to the capital markets, then the stock returns should adjust contemporaneously. However, this may be less true for adjustments in book-value or accounting measures of bank return (return on assets–ROA, and return on equity–ROE). Hence, we also consider the specification in equation (4.1) above with one year lagged values of focus measures: I–HHI_{t-1}, A–HHI_{t-1}, and G–HHI_{t-1}.

Next, we test the hypothesis that, in contrast to the specification in equation (4.1), the return–focus relationship is in fact non–linear and U–shaped in bank risk, as implied by hypothesis H.1 above (see the discussion in the Introduction of the paper). Put another way, the hypothesis states that bank risk interacts with bank focus in a U–shaped manner in explaining the cross–sectional variation across banks in the return–focus relationship. Mathematically, this is equivalent to the statement that the effect of focus on returns, d(Returns)/d(Focus), is U–shaped in risk, reaching its minimum at moderate levels of risk. To try to capture this, we modify equation (4.1) by introducing interaction terms between the focus measures and our measure of risk, the non–performing and doubtful loans (RISK) as well as risk squared (RISK^2). That is:

$$\begin{aligned}\text{Return}_t \;=\; & \alpha_0 + \alpha_1 * \text{I–HHI}_t + \alpha_2 * \text{A–HHI}_t + \alpha_3 * \text{G–HHI}_t + \eta * Z_t + \beta_0 * \text{RISK} + \\ & \beta_{11} * \text{I–HHI}_t * \text{RISK} + \beta_{12} * \text{I–HHI}_t * \text{RISK}^2 + \\ & \beta_{21} * \text{A–HHI}_t * \text{RISK} + \beta_{22} * \text{A–HHI}_t * \text{RISK}^2 + \\ & \beta_{31} * \text{G–HHI}_t * \text{RISK} + \beta_{32} * \text{G–HHI}_t * \text{RISK}^2 + \epsilon_t, \qquad (4.3)\end{aligned}$$

where Z_t is a vector representing the non–risk control variables stated above. Under this specification, the effect of focus on returns is quadratic in risk. For example, for industrial

focus, I–HHI:

$$\text{d(Return)/d(Focus)} \quad = \quad \alpha_1 + \beta_{11} * \text{RISK} + \beta_{12} * \text{RISK}^2. \tag{4.4}$$

Thus, the hypothesis that the effect of a bank's focus on its returns is U–shaped in its risk takes the form:

$$\beta_{11} < 0,\ \beta_{12} > 0,\ \beta_{21} < 0,\ \beta_{22} > 0,\ \beta_{31} < 0,\ \beta_{32} > 0. \tag{4.5}$$

As stated above, the measure of bank RISK employed in the regression above is a measure of expected losses: the ratio of doubtful and non–performing loans to assets, DOUBT_t. For the sake of robustness, we employ two other measures of expected losses as RISK: (i) AVGDOUBT, the average of each bank's risk exposure, i.e., the average of DOUBT_t for each bank over the entire time-period of our sample, 1993–1999; and (ii) PREDOUBT, the predictable component of each bank's risk computed from a regression of DOUBT_t on our measures of Focus (HHI's). In other words, we treat DOUBT_t as an endogenous variable as specified in equation (4.7) below and look at its predicted value. These latter measures are potentially more attractive as *ex–ante* measures of bank risk.[18] In addition, we have also employed two measures of unexpected losses as measures of RISK: STDDOUBT, the standard deviation of DOUBT, and STDRET, the annual standard deviation of SR.

INSERT TABLE 3 HERE.

Table 3 presents the results for linear regressions of bank returns on focus specified in equation (4.1) with return on assets (ROA), return on equity (ROE), unadjusted stock return (SR), and market or beta–adjusted stock return (BSR) employed as alternative bank return measures. Note that all standard errors reported in the tables are corrected using White's adjustment for heteroscedasticity. Examination of lags did not reveal a significant auto–correlation problem in our data.[19] The null hypothesis that focus reduces bank returns (and thus diversification increases bank returns) is rejected for all three measures of loan portfolio focus: industrial and household focus (I–HHI), broad asset sector focus (A–HHI), and geographic focus (G–HHI), as reflected in the positive and statistically significant (mostly

[18]We also employed two additional measures: (i) PROVISIONS, the ratio of loan loss reserves for expected losses reported by each bank in its balance–sheet to its assets, and (ii) AVGEQRATIO, the average of banks' (Tier–1) equity ratio EQRATIO, the latter being inversely related to bank risk. Both measures produced qualitatively similar results with slightly weaker effects for the case of PROVISIONS as the risk measure. For the sake of expositional parsimony, we state our results using risk measures that are based on DOUBT, the doubtful and non–performing loans to assets ratio.

[19]For this, we employed the VIF statistic in SAS program for multiple regression.

at 1% confidence level) coefficients on these measures. Observe that the sample size is much smaller for the stock return based measures of bank returns since only 34 out of our 105 banks are publicly traded.

INSERT TABLE 4 HERE.

We also tested the link between focus and bank returns employing a broader specification which introduces the control variables, bank size (SIZE), bank capital ratio (EQRATIO), branch to assets ratio (BRRATIO), employees to assets ratio (EMPRATIO), risk of bank loans (DOUBT), and the year dummies for time fixed effects, into the regression. The results from this broader specification are contained in Table 4. As before, all the focus measures (I–HHI, A–HHI, and G–HHI) have a positive and statistically significant effect on bank return measures. The inclusion of control variables significantly enhances the explanatory power of equation (4.1). The control variables for a bank's capital ratio and the risk of its loans (doubtful and non–performing loans to assets ratio) are strongly significant in their effect on ROA but have a less significant impact on the bank's stock return (SR). For brevity we only report results for the return measures ROA and SR.

We also enhanced the specification employed in Table 4 by adding bank–specific fixed effects. Again, all the focus measures (I–HHI, A–HHI, and G–HHI) have a positive and statistically significant effect on bank return measures, even after allowing for bank–specific fixed effects.[20] In addition, we replaced the focus measures (HHI_t) by their one–year lags (HHI_{t-1}). The results are similar to the specification with contemporaneous focus measures. Finally, we considered the specification which employs the contemporaneous focus measures, HHI_t, and the increase in focus measures, HHI_t - HHI_{t-1}. In the presence of contemporaneous focus, the increase in focus (HHI_t - HHI_{t-1}) appears to have little additional explanatory power.[21]

INSERT TABLE 5 HERE.

Table 5 tests whether the return–focus relationship is non–linear and U–shaped in bank risk, thus linking the cross–sectional effect of focus on returns to the level of bank risk (see equation 4.3). Table 5 employs the doubtful and non–performing loans to assets ratio

[20]Conducting the Hausmann specification test led to a rejection of the random effects model in favor of the fixed effect model for both ROA and SR specifications (with a p–value lower than 0.01). Throughout the paper, all results have been checked for robustness by also employing the specifications with bank–specific fixed effects.

[21]For reasons of space, Tables 4B to 4D containing the results of the robustness tests described above are not included in the paper but are available from the authors upon request.

(DOUBT_t) as the measure of bank risk (RISK). In robustness tests, we allowed for bank–specific fixed effects in the specification of equation 4.3. We also employed the average of the realized doubtful and non–performing loans to assets ratio for each bank over the entire sample period 1993–1999 (AVGDOUBT) as the measure of bank risk and alternatively the predicted value of DOUBT obtained through a regression of DOUBT on focus variables (equation 4.7 below) as the measure of bank risk (PREDOUBT_t). Finally, we examined the robustness of results by using the measures of unexpected component of risk, STDDOUBT (for the entire sample) and STDRET_t (for the publicly traded sample).[22]

Table 5 as well as the robustness tests provide strong support for a U–shaped relationship between focus and returns as a function of the risk level of the bank. The coefficients on the interaction terms, $\text{HHI}_t * \text{RISK}$, and $\text{HHI}_t * \text{RISK}^2$, are negative and positive respectively, and are statistically significant. This holds for both measures of bank returns, ROA and SR, for all three measures of focus, I–HHI, A–HHI, and G–HHI, and for all measures of bank risk, DOUBT, AVGDOUBT, PREDOUBT, STDDOUBT, and STDRET.

Computation of F–statistics to test the statistical significance of linear and quadratic terms, separately and jointly, revealed that the coefficients on these terms are statistically significant (at a 99% confidence level) in contributing to the explanatory power of the regression in Table 5.

INSERT FIGURE 2 AND TABLE 6 HERE.

To understand the economic significance of this U–shaped relationship, Figure 2 plots the marginal effect d(ROA)/d(Focus) for different values of DOUBT for all three measures of Focus, I–HHI, A–HHI, and G–HHI, based on Table 5, Column 2 (for ROA) estimated coefficients. The range of DOUBT is taken to be between 0% and 50%, which covers the minimum (zero) and the maximum value (45%) over our sample period. Table 6 presents the minimum, 10^{th} percentile, 25^{th} percentile, 50^{th} percentile, 75^{th} percentile, 90^{th} percentile, and the maximum values for DOUBT (ranked across all banks) for each of the years, 1993 through 1999. Note that the mean (median) doubtful and non–performing loans to assets ratio over the entire sample period is 5% (3%) with a standard deviation of 5.6%. However, about 25% of the banks have DOUBT values exceeding 7% in most of the sample years. This is consistent with the fact that the 1990s were a particularly difficult period for many Italian banks (and industries) with significantly high non–performing loan ratios (see also BNP Paribas, 2001, Goldman Sachs, 2001, and Sapienza, 2002a, b for corroborating evidence).

As can be seen from Figure 2, for the mean (median) bank in our sample, the effect of a small increase in industrial focus on returns (I–HHI) is very small and positive. Importantly,

[22]For reasons of space, Tables 5B to 5E containing the results of the robustness tests described above are not included in the paper but are available from the authors upon request.

the effect of a small increase in industrial focus is *uniformly positive* for the entire range of DOUBT values. This positive effect rises sharply as bank risk increases above a DOUBT value of 10%. In other words, for most banks in our sample (banks with median levels of risk or below), industrial focus has a relatively small positive effect on bank returns. However, for the few banks in our sample with very high levels of risk, industrial focus has a large positive effect on bank returns.[23]

On the other hand, a small increase in asset sector focus (A–HHI) and geographic focus (G–HHI) has a small and negative effect on returns for the mean (median) bank. Specifically, the effect of a small increase in asset sector focus is negligible for bank returns for a DOUBT level up to 15% (which represents about the 85th percentile in the bank sample) and is positive and increasing sharply for banks with DOUBT greater than 15%. In fact, the positive effect of focus on returns at high risk levels is stronger for broad asset sector focus than for industrial focus. However, a small increase in geographic focus has a negative effect on returns for most banks in our sample, reaching its minimum between DOUBT values of 15–25% and becoming positive only at extremely high levels of risk (DOUBT values greater than 37.5%). Alternatively, diversification across sectors and geographical regions is beneficial for the returns of moderately risky banks, but is costly for high risk banks.

Before proceeding further, it is important to address the following two questions. First, is the U–shaped relationship between return and focus as a measure of risk merely a spurious econometric outcome due to the quadratic specification employed? To answer this, we also considered the following piece–wise relationship:

$$\begin{aligned} \text{d(Return)/d(Focus)} &= \alpha + \beta_1 * \text{Dummy}(4\% \leq \text{DOUBT} < 8\%) \\ &+ \beta_2 * \text{Dummy}(8\% \leq \text{DOUBT} < 12\%) \\ &+ \beta_3 * \text{Dummy}(12\% \leq \text{DOUBT} < 20\%) \\ &+ \beta_4 * \text{Dummy}(20\% \leq \text{DOUBT} < 30\%) \\ &+ \beta_5 * \text{Dummy}(\text{DOUBT} \geq 30\%) \end{aligned} \tag{4.6}$$

[23]Note that the effect of industrial focus (I–HHI) on ROA in Tables 5B–5E which employ measures other than DOUBT as a proxy for bank risk also reveals a similar pattern though the effect is slightly negative for low values of DOUBT in some tests. By contrast, the effect of I–HHI on stock returns (SR) is often negative for a large range of risk values in some cases. This is not a cause for worry as we explain below. The reader should recall that Winton (1999)'s hypothesis in its purest form applies to the overall returns of the bank (proxied by ROA) and not to bank equity returns (SR). In fact, it is the agency problem between equityholders and creditors which is at the heart of Winton's paper and leads to diversification resulting in poor quality of monitoring. The cost of this agency problem should manifest as a deterioration in overall bank returns. The fact that some of the tests reveal a uniformly positive relationship between I–HHI and SR as well provides even stronger evidence for Winton's hypothesis: industrial specialization (focus) seems to be superior not just for the bank as a whole but is sometimes superior also for bank's equityholders.

If the U–shaped relationship is robust, then the sum of α and the β's associated with relatively lower levels of DOUBT should be negative and decreasing (increasing in magnitude) but the sum of α and β's should eventually be positive and increasing as higher and higher DOUBT observations are considered. This is precisely what the estimated coefficients reveal. For example, in the case of industrial focus (I–HHI), we find that $0 > \alpha + \beta_1 > \alpha + \beta_2$ and $0 < \alpha + \beta_3 < \alpha + \beta_4 < \alpha + \beta_5$. The coefficients estimated for asset focus (A–HHI) and geographic focus (G–HHI) reveal a similar pattern. This makes it clear that the non–linear relationship between returns and focus as a function of risk is not purely an artifact of our quadratic specification.[24]

Second, one might be concerned with the fact that the non–linear relationship shows up for DOUBT values in the range of 15–45%, i.e., at relatively high values of the non–performing and doubtful loans to assets ratio. Are these observations merely outliers that should be ignored? In fact, it turns out that these observations cannot be treated as mere outliers and discarded for banking systems under stress. As mentioned earlier, the 1990s were a particularly difficult period for many Italian banks and industries and thus provide potential insights regarding other countries with banking systems subject to similar stressful periods. Importantly, most banks experienced fluctuations in their DOUBT values from being very low to very high at different points during this period. Eliminating observations with high DOUBT values thus amounts to retaining only those data points for each bank that correspond to low or moderate values of DOUBT. Moreover, if one were to omit the top 10% observations of DOUBT in each year, then the omitted data points correspond to over 25 banks (more than 1/5th of our sample size of 105 banks) across different years. Put simply, banks with the highest values of DOUBT in any given year are not necessarily the same banks with the highest values of DOUBT in other sample years.

Overall, our results thus lend empirical support to Winton (1999)'s hypothesis that diversification (focus) has a "slight" benefit (cost) at low bank risk levels, has maximum benefit (cost) at moderate risk levels, and in fact, hurts (helps) bank returns at very high risk levels. Indeed, we find that for industrial focus, there is only a cost (and no benefit) associated with diversification for banks in our sample. It is important to note, however, that examining bank returns is only one side of the tradeoff between return and risk. We examine the other side of the tradeoff, the effect of the decision to focus (diversify) on bank loan risk, next.

4.2 Test of hypothesis H.2: Effect of focus on bank loan risk

The hypothesis H.2 stated in the Introduction in terms of bank diversification is restated below in terms of bank focus.

[24]These results are available from the authors upon request.

H.2: A bank's monitoring effectiveness may be lower in newly entered and more competitive sectors, and thus, being focused can result in a superior quality of loan portfolio that reduces the bank's loan portfolio risk.

In order to study the effect of focus (diversification) on bank monitoring incentives, and in turn, on the quality of bank loan portfolios, we consider first the risk of bank loans as a dependent variable in the regression

$$\begin{aligned} \text{RISK}_t &= \gamma_0 + \gamma_1 * \text{I–HHI}_t + \gamma_2 * \text{A–HHI}_t + \gamma_3 * \text{G–HHI}_t + \eta * Z_t + \\ &\quad \theta_1 * \text{RISK}_{t-1} + \theta_2 * \text{Return}_{t-1} + \epsilon_t, \end{aligned} \tag{4.7}$$

where, as before, Z_t are the non–risk control variables, risk is proxied by the variable DOUBT_t, Return is ROA for the entire sample and SR for the publicly traded sample. Then, the simplest version of hypothesis H.2 (discussed in the Introduction) is the null hypothesis that an increase in focus (increase in HHI) reduces the risk of bank loan portfolios.

$$\gamma_1 < 0,\ \gamma_2 < 0,\ \gamma_3 < 0. \tag{4.8}$$

Moreover, entering into "new" loan sectors may adversely affect bank loan portfolio quality due to the lack of monitoring specialization and/or due to poor monitoring incentives. Recall that we use the qualifier "newer" for those industries where previous exposures of the bank have been relatively small or non–existent (rather than being newer in the sense of technological or productive aspects of the industry such as dot.com firms). To test this aspect of hypothesis H.2, we use the first difference in bank focus measures as a variable measuring the inter–temporal increases in bank focus (i.e., decrease in bank diversification):

$$\begin{aligned} \text{RISK}_t &= \gamma_0 + \gamma_1 * \text{I–HHI}_t + \gamma_2 * \text{A–HHI}_t + \gamma_3 * \text{G–HHI}_t + \eta * Z_t + \\ &\quad \theta_1 * \text{RISK}_{t-1} + \theta_2 * \text{Return}_{t-1} + \\ &\quad \delta_1 * (\text{I–HHI}_t - \text{I–HHI}_{t-1}) + \delta_2 * (\text{A–HHI}_t - \text{A–HHI}_{t-1}) + \\ &\quad \delta_3 * (\text{G–HHI}_t - \text{G–HHI}_{t-1}) + \epsilon_t. \end{aligned} \tag{4.9}$$

Under H.2, an inter–temporal increase in focus (a decrease in diversification), i.e., $\text{HHI}_t - \text{HHI}_{t-1} > 0$, should reduce bank risk:

$$\delta_1 < 0,\ \delta_2 < 0,\ \delta_3 < 0. \tag{4.10}$$

We also introduce an additional variable, COMP, that measures the extent of competition a bank faces for its top five industries (ranked by loan exposure amounts) in the non–financial and household part of the loan portfolio. Formally, COMP for bank i is measured

as $\sum_{j=1}^{5}[\ 1-(X_{ij}/R_j)\ ]$, where $R=\sum_{j=1}^{N} X_{ij}$, the total exposure across all banks (1 through N) to industry j. Note that COMP is higher for bank i if its exposure to the (top 5) industries it lends to is smaller compared to the exposure of other banks to the same set of industries, i.e., it has a smaller share of lending to these industries, and thus, is likely to face greater competition, and adverse selection problems, when it seeks to expand its loans to these industries.

To test a potential "winner's curse" or adverse selection effect, we consider a modification of regression (4.9) by introducing an interaction term between the measure of initial (or beginning of period) competition faced by the bank (COMP_{t-1}) and the change in its industrial focus (I–HHI_t - I–HHI_{t-1}):

$$\begin{aligned}\text{RISK}_t \;=\; & \gamma_0+\gamma_1*\text{I–HHI}_t+\gamma_2*\text{A–HHI}_t+\gamma_3*\text{G–HHI}_t+\eta*Z_t+\theta*\text{RISK}_{t-1}+\\ & \delta_{11}*(\text{I–HHI}_t-\text{I–HHI}_{t-1})+\delta_{12}*(\text{I–HHI}_t-\text{I–HHI}_{t-1})*\text{COMP}_{t-1}+\\ & \delta_2*(\text{A–HHI}_t-\text{A–HHI}_{t-1})+\delta_3*(\text{G–HHI}_t-\text{G–HHI}_{t-1})+\epsilon_t. \qquad (4.11)\end{aligned}$$

The null hypothesis is that d(RISK)/d(Increase in Focus) is decreasing in the extent of competition initially faced, i.e., the interaction term $(\text{I–HHI}_t-\text{I–HHI}_{t-1})*\text{COMP}_{t-1}$ above has a negative coefficient.[25]

$$\delta_{12}<0. \qquad (4.12)$$

INSERT TABLE 7 HERE.

Table 7 presents empirical evidence on how the decision to focus or diversify affects endogenously the risk of bank loan portfolios by reporting the results of tests of equations (4.7) through (4.12) above. The first three columns in Table 7 correspond to the entire sample while the last three columns correspond to publicly traded banks only. The risk of bank loan portfolios is proxied by the doubtful and non–performing loans to assets ratio (DOUBT_t). The first column for the entire sample tests the hypothesis based on the preliminary specification in equation (4.7), the second column tests the hypothesis based on the specification in equation (4.9) where we employ the first difference in focus measures (HHI_t - HHI_{t-1}) as explanatory variables, and the third column tests the hypothesis based on the specification in equation (4.11) where we also employ the interaction term between the change in industrial focus and the extent of competition in the lending sector faced by the bank [(I–HHI_t - I–HHI_{t-1}) * COMP_{t-1}].

[25]Note that if diversification has an effect on bank risk due to (agency) costs associated with any corresponding increase in the bank size, increase in the number of branches or employees, then such effects should be at least partially captured through the coefficients in the regressions on the control variables: SIZE, BRRATIO, and EMPRATIO.

An interesting pattern emerges from Table 7. From Column 1, we see that industrial and asset sector focus (I–HHI and A–HHI) reduces the risk of bank loan portfolios as indicated by the negative and statistically significant (at the 5% confidence level) coefficients on these measures of focus. However, geographical focus (G–HHI) increases the risk of bank loan portfolios. This suggests that diseconomies in bank monitoring arise more from expansion across industries and asset sectors rather than from geographical expansion. This difference is further confirmed in Column 2 where we employ the first difference in focus measures as explanatory variables. When a bank increases focus over time by lending more to fewer industries or asset sectors (I–HHI$_t$ > I–HHI$_{t-1}$, A–HHI$_t$ > A–HHI$_{t-1}$), there is a decrease in the risk of its loans. However, an increase in geographical focus (G–HHI$_t$ > G–HHI$_{t-1}$) appears to have little effect on loan risk.

Finally, Column 3 reveals that when a bank diversifies by entering into "new" industrial sectors, loan risk increases at a rate that is increasing in the extent of competition that the bank faces in the (five largest) industries it has loan exposures to. The coefficient on the interaction term [(I–HHI$_t$ - I–HHI$_{t-1}$) * COMP$_{t-1}$] is negative and significant suggesting that an increase in focus, i.e., a decrease in diversification, reduces risk more when the competition that the bank faces in its loan sectors is smaller. Repeating the tests of Table 7 with the two measures of unexpected loan risk, STDDOUBT and STDRET$_t$, results in qualitatively similar findings for the effect of different forms of focus on bank risk.

This provides evidence supporting the hypothesis that banks face greater adverse selection when they expand into industries that have been previously penetrated by their competitors. This also suggests that if banks take this effect of lending competition into account and are value–maximizing, then they should choose to diversify (if at all) in industries with a lower penetration by other banks, as proposed by Boot and Thakor (2000). In a recent paper, Hauswald and Marquez (2002) also demonstrate that bank incentives to concentrate informational resources are increasing in the degree of adverse selection they face in the market, which in turn, would be greater if banks expand by lending more to industries where (lending) competition is strong.

4.3 Additional Robustness of Tests and Results

4.3.1 Simultaneous estimation of return and risk regressions

As a first robustness check, we consider the effect of focus on bank returns (ROA, SR) and bank risk (DOUBT), where both return and risk are treated as endogenous variables, simultaneously determined, using a Seemingly Unrelated Regression (SUR) approach (see

Johnson, 1972, Maddala, 1977, and Theil, 1971). That is:

$$\begin{aligned}\text{Return}_t &= \alpha_0 + \alpha_1 * \text{I–HHI}_t + \alpha_2 * \text{A–HHI}_t + \alpha_3 * \text{G–HHI}_t + \\ &\quad \eta_p * Z_t + \theta_p * \text{RISK}_{t-1} + \omega_p * \text{Return}_{t-1} + \\ &\quad \beta_{11} * (\text{I–HHI}_t - \text{I–HHI}_{t-1}) + \beta_{12} * (\text{I–HHI}_t - \text{I–HHI}_{t-1}) * \text{COMP}_{t-1} + \\ &\quad \beta_2 * (\text{A–HHI}_t - \text{A–HHI}_{t-1}) + \beta_3 * (\text{G–HHI}_t - \text{G–HHI}_{t-1}) + \epsilon_{pt}, \end{aligned} \tag{4.13}$$

$$\begin{aligned}\text{RISK}_t &= \gamma_0 + \gamma_1 * \text{I–HHI}_t + \gamma_2 * \text{A–HHI}_t + \gamma_3 * \text{G–HHI}_t + \\ &\quad \eta_r * Z_t + \theta_r * \text{RISK}_{t-1} + \omega_r * \text{Return}_{t-1} + \\ &\quad \delta_{11} * (\text{I–HHI}_t - \text{I–HHI}_{t-1}) + +\delta_{12} * (\text{I–HHI}_t - \text{I–HHI}_{t-1}) * \text{COMP}_{t-1} + \\ &\quad \delta_2 * (\text{A–HHI}_t - \text{A–HHI}_{t-1}) + \delta_3 * (\text{G–HHI}_t - \text{G–HHI}_{t-1}) + \epsilon_{rt}. \end{aligned} \tag{4.14}$$

Under SUR estimation, the residuals ϵ_{pt} and ϵ_{rt} are allowed to be heteroscedastic and correlated. The possibility of a correlation between the equation residuals implies that the two regressions may be "related." The t–statistics from the estimation of the SUR system are also corrected for heteroscedasticity.

INSERT TABLE 8 HERE.

The simultaneous estimation results presented in Table 8 are consistent with the results presented in Tables 3 and 4. The overall effect of all three focus measures is to improve bank returns on average as implied by the positive and statistically significant coefficients on I–HHI, A–HHI, and G–HHI, for both ROA and SR. Similarly, industrial and sectoral focus reduces bank risk, whereas geographic focus increases bank risk, as in Table 7.

4.3.2 Endogeneity of focus measures

To address the question of whether focus (diversification) is itself endogenous, we estimated a SUR system similar to the equations (4.13) and (4.14) above treating Return, Risk, and all three focus measures as being endogenously determined by each other's lags and by control variables. While the estimation of such a large system (90 coefficients including time–dummies) reduces the statistical power of the estimation, we found the correlations among the residuals to have the expected signs. In particular, the correlation among residuals is positive for each focus measure and return, negative for I–HHI (A–HHI) and risk, and positive for G–HHI and risk. Since the only dependence between contemporaneous observations of dependent variables, i.e., Return, Risk, and three focus measures, in the SUR estimation

arises from the correlation of residuals of these dependent variables, the observed signs of these correlations noted above confirm the findings of Tables 3, 4, and 7.[26]

4.3.3 State–owned vs. private banks

Sapienza (2002b) finds that the objective functions of state–owned Italian banks differ from those of private Italian banks. State–owned banks charge lower interest rates than do privately owned banks to similar or identical firms, even if the company is able to borrow more from privately owned banks. Further, she finds that state-owned banks mostly favor firms located in depressed areas and large firms. This makes it plausible that a part of the inefficiency arising from diversification may simply be due to the presence of state–owned banks in our sample. To check this, we employed the same classification of state–owned and private Italian banks employed by Sapienza (2002b) and re–examined our hypotheses for the private (not state–owned) bank sample. Based on the available classification at the beginning of 1993, 34 banks in our sample were privately–owned. The qualitative nature and the significance of our results remained unaffected by restricting analysis to this smaller sample: all focus measures improve bank returns on average, industrial and asset sectoral focus reduces bank risk, while geographic focus increases bank risk.[27]

4.3.4 Money center banks

The measure of focus and diversification employed in our paper concerns the asset–side of the bank balance–sheet, i.e., it is based on a bank's loan exposures to different industries, sectors, and geographical areas. The effect of changes in focus or diversification (especially geographic) might affect money center banks differently since these do not rely as heavily on deposits, and hence, on a local "core" deposit base. To check for links between asset-side focus and performance while controlling for liability structure of banks, we employed the classification of banks in our sample into money center banks and non–money center banks used by the Bank of Italy. There were 8 money center banks identified over the period 1993–1999. Estimation of the effects of focus (diversification) on return (Tables 4, 5) and on risk (Table 7) separately for the sample of money center banks and the rest of the banks produced qualitatively similar patterns for both the samples. Consistent with economic intuition, the results suggest that geographic diversification aids both return and risk of non–money center

[26]These results are contained in Table 9 which is available from the authors upon request.

[27]These results are contained in Table 10A and 10B which are available from the authors upon request. Note that the classification of Italian banks into state–owned and private banks in Sapienza (2002b) is based upon their ownership as at the beginning of 1993. While there have been changes in the state vs. private ownership of some Italian banks since then (in particular, a decline in the number of state–owned banks, see Goldman Sachs, 2001), we have been unable to obtain a comprehensive data set that provides these changes.

banks more than it does for money center banks. This is likely attributable to the additional benefit from diversification to the deposit base for non–money center banks. Conversely, industrial (loan) diversification hurts the return as well as the risk of non–money center banks – and thus their performance – more than it does for money center banks.[28]

4.3.5 Consortium banks

Another feature of some banks in our sample concerns the fact that they are "part of a bank group or a consortium." Since bank strategy to focus or diversify might be determined at a consortium–wide level, it might be deemed as more appropriate to measure return and risk of such banks also at a consortium–wide level. Consequently, we estimated the effects of focus (diversification) on return (Tables 4, 5) and risk (Table 7) separately for the sample of banks that is restricted to those that are not a part of any bank group or consortium. There were 70 such banks in our sample. While the overall patterns remain qualitatively unaffected, we find that in fact, the harmful effects of industrial diversification on return and risk are actually more pronounced for the subset of banks that are not a part of any consortium.[29]

4.4 Overall effects of diversification on bank performance

Combining the empirical findings of Tables 3 through 8 regarding the effects of diversification (focus) on bank returns (hypothesis H.1) and bank loan portfolio risk (hypothesis H.2), we summarize our results in Figure 3 in terms of their implications for the benefits of loan portfolio diversification. Note that in Figure 3, $\uparrow$ means an increase and $\downarrow$ means a decrease.

We conclude that for our sample of Italian banks:

1. Industrial diversification results in an inefficient tradeoff between risk and return for all banks: return declines with diversification, and simultaneously, loan risk increases. This implies an overall deterioration in bank performance.

2. Broad asset sector diversification results in an inefficient tradeoff between risk and return for banks with high risk levels: for these banks, return declines with diversification, and simultaneously, loan risk increases. Again, this implies an overall deterioration in bank performance.

[28] These results are available from the authors upon request. We also classified banks into two samples depending upon whether their deposits to assets ratio was greater or smaller than the median deposits to assets ratio in each year. This classificiation produced similar results to those obtained from division of the sample into money center and non–money center banks.

[29] Again, these results are available from the authors upon request.

3. Geographic diversification results in an improvement in the tradeoff between risk and return for banks with moderate risk levels: for these banks, return improves with diversification and so does loan risk. This implies an overall improvement in bank performance.

4. The effect of asset sector diversification on banks with moderate risk levels, and the effect of geographical diversification on banks with very high risk levels cannot be assessed without taking a stand on how much bank return should increase per unit increase in bank risk.[30]

Figure 3: Summary of the Effect of Diversification on Bank Return, Risk, and Performance

	Moderately Risky Banks	Highly Risky Banks
Industrial Diversification	Return ↓ Risk ↑ ⇒ Decreased Performance	Return ↓ Risk ↑ ⇒ Decreased Performance
Sectoral Diversification	Return ↑ Risk ↑ Effect on Performance Ambiguous	Return ↓ Risk ↑ ⇒ Decreased Performance
Geographic Diversification	Return ↑ Risk ↓ ⇒ Improved Performance	Return ↓ Risk ↓ Effect on Performance Ambiguous

[30]In practice, many banks use a RAROC (risk–adjusted return on capital) framework to determine whether such loans are beneficial. Commonly the return per unit of risk of the loan should exceed some cost of capital benchmark specified by the bank such as the after tax ROE of the bank.

Crucially, a robust finding that emerges from our results is that the "conventional wisdom" of not putting all one's eggs in a single basket cannot be applied uniformly to all banks. That is, diversification, per se, is no guarantee of superior performance or greater bank safety. Our results also point to a potentially important performance difference between diversification attempted through industrial or asset sector diversification and diversification attempted through geographical expansion.[31]

5 Discussion and Conclusion

In this paper, we have examined the effects of a bank's decision to focus (diversify) on its return and risk. Understanding these two effects enables us to derive conclusions about the overall effects of focus (diversification) on a bank's performance. Indeed, we believe that this is the first paper to employ measures of focus (diversification) based on relatively micro-level data, i.e., industrial and sectoral exposures in individual bank asset portfolios.

Driven by the availability of data, our tests are based on a unique data set of 105 Italian banks over the sample period 1993–1999. While data limitations mean that our results need to be interpreted with caution, they do suggest some implications for the optimal size and scope of a "bank." While traditional banking theory based on a delegated monitoring argument (see, for example, Boyd and Prescott, 1986) recommends that the optimal organization of a bank is one where it is as diversified as possible, our results suggest that empirically, there seem to be diseconomies of diversification for certain banks. These diseconomies arise in the form of poor monitoring incentives and/or greater credit risk of loan portfolios when a bank expands into industries where it faces a high degree of competition or lacks prior lending experience. This finding complements the agency theory based analysis of the boundaries of a bank's activities as proposed in Cerasi and Daltung (2000), Stein (2002) and Berger et al.(2001), and also suggests that the optimal industrial organization of a banking sector might be one that comprises several focused or specialized banks instead of a large number of diversified banks, an outcome that may also be attractive from a systemic risk standpoint as noted by Acharya (2001) and Shaffer (1994).

From a normative standpoint, our results imply a cautious warning regarding the adoption of mechanisms that require increased bank–level diversification. A similar caveat applies to the attempts to measure credit portfolio risk through traditional diversification measures without bank–specific risk–return measurements. Finally, our results help explain the results of DeLong (2001) who finds that bank mergers that are focusing (in terms of geography and activity) produce superior economic performance relative to those that are diversifying.

[31]These results also conform with the findings of Amihud, DeLong and Saunders (2002) who find that international cross–border mergers do not increase the value of acquiring firms.

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Captions for Tables and Figures

Table 1: This table presents the mean, median, standard deviation, minimum value, and maximum value for the measures of bank return (ROA, ROE, SR), risk (DOUBT, STDDOUBT, STDRET), and bank focus (I–HHI, A–HHI, G–HHI) for 105 Italian banks over the sample period 1993–1999. In addition, it presents these univariate statistics also for several control variables (SIZE, EQRATIO, BRRATIO, EMPRATIO) employed in the paper. Section 3 in the paper contains the definitions of all variables and also a description of how they are computed.

Table 2: This table presents the correlation coefficients between the measures of bank return (ROA, ROE, SR), bank risk (DOUBT, STDDOUBT, STDRET), and bank focus (I–HHI, A–HHI, G–HHI) for 105 Italian banks over the sample period 1993–1999. In addition, it also includes control variables (SIZE, EQRATIO, BRRATIO, EMPRATIO) employed in the paper. Section 3 in the paper contains the definitions of all variables and also a description of how they are computed. All correlation coefficients in the table which are greater than 0.08 in magnitude are statistically significant at least at the 10% confidence level.

Table 3: This table presents the results for the linear regression (equation 4.1 in the paper) to understand the average relationship between bank return (ROA, ROE, SR, BSR) and bank focus (I–HHI, A–HHI, G–HHI) for 105 Italian banks over the sample period 1993–1999. Section 3 in the paper contains the definitions of all variables and also a description of how they are computed. Note that $*$, # and + indicate statistical significance of the estimated coefficients at the $1, 5$, and 10 percent significance level, respectively. The t-statistics in parentheses are corrected for heteroscedasticity using White's correction.

Table 4: This table presents the results for the linear regression (equation 4.1 in the paper) to understand the average relationship between bank return (ROA, SR) and bank focus (I–HHI, A–HHI, G–HHI) using a broader specification that also employs the control variables (SIZE, EQRATIO, BRRATIO, EMPRATIO), and the year dummies for time fixed effects, for 105 Italian banks over the sample period 1993–1999. Section 3 in the paper contains the definitions of all variables and also a description of how they are computed. Note that $*$, # and + indicate statistical significance of the estimated coefficients at the $1, 5$, and 10 percent significance level, respectively. The t-statistics in parentheses are corrected for heteroscedasticity using White's correction.

Table 5: This table presents the results for the test of whether the relationship between bank return (ROA, SR) and bank focus (I–HHI, A–HHI, G–HHI) is non–linear and U–shaped

in bank risk (DOUBT) for 105 Italian banks over the sample period 1993–1999 (equation 4.3 in the paper). The specification tested also employs the control variables (SIZE, EQRATIO, BRRATIO, EMPRATIO), and the year dummies for time fixed effects. Section 3 in the paper contains the definitions of all variables and also a description of how they are computed. Note that $*$, # and + indicate statistical significance of the estimated coefficients at the $1, 5$, and 10 percent significance level, respectively. The t-statistics in parentheses are corrected for heteroscedasticity using White's correction. The coefficients on year dummies for the sample years are not reported for the sake of brevity.

Table 6: This table presents the various quantile values (in particular, the mean, minimum, 10 percentile, 25 percentile, 50 percentile (the median), 75 percentile, 90 percentile, and maximum) for each year of Doubtful and Non–Performing Loans to Total Assets Ratio (DOUBT) for 105 Italian banks over the sample period 1993–1999.

Table 7: This table presents the results for the effect of bank focus (I–HHI, A–HHI, G–HHI), change in bank focus (I–HHI$_t$ - I–HHI$_{t-1}$, A–HHI$_t$ - A–HHI$_{t-1}$, G–HHI$_t$ - G–HHI$_{t-1}$), and competition faced by a bank in lending ((I–HHI$_t$ - I–HHI$_{t-1}$) $*$ COMP$_{t-1}$) on bank risk (DOUBT) for 105 Italian banks over the sample period 1993–1999. The results are presented for the entire sample and also for just the publicly traded sample. Column 1 tests the specification with only the focus measures (equation 4.7 in the paper), Column 2 tests the specification that also includes the change in focus (equation 4.9), and Column 3 tests the specification that further includes the competition faced in lending (equation 4.11). All specifications also employ the control variables (SIZE, EQRATIO, BRRATIO, EMPRATIO, DOUBT$_{t-1}$, ROA$_{t-1}$, SR$_{t-1}$), and the year dummies for time fixed effects. Section 3 in the paper contains the definitions of all variables and also a description of how they are computed. Note that $*$, # and + indicate statistical significance of the estimated coefficients at the $1, 5$, and 10 percent significance level, respectively. The t-statistics in parentheses are corrected for heteroscedasticity using White's correction. The coefficient on year dummies for the sample years are not reported for the sake of brevity.

Table 8: This tables presents the results for the effect of bank focus (I–HHI, A–HHI, G–HHI), change in bank focus (I–HHI$_t$ - I–HHI$_{t-1}$, A–HHI$_t$ - A–HHI$_{t-1}$, G–HHI$_t$ - G–HHI$_{t-1}$), and competition faced by a bank in lending ((I–HHI$_t$ - I–HHI$_{t-1}$) $*$ COMP$_{t-1}$) on bank return (ROA, SR) and bank risk (DOUBT), where both return and risk are treated as endogenous variables, simultaneously determined, using a Seemingly Unrelated Regression (SUR) approach (see Johnson, 1972, Maddala, 1977, and Theil, 1971). The specification tested is contained in equations (4.13) and (4.14) in the paper. The specification also employs the control variables (SIZE, EQRATIO, BRRATIO, EMPRATIO, DOUBT$_{t-1}$, ROA$_{t-1}$, SR$_{t-1}$),

and the year dummies for time fixed effects. Section 3 in the paper contains the definitions of all variables and also a description of how they are computed. Note that $*$, # and + indicate statistical significance of the estimated coefficients at the $1, 5$, and 10 percent significance level, respectively. The coefficients on year dummies for the sample years are not reported for the sake of brevity.

Figure 1: This figure illustrates the effect of diversification (focus) on the probability of failure. It plots the cumulative probability function, Prob (z < x), for two normal distributions with different standard deviations and with a common mean of zero. The thick line denoted as "less diversified" has a standard deviation of 1.0 whereas the dashed line denoted as "more diversified" has a lower standard deviation of 0.5. For the sake of illustration, z is treated as the distribution of bank returns and x as the level of bank debt (under a suitable scale). If the level of debt x is to the left of the central tendency of zero, e.g., at x = -1, then a decrease in standard deviation, by reducing the likelihood of events in the left tail of the distribution (the "default" states), reduces the probability of default. However, if the level of debt x is to the right of zero, e.g., at x = 1, then a decrease in standard deviation, by reducing the likelihood of events in the right tail of the distribution (the "no-default" states), in fact increases the probability of default.

Figure 2: This figure presents the economic significance of the relationship between bank return and bank focus which is non–linear as a function of bank risk. It plots the marginal effect d(ROA)/d(Focus) = $\alpha_1 + \beta_{11} * \text{DOUBT} + \beta_{12} * \text{DOUBT}^2$ for different values of DOUBT for all three measures of Focus, I–HHI, A–HHI, and G–HHI, based on the estimated coefficients in Table 5, Column 2 (for ROA). The underlying specification for this marginal effect is the one in equation (4.3) in the paper. The range of DOUBT is taken to be between 0% and 50% which covers the minimum (zero) and the maximum value (45%) over our sample period (see Table 6). Section 3 in the paper contains the definitions of all variables and also a description of how they are computed.

Appendix A

Banks in Our Sample over the Period 1993-1999

	Name of Italian Bank	Publicly Traded	State Owned	Size	Type	Average Asset Size: 93-99 (ml $)
1	IST.BANC.S.PAOLO TORINO SP		Yes	VERY LARGE	NATIONAL	127697.41
2	BANCA DI ROMA	Yes	Yes	VERY LARGE	NATIONAL	92116.38
3	CARISPA PROV. LOMBARDE SPA		Yes	VERY LARGE	NATIONAL	88961.87
4	B.CA COMMERCIALE ITALIANA	Yes	Yes	VERY LARGE	NATIONAL	87582.60
5	B.CA NAZ.LE DEL LAVORO SPA	Yes	Yes	VERY LARGE	NATIONAL	86629.62
6	CREDITO ITALIANO	Yes	Yes	VERY LARGE	NATIONAL	65935.05
7	BANCA MONTE PASCHI SIENA	Yes	Yes	VERY LARGE	NATIONAL	64653.49
8	BANCO DI NAPOLI SPA	Yes	Yes	VERY LARGE	NATIONAL	48283.50
9	ROLO BANCA 1473 S.P.A.	Yes		LARGE	INTRA-REGIONAL	36928.96
10	BANCO DI SICILIA SPA		Yes	LARGE	INTRA-REGIONAL	30238.15
11	B.CA POP. DI NOVARA	Yes		LARGE	INTRA-REGIONAL	24109.91
12	B.CA POP. DI MILANO	Yes		LARGE	INTRA-REGIONAL	23473.00
13	CARISPA DI TORINO SPA		Yes	LARGE	INTRA-REGIONAL	23048.44
14	B.CA NAZ.LE AGRICOLTURA	Yes		LARGE	INTRA-REGIONAL	21764.49
15	DEUTSCHE BANK SPA			LARGE	INTRA-REGIONAL	19286.35
16	CARIVERONA BANCA S.P.A.		Yes	LARGE	INTRA-REGIONAL	19186.40
17	B.CA POP. DI BERGAMO-CREDITO VARES	Yes		LARGE	INTRA-REGIONAL	19013.32
18	BANCA TOSCANA	Yes		LARGE	INTRA-REGIONAL	15357.70
19	CARISPA IN BOLOGNA SPA		Yes	LARGE	INTRA-REGIONAL	14610.17
20	CR PARMA E PIACENZA SPA		Yes	LARGE	INTRA-REGIONAL	14443.26
21	BANCA ANTONIANA-POP.VENETA			MEDIUM	REGIONAL	13083.25
22	BP VERONA/POP.VERONA-S.GIM.E S.PR	Yes		MEDIUM	REGIONAL	13075.80
23	CARISPA DI FIRENZE SPA		Yes	MEDIUM	REGIONAL	11350.44
24	CARISPA PADOVA ROVIGO SPA		Yes	MEDIUM	REGIONAL	10990.80
25	B.CA POP. EMILIA ROMAGNA	Yes		MEDIUM	REGIONAL	10943.33
26	MEDIOCREDITO LOMBARDO-SPA		Yes	MEDIUM	REGIONAL	10688.70
27	BANCA CARIGE S.P.A.	Yes	Yes	MEDIUM	REGIONAL	10479.00
28	BANCO DI SARDEGNA SPA	Yes	Yes	MEDIUM	REGIONAL	10348.93
29	CENTROBANCA		Yes	MEDIUM	REGIONAL	9576.32
30	EFIBANCA		Yes	MEDIUM	REGIONAL	9414.93
31	CREDITO BERGAMASCO	Yes		MEDIUM	REGIONAL	7848.34
32	BANCA MEDIOCREDITO SPA		Yes	MEDIUM	REGIONAL	7638.04
33	B.R.E. BANCA		Yes	MEDIUM	REGIONAL	7110.85
34	B.AGRICOLA MANTOVANA	Yes		MEDIUM	REGIONAL	6898.42
35	BANCA DELLE MARCHE		Yes	MEDIUM	REGIONAL	6752.06
36	INTERBANCA	Yes	Yes	MEDIUM	REGIONAL	6678.02
37	B.CA POP. DI LODI	Yes		MEDIUM	REGIONAL	6413.13
38	B.CA POP. DI BRESCIA	Yes		MEDIUM	REGIONAL	5921.20
39	B.POP.COM.IO INDUSTRIA	Yes		MEDIUM	REGIONAL	5684.98
40	CARISPA DI VENEZIA SPA		Yes	MEDIUM	REGIONAL	4930.30
41	B.POP.ETRURIA E LAZIO	Yes		MEDIUM	REGIONAL	4704.56
42	CREDITO EMILIANO S.P.A.	Yes	Yes	SMALL	INTRA-REGIONAL	6889.18
43	BANCA SELLA SPA			SMALL	PROVINCIAL	3706.60
44	B. DEL SALENTO-C.P.SAL.SPA			SMALL	PROVINCIAL	3507.56
45	BANCA FIDEURAM SPA	Yes		SMALL	PROVINCIAL	3369.71
46	B.PIC.LO CRED.VALTELLINESE	Yes		SMALL	PROVINCIAL	3297.29
47	BANCA DI LEGNANO	Yes		SMALL	PROVINCIAL	2665.17
48	CREDITO ARTIGIANO	Yes		SMALL	PROVINCIAL	2384.90
49	B.CHIAVARI RIV LIGURE SPA	Yes		SMALL	PROVINCIAL	2330.64
50	B.DESIO E DELLA BRIANZA	Yes		SMALL	PROVINCIAL	2094.03
51	B.AGRIC.POP. RAGUSA			SMALL	PROVINCIAL	2052.50
52	B.CA TRENTO E BOLZANO			SMALL	PROVINCIAL	1966.21
53	BANCA DI PIACENZA			SMALL	PROVINCIAL	1841.55

Appendix A (Continued)

Banks in Our Sample over the Period 1993-1999

	Name of Italian Bank	Publicly Traded	State Owned	Size	Type	Average Asset Size: 93-99 (ml $)
54	MEDIOCREDITO CENTRALE SPA		Yes	SMALL	PROVINCIAL	6426.76
55	B.CA POP. DI SONDRIO	Yes		SMALL	PROVINCIAL	5012.77
56	B.CA POP. VICENTINA			SMALL	PROVINCIAL	4843.56
57	CASSAMARCA S.P.A.		Yes	SMALL	PROVINCIAL	3699.20
58	BIVERBANCA SPA		Yes	SMALL	PROVINCIAL	3499.32
59	CARISPA BOLZANO SPA		Yes	SMALL	PROVINCIAL	3491.64
60	BANCA POP. DI ANCONA SPA			SMALL	PROVINCIAL	3466.38
61	CARISPA DI LUCCA SPA		Yes	SMALL	PROVINCIAL	3155.62
62	CA.RI.TRO SPA		Yes	SMALL	PROVINCIAL	3088.71
63	CARISPA TRIESTE-BANCA SPA		Yes	SMALL	PROVINCIAL	2816.87
64	BANCA MEDITERRANEA SPA			SMALL	PROVINCIAL	2802.25
65	CARISPA DI PERUGIA SPA		Yes	SMALL	PROVINCIAL	2671.11
66	B.CA POP. FRIULADRIA			SMALL	PROVINCIAL	2514.32
67	CARISPA PISTOIA PESCIA SPA		Yes	SMALL	PROVINCIAL	2462.67
68	B. P. PUGLIA E BASILICATA			SMALL	PROVINCIAL	2436.34
69	CARISPA DI S.MINIATO SPA		Yes	SMALL	PROVINCIAL	2417.15
70	CARISPA UDINE E PN SPA		Yes	SMALL	PROVINCIAL	2191.54
71	CARISPA DI ASTI SPA		Yes	SMALL	PROVINCIAL	2181.40
72	CARISPA DI PISA SPA		Yes	SMALL	PROVINCIAL	2163.15
73	B.C.C. DI ROMA			SMALL	PROVINCIAL	2142.55
74	BANCA POP. IRPINIA			SMALL	PROVINCIAL	2135.68
75	BANCA POP. ALTO ADIGE			SMALL	PROVINCIAL	2060.46
76	TERCAS-C.R. TERAMO SPA		Yes	SMALL	PROVINCIAL	2034.38
77	CARISPA DI FERRARA SPA		Yes	SMALL	PROVINCIAL	1966.96
78	CARISPA DELLA SPEZIA SPA		Yes	SMALL	PROVINCIAL	1887.49
79	CARISPA DI RIMINI SPA		Yes	SMALL	PROVINCIAL	1759.66
80	B.CA POP. DI INTRA-SCPARL	Yes		SMALL	PROVINCIAL	1692.76
81	B.CA POP. DI CREMONA	Yes		SMALL	PROVINCIAL	1686.39
82	B.POP. LUINO E VARESE-SPA	Yes		SMALL	PROVINCIAL	1677.24
83	CARISPA DI ALESSANDRIA SPA		Yes	SMALL	PROVINCIAL	1641.21
84	CARISPA DI FORLI' SPA		Yes	SMALL	PROVINCIAL	1596.49
85	CARISPA DI RAVENNA SPA		Yes	SMALL	PROVINCIAL	1539.31
86	CARISPA DI CESENA SPA		Yes	SMALL	PROVINCIAL	1518.21
87	B.POP.DI ABBIATEGRASSO-SPA			SMALL	PROVINCIAL	1445.37
88	MED. TRENT.-ALTO ADI. SPA		Yes	SMALL	PROVINCIAL	1403.68
89	CARISPA PROV. CHIETI SPA		Yes	SMALL	PROVINCIAL	1384.76
90	CR PESCARA LORETO SPA		Yes	SMALL	PROVINCIAL	1349.76
91	CARISPA DI FERMO SPA		Yes	SMALL	PROVINCIAL	1313.52
92	BANCA MONTE PARMA - SPA		Yes	SMALL	PROVINCIAL	1297.52
93	CARISPA DI RIETI SPA		Yes	SMALL	PROVINCIAL	1292.20
94	CARISPA DI SAVONA SPA		Yes	SMALL	PROVINCIAL	1292.03
95	B.CA POP. DI SPOLETO SPA			SMALL	PROVINCIAL	1264.85
96	CARISPA DI GORIZIA SPA		Yes	SMALL	PROVINCIAL	1251.80
97	CARISPA PROV. VITERBO SPA		Yes	SMALL	PROVINCIAL	1194.85
98	IRFIS- MED. SICILIA SPA		Yes	SMALL	PROVINCIAL	1155.97
99	CARISPAQ - SPA		Yes	SMALL	PROVINCIAL	1135.98
100	CRED. FOND. TOSCANO SPA		Yes	SMALL	PROVINCIAL	1126.50
101	BANCA POP. UDINESE			VERY SMALL	LOCAL	1207.66
102	CARISPA ASCOLI PICENO SPA		Yes	VERY SMALL	LOCAL	1187.36
103	B.CA DI VALLE CAMONICA			VERY SMALL	LOCAL	1102.95
104	CARISPA TERNI E NARNI SPA		Yes	VERY SMALL	LOCAL	834.76
105	CARISPA CIVITAVECCHIA SPA		Yes	VERY SMALL	LOCAL	426.94

Table 1
Univariate Descriptive Statistics: Italian Banks 1993-1999

Variable/Ratio	Mean	Median	St. Deviation	Minimum	Maximum
ROA (%)	0.927	0.982	0.852	-5.962	2.958
ROE (%)	8.76	11.60	29.30	-6.229	37.75
Stock Return (%) - SR	20.95	10.37	41.76	-24.01	129.30
Industrial Sector I-HHI	0.237	0.231	0.038	0.181	0.793
Asset Sector A-HHI	0.371	0.352	0.098	0.197	0.875
Geographical Sector G-HHI	0.947	0.896	0.097	0.378	1.000
Asset Size - SIZE	11,894	3,080	22,674	376	152,596
Equity to Asset Ratio (%) – EQRATIO	8.732	8.113	3.76	0.604	31.80
Branch to Asset Ratio – BRRATIO	0.022	0.221	0.010	0	0.06185
Employment Expenses to Assets Ratio – EMPRATIO	1.855	0.018	0.611	0.232	4.636
Doubtful and Non-Performing Loans to Assets Ratio – DOUBT	5.234	3.199	5.632	0	44.43
Standard Deviation of DOUBT - STDDOUBT	14.853	9.760	10.856	2.760	28.564
Standard Deviation of SR - STDRET	6.745	13.04	11.204	1.701	41.86

Table 2
Bivariate Descriptive Statistics: Italian Banks 1993-1999
Correlation Coefficients

Variable/Ratio	ROA	ROE	SR	I-HHI	A-HHI	G-HHI	SIZE	EQ	BR	EMP	DOUBT	STD DOUBT	STD RETN
ROA	1.00												
ROE	0.621	1.00											
SR	0.294	0.144	1.00										
I-HHI	-0.001	0.062	0.124	1.00									
A-HHI	0.144	0.083	0.193	0.257	1.00								
G-HHI	0.134	0.037	0.162	-0.307	-0.024	1.00							
SIZE	-0.225	-0.101	-0.155	0.205	-0.115	-0.589	1.00						
EQRATIO	0.422	0.146	0.112	0.009	0.236	0.084	-0.321	1.00					
BRRATIO	0.139	0.038	0.002	-0.366	-0.294	0.425	-0.400	0.133	1.00				
EMPRATIO	0.087	-0.009	-0.319	-0.384	-0.365	0.356	-0.278	0.167	0.743	1.00			
DOUBT	-0.418	-0.266	-0.075	-0.061	-0.041	0.099	0.003	-0.063	-0.116	-0.134	1.00		
STDDOUBT	-0.462	-0.323	-0.331	-0.124	-0.092	0.052	0.003	-0.051	-0.014	0.014	0.688	1.00	
STDRET	0.245	0.116	0.697	0.197	0.126	0.038	-0.006	0.044	-0.044	-0.275	-0.201	-0.169	1.00

Note: All correlation coefficients greater than 0.08 in magnitude are statistically significant at least at the 10% confidence level.
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Table 3
Preliminary Test for Average Effect of Focus on Bank Returns

	Dependent Variables											
	Return on Assets (ROA)				Return on Equity (ROE)				Stock Return (SR)			
Variables	1	2	3	4	1	2	3	4	1	2	3	4
Intercept	0.009 *	0.004*	-0.001	-0.006+	-0.022	0.005*	-0.017	-0.262+	-0.116	0.547	-0.751	-1.482 *
Non Financial and Housing-I-HHI	0.003 (1.94)+	-	-	0.001 (1.79)+	0.465 (2.20)#	-	-	0.046 (2.10)#	0.018 (2.62)#	-	-	0.035 (2.95)*
Asset-Sectoral A-HHI	-	0.012 (3.90)*	-	0.012 (3.84)*	-	0.248 (2.67)#	-	0.020 (2.64)#	-	0.011 (3.42)*	-	0.007 (3.01)*
Geographical-G-HHI	-	-	0.011 3.62*	0.011 (3.59)*	-	-	0.111 (1.91)+	0.467 (1.84)+	-	-	0.066 (2.90)*	0.082 (3.06)*
Adjusted R^2	.0114	.0168	.0194	.0360	.0114	.0168	.0194	.0359	.0158	.0370	.0258	.0770
F-Statistics	11.05 *	13.09*	15.01*	9.78*	11.05 *	13.09*	15.01*	9.78*	3.06*	7.40*	5.25*	6.44*
Number	709	709	709	709	709	709	709	709	194	194	194	194

	Dependent Variables			
	β Adjusted Stock Return (BSR)			
Variables	1	2	3	4
Intercept	-0.183	0.449	-0.580	-0.261 #
Non Financial and Housing-I-HHI	0.060 (1.97)#	-	-	0.092 (2.06)#
Asset-Sectoral A-HHI	-	0.026 (2.62)#	-	0.018 (2.30)#
Geographical-G-HHI	-	-	0.048 (3.01)*	0.069 (2.98)*
Adjusted R^2	.0183	.0395	.0276	.0649
F-Statistics	2.97*	6.61*	4.80*	7.08*
Number	194	194	194	194

Note: *, #, and + indicate statistical significance of the estimated coefficient at the 1, 5, and 10 percent significance level, respectively. The t-statistics in parentheses are corrected for heteroscedasticity using White's correction.

Table 4
Specification Test for Average Effect of Focus on Bank Returns with Time Dummies

	Dependent Variables							
	Return on Assets (ROA)				Stock Return (SR)			
Variables	1	2	3	4	1	2	3	4
Intercept	0.012*	0.005+	0.007	0.005	0.0016#	0.0015#	0.001#	0.001#
Non Financial and Housing-I-HHI	0.001 (1.70)+	-	-	0.001 (1.83)+	0.017 (2.34)#	-	-	0.023 (2.25)#
Asset Sectoral A-HHI	-	0.012 (2.01)#	-	0.003 (1.97)#	-	0.001 (2.45)#	-	0.006 (2.14)#
Geographical-G-HHI	-	-	0.08 (3.24)*	0.001 (3.01)*	-	-	0.040 (3.50)*	0.042 (3.68)*
Log of SIZE	-0.001 (2.36)#	-0.001 (1.42)	-0.001 (1.86)+	-0.001 (1.71)+	0.009 (0.32)	0.005 (0.34)	0.003 (0.18)	0.005 (0.18)
Equity to Assets Ratio - EQRATIO	0.124 (8.15)*	0.097 (10.05)*	0.083 (12.27)*	0.097 (12.73)*	0.0366 (0.53)	0.038 (0.30)	0.045 (0.24)	0.018 (0.19)
Branch to Asset Ratio - BRRATIO	0.087 (2.14)#	0.075 (1.83)+	0.077 (1.79)+	0.075 (1.76)+	0.084 (1.36)	0.090 (1.82)+	0.085 (1.57)	0.081 (1.48)
Employment Expense to Assets Ratio - EMPRATIO	-0.257 (1.48)	-0.10 (1.47)	-0.082 (1.18)	-0.104 (1.48)	-0.1871 (1.36)	-0.084 (1.62)	-0.081 (3.20)*	-0.085 (2.99)*
Non performing & Doubtful Loans to Asset Ratio - DOUBT	-0.058 (11.24)*	-0.100 (16.07)*	-0.098 (15.53)*	-0.010 (15.89)*	0.045 (0.48)	0.017 (1.43)	0.016 (1.44)	0.017 (0.52)
1994	-0.010 (6.41)*	-0.005 (6.20)*	-0.005 (6.06)*	-0.005 (6.22)*	-0.015 (1.68)+	-0.010 (1.75)+	-0.016 (1.60)	-0.017 (1.62)
1995	0.015 (1.27)	0.001 (1.20)	0.001 (1.16)	0.001 (1.24)	-0.001 (1.64)	-0.001 (1.39)	-0.001 (1.52)	-0.001 (1.54)
1996	0.001 (0.21)	0.001 (0.30)	0.002 (0.30)	0.001 (0.21)	0.014 (3.06)*	0.013 (2.88)#	0.012 (3.08)*	0.012 (1.94)+
1997	-0.002 (2.65)#	-0.001 (2.77)#	-0.002 (2.69)#	-0.002 (2.57)#	-0.01 (0.86)	-0.005 (0.19)	-0.004 (0.26)	-0.004 (0.25)
1998	0.001 (0.45)	0.003 (0.39)	0.003 (0.39)	0.001 (0.45)	0.026 (2.07)#	0.025 (2.80)#	0.028 (2.84)#	0.026 (0.84)
1999	-0.005 (2.30)#	-0.002 (2.28)#	-0.002 (2.31)#	-0.002 (2.32)#	-0.053 (0.76)	-0.051 (3.80)*	-0.062 (4.37)*	-0.037 (2.83)#
Adjusted R^2	.4676	.4789	.4557	.4790	.3026	.3716	.3302	.3127
F-Statistics	47.93 *	50.17*	47.91*	42.88*	7.19*	8.22*	7.90*	6.78*
Number	709	709	709	709	189	189	189	189

Note: *, #, and + indicate statistical significance of the estimated coefficient at the 1, 5, and 10 percent significance level, respectively. The t-statistics in parentheses are corrected for heteroscedasticity using White's correction.

Table 5
Test for Non-monotonicity in Effect of Focus on Bank Returns as a function of Risk (DOUBT): Hypothesis H.1

	Dependent Variables			
	Return on Assets (ROA)		Stock Return (SR)	
Variables	1	2	1	2
Intercept	0.016	0.017	-0.012+	-0.115+
Non Financial and Housing-I-HHI	0.002 (1.76) +	0.024 (1.98)#	0.093 (2.56)#	0.041 (3.69)*
Asset Sectoral A-HHI	0.010 (2.70) #	0.001 (2.30)#	0.013 (3.04)*	0.117 (4.02) *
Geographical-G-HHI	0.016 (2.99) *	0.001 (3.17)*	0.049 (1.86) +	0.035 (1.80) +
Log of SIZE	-	-0.0019 (1.07)	-	-0.107 (0.76)
Equity to Assets Ratio - EQRATIO	-	0.105 (8.48)*	-	0.004 (0.59)
Branch to Asset Ratio - BRRATIO	-	0.294 (1.80) +	-	0.164 (1.68)+
Employment Expense to Assets Ratio - EMPRATIO	-	-0.120 (1.30)	-	-3.94 (2.69) #
Non performing & Doubtful Loans to Asset Ratio - DOUBT	-0.326 (2.29) #	-0.128 (1.13)	-2.45 (1.07)	-2.11 (0.94)
I-HHI*DOUBT	-1.630 (1.85)+	-0.394 (1.98)#	-2.165 (1.87)+	-2.202 (1.66)+
I-HHI*DOUBT^2	8.592 (1.93)+	2.381 (1.79)+	15.082 (1.92)+	15.906 (1.65)
A-HHI*DOUBT	-0.062 (1.69)+	-0.504 (1.17)	-1.298 (1.76)+	-5.062 (1.50)
A-HHI*DOUBT^2	2.751 (1.84)+	3.301 (1.70)+	12.430 (1.07)	29.351 (1.87)+
G-HHI*DOUBT	-0.893 (2.94) *	-0.936 (2.59)#	-1.492 (2.82) #	-6.019 (2.77)#
G-HHI*DOUBT^2	3.073 (1.97)#	2.483 (2.35)#	8.755 (1.67)+	15.495 (2.08)#
Adjusted R^2	.4704	.4819	.3190	.3856
F-Statistics	45.66 *	46.30*	8.06*	8.54*
Number	683	683	189	189

Note: *, #, and + indicate statistical significance of the estimated coefficient at the 1, 5, and 10 percent significance level, respectively. The t-statistics in parentheses are corrected for heteroscedasticity using White's correction. The coefficients on Year dummy variables for the sample years are not reported for the sake of brevity.

Table 6
Percentiles for Doubtful and Non-Performing Loans to Total Assets Ratio (DOUBT) over 1993-1999

YEAR	MEAN	Minimum	10%	25%	50%	75%	90%	Maximum
1993	3.66	0.23	1.22	1.96	2.99	4.22	6.72	14.72
1994	4.96	0.21	1.52	2.45	3.75	6.17	9.73	24.06
1995	5.91	0.00	1.71	3.24	4.44	7.75	11.68	24.09
1996	6.48	0.00	1.70	2.89	4.45	8.00	12.84	34.15
1997	6.36	0.00	1.70	2.58	4.44	7.68	10.60	36.91
1998	6.70	0.19	1.55	2.71	4.53	7.14	11.27	40.94
1999	6.51	0.09	1.38	2.59	4.18	6.98	10.62	44.43

Table 7
Test for Effect of Focus on Bank Loan Risk (DOUBT): Hypothesis H.2

	Dependent Variable					
	All Banks			Publicly Traded Banks		
Variables	1	2	3	1	2	3
Intercept	0.125#	0.137+	0.190	0.003	0.003	0.003
Non Financial and Housing-I-HHI	-0.083 (2.30)#	-0.071 (2.18)#	-0.056 (1.92)+	-0.046 (1.98)#	-0.052 (1.87)+	-0.075 (1.79)+
Asset Sectoral A-HHI	-0.037 (2.14)#	-0.042 (2.35)#	-0.054 (2.26)#	-0.023 (1.95)+	-0.161 (1.85)+	-0.246 (1.88)+
Geographical-G-HHI	0.016 (1.72)+	0.021 (1.61)	0.029 (1.52)	-0.011 (1.44)	-0.019 (1.52)	-0.024 (1.75)+
Log of SIZE	-0.017 (1.86)+	-0.008 (2.09)#	-0.006 (2.01) #	-0.002 (1.70)+	-0.004 (1.37)	-0.002 (0.83)
Equity to Assets Ratio – EQRATIO	-0.050 (1.75)+	-0.064 (1.65)	-0.075 (1.48)	-0.064 (1.54)	-0.052 (0.98)	-0.084 (0.75)
Branch to Asset Ratio - BRRATIO	-0.650 (1.91)+	-0.504 (2.06)#	-0.516 (2.13)#	0.101 (1.13)	0.073 (0.98)	0.085 (1.02)
Employment Expense to Assets Ratio – EMPRATIO	-0.809 (1.62)	-0.753 (1.57)	-0.763 (1.54)	-0.151 (1.36)	-0.132 (1.42)	-0.120 (1.23)
$DOUBT_{t-1}$	0.016 (1.70)+	0.024 (1.48)	0.029 (1.42)	0.011 (1.02)	0.020 (1.17)	0.027 (1.32)
ROA_t-1	-0.048 (1.39)	-0.043 (1.30)	-0.038 (1.24)	-0.022 (1.85)+	-0.021 (1.67)+	-0.028 (1.70)+
SR_t-1	-	-	-	-0.012 (1.09)	-0.016 (1.24)	-0.020 (1.35)
$I\text{-}HHI_{t-} - I\text{-}HHI_{t-1}$	-	-0.053 (1.96)#	-0.051 (2.06)#	-	-0.028 (1.50)	-0.034 (1.61)
$(I\text{-}HHI_t - I\text{-}HHI_{t-1}) * COMP_{t-1}$	-	-	-0.002 (1.80)+	-	-	-0.018 (1.87)+
$A\text{-}HHI_t - A\text{-}HHI_{t-1}$	-	-0.012 (1.76)+	-0.015 (1.73)+	-	-0.006 (1.73)+	-0.005 (1.90)+
$G\text{-}HHI_t - G\text{-}HHI_{t-1}$	-	0.001 (0.73)	0.001 (0.67)	-	0.001 (1.25)	0.003 (1.05)
Adjusted R^2	.2106	.2683	.2904	.2635	.2914	.3476
F-Statistics	6.05*	8.14*	8.85*	4.07*	4.58*	5.05*
Number	604	604	604	152	152	152

Note: *, #, and + indicate statistical significance of the estimated coefficient at the 1, 5, and 10 percent significance level, respectively. The t-statistics in parentheses are corrected for heteroscedasticity using White's correction. The coefficients on Year dummy variables for the sample years are not reported for the sake of brevity.

Table 8
Simultaneous (SUR) Estimation of Effect of Focus on Bank Returns (ROA, SR) and Bank Loan Risk (DOUBT)

	1		2	
Variables	ROA	DOUBT	SR	DOUBT
	1	2	1	2
Intercept	0.108	0.153+	0.014	0.039
Non Financial and Housing-I-HHI	0.002 (1.77)+	-0.042 (1.85)+	0.006 (2.15)#	-0.070 (1.94)+
$I\text{-}HHI_t - I\text{-}HHI_{t-1}$	0.108 (1.29)	-0.010 (1.97)#	-0.022 (1.15)	-0.161 (1.90)+
$(I\text{-}HHI_t - I\text{-}HHI_{t-1}) * COMP_t$	0.046 (1.31)	-0.011 (1.96)#	0.052 (1.28)	-0.013 (1.99)#
Asset Sectoral A-HHI	0.007 (1.84)+	-0.039 (1.94)+	0.011 (3.23)*	-0.012 (3.06)*
$A\text{-}HHI_t - A\text{-}HHI_{t-1}$	0.002 (1.02)	-0.013 (1.74)+	-1.16 (1.48)	-1.903 (1.88)+
Geographical-G-HHI	0.015 (2.55)#	0.073 (2.01)#	0.044 (2.35)#	0.021 (3.29)*
$G\text{-}HHI_t - G\text{-}HHI_{t-1}$	-0.094 (1.77)+	0.001 (0.80)	-0.126 (1.72)+	0.029 (1.26)
Log of SIZE	0.004 (0.54)	-0.003 (1.43)	0.005 (0.85)	-0.006 (1.78)+
Equity to Assets Ratio - EQRATIO	0.014 (1.32)	-0.104 (2.06)#	-0.203 (0.75)	0.020 (1.04)
Branch to Asset Ratio - BRRATIO	0.994 (1.81)+	-0.902 (2.16)#	0802 (1.50)	-0.280 (1.82) +
Employment Expense to Assets Ratio - EMPRATIO	-1.903 (0.75)	-0.781 (1.06)	-0.801 (0.99)	-0.147 (1.38)
Last Year's Doubt Ratio $DOUBT_{t-1}$	-0.030 (1.38)	0.051 (1.20)	-0.149 (1.64)	0.020 (1.45)
(COLUMN 2 AND 3) ROA_{t-1} OR (COLUMN 4 AND 5) SR_{t-1}	-0.001 (1.53)	-0.016 (1.29)	0.010 (1.32)	-0.011 (0.92)
System Weighted R^2	.4916		.1038	
Cross Model Covariance	-0.001		-0.0001	
Cross Model Correlation	-0.014+		-0.0026	
Number	604		152	

Note: *, #, and + indicate statistical significance of the estimated coefficient at the 1, 5, and 10 percent significance level, respectively. The coefficients on Year dummy variables for the sample years are not reported for the sake of brevity.

Figure 1: Effect of Diversification on Probability of Failure

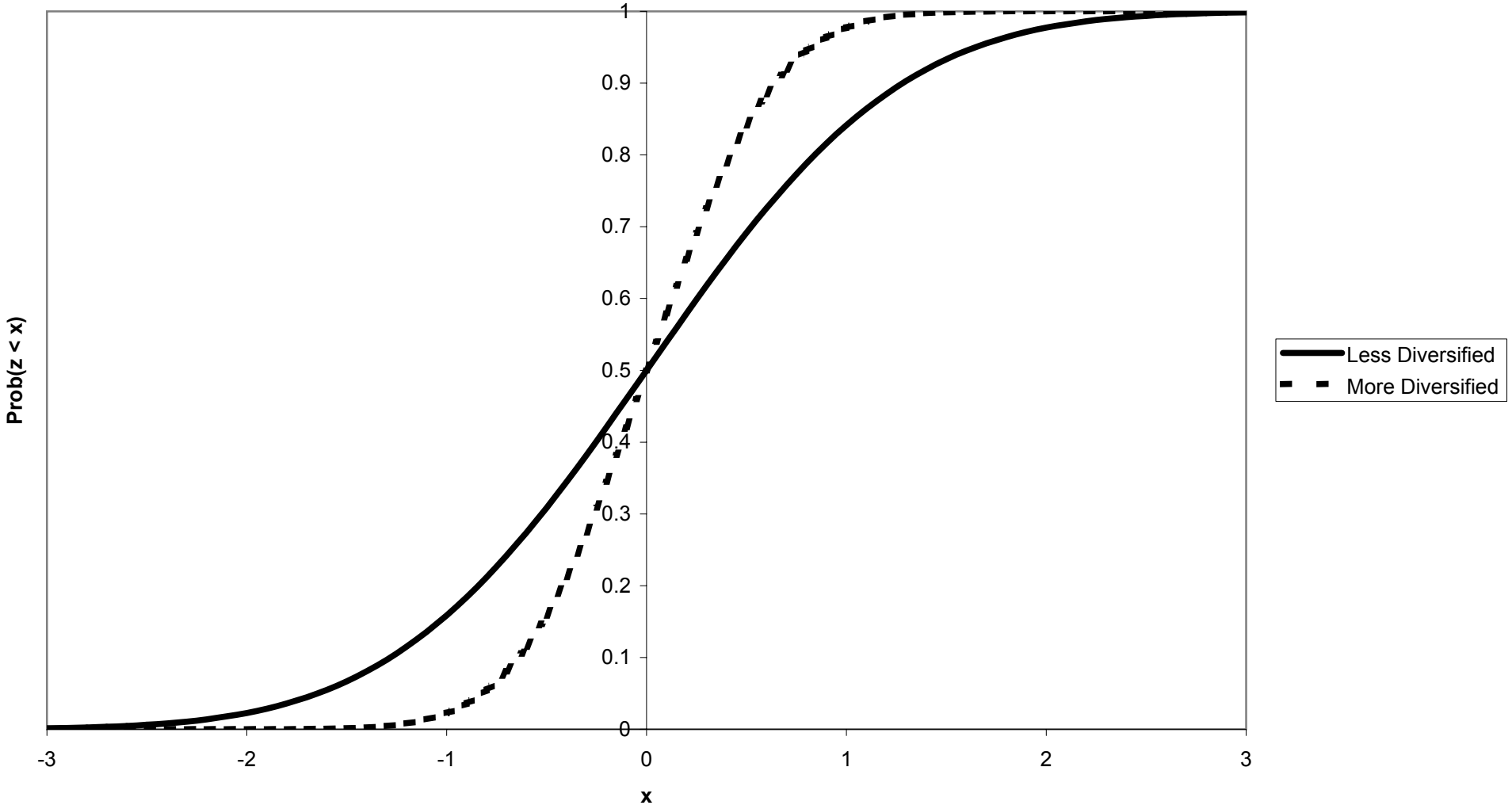
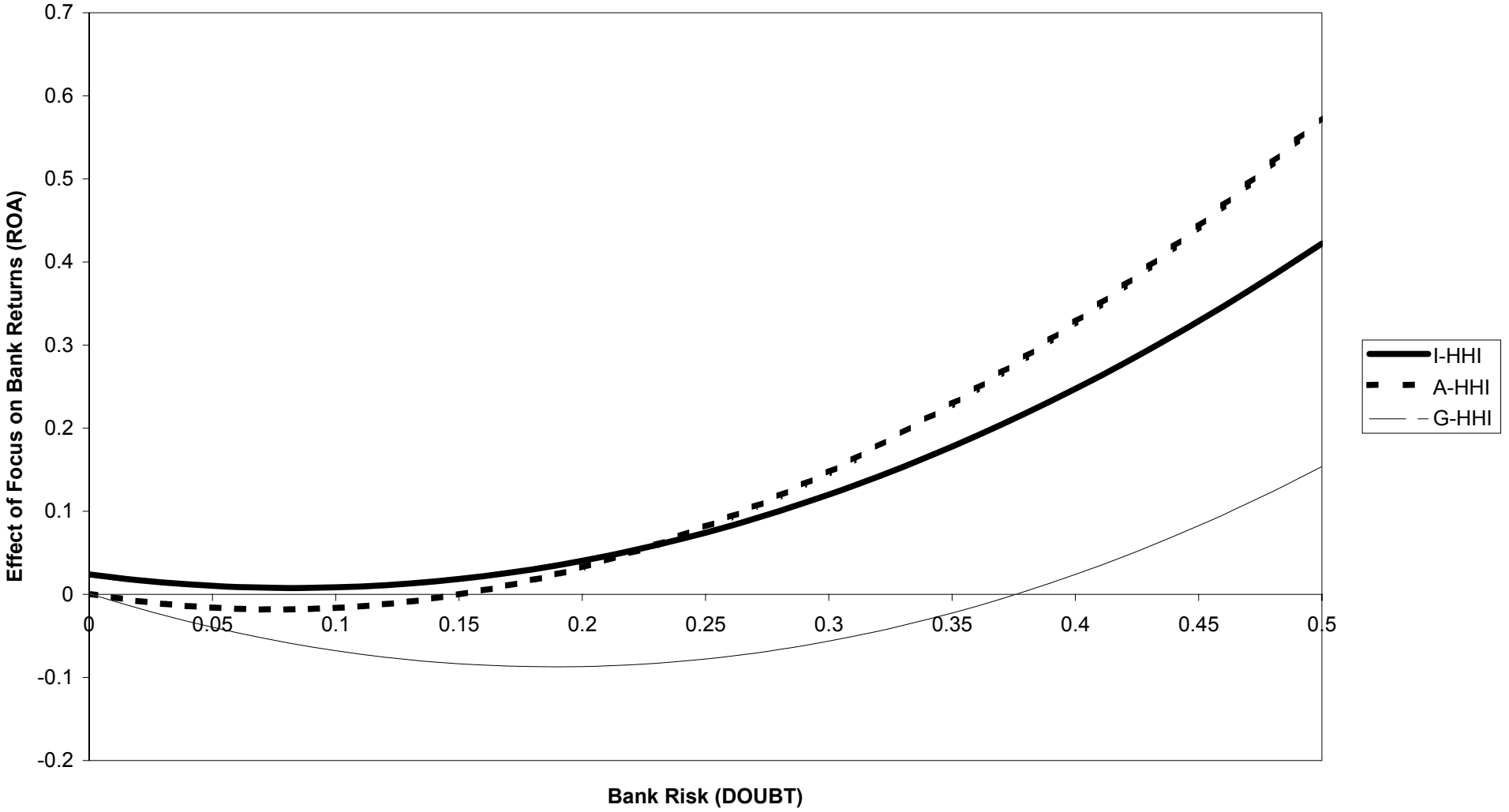


Figure 2: Non-monotonicity in Effect of Focus on Bank Returns (ROA) as a Function of Bank Risk (DOUBT)



Addendum: Table 4B
Specification Test for Average Effect of Focus on Bank Returns with Time Dummies and Bank Fixed Effects

	Dependent Variables							
	Return on Assets (ROA)				Stock Return (SR)			
Variables	1	2	3	4	1	2	3	4
Non Financial and Housing - I-HHI	0.002 (1.74)+	-	-	0.004 (1.98)#	0.008 (2.56)#	-	-	0.006 (2.48)#
Asset Sectoral A-HHI	-	0.002 (1.71)+	-	0.002 (1.78)+	-	0.003 (2.54)#	-	0.001 (2.35)#
Geographical G-HHI	-	-	0.052 (2.56)*	0.029 (2.95)*	-	-	0.024 (3.02)*	0.028 (2.99)*
Log of SIZE	-0.001 (1.96)#	-0.001 (1.27)	-0.001 (1.70)+	-0.001 (1.77)+	0.012 (0.89)	0.017 (0.90)	0.004 (0.35)	0.006 (0.29)
Equity to Assets Ratio EQRATIO	0.083 (6.12)*	0.079 (7.25)*	0.065 (8.10)*	0.081 (7.92)*	0.028 (0.65)	0.026 (0.39)	0.035 (0.76)	0.024 (0.40)
Branch to Asset Ratio BRRATIO	0.059 (1.94)+	0.055 (1.68)+	0.060 (1.73)+	0.068 (1.74)+	0.059 (1.60)	0.072 (1.72)+	0.065 (1.65)	0.053 (1.44)
Employment Expense to Assets Ratio EMPRATIO	-0.163 (1.44)	-0.139 (1.45)	-0.075 (1.38)	-0.086 (1.47)	-0.096 (1.52)	-0.075 (1.70)+	-0.068 (2.74)#	-0.069 (2.61)#
Non performing & Doubtful Loans to Asset Ratio $DOUBT_t$	-0.049 (8.96)*	-0.062 (10.17)*	-0.060 (10.22)*	-0.187 (11.26)*	0.038 (0.84)	0.023 (1.48)	0.018 (1.64)	0.018 (0.65)
1994	-0.004 (4.55)*	-0.003 (3.85)*	-0.002 (3.60)*	-0.002 (3.67)*	-0.008 (1.90)+	-0.007 (1.84)+	-0.008 (1.79)+	-0.005 (1.68)+
1995	-0.006 (0.96)	-0.001 (0.87)	-0.001 (0.90)	-0.006 (0.96)	-0.0004 (1.15)	-0.0003 (0.99)	-0.0004 (1.04)	-0.0004 (1.18)
1996	0.004 (0.75)	0.002 (1.26)	0.002 (0.59)	0.002 (0.66)	0.008 (1.68)+	0.007 (1.66)+	0.006 (1.62)	0.007 (1.65)
1997	-0.005 (2.31)#	-0.005 (2.07)#	-0.006 (2.56)*	-0.007 (2.36)*	-0.015 (1.08)	-0.007 (0.97)	-0.007 (1.02)	-0.004 (1.19)
1998	0.005 (0.97)	0.003 (0.90)	0.005 (0.63)	0.003 (0.73)	0.008 (0.99)+	0.007 (1.28)	0.007 (0.96)	0.007 (0.80)
1999	-0.004 (1.86)+	-0.001 (1.87)+	-0.001 (1.80)+	-0.001 (1.77)+	-0.037 (1.09)	-0.016 (0.88)	-0.014 (0.94)	-0.018 (1.10)
Adjusted R^2	.5106	.5185	.4829	.4902	.3415	.4007	.3605	.3272
F-Statistics	45.37 *	46.94*	44.51*	46.26*	10.06*	10.93*	9.28*	8.45*
Number	709	709	709	709	189	189	189	189

Note: *, #, and + indicate statistical significance of the estimated coefficient at the 1, 5, and 10 percent significance level, respectively. The t-statistics in parentheses are corrected for heteroscedasticity using White's correction. Bank Fixed Effect coefficients are not reported for the sake of brevity.

Addendum: Table 4C
Specification Test for Average Effect of One Year Lagged Focus on Bank Returns

	Dependent Variables							
	Return on Assets (ROA)				Stock Return (SR)			
Variables	1	2	3	4	1	2	3	4
Intercept	0.018#	0.014	0.012	0.006	0.0022#	0.0019+	0.002#	0.002#
$I\text{-}HHI_{t-1}$ Previous year's Industrial HHI	0.003 (1.66)+	-	-	0.002 (1.90)+	0.013 (2.07)#	-	-	0.018 (2.44)#
$A\text{-}HHI_{t-1}$ Previous year's Asset Sectoral HHI	-	0.008 (1.80)+	-	0.006 (1.91)+	-	0.002 (2.78)#	-	0.001 (2.56)#
$G\text{-}HHI_{t-1}$ Previous year's Geographic HHI	-	-	0.045 (2.98)*	0.016 (3.58)*	-	-	0.033 (3.13)*	0.039 (3.06)*
Log of SIZE	-0.001 (2.03)#	-0.002 (1.08)	-0.002 (1.78)+	-0.002 (1.83)+	0.011 (0.73)	0.010 (0.87)	0.005 (0.24)	0.005 (0.32)
Equity to Assets Ratio - EQRATIO	0.106 (7.48)*	0.084 (8.39)*	0.080 (11.89)*	0.092 (11.56)*	0.0302 (0.87)	0.032 (0.45)	0.040 (0.94)	0.027 (0.48)
Branch to Asset Ratio - BRRATIO	0.065 (2.02)#	0.063 (1.75)+	0.066 (1.80)+	0.071 (1.89)+	0.076 (1.55)	0.107 (1.76)+	0.083 (1.51)	0.071 (1.32)
Employment Expense to Assets Ratio - EMPRATIO	-0.206 (1.26)	-0.182 (1.38)	-0.096 (1.42)	-0.0934 (1.51)	-0.132 (1.44)	-0.088 (1.67)+	-0.084 (2.98)*	-0.081 (2.85)*
Non performing & Doubtful Loans to Asset Ratio - DOUBT	-0.052 (10.87)*	-0.083 (13.45)*	-0.092 (14.06)*	-0.027 (14.39)*	0.043 (0.73)	0.029 (1.54)	0.021 (1.49)	0.018 (0.65)
Adjusted R^2	.4024	.3981	.4128	.4226	.2691	.3154	.2904	.2733
F-Statistics	42.93 *	44.26*	40.04*	40.57*	8.31*	8.90*	8.25*	8.64*
Number	604	604	604	604	152	152	152	152

Note: *, #, and + indicate statistical significance of the estimated coefficient at the 1, 5, and 10 percent significance level, respectively. The t-statistics in parentheses are corrected for heteroscedasticity using White's correction. For the sake of brevity, the year dummies for time fixed-effects are not reported.

Addendum: Table 4D
Specification Test for Average Effect of Focus and Increase in Focus on Bank Returns

	Dependent Variables							
	Return on Assets (ROA)				Stock Return (SR)			
Variables	1	2	3	4	1	2	3	4
Intercept	0.102	0.084	0.074	0.177	0.145	0.157	0.236	0.204
Non Financial and Housing-I-HHI	0.002 (1.73)+	-	-	0.003 (1.85)+	0.010 (1.99)#	-	-	0.012 (2.28)#
$I\text{-}HHI_t - I\text{-}HHI_{t-1}$	0.082 (1.34)	-	-	0.136 (1.39)	0.085 (1.37)	0.076 (1.25)	0.103 (1.31)	-0.124 (1.34)
Asset Sectoral A-HHI	-	0.005 (1.86)+	-	0.004 (1.94)+	-	0.003 (2.50)#	-	0.002 (2.42)#
$A\text{-}HHI_t - A\text{-}HHI_{t-1}$	-	-0.003 (0.25)	-	0.006 (1.01)	-	-0.013 (1.17)	-0.008 (1.03)	-0.012 (0.96)
Geographical-G-HHI	-	-	0.032 (2.51)#	0.011 (2.99)*	-	-	0.027 (3.56)*	0.023 (3.14)*
$G\text{-}HHI_t - G\text{-}HHI_{t-1}$	-	-	-0.093 (1.56)	-0.145 (1.68)+	-	-	-0.158 (1.77)+	-0.150 (1.74)+
Log of SIZE	0.005 (0.43)	0.004 (0.65)	0.004 (0.49)	0.007 (0.51)	0.004 (0.51)	0.003 (0.64)	0.003 (0.75)	0.005 (1.34)
Equity to Assets Ratio - EQRATIO	0.054 (1.48)	0.095 (1.43)	0.106 (1.52)	0.099 (1.25)	0.083 (1.27)	0.074 (0.94)	0.0654 (1.01)	0.218 (0.50)
Branch to Asset Ratio - BRRATIO	1.085 (1.77)+	0.074 (1.70)+	0.068 (1.89)+	1.260 (1.93)+	1.062 (0.70)	1.543 (1.04)	1.140 (1.48)	1.066 (0.99)
Employment Expense to Assets Ratio - EMPRATIO	-1.924 (0.82)	-0.905 (0.75)	-0.886 (0.83)	-2.316 (0.90)	-1.02 (0.83)	-1.54 (0.76)	-1.09 (0.58)	-1.618 (0.67)
Non performing & Doubtful Loans to Asset Ratio - DOUBT	-0.024 (1.66)+	-0.018 (1.59)	-0.015 (1.1.60)	-0.035 (1.78)+	-0.380 (0.58)	-0.403 (1.01)	-0.448 (0.965)	-0.479 (0.41)
Adjusted R^2	.5018	.5114	.4787	.5279	.2801	.2785	386	.29512
F-Statistics	41.30*	43.07*	40.02	47.87 *	19.05 *	20.56 *	21.76*	18.39 *
Number	604	604	604	604	152	152	152	152

Note: *, #, and + indicate statistical significance of the estimated coefficient at the 1, 5, and 10 percent significance level, respectively. The t-statistics in parentheses are corrected for heteroscedasticity using White's correction. For the sake of brevity, the year dummies for time fixed-effects are not reported.

Addendum: Table 5B

Test for Non-monotonicity in Effect of Focus on Bank Returns as a function of Risk (DOUBT) with Fixed Effects: Hypothesis H.1

	Dependent Variables			
	Return on Assets (ROA)		Stock Return (SR)	
Variables	1	2	1	2
Non Financial and Housing-I-HHI	0.005 (1.68) +	0.017 (1.86)#	0.093 (2.29)#	0.041 (3.17)*
Asset Sectoral A-HHI	0.007 (2.49) #	0.004 (2.13)#	0.029 (2.88)*	0.084 (3.53) *
Geographical-G-HHI	0.008 (3.04)*	0.004 (2.81)#	0.040 (1.75) +	0.039 (1.70) +
Log of SIZE	-	-0.001 (0.93)	-	-0.072 (1.01)
Equity to Assets Ratio - EQRATIO	-	0.132 (6.47)*	-	0.015 (1.24)
Branch to Asset Ratio - BRRATIO	-	0.236 (1.71) +	-	0.155 (1.64)
Employment Expense to Assets Ratio - EMPRATIO	-	-0.100 (1.45)	-	-3.63 (2.04) #
Non performing & Doubtful Loans to Asset Ratio - DOUBT	-0.181 (1.93) +	-0.105 (1.05)	-1.939 (1.24)	-1.115 (0.94)
I-HHI*DOUBT	-1.030 (1.72)+	-0.642 (1.85)+	-2.104 (1.96)#	-2.042 (1.78)+
I-HHI*DOUBT^2	6.083 (1.60)	3.062 (1.62)+	15.184 (1.90)+	16.247 (1.58)
A-HHI*DOUBT	-0.047 (1.74)+	-0.417 (1.35)	-1.431 (1.84)+	-6.932 (1.66)+
A-HHI*DOUBT^2	1.945 (1.71)+	2.982 (1.55)	11.561 (1.34)	26.437 (1.72)+
G-HHI*DOUBT	-0.800 (2.73) #	-0.862 (2.35)#	-1.248 (2.61) #	-5.883 (2.82)#
G-HHI*DOUBT^2	2.098 (1.82)+	2.322 (2.16)#	8.026 (1.64)	14.542 (1.93)+
Adjusted R^2	.4853	.5007	.3491	.3905
F-Statistics	41.58 *	44.73*	8.56*	8.62*
Number	683	683	189	189

Note: *, #, and + indicate statistical significance of the estimated coefficient at the 1, 5, and 10 percent significance level, respectively. The t-statistics in parentheses are corrected for heteroscedasticity using White's correction. The coefficients on Year dummy variables and Bank fixed effects are not reported for the sake of brevity

Addendum: Table 5C
Test for Non-monotonicity in Effect of Focus on Bank Returns as a function of Risk (AVGDOUBT): Hypothesis H.1

	Dependent Variables			
	Return on Assets (ROA)		Stock Return (SR)	
Variables	1	2	1	2
Intercept	0.002	0.007	-0.008+	-0.092+
Non Financial and Housing-I-HHI	0.016 (1.90) +	0.028 (2.52)#	0.051 (2.16)#	0.041 (2.10)#
Asset Sectoral A-HHI	0.009 (2.04) #	0.001 (1.96)#	0.011 (2.67)#	0.025 (2.34) #
Geographical-G-HHI	0.006 (2.80) #	0.004 (2.96)*	0.054 (1.92) +	0.041 (2.55) #
Log of SIZE	-	-0.001 (0.64)	-	-0.002 (0.89)
Equity to Assets Ratio - EQRATIO	-	0.063 (10.56)*	-	0.029 (0.72)
Branch to Asset Ratio - BRRATIO	-	0.049 (1.71) +	-	0.157 (1.42)
Employment Expense to Assets Ratio - EMPRATIO	-	-0.263 (1.60)	-	-3.20 (3.45) *
Average Non performing & Doubtful Loans to Asset Ratio – AVGDOUBT	-0.023 (2.14) #	-0.102 (1.18)	-1.01 (0.87)	-2.42 (0.80)
I-HHI*AVGDOUBT	-1.15 (2.49)#	-0.748 (2.00)#	-2.016 (1.91)+	-5.329 (1.68)+
I-HHI*AVGDOUBT^2	8.032 (2.95)*	3.472 (1.94)+	12.317 (2.25)#	11.560 (1.61)
A-HHI* AVGDOUBT	-0.106 (1.78)+	-0.117 (1.28)	-1.203 (1.70)+	-3.494 (1.81)+
A-HHI* AVGDOUBT^2	3.786 (1.99)#	2.285 (1.83)+	7.042 (0.91)	11.043 (1.66)+
G-HHI* AVGDOUBT	-0.306 (2.55) #	-0.164 (2.37)#	-0.195 (2.16) #	-4.873 (2.40)#
G-HHI* AVGDOUBT^2	5.016 (3.08)*	2.071 (2.55)#	5.094 (1.96)#	5.254 (1.72)+
Adjusted R^2	.4954	.5012	.3458	.39.91
F-Statistics	44.20 *	45.07*	8.49*	8.50*
Number	683	683	189	189

Note: *, #, and + indicate statistical significance of the estimated coefficient at the 1, 5, and 10 percent significance level, respectively. The t-statistics in parentheses are corrected for heteroscedasticity using White's correction. The coefficients on Year dummy variables for the sample years are not reported for the sake of brevity.

Addendum: Table 5D
Test for Non-monotonicity in Effect of Focus on Bank Returns as a function of Risk (PREDOUBT): Hypothesis H.1

	Dependent Variables			
	Return on Assets (ROA)		Stock Return (SR)	
Variables	1	2	1	2
Intercept	0.007	0.007	-0.125 *	-0.173 *
Non Financial and Housing-I-HHI	0.001 (1.71) +	0.001 (1.84)+	0.493 (3.48)*	0.412 (4.10)*
Asset Sectoral A-HHI	0.016 (2.98) *	0.008 (3.16)*	0.132 (5.34)*	0.117 (4.02) *
Geographical-G-HHI	0.018 (2.77) #	0.007 (3.05)*	0.029 (1.66) +	0.035 (1.80) +
Log of SIZE	-	-0.0001 (1.32)	-	-0.009 (0.76)
Equity to Assets Ratio - EQRATIO	-	0.027 (1.39)	-	0.004 (0.59)
Branch to Asset Ratio - BRRATIO	-	0.312 (1.86) +	-	0.164 (1.02)
Employment Expense to Assets Ratio - EMPRATIO	-	-0.183 (0.52)	-	-1.881 (2.69) #
Predicted Non performing & Doubtful Loans to Asset Ratio – PREDOUBT	-0.220 (2.14) #	-0.167 (2.40)#	-2.452 (1.78)+	-5.04 (1.85)+
I-HHI* PREDOUBT	-0.563 (1.84)+	-0.425 (1.94)+	-2.328 (1.78)+	-5.046 (1.85)+
I-HHI* PREDOUBT^2	2.668 (1.72)+	2.374 (1.75)+	2.082 (2.16)#	15.37 (0.95)
A-HHI* PREDOUBT	-0.732 (1.17)	-0.560 (1.08)	-1.240 (1.61)	-1.043 (1.99)*
A-HHI* PREDOUBT^2	2.751 (1.84)+	2.980 (1.69)+	12.430 (1.28)	15.935 (1.46)
G-HHI* PREDOUBT	-0.893 (2.94) *	-0.957 (2.55)#	-2.932 (2.43) #	-2.049 (2.90)#
G-HHI* PREDOUBT^2	3.053 (1.77)+	2.796 (2.02)#	4.755 (1.67)+	3.168) (1.97)*
Adjusted R^2	.2320	.2914	.2778	.2803
F-Statistics	14.75 *	15.88*	8.51 *	8.86 *
Number	604	604	189	189

Note: *, #, and + indicate statistical significance of the estimated coefficient at the 1, 5, and 10 percent significance level, respectively. The t-statistics in parentheses are corrected for heteroscedasticity using White's correction. The coefficients on Year dummy variables for the sample years are not reported for the sake of brevity.

Addendum: Table 5E

Test for Non-monotonicity in Effect of Focus on Bank Returns as a function of Risk (STDDOUBT and STDRET): Hypothesis H.1

	Dependent Variables			
	Return on Assets (ROA)		Stock Return (SR)	
Variables	1	2	1	2
Intercept	0.010	0.011	-0.124	-0.146
Non Financial and Housing-I-HHI	0.002 (1.80) +	0.002 (1.91)+	0.088 (2.57)#	0.081 (3.05)*
Asset Sectoral A-HHI	0.012 (2.54) #	0.016 (2.48)#	0.067 (2.86)#	0.052 (3.43) *
Geographical-G-HHI	0.011 (3.05) *	0.015 (3.34)*	0.040 (1.91) +	0.039 (1.97) #
Log of SIZE	-	-0.001 (0.97)	-	-0.102 (0.85)
Equity to Assets Ratio - EQRATIO	-	0.103 (7.02)*	-	0.015 (1.02)
Branch to Asset Ratio - BRRATIO	-	0.358 (1.69) +	-	0.150 (1.76)+
Employment Expense to Assets Ratio - EMPRATIO	-	-0.082 (1.44)	-	-1.104 (2.33) #
Non performing & Doubtful Loans to Asset Ratio – DOUBT	-0.256 (2.06) #	-0.105 (1.02)	-2.157 (1.25)	-1.092 (1.06)
STDDOUBT	-0.075 (2.11)#	-0.093 (3.76)*	-1.081 (3.01)*	-1.125 (2.98)*
STDRET	-	-	0.034 (7.36)*	0.039 (8.44)*
I-HHI*STDDOUBT or I-HHI*STDRET	-0.562 (1.63)	-0.440 (1.72)+	-1.172 (1.80)+	-1.981 (1.86)+
I-HHI*STDDOUBT^2 or I-HHI*STDRET^2	4.327 (2.07)#	3.397 (1.98)#	4.345 (2.36)#	5.143 (2.02)#
A-HHI*STDDOUBT or or A-HHI*STDRET	-0.044 (1.54)	-0.375 (1.23)	-1.154 (1.63)	-1.365 (1.71)+
A-HHI*STDDOUBT^2 or A-HHI*STDRET^2	2.751 (1.84)+	3.301 (1.70)+	2.430 (1.07)	12.935 (1.87)+
G-HHI*STDDOUBT or or G-HHI*STDRET	-0.763 (2.57) *	-0.905 (2.66)#	-1.284 (2.59) #	-2.432 (2.84)#
G-HHI*STDDOUBT^2 or G-HHI*STDRET^2	2.044 (1.92)+	2.2467 (2.08)#	4.50 (1.61)	6.076 (1.98)#
Adjusted R^2	.4798	.4802	.3043	.3421
F-Statistics	35.00 *	36.18*	8.55*	8.62*
Number	683	683	189	189

Note: *, #, and + indicate statistical significance of the estimated coefficient at the 1, 5, and 10 percent significance level, respectively. The t-statistics in parentheses are corrected for heteroscedasticity using White's correction. The coefficients on Year dummy variables for the sample years are not reported for the sake of brevity.

Addendum: Table 9
Simultaneous (SUR) Estimation of Effect of Focus on Bank Returns (ROA) and Bank Loan Risk (DOUBT) Treating Focus Measures (I-HHI, A-HHI, G-HHI) as Endogenous Variables

Variables	ROA	DOUBT	I-HHI	A-HHI	G-HHI
	1	2	3	4	5
Intercept	0.225*	0.152+	0.168*	0.027*	0.031
Past Year's Non Financial and Housing- $I\text{-}HHI_{t-1}$	0.002 (1.60)	0.014 (1.71)+	0.040 (1.86)+	0.010 (1.43)	-0.060 (0.74)
Past Year'sAsset Sectoral $A\text{-}HHI_{t-1}$	0.005 (1.87)+	-0.035 (1.80)+	0.058 (2.63)#	0.032 (4.16)*	-0.045 (1.42)
Past Year's Geographical- $G\text{-}HHI_{t-1}$	0.011 (2.00)#	0.071 (2.25)#	- 0.027 (1.54)	0.046 (1.72)+	0.054 (2.03)#
$(COMP_t - COMP_{t-1})$	-0.017 (1.85)+	0.043 (1.52)	-0.008 (1.40)	-0.011 (1.17)	-0.006 (0.84)
$(I\text{-}HHI_{t-1}) * (COMP_t - COMP_{t-1})$	-0.015 (1.29)	0.026 (1.54)	-0.046 (0.65)	0.039 (0.96)	0.020 (0.77)
Log of SIZE	0.002 (1.06)	-0.001 (2.73)*	0.023 (2.41)#	-0.008 (2.29)#	-0.042 (7.65)*
Equity to Assets Ratio - EQRATIO	0.012 (1.48)	-0.079 (2.84)#	0.873 (0.68)	0.345 (1.70)+	0.026 (1.02)
Branch to Asset Ratio - BRRATIO	1.040 (1.89)+	-0.763 (2.48)#	0.050 (0.96)	-1.062 (2.33)#	-0.148 (2.04)#
Employment Expense to Assets Ratio - EMPRATIO	-1.468 (1.47)	-0.664 (3.01)*	-0.037 (0.48)	-2.185 (1.85)+	-0.150 (2.06)#
Last Year's Doubt Ratio $DOUBT_{t-1}$	-0.016 (1.38)	0.048 (1.17)	-0.085 (1.86)	-0.094 (1.42)	0.157 (1.32)
ROA_{t-1}	-0.001 (0.97)	0.002 (1.03)	0.090 (1.70)+	0.036 (0.13)	-0.036 (0.29)
System Weighted R^2	.4798				
Cross Model Correlation	ROA	DOUBT	I-HHI	A-HHI	G-HHI
ROA	1.000	-0.005+	0.001	0.012	0.013
DOUBT		1.000	-0.001	-0.002	0.002
I-HHI			1.000	0.225*	-0.217*
A-HHI				1.000	-0.002
G-HHI					1.000
Number	594				

Note: *, #, and + indicate statistical significance of the parameters at the 1, 5, and 10 percent significance level respectively. The coefficients on Year dummy variables for the sample years are not reported for the sake of brevity.

Addendum: Table 10A (SAMPLE OF PRIVATE BANKS ONLY)
Test for Non-monotonicity in Effect of Focus on Bank Returns as a function of Risk (DOUBT): Hypothesis H.1

	Dependent Variables			
	Return on Assets (ROA)		Stock Return (SR)	
Variables	1	2	1	2
Intercept	-0.013	-0.011	-0.016	-0.010
Non Financial and Housing-I-HHI	-0.021 (1.98)#	-0.012 (1.95)+	0.056 (2.96)#	0.050 (2.80)#
Asset Sectoral A-HHI	0.007 (2.45)#	0.005 (2.08)#	0.010 (2.37)#	0.011 (2.68) #
Geographical-G-HHI	0.005 (3.29)#	0.004 (3.11)*	0.031 (2.05)#	0.032 (2.09)#
Log of SIZE	-	-0.047 (0.80)	-	-0.002 (1.17)
Equity to Assets Ratio - EQRATIO	-	0.081 (6.81)*	-	0.003 (0.68)
Branch to Asset Ratio - BRRATIO	-	0.051 (1.01)	-	0.087 (1.50)
Employment Expense to Assets Ratio - EMPRATIO	-	-0.081 (1.67)+	-	-0.892 (2.05) #
Non performing & Doubtful Loans to Asset Ratio – DOUBT	-0.006 (1.94)+	-0.001 (1.58)	-0.420 (1.38)	-0.363 (1.39)
STDDOUBT	-0.113 (4.53)*	-0.101 (2.48)#	-0.869 (3.95)*	-1.421 (2.56)#
STDRET_t	-	-	0.043 (9.24)*	0.045 (9.10)*
I-HHI*DOUBT	-0.327 (1.76)+	-0.313 (1.72)+	-0.245 (1.72)+	-0.244 (1.60)
I-HHI*DOUBT^2	1.052 (1.62)	1.765 (1.73)+	1.109 (1.80)+	1.120 (1.63)
A-HHI*DOUBT	-0.012 (1.70)+	-0.001 (1.43)	-1.092 (1.94)+	-2.093 (1.66)+
A-HHI*DOUBT^2	0.004 (1.43)	0.162 (1.79)+	3.804 (1.50)	3.137 (1.75)+
G-HHI*DOUBT	-0.014 (1.68)+	-0.257 (2.69)#	-1.783 (2.89)*	-2.180 (2.75)#
G-HHI*DOUBT^2	0.470 (1.86)+	0.205 (2.96)*	4.163 (1.40)	4.091 (1.44)
Adjusted R^2	.4205	.4341	.4439	.5804
F-Statistics	28.06*	28.89	14.11*	15.90
Number	288	288	133	133

Note: *, #, and + indicate statistical significance of the parameters at the 1, 5, and 10 percent significance level respectively. The t-statistics in the parenthesis are corrected for heteroscedasticity using White's correction. The coefficients on Year dummy variables for the sample years are not reported for the sake of brevity.

Addendum: Table 10B (SAMPLE OF PRIVATE BANKS ONLY)
Test for Effect of Focus on Bank Loan Risk (DOUBT): Hypothesis H.2

	Dependent Variable					
	All Banks			Publicly Traded Banks		
Variables	1	2	3	1	2	3
Intercept	0.012	0.103	0.149	0.001	0.001	0.003
Non Financial and Housing-I-HHI	-0.058 (2.06)#	-0.042 (1.91)+	-0.046 (1.95)+	-0.020 (1.66)+	-0.027 (1.71)+	-0.039 (1.82)+
Asset Sectoral A-HHI	-0.020 (1.89)+	-0.018 (1.93)+	-0.043 (2.05)#	-0.049 (1.83)+	-0.280 (1.87)+	-0.260 (1.93)+
Geographical-G-HHI	0.020 (1.90)+	0.028 (1.22)	0.036 (1.60)	-0.010 (1.49)	0.010 (1.72)+	0.011 (1.84)+
Log of SIZE	-0.002 (1.65)	-0.002 (1.47)	-0.002 (2.11)#	-0.104 (1.99)#	-0.061 (1.01)	-0.002 (0.42)
Equity to Assets Ratio – EQRATIO	-0.057 (1.61)	-0.070 (1.34)	-0.063 (0.80)	-0.063 (1.62)	-0.042 (1.38)	-0.078 (0.95)
Branch to Asset Ratio - BRRATIO	-0.128 (1.90)+	-0.224 (1.35)	-0.209 (2.15)#	0.063 (2.07)#	0.062 (2.12)#	0.045 (2.49)#
Employment Expense to Assets Ratio – EMPRATIO	-0.143 (0.89)	-0.148 (0.47)	-0.219 (1.42)	-0.164 (1.15)	-0.159 (0.60)	-0.149 (0.58)
ROA_t-1	-0.005 (0.76)	-0.008 (0.91)	-0.001 (0.85)	-0.009 (1.65)	-0.018 (1.42)	-0.047 (1.10)
SR_t-1	-	-	-	-0.008 (1.00)	-0.031 (1.023)	-0.018 (0.79)
$DOUBT_{t-1}$	0.037 (1.61)	0.0281 (1.06)	0.021 (1.05)	0.012 (0.65)	0.011 (0.68)	0.019 (0.74)
STDDOUBT	-	0.104 (3.49)*	0.165 (4.03)*	-	0.862 (3.80)*	1.047 (3.02)*
STDRET_t-1	-	-	-	0.562 (2.34)#	0.549 (2.01)#	0.602 (1.98)#
$I\text{-}HHI_{t-} - I\text{-}HHI_{t-1}$	-	0.065 (2.67)#	0.067 (1.68)+	-	-0.021 (1.70)+	-0.027 (1.46)
$(I\text{-}HHI_t - I\text{-}HHI_{t-1}) * COMP_{t-1}$	-	-	-0.003 (2.35)#	-	-	-0.011 (1.94)+
$(I\text{-}HHI_t - I\text{-}HHI_{t-1}) * (COMP_t - COMP_{t-1})$	-	-	0.021 (0.81)	-	-	0.020 (1.69)+
$A\text{-}HHI_t - A\text{-}HHI_{t-1}$	-	0.006 (2.13)#	0.006 (1.74)+	-	-0.005 (1.81)+	-0.007 (2.00)#
$G\text{-}HHI_t - G\text{-}HHI_{t-1}$	-	0.001 (0.30)	0.002 (0.65)	-	0.001 (0.95)	0.006 (0.77)
Adjusted R^2	.1805	0. 2211	.2875	.2743	.2863	.2965
F-Statistics	5.76*	8.54*	8.96*	4.87*	4.75*	4.80*
Number	247	247	247	114	114	114

Note: *, #, and + indicate statistical significance of the estimated coefficient at the 1, 5, and 10 percent significance level, respectively. The t-statistics in parentheses are corrected for heteroscedasticity using White's correction. The coefficients on Year dummy variables for the sample years are not reported for the sake of brevity.

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