Lehman Sisters*

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Abstract

Would the crisis have happened if Lehman Brothers had been Lehman Sisters? Evidence on population gender differences in risk-aversion suggest not. Consistent with the idea that female *managers* need not be more risk-averse than men, we find that listed banks with more female directors did not engage in fewer risk-taking activities around the crisis and did not have lower risk than other banks. However, banks with more diverse boards had better performances, even in instrumental variable regressions. Our results suggest that more gender diversity is not necessarily associated with less risk. However, diversity may be valuable in crisis situations.

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Keywords: Women; Risk-Aversion; Risk; Crisis; Bank; Board of Directors

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At the recent World Economic Forum in Davos, Switzerland, some of the most interesting discussions revolved around whether we would be in the same mess today if Lehman Brothers had been Lehman Sisters. The consensus (and this is among the dead white men who parade annually at Davos) is that the optimal bank would have been Lehman Brothers and Sisters. (Kristof, 2009)

The "Lehman Sisters" fancy assumes that women are less risk-taking, less obsessed with money and status and generally less full of themselves than men. (The Economist, August 6, 2009)

1. Introduction

Neelie Kroes, European Union Commissioner for Competition, famously said "My clear line is that if Lehman Brothers had been 'Lehman Sisters,' would the crisis have happened like it did? No." Her arguments were that women are more risk-averse and would give different perspectives than those of their male colleagues (Kroes, 2009). For similar reasons, Michel Barnier, Europe's internal markets commissioner, proposed mandatory gender quotas on bank boards in 2011 (Treanor, 2011). However, Lehman Brothers was arguably already "Lehman Brothers and Sisters". From 1996 until 2007, it had one woman on the board and in 2004 and 2005 it had two women on the board. Moreover, newspapers are rife with stories about female bankers who followed very risky strategies. In fact, the creator of credit default swaps, which many blame for the crisis, was a woman: Blythe Masters, who at the time was heading JP Morgan's Global Credit Derivatives group. Journalists describe Erin Callan, who became the chief financial officer of Lehman Brothers in 2007 as following a "risky, high-profile strategy" (Clark, 2010) and Jamie Dimon, the CEO of JPMorgan Chase, famously described Ina Drew, his then chief investment officer who was later fired over a $6 billion trading loss, as "bold" (Dominus, 2012).

It is, therefore, not clear that we should expect women working in banks or sitting on bank boards to be more risk-averse than men. While many experimental and survey-based studies document that women are more risk-averse than men (see the surveys in Eckel and Grossman, 2008, Croson and Gneezy, 2009 and the JEBO special issue edited by Croson, Gneezy and Rey-Biel, 2012) most of these studies are based on samples of college students or the general population, not top executives. Adams and Funk (2012) provide evidence that generalizing from the population to the executive ranks may be misleading. In a survey of the population of directors in Sweden, they show that women on boards of publicly-listed firms are different both from women in the general population and from male directors in the values they emphasize. Female directors are more open to change and less conservation-

oriented than both their population counterparts and male directors. Moreover, female directors are *less* risk-averse than male directors in their sample. One explanation for their results is self-selection. The women who choose a career leading to a directorship may be very different from those who do not.[1]

This problem is likely to be particularly severe for banks. Sapienza, Zingales and Maestripieri (2009) document that at the University of Chicago only about 36% of female MBA students choose a risky career in finance (e.g., investment banking or trading), whereas 57% of male students do so. They argue one reason for this may be biological. Individuals high in testosterone and low in risk aversion were more likely to choose risky careers in finance in their study. Since these results hold even after controlling for gender, this suggests that women who choose finance careers are less risk-averse and have higher levels of testosterone than other women. Using the data from Sapienza, Zingales and Maestripieri (2009), we confirm that this is true. Moreover, we show that *conditional on choosing a finance career*, women are not more risk-averse than men. In fact, although the results are not statistically significant, women in finance are *less risk-averse* than men in finance in the Sapienza, Zingales and Maestripieri (2009) sample.

The data in studies such as Adams and Funk (2012) and Sapienza, Zingales and Maestripieri (2009) are clearly very stylized. It is possible that in real life situations women generally behave in a more conservative manner than men, even as directors, and that this could lead to less risky firm outcomes. Moreover, for outside directors testosterone may not affect the choice of a directorship in a bank in the same way as it affects the choice of a job in a financial firm. Whether or not more gender diverse boards of banks engage in fewer risk-taking activities is therefore an empirical question. We examine this in the context of roughly 300 large publicly-traded U.S. banks and bank holding companies in a 4-year period spanning the 2007-2008 financial crisis. We focus on commercial banks and bank holding companies because the gender policies for financial institutions have focused on these types of banks. For example, the EU recently added quotas for the underrepresented gender in the management body to new capital requirement directives for banks (e.g. Haslett, 2013).Beyond allowing us to directly examine the "Lehman Sisters" hypothesis, we believe examining the role of diversity in a crisis is of broader interest. Lorsch and MacIver (1995) suggest that boards take on a more important role in a crisis. They quote one director as

[1] Another explanation could be adaptive behaviour to the requirements of the job. According to recent research, psychological differences between men and women may be influenced by the environment (e.g. Bertrand, 2010).

saying (p. 97): “Directors are like firemen. They sit around doing very little until there’s a fire alarm and then they spring into action.” If the board makes more decisions during the crisis, the role of diversity may also be more important. In a crisis, corporate performance may depend more critically on obtaining the different viewpoints that directors with different backgrounds may bring to the table. On the other hand, Kanter (1977) argues that trust is more important in uncertain times and social similarity breeds trust. Thus, it is possible that diversity is more costly during a crisis than in periods of normalcy. To shed some light on the role of diversity in a crisis, we extend our analysis from risk to bank performance, as well as measures of individual behaviour.

We first examine the relationship between boardroom gender diversity and various measures of risk-taking activities in banks, such as the use of mortgage-backed securities. We then examine the relationship between diversity and various measures of overall bank risk in an instrumental variable framework. We believe there are several reasons why boardroom diversity will be endogenous in risk regressions. First, if bank executives believe that women are more risk-averse then men, they may appoint more women if risk-aversion on the board is a concern. Second, banks may prefer a more homogenous board as their risk levels increase if Kanter’s (1977) argument that social similarity breeds trust is true and trust is important as risk increases.

To deal with the endogeneity problem, we instrument for gender diversity using the average number of years bank directors interacted with women in either an executive or a director role at firms other than banks in our sample. Our justification for this instrument is that for male directors intergender trust should increase the more they work with female directors. Moreover, the more connections directors have to women they know in an executive capacity, the more they may appoint women to the board-either because of direct connections or because of indirect connections their female acquaintances may have to other women. But, we believe that this measure is unlikely to be correlated with bank outcomes, as we are primarily measuring exposure of men to women in firms outside of the banking sector.

We find weak evidence that boardroom gender diversity is associated with more risk taking activities around the crisis. For example, the likelihood that the bank issues mortgage backed securities is higher in banks with more women and banks with more women do not engage in more hedging activities. Moreover, total risk is not lower (or higher) when boards are more diverse, even in instrumental variable regressions, and there is a significant negative relationship between diversity and bank-specific Z-scores for default risk. However,

measures of bank performance are positively associated with diversity in instrumental variable regressions.

Our performance results raise the possibility that diversity may add value during a crisis. Although Kanter's arguments suggest homogenous groups perform better during a crisis, it is not necessarily clear along which dimension homogeneity is important. The evidence on risk-aversion for directors in Adams and Funk (2012) suggests that in this dimension, at least, female and male directors may not be so dissimilar. So it is not clear that gender-diverse boards should underperform other boards in a crisis. In addition, many argue that diversity is valuable because it leads to less complacency in decision-making (European Commission, 2012). This aspect of diversity may be particular valuable in a crisis.

To examine whether there is evidence that more diverse boards behave differently in ways that could enhance their performance, we follow Adams and Ferreira (2009) and examine whether female directors seem to behave differently than male directors and whether boards with more women are different. Consistent with Adams and Ferreira (2009), we find that male directors are less likely to have attendance problems in banks with more women on the board and female directors are more likely to serve on committees, especially monitoring committees. Female directors are also less likely to resign in banks that eventually delist. This evidence suggests that female directors do behave differently than male directors. We also find that banks that received TARP funds in our sample were more likely to exit TARP if they had more women on their boards. This suggests that more gender-diverse boards may behave differently in ways that are correlated with performance around the crisis.

Although banks with more women perform better in our sample, our results do not represent compelling evidence for the Lehman Sisters hypothesis. Our conclusions are in contrast to several recent papers that use corporate outcomes to make inferences about the preferences of female corporate leaders. For example, Huang and Kisgen (2013) document that firms with more female top executives make fewer acquisitions and argue the evidence is consistent with lower female overconfidence. In a related analysis, Levi, Li and Zhang (2013) assume that women are less overconfident than men. They document that firms with more female board members make fewer acquisitions and take this as corroborating evidence of lower overconfidence of women. In a cross country study of mostly private firms, Faccio, Machica and Mura (2012) document that firms with female CEOs have lower leverage and less volatile earnings. They interpret their findings as evidence of female risk-avoidance. Our results may be different because of selection. The pool of female corporate leaders in banks may be substantially different from the pool of female corporate leaders in non-financial

firms. Our results using the Sapienza, Zingales and Maestripieri (2009) sample provides suggestive evidence that this may be true.

However, our results also do not suggest the opposite, namely that banks with more women are *more* risky, as Berger, Kick and Shaeck (2013) argue is the case for their sample of German banks. As Adams and Funk (2012) argue, the characteristics of female directors may vary across countries as a function of the institutional environment. If it is more difficult for women to advance to the executive level in Germany, it is possible that female directors in Germany are on average much less risk-averse than female directors in the U.S.. This could explain the differential effect of gender on corporate risk measures across the two samples.

But, if board-level risk-aversion levels depend on the pool directors come from, then it is not clear that we should reject quotas on bank boards outright-at least if the rationale for quotas is to reduce average risk-aversion. If women outside of the regular director pool are more risk-averse than women already in the director ranks, then average board level risk-aversion may decrease once a quota is put into place. However, it would be difficult to say whether the women who would be next in line to fill a board quota would be more risk-averse than women who already sit on boards. Moreover, as the literature on gender composition in teams points out (e.g. Aspetiguia, Azmat and Iriberri, 2012), different teams may have different ways of aggregating individual preferences. Thus, it is unclear that imposing gender quotas on bank boards would be an effective way of increasing their levels of risk-aversion. The rationale for quotas is even less compelling if adaptive behaviour plays a dominant role in shaping board-level risk preferences.

Putting aside the question of whether quotas would affect board risk-preferences, we believe that policy may still play an important role in improving the representation of women in the financial services industry. We extend our bank sample using additional board data for listed banks in Boardex and show that both the levels and the within-firm variation in the proportion of women on boards appears to be smaller in banking than in a size-matched sample of non-financial firms. We obtain similar results when we compare banks and size matched non-financial firms in Riskmetrics data. Consistent with the arguments in Niessen-Ruenzi and Ruenzi (2011), this suggests that barriers to female representation are larger in banking than in other industries. More research needs to be done to uncover what these barriers are, but the evidence in Sapienza, Zingales and Maestripieri (2009) that proportionally fewer women enter banking than men suggests that the barriers are not specific to the boards of banks but may already occur at lower levels of the organization.

2 Gender differences in risk aversion: some evidence on the importance of selection

XXneed say something about the sample means not being reflective of full sample because of number obs

A large experimental literature examines differences between risk-aversion between men and women. In their survey of this evidence, Croson and Gneezy (2009) conclude that women are indeed more risk-averse than men. But they also suggest that this conclusion may not generalize to the managerial level or professional populations because of self-selection or adaptive behavior to the job. Because it is difficult to get managers to participate in experiments, the evidence on gender differences at the managerial level is scant.

An early paper in this literature by Johnson and Powell (1994) examines betting behaviour in a random sample of the betting population in the U.K. as well as decisions in classes of undergraduate students with and without "managerial" education. They find some gender differences in betting behaviour in the population that they argue are suggestive that women are more risk-averse than men. However, in their decision-making study, there are no differences in risk-taking behaviour between male and female students with managerial backgrounds. Johnson and Powell conclude that one cannot infer how female managers will behave by observing women who are not managers.

Adams and Funk (2012) try to measure managerial risk-aversion directly using a survey of corporate directors. As part of a larger survey on psychological characteristics, they asked directors of publicly-traded companies in Sweden an investment question designed to measure risk-aversion. They found that female directors were less risk-averse than men. Moreover, this finding did not reverse even after they controlled for differences in individual and firm characteristics. Because they also find that female directors and women in the Swedish population are significantly different in other psychological characteristics, they argue that self-selection may be important for understanding their findings. Because a career leading to a directorship is more unconventional for women, the women who choose to pursue a high-profile career might be precisely the women who are less risk-averse.[4]

[4] Self-selection may not be the only reason female directors might be less risk-averse than women in the population. They may also arise because firms only want women with certain characteristics. However, it is unclear whether they are able to screen on the basis of unobservable characteristics.

The importance of selection for risk-aversion is likely to be even more important in the financial services industry. For example, Niessen-Ruenzi and Ruenzi (2011) document that the fraction of female fund managers in the U.S. equity mutual fund industry is low-it has hovered around 10% for the last 20 years. It seems unlikely that the women who nevertheless choose a career in this industry are very risk-averse. Consistent with this idea, Niessen-Ruenzi and Ruenzi document that female fund managers perform as well as male managers.[5]

Sapienza, Zingales and Maestripieri (2009) find that fewer women choose a career in finance in their sample of University of Chicago MBA students. They argue that one reason for this may be biological. In their sample, women have lower levels of testosterone and testosterone is positively correlated with the likelihood of choosing a career in finance. They also document that testosterone is negatively correlated with risk-aversion and that women have higher levels of risk-aversion on average.

Using their data, we can provide some evidence on the importance of selection for the risk-aversion of women who might eventually end up being executives on the boards of banks. In particular, we ask whether the women who choose a career in finance have different characteristics than the women who do not choose a career in finance and what the gender differences in testosterone and risk-aversion look like conditional on choosing a career in finance.

<Insert Table I about here>

The sample consists of data on the entire cohort of MBA students in 2008 (550 students). Testing problems and refusal by some students to be included in the sample means not all variables have 500 observations. The data includes the premium individuals would pay to avoid a lottery as a measure of risk-aversion, measures of salivary and pre-natal testosterone (Baron-Cohen eye test and Average 2D:4D Digit ratio), gender and career choice. In Table 1 we first provide summary statistics for the full sample, stratified by men and women. We then provide summary statistics separately for the group of students who chose a career in finance and those that did not. We also report the differences in means between men and women and the t-statistics for the tests of equality of means across gender, as well as the corresponding statistics within gender but across finance and non-finance careers.

The full sample results show that women are more risk-averse than men. On average they will pay $20.18 to avoid the lottery; this is $7.49 dollars more than the average for men.

[5] Niessen-Ruenzi and Ruenzi (2011) document that female fund managers experience fewer inflows, which they attribute to gender discrimination.

Women also have lower levels of salivary testosterone, 48.72 as compared to 100.91 pg/ml. They score higher on the Baron-Cohen eye test and have larger 2D:4D ratios, both of which indicate lower pre-natal testosterone. The full sample summary statistics are thus consistent with the general conclusions from the experimental literature that women are more risk-averse than men.

However, the full-sample averages mask important variation in these characteristics for women, as is evident when we compare means within gender but across career choice. Men in finance are not significantly different from other men in any dimension except the 2D:4D ratio, which is 0.02 lower for men in finance (significant at the 5% level). In contrast, women in finance are significantly different from other women in all but salivary testosterone. Moreover, these differences are relatively large as compared to the differences between men and women. For example, women in finance would pay $10.85 less than other women to avoid the lottery. This is a 45% larger difference in risk-aversion than the difference between men and women in the full sample. Similarly, the difference between women in finance and other women is 53% greater than the difference between men and women in the full sample for the Baron-Cohen eye test and 50% greater for the 2D:4D ratio.

Since women in finance appear very different from other women, but men in finance do not appear very different from other men, gender differences within occupations should be different. When we compare men and women outside of finance, we observe that the gender differences in characteristics are all larger than in the full sample. For example, women are 24% more risk-averse than men outside of finance. In contrast, gender differences almost disappear for men and women in finance. Other than the differences in salivary testosterone, none of the differences are statistically significant. Moreover, the magnitudes of the differences are small. For example, the difference in the Baron-Cohen eye test goes from -0.70 in the full sample to -0.12 in the finance sample and the 2D:4D ratio goes from -0.02 to -0.004. Most notably, the difference in premia to avoid the lottery between men and women is positive in the finance sample. Although the difference is not statistically significant, it appears that, if anything, women in finance are less risk-averse than men in finance.

Depending on the context, Table 1 suggests that generalizing from characteristics of women in the population at large to subpopulations of women may be misleading. This should be particularly true if the characteristic under consideration plays a key role in the selection into the subpopulation. In this case, risk-aversion and testosterone play a key role in selection into a finance career, as Sapienza, Zingales and Maestripieri (2009) argue. Thus, women in finance will have lower risk-aversion and higher testosterone than other women.

Since it is plausible that risk-aversion and testosterone will also play a role in women's choice to pursue a career leading to a bank directorship, both for executive and outsider directors, we believe that it is not clear that female bank directors will be more risk-averse than male bank directors. As such, we do not expect risk to be lower in banks with more gender-diverse boards.

3 **Data and Comparisons to Non-Financial Firms**

3.1 Sample data

We obtain data on listed bank holding companies and commercial banks for the fiscal years 2006-2009 from several sources. The initial sample includes all firms in Compustat with SIC codes 6000 to 6300. We restrict this sample to regulated banks by matching their CRSP permcos to the regulatory entity codes of supervised financial institutions using the 2007 CRSP-FRB Link file of the Federal Reserve Bank of New York.[6] We end with a sample of 365 banks with proxies available at some point during the sample period. This is close to the number of banks (372) in Aebi, Sabato and Schmid (2012), who use a slightly different sample selection procedure. In Appendix Table I, we provide basic information about our sample for each year. The bulk of the sample consists of bank holding companies. Since a number of banks failed since 2007, the decline in the number of banks with proxies from 350 to 296 over the four year period is not surprising.

<Insert Table II about here>

We collect a wide variety of data to proxy for bank activities that might be related to risk-taking, bank risk, bank performance, bank capital structure and the governance structure of banks. The financial information for our sample comes from three sources. Accounting data comes from Compustat and the Financial Institution Reports (FR Y-9C and FR Y-9SP Call Reports for large and small bank holding companies respectively and the Report of Condition and Income for Commercial Banks) collated by the Federal Reserve. Stock price data is from CRSP. In Table II, we provide summary statistics for our sample. We describe the construction of some of the variables below; the Appendix provides detailed descriptions of all variables as well as the data sources. Average bank size, as measured by the book value of assets, is approximately $31 billion in our sample. The Tier one capital ratio is on average 11.40, much higher than the 4% required by the Basel II Accord. We define the loan ratio as

[6] The version of link file we used was valid from January 1990 to December 2007. This means that Goldman Sachs which became a BHC in late 2007 is not in our dataset.

total loans deflated by the book value of total assets. On average, loans account for 70% of assets. We document an average deposit-to-loan ratio of 1.16, implying that the banks lend approximately 90 cents for each dollar they receive in deposits.

To measure risky activities, we obtain information on the use of derivatives from the Financial Institution Reports (Schedule HC-D). Derivatives for trading purposes account for approximately 35% of assets. Like Ellul and Yerramilli (2010), we find that banks use derivatives for hedging sparingly – they only account for 4.1% of total assets. We also measure the amount of trading assets in a bank's trading portfolio that are considered to be risky. Banks only need to report this data item if risky assets are more than $2m during any of the four preceding quarters. We account for potential threshold effects by using an indicator variable, Risky-Trading *t*, that is one when banks report that they have risky assets for trading purposes and zero when risky assets are either zero or missing. We also use a variant, Risky Trading *d*, that records missing values as missing.

We use stock returns to estimate proxies for bank risk, such as the standard deviation of weekly stock returns, Idiosyncratic risk and Tail risk. For Tail risk, we follow the approach of Acharya et al. (2010) of measuring it as the average returns for the bank estimated over the 5% worst days for the market. As measures of default risk we use the Estimated Default Frequency (EDF) data from Moody's Analytics and a Z-Score. Like Laeven and Levine (2009), we compute the Z-Score as the sum of ROA and the capital asset ratio scaled by the standard deviation of ROA over last four quarters. From the 10-K filings we collect information on all aspects of TARP financing including the dates of repayment. From the National Information Center dataset, we obtain delisting information.

We define Tobin's *Q*, one of our proxies for performance, as the ratio of the firm's market value of assets (book assets minus book equity plus market value of equity) to its book value of assets. The average Tobin's *Q* is 1.035 with a range from 0.899 to 3.115. We also use the fraction of bad loans (bad loans/total loans) as a performance measure. Roughly 2.1% of the banks' loan portfolios end up being classified as non-performing during this period.

Because banks are underrepresented in several common governance databases, we obtain governance information from the banks' proxy filings. We collect information on board size, the number of independent directors, attendance records at board meetings, the number of board meetings and committee memberships.[11]

[11] Since the proxy lists the names of directors standing for election in the upcoming annual meeting, we calculate board size as the number of nominees minus the number of directors newly nominated plus the number

Mean board size is eleven directors. The fact that it is lower than the mean board size of 18 in Adams and Mehran (2003) for the period 1986-1999 is consistent with the general downward trend in bank board size that they document. Female directors make up 9.5% percent of the board, which is similar to the proportion of female directors (8.5%) Adams and Ferreira (2009) document for industrial firms but for an earlier time period: 1996-2003. Only 0.6% of directors are female bank executives.

<Insert Table III about here>

The total number of unique directors in our sample is 4,871. We source their individual characteristics from BoardEx, a database created by Management Diagnostics Limited. To obtain director information, we hand-matched the names of directors in our sample to those in BoardEx. This step is necessary to eliminate matching errors that may arise when there are multiple directors with the same name and also because of subtle differences in names across databases such as the inclusion of a director's title in the BoardEx name field. We are able to match the names of all but 57 directors. As panel A of Table III shows, 80% of directors serve on committees. Directors are on average 61 years old and they are on the boards of 1.23 public companies. Their tenure on the board of the sample bank (the difference between the sample year and appointment year) is nine years. Female directors account for 9.9 per cent of director-years. They are younger (58.63 vs. 61.57), have less board experience and shorter board tenures relative to their male counterparts. A higher proportion of female directors sit on committees (84% vs. 79%) and when they do serve, they are on more committees than male directors. The differences in averages across genders for all characteristics are statistically significant at the 1% level.

3.2 Are banks different when it comes to boardroom gender diversity?

Implicit in the "Lehman Sisters" hypothesis is the assumption that women are relatively underrepresented on bank boards and perhaps more so than on the boards of non-financials. To put the 9.5% average representation of women in our sample into perspective, we compare the representation of women on bank boards to their representation on a size (book value of assets) matched sample of non-financial firms. Consistent with the literature on board composition and diversity on boards, we measure representation in terms of percentages. We adjust for firm size because Adams and Kirchmaier (2013) show that

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of directors that were described as having left the board during the previous fiscal year or who were not standing for re-election.

women are much less likely to sit on the boards of smaller firms and our sample contains both large and small banks.

We take the intersection of our sample with BoardEx and require that banks have at least 4 years of data in the period 2003-2010, a period for which BoardEx coverage is relatively representative of the US market (Adams and Kirchmaier, 2013). We end with a sample of 321 banks. We define industrial firms in BoardEx to be firms with SIC codes outside of 6000-6300 (financial firms) and SIC code 4900-4949 (utilities). We match banks to industrial firms on the book value of assets (from Compustat) with replacement. A bank's control firm is the best match within 30% of the bank's assets. In Figure 1 we plot the percentage of women on bank and matched industrial firm boards. The percentage of women on bank boards is lower than for industrial firms throughout the whole period except in 2008 where the percentage of women on industrial firm boards drops to the same level as in banking.

<Insert Figure 1 about here>

To examine whether the relative underrepresentation of women on bank boards looks different if we focus only on larger banks, we construct an alternative sample of banks and size matched industrials in the S&P 1500 using Riskmetrics' board data. We define industrial firms as for the BoardEx sample and define banks as firms with SIC codes 6000-6300. We use the same matching procedure as for the BoardEx sample. Once we restrict our sample to banks with at least 4 years of data between 1996 and 2010, we end with a sample of 192 banks with matching control firms. Even though the banks in the Riskmetrics sample have higher percentages of female directors than the banks in the BoardEx sample, Figure 1 shows that women still appear to be relatively underrepresented on their boards.

What is also noticeable from Figure 1 is that there is more variation in the average percentage of women on the boards of industrial firms both in the BoardEx and the Riskmetrics sample. It is plausible that this is the result of greater within-firm variation in the percentage of women on boards of industrial firms. We provide some suggestive evidence that this is true in Figures 2 and 3. Because we are interested in within-firm changes, we no longer restrict ourselves to matching firms whose identity may change depending on the best match. To still ensure some degree of comparability, we focus on the 194 banks and 1,865 industrial firms with at least 4 years of data in the Riskmetrics sample. For each firm, we calculate both the absolute value of the year-to year differences in the percentage of women on the board, as well as the average percentage of women over all years the firm appears in the sample. In Figure 2, we show separate boxplots of the differences and the averages for

banks and industrial firms. The line intersecting the box denotes the median. The lower/upper edges of the box denote the $25^{th}/75^{th}$ percentiles.

<Insert Figure 2 about here>

Figure 2 suggests that the distribution of year-to-year differences is more spread out for non-financial firms than for banks because there are more extreme values for non-financial firms. In contrast, the maximum values for the averages are attained by banks, although the difference between the 75^{th} and 25^{th} percentile is larger for non-financial firms. In Figure 3, we restrict our sample to firm-year observations for which the percentage of women on the board of the firm in the previous year was non-zero. This figure suggests even more strongly that for firms with women on the board, there is greater within-firm variation for non-financial firms than for banks.

<Insert Figure 3 about here>

These comparisons suggest that the implicit assumption underlying the "Lehman Sisters" hypothesis is correct. Women are relatively less represented on the boards of banks than on the boards of non-financial firms of similar size. While there is cross-sectional variation in the percentage of women on bank boards, there is less within-firm variation in their representation than is the case for non-financial firms.

3.3 Our instrument for gender diversity

Because there is little within-firm variation in gender diversity in banks, we focus on instrumental variable methods to address endogeneity problems in our analysis of both risk and performance instead of using firm fixed effects as in Adams and Ferreira (2009) and Matsa and Miller (2013). Adams and Ferreira (2009) argue that connections of directors to women help to explain the presence of women on the board. They use a measure of connections male directors have with women through other board seats in their sample as their instrument for the proportion of women on the board. As our sample consists only of banks, using a within-sample measure of connections is not feasible for us. Federal Reserve Regulation L generally prohibits a management official (including directors) from serving at two non-affiliated depository institutions, depository institution holding companies, or any combination thereof, in situations where the management interlock would likely have an anticompetitive effect. Thus, bank directors will not have multiple bank directorships. Instead, we construct a related measure using data on career experience that is available in BoardEx.

Since BoardEx provides start dates of relationships, we focus on the average length of the professional relationships directors have with women instead of the number of connections. Our argument is that if directors started working with women earlier in their careers, there is a greater chance that the board will have more women. First, directors with longer connections to women may be more comfortable working with women. Second, they may have more direct and indirect connections to women who could be potential nominees for board positions. We document that our instrument is positively and significantly correlated with the percentage of women on the board later in the paper. For our instrument to be valid it also needs to satisfy the exclusion restriction. We believe it is unlikely that work experience with women in the past should be directly correlated with bank outcomes except through the effect of boardroom gender diversity. Since there are few women in top positions, it is plausible that for male directors most connections to women occur by chance. For female directors, the greater incidence of connections to women may partly be driven by industry characteristics. While it is possible that non-banking industry experience of female directors matters for bank outcomes, its effect should also operate through the percentage of women on the board. [15]

To calculate our instrument, *relationship length*, we download network information for each director from BoardEx. The director's network contains the names of all individuals and the name of the organization(s) through which they are connected, the type of the organization, the role of both individuals and the years when they overlapped. BoardEx classifies a relationship as either current (the end date of the relationship is either missing or occurs after the sample year) or historical (the end date predates the sample year).[16] We consider both types of relationships after excluding the names of other directors on the bank board from the list of connected people. Because we are interested in work experience, we only consider connections where at least one of the individuals – the director and/or the person in his network – sits on the board of the organization on which they overlap. To classify the gender of each person in the director's network, we use the lists of first names from the US census bureau. We search the web to classify remaining names.

In Table III, we provide some summary statistics for network information. On average bank directors have 131.79 connections. The range is between 38 and 3276 individuals.

[15] We exclude our sample banks from the sample of connections we consider in the construction of our instrument. Thus, the connections to women would generally not include connections established while working in a bank unless they were at a relatively small bank.

[16] We lose data as BoardEx does not retain network information for deceased directors.

Female directors have on average more connections than male directors (161.12 versus 129.69), which suggests that connections may be relatively more important for them. On average, directors have 15 women in their networks, but with 23.2 women in their networks female directors are more connected to other women.

For each director we calculate the length of a relationship they have with a woman in a professional capacity as the difference between the sample year and the start year of the relationship. We then average this at the director level. Our instrument is the board-level average of the individual averages. The mean value is 11.18 years with a standard deviation of 5.251.

4. Boardroom gender diversity and bank risk

Based on the evidence from Section II, we are sceptical that female bank directors are more risk-averse than male bank directors. But the measures of risk-aversion we examine are obviously very stylized. Faced with real-world decisions female directors may advocate for less risky decisions. Alternatively, the presence of female directors may lead the boards to behave in a more conservative manner. Because of the need to reconcile differences in opinions that arise because female directors may have different backgrounds or values (e.g. Adams and Funk, 2012), it is possible, for example, that boards with more women spend more time discussing optimal strategies. More deliberation could lead banks to undertake less risky strategies if there is uncertainty about the distributions of the payoffs of investment projects. Whether or not banks with more female directors have less risky outcomes is, therefore, ultimately an empirical issue.

To examine the relationship between boardroom gender diversity and risk in banks, we first examine how the presence of female directors is associated with investments in risky assets. We then examine how they are associated with measures of overall bank risk. To examine bank behaviour, we examine banks' use of derivatives for hedging and trading purposes; their risky trading and mortgage backed security positions and two measures of non-traditional banking activities: the ratio of deposits to loans and the percentage of non-traditional income. We expect greater hedging and more deposits to loans to be associated with less risk, but all other measures to be associated with more risk. Because relatively few banks have derivative positions, we examine both the presence of derivatives of a certain type, as well as the magnitudes of the positions.

<Insert Table IV about here>

Univariate comparisons of investments in risky assets in Table IV do not provide immediate support for the Lehman Sisters hypothesis. The banks with female directors have larger risky trading, derivative trading and mortgage-backed security positions, but also larger derivative hedging positions. But these differences may simply reflect differences in bank size, since women are more likely to sit on the boards of large firms. In Table V, we regress our investment measures on bank characteristics such as ln(assets) as a proxy for bank size, the Tier 1 capital ratio, the deposit and loan ratios and ROA. We also add board size and independence and the fraction of female directors. Beneath the constant, we also report the coefficient on the fraction of female directors in a basic specification that only includes board size, indpendence and bank size. All regressions include year dummies. To correct the standard errors, we treat observations for the same bank within the 2007-2008 crisis period and outside of that period as correlated, but uncorrelated across crisis and non-crisis years. In columns I, III, V, VI and VIII our dependent variables are dummy variables that indicate that the bank discloses the use of the corresponding derivative. In all other columns our dependent variables measure the size of the position.

As expected, bank size is positively and significantly correlated with the usage of all securities, as well as the deposit to loan ratio and the percentage of non-traditional income. Larger banks also have larger positions in all securities except mortgage-backed securities. The coefficient on the fraction of women is only statistically significant in columns IV, VII and VIII. These regressions suggest that the fraction of women is positively correlated with the natural logarithm of the ratio of the value of derivatives that banks hold in their trading portfolios to total assets, the corresponding measure for risky derivatives and the presence of mortgage-backed securities. If anything, the presence of more women seems associated with more risk-taking investments rather than fewer.

<Insert Table V about here>

We use stock return volatility, idiosyncratic risk, a bank specific z-score, the estimated default frequency from Moody's and a measure of tail risk as measures of bank risk. In Table VI, we regress them on bank size, Tier 1 capital ratio, ROA the loan and deposit ratios and the fraction of non-performing loans, as well as board size and independence and the fraction of women. Because the measures of investment behaviour we examine in Table V are also likely to affect overall bank risk, we include the dummies for derivative trading, risky trading, hedging and mortgage-backed securities, as well as the percentage of non-traditional income in a second specification for each dependent variable. We include year dummies and correct standard errors as in Table V.

Consistent with expectations, larger banks display lower idiosyncratic risk, lower estimated default frequency and lower tail risk. The coefficient on the fraction of women is statistically significant only for the z-score. Since larger z-scores are associated with lower risk, the z-score regressions suggest that banks with more women have greater default risk. Once again, our evidence appears inconsistent with the Lehman Sisters hypothesis. However, there are at least two reasons to be concerned about endogeneity in these regressions. First, banks may appoint women precisely because they use the evidence form population gender gaps to infer that they are more risk-averse than men. This could lead to a positive correlation between women and risk as more risky banks appoint women in an attempt to reduce risk. On the other hand, Kanter's (1977) argument that homogenous groups perform better in volatile environments could lead riskier banks to appoint fewer women. This would result in a negative correlation between risk and women.

<Insert Table VII about here>

In Table VII we replicate the specifications in Table VI using instrumental variable analysis. Our instrument is relationship length with women. In columns I and VII we report the first stage regressions associated with the two specifications we use for each dependent variable. In both specifications the coefficients on the instrument are positive and statistically significant at the 1% level. The Kleibergen-Paap statistic for weak instruments is 19.87 in column I and 12.9 in column VI suggesting that the instrument is reasonably strong. Columns II-VI provide the second stage regressions corresponding to the basic specifications in Table VI and columns VIII-XII provide the expanded specifications. Even in the IV regressions, we find no support for the Lehman Sisters hypothesis. The coefficients on the fraction of female directors are significant only for the z-score and they are still negative.

5. Does boardroom gender diversity matter for banks?

One explanations for the lack of a correlation between the fraction of female directors and measures of risky investments and risk is that boardroom gender diversity does not matter at all. Thus we examine the relationship between the fraction of female directors and our three performance measures: Tobin's Q, ROA and the fraction of non-performing loans. We use similar specifications as in Table VII, except that we also add volatility and the fraction of nonperforming loans to the Tobin's Q and ROA regressions and we exclude ROA (the fraction of non-performing loans) from the ROA (non-performing loan) regressions. In columns II, IV and VI of Table VIII we report the coefficients on the fraction of female directors in OLS regressions beneath the constant. The other coefficients belong to the second

stage of IV regressions with relationship length as our instrument. Columns I, III and V report the corresponding first-stage regressions. The coefficients on the fraction of female directors in columns II and IV are positive and significantly significant, suggesting that banks with more women have higher Tobin's Q and ROA. Although the coefficient on the fraction of female directors is not significant in column VI, it is negative which suggests that banks with more women have fewer non-performing loans.

<Insert Table VIII about here>

The results from Table VIII suggest that boardroom gender diversity matters for banks. At first glance the positive relationship appears surprising since neither Adams and Ferreira (2009) nor Matsa and Miller (2013) find a positive relationship between board diversity and performance in performance regressions. However, Lorsch and MacIver (1995) suggest that boards take on a more important role in a crisis. They quote one director as saying (p. 97): "Directors are like firemen. They sit around doing very little until there's a fire alarm and then they spring into action." If the board is more important during the crisis, the role of diversity may also be more important. In a crisis, corporate performance may depend more critically on obtaining the different viewpoints that directors with different backgrounds may bring to the table. Some evidence that this may be true comes from Adams and Ferreira (2009). They find that CEO turnover-arguably a firm-level crisis event-is more sensitive to performance when there are more women on the board.

<Insert Table IX about here>

To provide additional evidence that board with more gender diversity may behave differently in ways that may be associated with better performance, we follow Adams and Ferreira (2009) and (2013) and examine data on director-level behaviour. In Table IX, we regress a measure of attendance problems (a dummy indicating that the bank's proxy named the director as attending fewer than 75% of the meetings he was supposed to attend) on individual director characteristics (such as the director's gender, the number of directorships, her age and tenure), board characteristics (such as the number of board meetings, board size and independence) and bank characteristics as in previous specifications. As in Adams and Ferreira (2009) we include year and firm fixed-effects and correct the standard errors at the director-firm level. In column I of Table IX, we use the full sample of director-level data. In column II, we restrict the sample to male directors and use the fraction of women on the board as the main explanatory variable.

The coefficient on the female director is negative but not significant. One reason why the results may be different from those in Adams and Ferreira (2009 and 2013), who

document that women have better attendance records than men in both non-financial firms and banks, is that bank directors face greater pressure to attend meetings during the crisis. However, the coefficient on the fraction of female directors is negative and significant at the 1% level in column II, which is consistent with Adams and Ferreira's (2009) results that male directors have better attendance behaviour when there are more women on the board.

As an alternate measure of director behaviour that may be particularly relevant in the crisis is director departure. In columns III and IV our dependent variable is a dummy which is one if the director's name does not appear in the following year's proxy statement. In column III we use the full sample, in column IV we restrict the sample to banks that were in more difficulties than the others. We classify banks as having particular difficulties if they eventually delisted. The coefficient on female is negative but statistically significant only in column IV. For problem banks at least, female directors seem less likely to depart from the board. This may be a valuable quality for troubled banks.

<Insert Table X about here>

In Table X, we examine which committees female directors sit on. Our dependent variable is a dummy indicating whether or not a director sits on committees in columns I and II. In columns III and IV, our dependent variable measures whether a director sits on "monitoring" committees. In columns V and VI, our dependent variable measures whether a director sits on the risk committee. As in Adams and Ferreira (2009), we find that women are more likely to serve as committee members and more likely to sit on monitoring committees than male directors. Perhaps surprisingly, but consistent with the idea that female directors need not be more risk-averse than male directors, female directors are not more likely to sit on the risk committee.

While the performance and individual behaviour regressions suggest that bank boards with more women behave differently and female directors behave differently from male directors, none of the measures we examine are specific to the crisis. In Table XI, we examine one measure of performance that is specifically related to the crisis: the likelihood of repaying TARP funds for banks that received TARP. The dependent variable in column II is a dummy indicating the bank repaid TARP. Column II shows the second stage of an IV regression with relationship length as our instrument. The corresponding first stage is in column I. The coefficient on the fraction of women is positive and significant, which suggests that banks with more gender-diverse boards had different crisis outcomes.

6. **Conclusion**

Women are not all the same. Because of selection, generalizing from gender differences in the population to the management level may be stereotyping. Using data from Sapienza, Zingales and Maestripieri (2009) we document that women who enter into a finance career can be significantly different in their risk-aversion levels than women who do not enter into the finance profession. As a result, women in finance may have the same average levels of risk-aversion as men in finance. We also show that banks with more female directors did not undertake fewer risky activities or exhibit less risk during the crisis. But this does not mean that gender diversity does not matter at all. Banks with more women performed better than other banks; their male directors had fewer attendance problems and they were more likely to repay TARP. Female directors performed different committee duties than male directors and had different resignation behaviours.

Our results highlight that we do not yet have a complete understanding of how and why gender diversity matters for corporate outcomes. We also do not know when diversity matters. Much more research remains to be done to fully understand the role of gender in corporate management. As such, the consequences of policies targeting boardroom gender policies are unclear. But we doubt that simply adding more women to bank boards will prevent future crises.

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Figure 1. Trends in the Average Proportion of Women on Boards for Banks and Matched Samples of Non-financial Firms

This figure shows the average proportion of women on boards for banks and size-matched samples of non-financial firms. We use two different samples. The first dataset consists of the intersection of our sample with Boardex and size-matched industrial firms in Boardex from 2003-2010. The second dataset consists of all banks in Riskmetrics and size-matched industrial firms from 1996-2010. Banks in Riskmetrics are firms with SIC codes 6000-6300. In both datasets, the industrial sample excludes banks and utilities (SIC 4900-4949). We match banks to industrial firms on the book value of assets (from Compustat) with replacement. We require that the control firm's assets are within 30% of the bank's assets and retain only the best match. We plot the average proportion of women only for the 321 banks in Boardex and the 192 banks in Riskmetrics who have at least 4 years of data and their corresponding matches. In the legend below, RM stands for Riskmetrics and BX stands for Boardex.

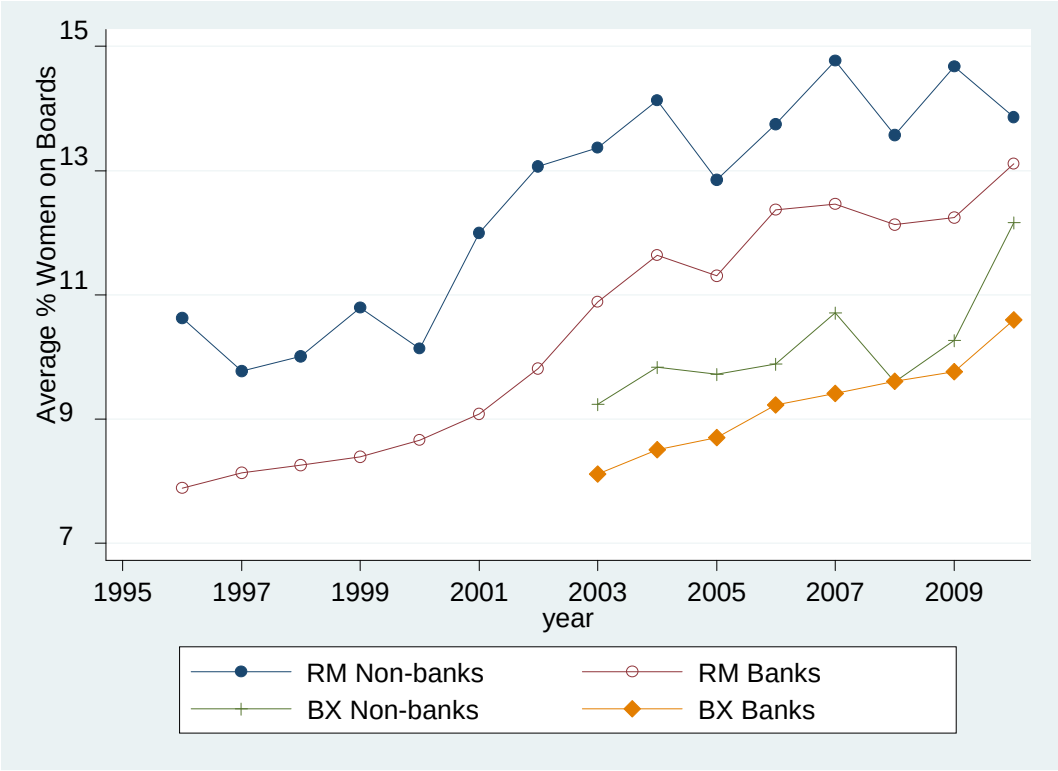


Figure 2. Boxplots of Changes and Averages of Boardroom Diversity for Banks and Non-financial Firms in Riskmetrics

This figure shows boxplots of changes and averages of boardroom diversity for banks and non-financial firms in Riskmetrics 1996-2010. We identify banks and industrial firms as for Figure 1. We restrict the sample to firms that have at least 4 years of data over this time period. There are 194 banks in the sample with 1,698 observations and 1,865 industrial firms with 17,789 observations. We calculate year-to-year changes in diversity as the absolute value of the difference in the percentage of women on the board minus the percentage of women on the board the previous year. We also calculate firm-level averages of the percentage of women over all years the firm is in the sample. We display boxplots of changes and firm-level averages. The lower/upper edges of the box denote the $25^{th}/75^{th}$ percentiles. The line intersecting the box denotes the median. The whiskers are set at the most extreme observed data value within 1.5 times the interquartile range from the edges of the box.

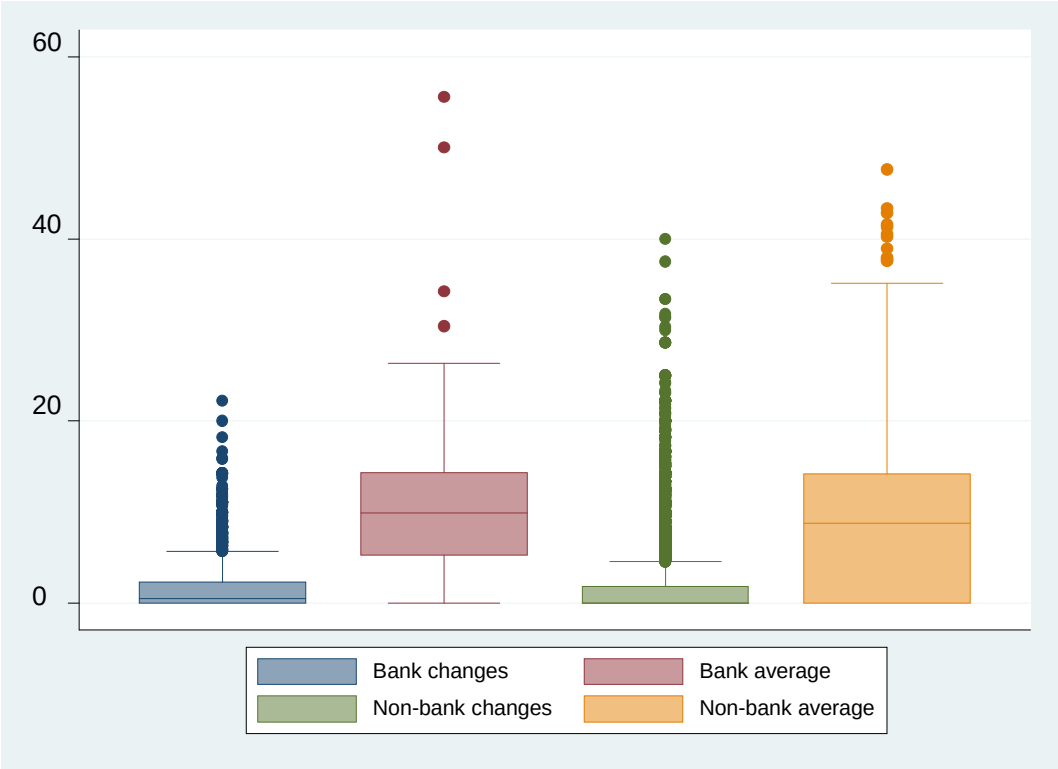
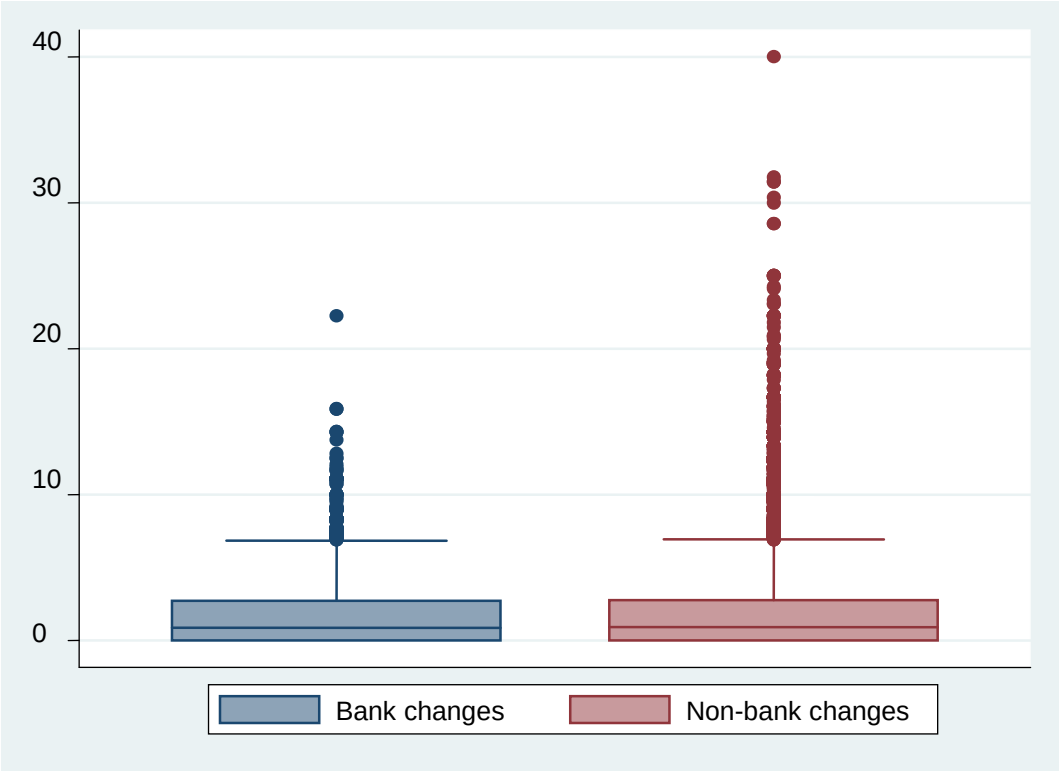
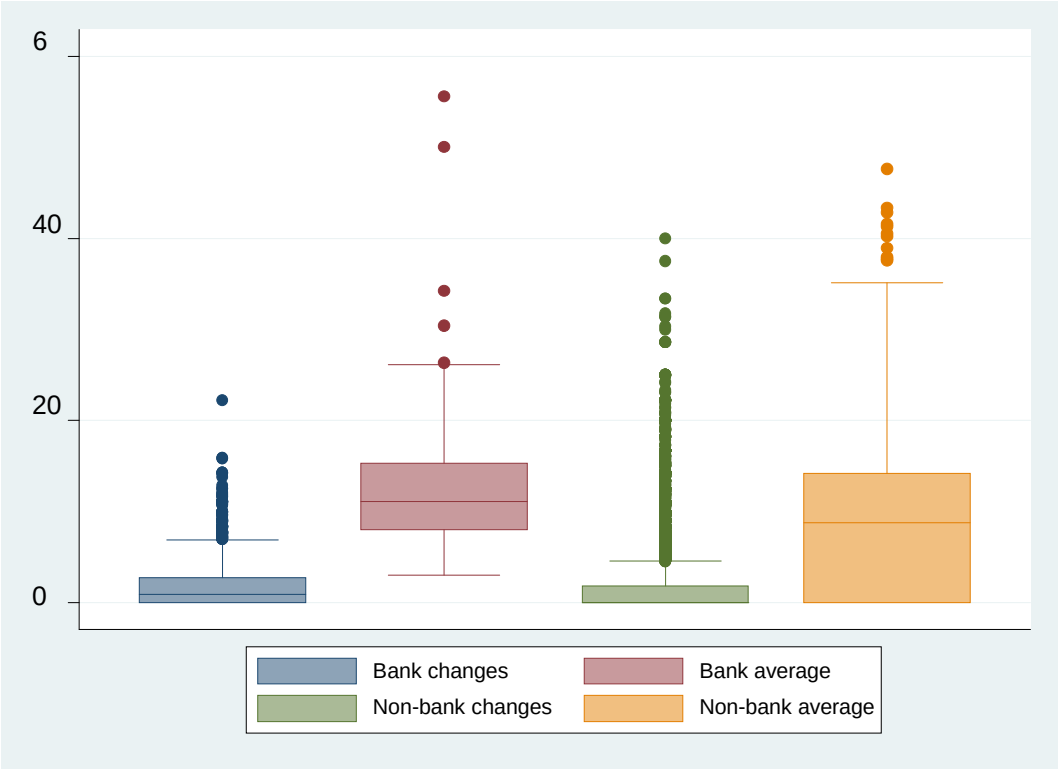


Figure 3. Changes in Boardroom Diversity for Banks and Non-financial Firms in Riskmetrics For Firms with Women on their Boards

Figure 3 replicates the changes in the percentages of women on boards shown in Figure 2 for firm-years observations for which the percentage of women on the board of the firm in the previous year was non-zero.




6
40
20
0
Bank changes
Bank average
Non-bank changes
Non-bank average

Appendix: Definition of Variables

Our sample consists of both Bank holding companies and Commercial Banks. In this appendix, we only report the mnemonics and item numbers for bank holding companies. Item numbers for commercial banks are identical, but the mnemonics can either be RCFD, RIAD or RCON. Financial data are sourced from COMPUSTAT and the Federal Reserve Bank of Chicago's Financial Institution Reports dataset (FR Y-9C Call Reports). Board characteristics such as Board Size, Number of Independent directors, Number of Female Directors, Committees and Committee Assignments are hand-collected from the firm's proxy filing (form DEF 14A) filed with the SEC and obtained through EDGAR. We use Boardex data to measure Relationship length.

Financial Variables:

Bad Loans: Bad or Non-performing loans is the sum of loans that are past due 90 days (BHCK5525) and loans that have nonaccrual status (BHCK5526)

Bank Size: Natural log of Total Assets (BHCK2170)

Deposit Ratio: Total Deposits/Total Assets

Derivative Trading: Sum (BHCKA126, BHCKA127, BHCK8723 and BHCK8724)

Derivative Hedging: Sum (BHCK8725, BHCK8726, BHCK8727 and BHCK8728)

Fraction of Bad Loans, Fr(Bad Loans): Bad Loans/Loans

Fr(Risky Trading): Risky Trading Assets/Total Assets

Fr(Derivative Trading): Derivative Trading/Total Assets

Fr(Derivative Hedging): Derivative Hedging/Total Assets

Hedging: 1 if Derivative Hedging is non-zero and zero otherwise

Loan Ratio: Loans (BHCK2122)/Total Assets

Mortgage-backed Securities (MBS): Sum of (BHCK1709, BHCK 1733, BHCK 1713, BHCK 1736 and BHCK 3536)

Percentage Non-Traditional Income (% NonTrad Inc): Non-Traditional Income/Total Income

Repaid Tarp: 1 if the bank mentions in 10-K that it had repaid the TARP funding and zero otherwise.

Return on Assets (ROA): Net Income (BHCK4340)/Total Assets

Risky Trading Assets: BHCK3545 - BHCK3531 - BHCK3532 - BHCK3533 - (BHCK3534 + BHCK3535)

Risky Trading *t*: The amount of risky assets in the bank's trading book is a threshold variable and is reported in Schedule HC-K conditional on a bank holding company having BHCK3401 (HC-K item 4a) greater than $2 million or more in any of the preceding four quarters. If this variable is missing, we assume it is below the threshold and code all missing values as zero.

Risky Trading *d*: A dummy variable that is 1 if Risky Trading Assets is non-zero; zero otherwise. All missing values are coded as missing.

Tier 1 Capital Ratio: Tier 1 Capital (BHCK8274)/Total Assets

Tobin's Q (TQ): (Total Assets – Book value of Equity + Market Value of Equity)/Total Assets

Total Deposits: Sum of (BHDM6631, BHDM6636, BHFN6631 and BHFN6636)

Total Income: Sum of Interest Income (BHCK4107) and Non-Interest Income (BHCK4079)

Non-Traditional Income: Sum (BHCKA220, BHCKC888, BHCKC386, BHCKB491, BHCKB493)

Trading: 1 if Derivative Trading is non-zero and zero otherwise

Measures of Risk:

EDF: Expected Default Frequency from Moody's Analytics

Capital Asset Ratio: Equity/Average Total Assets

Idiosyncratic Risk: Annualized standard deviation of the residuals from a market model regression estimated using daily returns over the fiscal year.

Tail Risk: Negative of the average bank's stock return estimated over the 5% worst days for the S&P500 in a given year.

Volatility: Standard deviation of excess weekly returns, estimated relative to the value-weighted market index for the 52 weeks preceding the fiscal year end date

Z-Score: (ROA + Capital Asset Ratio)/Standard Deviation (ROA)

Board Characteristics:

Board Size: Number of Directors

Fr(Women): No. of women directors/Board Size

Independence: No. of Independent Directors/Board Size

Missed Meetings: 1 if the proxy mentions that a director has attended less the 75% of meetings; 0 otherwise.

Monitoring Committee: 1 if a director on any of the following committees – audit, compensation, governance, nominating, proxy, stock option, human resource, risk, loan, regulation, succession, trust, director search, and subsidiary; and 0 otherwise.

Relationship Length: To estimate the length of relationship between a director and a person in his or her network, we restrict connections to non-social relationships external to the bank and where at least one is a board member. It is calculated as the difference between the sample (fiscal) year and the start year of a relationship. We use the aggregate measure estimated across all directors on the board for a given year. For each person in the director's network, we use census data to identify gender based on the first name. For ethnic or epicene names, we identify gender by searching the full name using google.

Risk Committee: If a director sits on the risk or loan committee, it is coded as 1; 0 otherwise.

Appendix Table I: Bank Sample description

We collect board and committee information from the proxies (form DEF 14A) filed by commercial banks and bank holding companies with the SEC. We download DEF 14A URLs for all firms from the SEC's EDGAR website. We then match the CIK number with those provided in COMPUSTAT. We retain institutions with SIC codes 6000-6300. Using PERMCOs we match the banks in our sample to the regulatory entity code in the Fed's 2007 CRSP-FRB Link file. This forms the sample for each of the four years. In each step we are likely to have duplicates as some firms file multiple proxy statements.

	2006	2007	2008	2009
Number of DEF 14A filings for firms in SIC codes 6000-6300	729	720	701	655
Number of DEF 14A filings after matching to CRSP-FRB link file	367	342	336	316
Number of (Small and Large) Bank-Holding Companies with DEF 14A filings	332	309	296	281
Number of Commercial Banks with DEF 14A filings	18	16	16	15
Total Number of Financial Institutions	350	325	312	296

Table I: Gender Variation in Risk Aversion and Testosterone

This table presents descriptive statistics for measures of *risk aversion* (the premium paid to avoid a lottery), salivary and pre-natal (*Average Digit Ratio* and Simon Baron-Cohen's "*Reading the Mind in the Eyes*" test) measures of testosterone levels used in Sapienza, Zingales and Maestripieri (2009). For each gender, we report the difference in means and the t-statistics (in brackets) for students who chose finance and those who did not forto the right of the table. Underneath the table, we report the differences in means and the t-statistics (in brackets) for men and women in the full sample and for each occupational choice. We estimate the significance of the difference in means between male and female MBA students using the Welch t-test.

	Full Sample			Finance = 1			Finance = 0			
	Men			Men			Men			
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Diff
Risk Aversion	12.69	16.40	335	12.70	16.19	165	14.18	16.10	122	-1.48 (0.77)
Testosterone (pg/ml)	100.91	31.84	320	100.86	32.54	159	98.58	31.17	118	2.28 (0.59)
Baron-Cohen Eye Test	26.60	3.64	328	26.69	3.56	165	26.55	3.46	122	0.14 (0.339)
Average Digit Ratio	0.95	0.03	117	0.95	0.03	62	0.97	0.03	40	-0.02** (2.52)
	Women			Women			Women			
Risk Aversion	20.18	18.23	140	12.62	14.78	42	23.47	19.04	72	-10.85*** (3.392)
Testosterone (pg/ml)	48.72	23	140	51.74	20.57	40	44.96	24.60	71	6.78 (1.550)
Baron-Cohen Eye Test	27.31	3.28	140	26.81	3.12	42	27.88	3.28	72	-1.07* (1.727)
Average Digit Ratio	0.97	0.03	64	0.96	0.02	15	0.98	0.04	38	-0.03*** (3.147)
	Diff			Diff			Diff			
Risk Aversion	-7.49*** (4.204)			0.08 (0.030)			-9.29*** (3.473)			
Testosterone (pg/ml)	52.19*** (19.797)			49.12*** (11.832)			53.62*** (13.097)			
Baron-Cohen Eye Test	-0.70** (2.503)			-0.12 (0.214)			-1.33*** (2.664)			
Average Digit Ratio	-0.02*** (4.076)			-0.004 (0.637)			0.02** (1.965)			

Table II: Sample Characteristics

This table presents summary statistics of financial characteristics for an unbalanced panel of 365 bank holding companies (BHCs) and commercial banks for fiscal years 2006-2009. Financial variables are sourced from COMPUSTAT and the Federal Reserve Bank of Chicago's Financial Institution Reports dataset (FR Y-9C Call Reports). Board characteristics such as *Board Size*, *Number of Independent directors*, *Number of Female Directors*, *Committees* and *Committee Assignments* are hand-collected from the firm's proxy filing (form DEF 14A) filed with the SEC and obtained through EDGAR. Gender of directors is manually assigned based on director names. For gender neutral and ethnic names we assign gender after checking BoardEx. We use Boardex data to measure relationship length (with Women).We provide definitions of all variables in the Appendix.

	Obs.	Mean	Std. Dev.	Min	Median	Max
Panel A: Financial Characteristics						
Total Assets ($ billions)	1,280	31,708.99	191,795.5	163.241	1,907.09	2,223,299
Tobin's Q	1,221	1.035	0.106	0.899	1.023	3.115
Tier One Capital Ratio	1,260	11.404	2.709	0.220	11.040	23.200
Deposit Ratio	1,158	0.743	0.099	0.056	0.757	0.923
Loan Ratio	1,259	0.694	0.138	0.001	0.713	0.948
Deposits/Loans	1,158	1.116	0.521	0.507	1.051	12.289
Fr(Bad Loans)	1,158	0.021	0.028	0	0.012	0.500
Risky Trading/TA	364	0.011	0.031	0	$2.62*10^{-3}$	0.234
Derivative Trading/TA	1,158	0.357	2.996	0	0	49.178
Derivative Hedging/TA	1,158	0.041	0.103	0	0.004	1.586
MBS/TA	1,158	0.009	0.021	0	0	0.286
ROA	1,261	0.003	0.016	-0.162	0.007	0.037
Z-Score	1,174	3.318	1.151	-3.594	3.508	7.013
EDF (%)	1,282	1.90	4.051	0.01	0.322	28.906
Tail Risk	1,283	0.039	0.044	-0.154	0.027	0.224
Volatility (weekly)	1,283	0.057	0.037	0.012	0.045	0.279
Idiosyncratic Risk	1,283	0.030	0.021	0.006	0.022	0.153
Panel B: Board Characteristics						
Board Size	1,283	11.554	3.121	3	11	23
No. of Independent Directors	1,283	9.099	2.710	2	9	18
No. of Independent Directors (%)	1,283	0.787	0.109	0.375	0.800	0.941
No. of Female Directors	1,283	1.142	1.017	0	1	5
Fraction of Female Directors	1,283	0.095	0.083	0	0.091	0.444
Fraction of Female Directors (Non-Independent)	1,283	0.011	0.032	0	0	0.222
No. of Board Meetings	1,283	11.315	7.003	1	12	153
Fraction of Directors who know women	1,278	0.879	0.167	0.090	0.923	1
Relationship Length (with Women)	1,272	11.184	5.251	0.4	10.501	33.338

Table IV Bank Characteristics (With and Without Women)

This table documents bank characteristics based whether the bank board had a female director or not. The total number of observations is 1,283. In 387 bank firm-years, banks had no female directors.

	With Women Directors	No Women Directors	Diff (t-stat)
Total Assets ($ billions)	44351.85	2318.449	42033.4*** (3.61)
Tobin's Q	1.039	1.026	0.013** (1.99)
ROA	0.0029	0.0026	.0003 (0.271)
Tier One Capital Ratio	11.3	11.643	-0.003** (2.068)
Fr(Bad Loans)	0.021	0.022	-0.001 (0.807)
Risky Trading/TA	0.013	0.001	0.012*** (2.906)
Derivative Trading/TA	0.496	0.003	0.493*** (2.550)
Derivative Hedging/TA	0.048	0.021	0.027*** (4.15)
MBS/TA	0.0095	0.0061	0.0034 (2.492)
Z-Score	3.350	3.239	0.111 (1.503)
EDF (%)	1.772	2.193	-0.421* (1.710)
Tail Risk	-0.043	-0.031	-0.012*** (4.547)
Volatility (weekly returns)	0.056	0.058	-0.002 (0.910)

Table III: Bank Director Characteristics

This table presents summary statistics of director characteristics for an unbalanced panel of 365 bank holding companies (BHCs) and commercial banks for fiscal years 2006-2009. Board characteristics such as *Board Size*, *Number of Independent directors*, *Number of Female Directors*, *Committees* and *Committee Assignments* are hand-collected from the firm's proxy filing (form DEF 14A) filed with the SEC and obtained through EDGAR. The total number of director firm year observations is 14,824. Director level variables such as *Director Age*, *Tenure* in the sample firm and the *Number of directorships* in public firms are from BoardEx. We also obtain the list of all people in the director's network from BoardEx. To calculate *Relationship length (with Women)* we restrict connections to non-social relationships external to the bank where at least one person is the member of a board. For each person in the director's network, we use census data to identify gender based on the first name. For ethnic and epicene names, we identify gender by searching the full name using google. We define the length of an individual's relationship with a woman as the difference between the sample (fiscal) year and the start year of a relationship. We average all individual-level relationship lengths and then average this measure across board members. The significance of the difference in means between male and female directors is estimated using the Welch t-test.

	Obs.	Mean	Std. Dev.	Min	Median	Max
Panel A: Director Characteristics						
Female Director Dummy	14,824	0.099	0.298	0	0	1
Committee Assignments: All Directors	14,824	0.796	0.403	0	1	1
Male Directors	13,362	0.790	0.407	0	1	1
Female Directors	1,462	0.843***	0.364	0	1	1
Missed Meetings: All Directors	14,824	0.016	0.125	0	0	1
Male Directors	13,362	0.016	0.125	0	0	1
Female Directors	1,462	0.018	0.132	0	0	1
Director Age: All Directors	14,401	61.671	8.642	28	62	96
Male Directors	12,979	62.965	8.635	28	62	96
Female Directors	1,422	58.984***	8.238	36	58	88
Tenure: All Directors	14,544	8.992	7.521	0	7	52
Male Directors	13,122	9.216	7.658	0	7	52
Female Directors	1,422	6.920***	5.718	0	5	30
Number of Directorships (Public Companies): All Directors	12,261	1.231	0.639	1	1	7
Male Directors	11,021	1.226	0.633	1	1	7
Female Directors	1,240	1.279***	0.689	1	1	6
Panel B: Network Characteristics						
Network Size (All ties)	13,562	131.791	244.764	1	38	3276
Male Director Network	12,297	128.629	242.057	1	37	3276
Female Director Network	1,298	161.117	265.530	2	48	2419
Relationship Length (with Women)	12,522	10.567	8.676	0	8	50

Table V: Female Directors and Risky Activities

This table shows the OLS regressions of various measures of trading and risky activities undertaken by banks on the *fraction of women directors on the board*, *Percentage of independent directors*, *Board size*, *Bank Size*, *Tier 1 capital ratio*, *Deposit and Loan ratios* and *ROA*. The dependent variables in columns I, III, V, VI and VIII are dummy variables that indicate whether or not the bank undertook the corresponding risky activity. Fr(Women)$_{basic}$ is the coefficient in the OLS regression that only includes *percentage of independent directors*, *Board size* and *Bank Size*. All variables are as defined in the Appendix. All regressions include year dummies. All standard errors are clustered at the "crisis id" level. "Crisis id" groups identifiers of banks according to whether they are in the 2007-2008 crisis or outside of the crisis. Heteroskedasticity robust t-statistics are reported in parentheses. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

	$Hedging$	$Ln\left(\frac{Hedging}{TA}\right)$	$Trading$	$Ln\left(\frac{Trading}{TA}\right)$	$Risky\ Tradingd$	$Risky\ Tradingt$	$Ln\left(\frac{RiskyTrading}{TA}\right)$	MBS	$Ln\left(\frac{MBS}{TA}\right)$	$\frac{Deposits}{Loans}$	$\%NonTradIncome$
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
Fr(Women)	0.259	0.003	-0.032	4.438**	0.149	-0.061	4.121*	0.676***	0.538	0.122	0.000
	[1.11]	[0.00]	[0.21]	[2.33]	[0.48]	[0.45]	[1.79]	[3.09]	[0.45]	[0.62]	[0.08]
Independence	-0.069	2.057***	-0.125	0.760	-0.143	0.130	2.149	-0.072	2.617**	0.224*	0.001***
	[0.43]	[2.68]	[1.04]	[0.41]	[0.68]	[1.19]	[0.89]	[0.46]	[2.07]	[1.66]	[3.30]
Board Size	0.074	-0.569*	0.070	1.193	-0.138	-0.051	0.448	0.066	0.419	-0.024	-0.000
	[1.04]	[1.66]	[1.49]	[1.44]	[1.24]	[1.22]	[0.54]	[0.95]	[0.95]	[1.26]	[0.20]
Bank Size	0.105***	0.412***	0.163***	0.625***	0.151***	0.159***	0.385***	0.052***	-0.046	0.021**	0.000***
	[7.85]	[7.12]	[16.35]	[5.47]	[8.75]	[16.70]	[2.77]	[3.80]	[0.66]	[2.32]	[5.96]
Tier 1 Capital Ratio	-0.783	-1.136	0.365	-14.617*	-0.092	-0.485	-15.467	-0.881	-8.739*	0.012	-0.001
	[1.00]	[0.30]	[0.77]	[1.75]	[0.07]	[1.02]	[1.61]	[1.14]	[1.82]	[0.03]	[0.21]
Deposit Ratio	-0.165	-2.885***	0.159	-5.827***	0.214	0.113	-2.014	-0.983***	-2.497**	1.790***	-0.001
	[0.67]	[3.17]	[0.90]	[2.91]	[0.71]	[0.65]	[0.73]	[4.37]	[2.04]	[11.42]	[0.92]
Loan Ratio	-0.320*	2.691***	-0.010	-2.719**	0.126	-0.168	-1.871*	-0.547***	-4.917***	-2.681***	-0.002**
	[1.86]	[3.84]	[0.09]	[2.30]	[0.72]	[1.48]	[1.85]	[3.06]	[5.26]	[6.25]	[2.14]
ROA	-1.166	-4.714	1.323*	-5.828	0.717	0.289	1.233	-1.307	-6.734	-0.782	0.003
	[0.99]	[1.00]	[1.84]	[0.62]	[0.52]	[0.37]	[0.10]	[1.16]	[1.15]	[1.21]	[0.79]
Constant	0.037	-6.882***	-1.360***	-6.193*	-0.588	-1.006***	-9.245**	1.144***	-2.034	1.369***	-0.001
	[0.10]	[4.31]	[5.45]	[1.73]	[1.35]	[4.24]	[2.06]	[3.34]	[0.94]	[9.80]	[-1.14]
Fr(Women)$_{basic}$	0.300	0.332	-0.066	4.125*	0.182	-0.026	5.086**	0.775***	0.917	0.013	0.013
	[1.29]	[0.35]	[0.43]	[1.92]	[0.59]	[0.20]	[2.12]	[3.45]	[0.74]	[0.05]	[1.31]
N	1,112	670	1,112	217	347	1,135	191	1,112	593	1,135	1,135
R^2	0.167	0.212	0.394	0.544	0.440	0.414	0.322	0.171	0.113	0.544	0.217
Adjusted R^2	0.159	0.199	0.388	0.520	0.422	0.408	0.281	0.163	0.0959	0.539	0.209

Table VI: Boardroom Gender Diversity and Bank Risk

This table reports OLS regressions relating boardroom gender diversity to measures of bank risk. *Volatility* is the standard deviation of weekly stock returns. *Idiosyncratic risk* is the annualized standard deviation of the residuals of a regression of excess bank stock returns on (excess) returns on the S&P 500. *Z-Score* and *EDF*, the estimated default frequency, are measures of default risk. *Tail Risk*, which captures the higher probability of big losses, is based on the worst performing days of the S&P 500. *Hedging* is a dummy variable that is one if a bank uses derivatives to hedge its risk. *Hedging* is a dummy variable that is one if a bank uses derivatives to hedge its risk. *Trading* is a dummy variable that is one if a bank's off-balance sheet derivative trading activity is non-zero. Risky Trading Assets is estimated as the difference between book value of assets and safe securities. *Risky Trading* is one if the variable is non-zero. *MBS* is one if the total value of private-label mortgage-backed securities held in both trading and investment portfolios is greater than zero. *Fr(women)* is the number of female directors relative to board size. All other control variables are as defined in the Appendix. All regressions include year dummies. All standard errors are clustered at the crisis id level. Heteroskedasticity robust t-statistics are in parentheses. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

	Volatility	Volatility	Idiosyncratic Risk	Idiosyncratic Risk	Z-Score	Z-Score	EDF	EDF	Tail Risk	Tail Risk
Fr(Women)	0.006	0.004	-0.001	-0.002	-1.030***	-1.034***	1.001	0.987	-0.004	-0.003
	[0.77]	[0.49]	[0.30]	[0.46]	[2.85]	[2.85]	[1.05]	[1.06]	[0.34]	[0.24]
Independence	0.003	0.002	0.001	0.000	0.190	0.211	-0.657	-0.749	0.002	0.001
	[0.48]	[0.28]	[0.53]	[0.17]	[0.84]	[0.93]	[0.96]	[1.09]	[0.19]	[0.12]
Board Size	-0.005**	-0.005**	-0.002	-0.002	0.334***	0.324***	-0.360	-0.290	-0.002	-0.002
	[2.22]	[1.98]	[1.63]	[-1.45]	[3.10]	[2.99]	[-1.14]	[0.91]	[0.35]	[0.33]
Bank Size	0.000	0.000	-0.002***	-0.002***	-0.022	-0.027	-0.298***	-0.297***	-0.016***	-0.017***
	[0.59]	[0.38]	[4.26]	[4.31]	[0.92]	[0.86]	[3.84]	[2.81]	[13.99]	[13.06]
Tier 1 Capital Ratio	0.013	0.022	-0.050**	-0.046**	4.513***	4.457***	-27.267***	-26.841***	-0.309***	-0.309***
	[0.31]	[0.53]	[2.40]	[2.31]	[3.24]	[3.24]	[4.66]	[4.66]	[5.74]	[5.67]
ROA	-0.748***	-0.736***	-0.370***	-0.367***	53.780***	53.561***	-116.238***	-115.592***	0.264**	0.259**
	[6.03]	[6.04]	[5.62]	[5.68]	[12.13]	[12.16]	[5.37]	[5.34]	[2.11]	[2.07]
Loan Ratio	0.019**	0.021***	0.003	0.005	1.133***	1.118***	-0.824	-0.786	-0.044***	-0.043***
	[2.36]	[2.67]	[0.85]	[1.31]	[3.97]	[3.89]	[0.97]	[0.91]	[3.88]	[3.78]
Deposit Ratio	0.001	0.004	-0.000	0.001	-1.433***	-1.421***	2.017**	2.033**	-0.035***	-0.037***
	[0.08]	[0.33]	[0.00]	[0.23]	[3.82]	[3.70]	[2.04]	[2.00]	[2.66]	[2.69]
Fr(Bad Loans)	0.296***	0.298***	0.140***	0.143***	-1.067	-1.139	44.547***	44.783***	-0.222***	-0.216***
	[2.63]	[2.69]	[2.98]	[3.09]	[0.55]	[0.59]	[3.95]	[3.98]	[3.88]	[3.77]
Trading		-0.006***		-0.002*		0.127		-0.476*		0.004
		[2.88]		[1.78]		[1.51]		[1.76]		[1.32]

Risky Trading*t*		0.006*		0.004**		-0.056		0.611		0.004
		[1.65]		[2.46]		[0.53]		[1.58]		[1.09]
Hedging		-0.000		0.000		-0.065		-0.133		0.000
		[0.03]		[0.32]		[1.17]		[0.77]		[0.02]
MBS		0.003***		0.001		0.033		0.084		-0.001
		[2.61]		[1.44]		[0.61]		[0.53]		[0.48]
%NonTradIncome		-0.246		0.239		-2.875		-30.884		0.425
		[0.53]		[1.03]		[0.22]		[0.55]		[0.58]
Constant	0.024	0.018	0.036***	0.037***	2.036***	2.099***	6.874***	6.716***	0.207***	0.219***
	[1.42]	[1.03]	[4.67]	[4.68]	[3.50]	[3.53]	[3.56]	[3.39]	[8.90]	[9.09]
N	1,140	1,140	1,140	1,140	1,075	1,075	1,139	1,139	1,140	1,140
Adjusted R^2	0.704	0.708	0.734	0.737	0.452	0.452	0.672	0.673	0.515	0.516

Table VII: Instrumental Variable Regressions For Risk

This table reports IV regressions relating boardroom gender diversity to measures of bank risk. Columns I and VII report the first stage regressions corresponding to columns II-VI and VIII-XII, respectively. The instrument *Relationship Length (Women)* is the average length of the relationships between directors and women in their network. This is averaged across all directors in the bank. To calculate Relationship length (with Women) we restrict connections to non-social relationships external to the bank. For each person in the director's network, we use census data to identify gender based on the first name. For ethnic or epicene names, we identify gender by searching the full name using google. *Volatility* is the standard deviation of weekly stock returns. *Idiosyncratic risk* is the standard deviation of the residuals of a regression of excess bank stock returns on (excess) returns on the S&P 500. *Z-Score* and *EDF*, the estimated default frequency, are measures of default risk. *Tail Risk*, which captures the higher probability of big losses, is based on the worst performing days of the S&P 500. *Hedging* is a dummy variable that is one if a bank uses derivatives to hedge its risk. *Trading* is a dummy variable that is one if a bank's off-balance sheet derivative trading activity is non-zero. *Risky Trading Assets* is estimated as the difference between book value of assets and safe securities. *Risky Trading* is one if the variable is non-zero. *MBS* is one if the total value of private-label mortgage-backed securities held in both trading and investment portfolios is greater than zero. *Fr(women)* is the number of female directors relative to board size. All other control variables are as defined in the Appendix. All regressions include year dummies. All standard errors are clustered at the crisis id level. Heteroskedasticity robust t-statistics or z-statistics are in parentheses. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

	Fr(Women)	Volatility	Idio. Risk	Z-Score	EDF	Tail Risk	Fr(Women)	Volatility	Idio. Risk	Z-Score	EDF	Tail Risk
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Fr(Women)		0.099	0.038	-7.218***	3.750	-0.117		0.094	0.031	-6.875***	3.465	-0.125
		[1.56]	[1.13]	[-2.69]	[0.59]	[-1.08]		[1.51]	[0.96]	[2.71]	[0.55]	[-1.16]
Independence	0.059**	-0.002	-0.001	0.492	-0.793	0.007	0.059*	-0.003	-0.001	0.492	-0.869	0.007
	[1.98]	[0.29]	[0.18]	[1.49]	[-1.07]	[0.65]	[1.95]	[0.42]	[0.39]	[1.53]	[1.17]	[0.62]
Board Size	0.037***	-0.008**	-0.003**	0.529***	-0.434	0.002	0.035***	-0.007**	-0.003*	0.490***	-0.353	0.002
	[3.02]	[2.57]	[2.00]	[3.44]	[-1.11]	[0.32]	[2.84]	[2.41]	[1.79]	[3.41]	[0.92]	[0.33]
Bank Size	0.010***	-0.000	-0.002***	0.044	-0.324***	-0.015***	0.010***	-0.000	-0.002***	0.036	-0.321***	-0.016***
	[4.22]	[0.47]	[-3.77]	[1.12]	[3.77]	[9.46]	[2.91]	[0.39]	[4.24]	[0.83]	[2.93]	[9.55]
Tier 1 Capital Ratio	-0.096	0.027	-0.044**	3.799**	-26.571***	-0.322***	-0.077	0.033	-0.042**	3.869**	-26.210***	-0.320***
	[0.77]	[0.61]	[-.07]	[2.24]	[4.39]	[5.63]	[0.61]	[0.79]	[-2.05]	[2.34]	[4.43]	[5.58]
ROA	-0.041	-0.750***	-0.371***	53.906***	-116.504***	0.262**	-0.024	-0.740***	-0.368***	53.847***	-115.869***	0.259**
	[0.21]	[6.19]	[5.73]	[11.14]	[-5.44]	[2.08]	[0.13]	[6.19]	[5.78]	[11.30]	[5.41]	[2.07]
Loan Ratio	0.001	0.019**	0.003	1.048***	-0.766	-0.044***	0.012	0.020**	0.005	1.105***	-0.751	-0.041***
	[0.03]	[2.31]	[0.89]	[2.68]	[-0.90]	[3.72]	[0.40]	[2.45]	[1.24]	[2.90]	[0.89]	[3.49]
Deposit Ratio	-0.092	0.009	0.004	-1.950***	2.147*	-0.047***	-0.069	0.010	0.003	-1.767***	2.089*	-0.047***
	[0.97]	[0.71]	[0.69]	[3.73]	[1.80]	[2.77]	[1.66]*	[0.78]	[0.68]	[3.56]	[1.84]	[2.87]
Fr(Bad Loans)	-0.098	0.298***	0.142***	-1.580	43.733***	-0.234***	-0.105	0.300***	0.144***	-1.773	43.965***	-0.229***

	[0.97]	[2.76]	[3.13]	[-0.73]	[4.07]	[3.89]	[1.09]	[2.81]	[3.21]	[0.83]	[4.10]	[3.79]
Trading							-0.001	-0.006***	-0.002*	0.116	-0.471*	0.004
							[0.06]	[2.75]	[1.72]	[1.13]	[1.73]	[1.27]
Risky Trading*t*							-0.007	0.007*	0.004***	-0.117	0.628	0.003
							[0.80]	[1.75]	[2.60]	[0.93]	[1.60]	[0.84]
Hedging							0.004	-0.000	0.000	-0.049	-0.125	0.001
							[0.53]	[0.21]	[0.20]	[0.70]	[0.71]	[0.29]
MBS							0.019***	0.002	0.000	0.145*	0.045	0.001
							[3.11]	[0.93]	[0.41]	[1.67]	[0.23]	[0.40]
%NonTradIncome							0.775	-0.354	0.200	5.626	-34.925	0.553
							[0.51]	[0.75]	[0.86]	[0.37]	[0.63]	[0.75]
Relationship Length (Women)	0.020***						0.020***					
	[3.65]						[3.69]					
Constant	-0.072	0.025	0.036***	1.900***	6.912***	0.207***	-0.101	0.021	0.038***	1.790**	6.815***	0.215***
	[1.19]	[1.38]	[4.54]	[2.68]	[3.57]	[8.54]	[1.64]	[1.14]	[4.71]	[2.49]	[3.47]	[8.57]
Observations	1,135	1,135	1,135	1,070	1,134	1,135	1,135	1,135	1,135	1,070	1,134	1,135
R-squared	0.122	0.667	0.713	0.224	0.672	0.482	0.135	0.675	0.723	0.255	0.675	0.479
Adjusted R-squared		0.663	0.710	0.215	0.668	0.476		0.670	0.719	0.243	0.670	0.471
Kleibergen-Paap *rk* statistic	19.87						12.90					
[Stock-Yogo 10%]	[16.38]						[16.38]					
Hausman		0.142	1.47	8.29	0.21	1.103		2.75	1.12	7.71	0.18	1.32
[p value]		[0.71]	[0.22]	[0.00]	[0.5]	[0.29]		[0.09]	[0.29]	[0.01]	[0.67]	[0.25]

Table VIII: Instrumental Variable Regressions for Bank Performance

This table reports IV regressions of measures of bank performance on boardroom gender diversity. Columns I, III and V report the first stage regressions corresponding to columns II, IV and VI, respectively. The instrument *Relationship Length (Women)* is the average length of the relationships between directors and women in their network. This is averaged across all directors in the bank. *ROA* is the bank's Return on Assets; *TQ* is Tobin's Q; *Fr(Bad Loans)* is the ratio of Bad Loans to Total Loans. Fr(women)$_{OLS}$ is the coefficient on the Fr(women) in the corresponding OLS regression. All control variables are as defined in the Appendix. All regressions include year dummies. All standard errors are clustered at the crisis id level. Heteroskedasticity robust t-statistics or z-statistics are in parentheses. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

	Fr(Women)	TQ	Fr(Women)	ROA	Fr(Women)	Fr(Bad Loans)
	I	II	III	IV	V	VI
Fr(Women)		0.573***		0.060*		-5.537
		[3.06]		[1.75]		[1.50]
Independence	0.059*	-0.030	0.059*	0.001	0.059*	0.169
	[1.90]	[1.34]	[1.95]	[0.24]	[1.97]	[0.41]
Board Size	0.033***	-0.021**	0.035***	-0.004**	0.036**	-0.158
	[2.62]	[2.33]	[2.80]	[2.41]	[2.90]	[0.85]
Bank Size	0.010***	0.003	0.009***	0.001	0.009**	0.176***
	[2.88]	[0.95]	[2.81]	[0.98]	[2.79]	[3.52]
Volatility	-0.005	-0.316***	0.008	-0.254***	-0.03	8.222***
	[0.04]	[2.94]	[0.07]	[8.35]	[0.25]	[5.53]
ROA	-0.018	0.591**			0.021	-11.859***
	[0.09]	[2.28]			[0.11]	[3.32]
Loan Ratio	0.014	-0.057**	0.013	0.006	0.015	1.306***
	[0.04]	[2.37]	[0.40]	[1.39]	[0.46]	[3.13]
Deposit Ratio	-0.079	0.179***	-0.074*	0.001	-0.075	-1.149*
	[1.83]*	[5.00]	[1.76]	[0.17]	[0.63]	[1.73]
Tier 1 Capital Ratio	-0.106	0.048	-0.091	0.124***	-0.079	-0.785
	[0.82]	[0.48]	[0.73]	[5.79]	0.63]	[0.44]
Fr(Bad Loans)	-0.115	-0.162	-0.103	-0.122***		
	[1.15]	[1.41]	[1.05]	[3.45]		
Trading	0.003	-0.006	0.001	-0.000	0.0001	-0.052
	[0.27]	[0.94]	[0.06]	[0.15]	[0.05]	[0.54]
Risky Trading*t*	-0.008	0.003	-0.008	0.001	-0.007	-0.127
	[0.85]	[0.46]	[0.87]	[0.51]	[0.80]	[1.21]
Hedging	0.004	-0.006	0.004	-0.001	0.004	0.118
	[0.62]	[1.14]	[0.53]	[0.81]	[0.53]	[1.40]
MBS	0.019***	-0.011*	0.020***	-0.001	0.020***	0.091
	[3.01]	[-1.82]	[3.13]	[0.56]	[3.15]	[0.87]
%NonTradIncome	1.664	0.701	0.594	0.073	0.56	3.310
	[0.85]	[0.54]	[0.40]	[0.24]	[0.37]	[0.20]
Relationship Length (women)	0.020***		0.020***		0.020***	
	[3.46]		[3.62]		[3.62]	
Constant	-0.086	-0.008	-0.092	-0.001	-0.095	-6.302***
	[1.37]	[0.19]	[1.49]	[0.11]	[1.53]	[7.78]
Fr(women)$_{OLS}$		0.066***		-0.000		-0.832**
		[3.03]		[0.68]		[2.44]
N	1,075	1,075	1,130	1,130	1,130	1,130
R^2	0.136	0.038	0.134	0.442	0.133	0.420
Kleibergen-Paap *rk* statistic		11.371		12.373		12.372
[Stock-Yogo 10%]		[16.38]		[16.38]		[16.38]

Hausman [p value]	13.30 [0.00]	3.55 [0.06]	1.68 [0.19]

Table IX: Gender and Director Behavior

This table reports director-level OLS regressions relating director gender to attendance problems and resignations. In columns I and II the dependent variable, *Missed Meetings*, is a dummy variable that is equal to one if the director was named in the proxy as having attended less than 75% of meetings they were supposed to attend during the fiscal year. In columns III and IV the dependent variable is *Resign* which takes the value one if a director resigned in the sample year and zero otherwise. In column II the sample is restricted to male directors. The sample in column IV is restricted to banks that eventually delist during the time period of our sample. *Female* is a dummy variable that is one if a director is a woman, zero otherwise. *Fr(women)* is the number of female directors relative to board size. *Committee Member* is an indicator variable that takes the value one if a director sits on a committee. *Busy public* is the number of directorships held by a director in listed firms. *Board meet* is the number of board meetings in a fiscal year. *Tenure* is the number of years the director has served on the board. *Age* is the director's age. All other control variables are as defined in Table IV. All columns report firm fixed effects estimates. All regressions include year dummies. All standard errors are corrected for group correlation at the director-firm level. Heteroskedasticity robust t-statistics are reported in parentheses. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

	Missed Meetings		Director Resignations	
	I	II	III	IV
Female	-0.004		-0.002	-0.019**
	[0.72]		[0.47]	[2.38]
Fr(Women)		-0.197***		
		[2.64]		
Committee Member	-0.023**	-0.022**	-0.018***	-0.034*
	[2.30]	[2.26]	[4.74]	[1.86]
Busy public	0.008**	0.008**	-0.007**	0.007
	[2.25]	[2.17]	[2.45]	[0.47]
Board meet	-0.000	-0.000		
	[0.52]	[1.26]		
Board size	0.011	0.019	0.016	0.061
	[0.67]	[1.21]	[0.98]	[1.07]
Independence	-0.004	-0.019	-0.063*	-0.133
	[0.12]	[0.54]	[1.95]	[1.24]
Tenure	0.000	0.000	-0.0001	0.0002
	[0.55]	[0.55]	[0.07]	[0.59]
Age	0.000	-0.000	0.0003**	-0.0007
	[0.50]	[0.04]	[2.32]	[1.26]
Bank Size	-0.004	-0.010	0.008	-0.067
	[0.40]	[0.84]	[0.67]	[1.21]
Lag(ROA)	0.212*	0.229*	-0.087	-3.309
	[1.86]	[1.80]	[1.62]	[1.31]
Volatility	-0.010	0.032	0.064	0.214
	[0.17]	[0.48]	[0.84]	[0.67]
Trading	-0.000	0.002	0.002	0.150
	[0.00]	[0.19]	[0.37]	[1.51]
Risky Trading*t*	-0.026***	-0.029***	0.008	-0.0295
	[3.15]	[3.15]	[1.24]	[0.80]
Hedging	-0.015**	-0.013*	0.003	-0.040*
	[1.99]	[1.73]	[0.81]	[1.70]
MBS	0.002	0.003	-0.001	0.0189
	[0.40]	[0.61]	[0.22]	[0.65]
%NonTradIncome	-0.206	-1.654*	-2.095	-4.455
	[0.18]	[1.67]	[0.86]	[0.44]
Constant	0.037	0.096	-0.044	0.589
	[0.39]	[0.91]	[0.39]	[1.27]
N	8,165	7,270	10,162	851
Adjusted R^2	0.045	0.049	0.025	0.049
Sample	Full	Men Only	Full	Delisted Firms

Table X: Director Gender and Committee Membership

This table reports director-level OLS regressions relating director gender to committee service. *Committee Member* is an indicator variable that takes the value one if a director sits on a committee. *Monitoring* (*Risk*) *Committee* is one if a director sits on a monitoring (risk) committee. *Busy public* is the number of directorships held by a director in listed firms. *Board meet* is the number of board meetings in a fiscal year. *Tenure* is the number of years the director has served on the board. *Age* is the director's age. All other control variables are as defined in Table IV. All columns report firm fixed effects estimates. All regressions include year dummies. All standard errors are corrected for group correlation at the director-firm level. Heteroskedasticity robust t-statistics are reported in parentheses. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

	Committee Member	Committee Member	Monitoring Committee	Monitoring Committee	Risk Committee	Risk Committee
Female	0.036**	0.030*	0.093***	0.089***	-0.006	-0.006
	[2.02]	[1.67]	[3.74]	[3.44]	[-0.45]	[-0.41]
Busy public	0.028***	0.031***	0.045***	0.046***	-0.006	-0.006
	[3.32]	[3.70]	[3.14]	[3.15]	[-0.52]	[-0.52]
Board size	-0.006**	-0.005**	-0.009***	-0.009**	-0.002	-0.002
	[-2.48]	[-2.08]	[-2.72]	[-2.36]	[-0.91]	[-0.70]
Independence	0.060	0.052	0.087	0.090	0.076	0.062
	[1.01]	[0.86]	[1.18]	[1.18]	[1.62]	[1.25]
Tenure	-0.003***	-0.003***	-0.009***	-0.009***	0.000	0.000
	[-3.15]	[-3.01]	[-7.39]	[-7.29]	[0.71]	[0.64]
Age	0.005***	0.005***	0.007***	0.007***	0.001	0.001
	[5.36]	[5.40]	[6.30]	[6.30]	[1.31]	[1.40]
Bank Size	-0.003	0.001	-0.023	-0.014	0.019	0.018
	[-0.14]	[0.02]	[-0.76]	[-0.42]	[0.59]	[0.52]
Lag(ROA)	0.054	0.049	0.109	0.113	-0.761**	-0.742**
	[0.20]	[0.19]	[0.24]	[0.25]	[-2.30]	[-2.24]
Volatility	0.024	0.043	0.215	0.232	0.147	0.125
	[0.16]	[0.29]	[1.13]	[1.17]	[0.89]	[0.74]
Loan Ratio		0.062		0.057		-0.028
		[0.79]		[0.59]		[-0.35]
Deposit Ratio		-0.010		0.086		0.114
		[-0.11]		[0.86]		[1.54]
Tier1 Capital Ratio		0.391**		0.028		0.878***
		[2.34]		[0.13]		[4.69]
Constant	0.591***	0.470**	0.450*	0.235	-0.136	-0.292
	[3.14]	[2.08]	[1.74]	[0.72]	[-0.51]	[-0.89]
N	11,218	10,372	11,218	10,372	11,218	10,372
Adjusted R^2	0.134	0.137	0.070	0.069	0.338	0.337

Table XI: Gender and TARP Repayments

This table reports firm-level IV regressions relating the fraction of women directors to the probability a TARP recipient repays CPP funds. We identify recipients of funding under Capital Purchase Program of TARP from the list provided by the U.S. Treasury. We also confirm receipt and repayment of TARP funding from each bank's 10-K filings in subsequent years. The sample consists of banks that received TARP funds in 2008 or 2009. Column I reports the first stage regression corresponding to the IV regression in column II. The instrument *Relationship Length (Women)* is the average length of the relationships between directors and women in their network. This is averaged across all directors in the bank. *ROA* is the bank's Return on Assets; *Fr(Bad Loans)* is the ratio of Bad Loans to Total Loans and *Repaid Tarp* is a dummy variable if a TARP recipient repaid funds and exited TARP and 0 otherwise. All control variables are as defined in the Appendix. All regressions include year dummies. All standard errors are clustered at the crisis id level. Heteroskedasticity robust t-statistics or z-statistics are in parentheses. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

	Fr(Women)	Repaid Tarp
Fr(Women)		4.410*
		[1.72]
Independence	0.089	0.247
	[1.25]	[0.52]
Board Size	0.071***	-0.193
	[2.95]	[0.74]
Bank Size	0.012*	0.05
	[1.86]	[1.10]
Volatility	-0.203	-2.41
	[0.92]	[1.50]
ROA	-0.204	-0.936
	[0.57]	[0.35]
Loan Ratio	0.045	0.03
	[0.74]	[0.07]
Deposit Ratio	-0.142	-0.256
	[1.32]	[0.32]
Tier 1 Capital Ratio	0.778***	-0.121
	[2.86]	[0.05]
Fr(Bad Loans)	0.429	-5.490**
	[1.56]	[2.41]
Trading	-0.015	0.089
	[0.97]	[0.77]
Risky Trading*t*	0.002	-0.174
	[0.11]	[1.50]
Hedging	0.003	0.040
	[0.18]	[0.39]
MBS	0.014	0.007
	[0.89]	[0.07]
%NonTradIncome	-3.631***	14.027
	[2.64]	[1.05]
Relationship Length (women)	0.029***	
	[2.64]	
Constant	-0.308**	0.569
	[2.22]	[0.52]
$Fr(women)_{OLS}$		0.220
		[0.88]
N	163	163
Adjusted R^2		-0.036
Kleibergen-Paap *rk* statistic	6.11 [16.38]	

[Stock-Yogo 10%]	
Hausman	3.157
[p value]	[0.08]