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WOMEN ON ITALIAN BANK BOARDS: ARE THEY "GOLD DUST"?

by Silvia Del Prete* and Maria Lucia Stefani**

Abstract

Italy ranks among EU countries with the fewest women on bank boards. Using a rich dataset on Italian banks that combines individual data on bank governance with different measures of performance and risk, this paper analyses the determinants of the gender gap in top positions. Econometric results suggest that there is a "second glass ceiling" as they confirm a significantly lower probability of women holding top decision-making positions (Chairman, CEO, General Manager), other individual characteristics and bank features being equal. Moreover, results show that the number of women at the top is greater *a)* in banks belonging to the major banking groups, with larger and younger boards; and *b)* in banks that are more cost efficient or in those with a larger share of risky loans in the past (in need of restructuring). Preliminary evidence from performance equations suggests that the presence of women is negatively correlated with indicators of ex post riskiness, implying that credit policies are more stringent when women are on the board, possibly due to their higher risk aversion.

JEL Classification: G21, G34, J16.
Keywords: banking, corporate governance, gender diversity, board of directors.

Contents

1. Introduction 5
2. Main empirical evidence from related literature 6
3. Sources and description of data 8
4. Women in Italian bank boardrooms: some stylized facts 10
5. The econometric set-up 11
6. Main econometric results 13
   6.1 Gender diversity on board and decisional power 13
   6.2 Gender diversity on board and turnover 14
   6.3 Women in boardrooms: board features and past bank performance 15
   6.4 Robustness checks: alternative estimation techniques 17
   6.5 Preliminary evidence on gender and bank performance 18
7. Concluding remarks 19
References 20
Appendix: Figures and Tables 22

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1. Introduction[1]

During the last two decades regulatory and structural changes, stemming from privatization, consolidation and ICT improvement, increased the contestability of the banking industry. In spite of this "morphological revolution" the involvement of women in corporate governance still remains very limited in Italian banks. Indeed, comparing the gender gap across different economic sectors, survey data suggest that in the banking sector gender discrimination is substantial.[2] Moreover, the gender gap in banking boardrooms is in Italy larger than in other European countries.[3]

The role of women in the economic activity, and more specifically in corporate governance, has become a topic of great interest and relevance, with the introduction of quotas in some European countries.[4] Recently, quotas have been introduced also in Italy for listed companies. Moreover, during the recent financial crisis many economists and researchers have questioned whether a greater participation of women as CEOs or on Board of Directors would have been able to contain the excessive riskiness and leverage in the financial sector and to prevent important collapses. In this regard, after the Lehman collapse in September 2008, some economic newspapers argued: *"What If Lehman Brothers had been Lehman Sisters?"*[5] and the debate in these terms was well synthesized during the 2009 World Economic Forum.[6]

The literature on this issue has provided mixed results. While most of the studies highlight the benefits originating from promoting gender diversity on boards of banks, there is still no unambiguous evidence about the effects on bank performance resulting from a greater involvement of women in corporate governance.

Using data on bank governance, board composition, and several measures of bank performance, primarily in terms of riskiness, the aim of this paper is threefold. First, using boardroom memberships combined with other bank-level features, it examines what affects the probability that a woman holds a top-decisional position on bank boards. In particular, it investigates the existence of a "second glass ceiling" for board membership, that is whether women present a lower probability (with respect to men) of reaching a top position (CEO, chairman, etc.), conditional on being a board member. Second, this paper studies whether there is gender discrimination in removal strategy. Third, it analyses the

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[1] A previous version of this paper was presented at the conference "Women and the Italian Economy" organized by the Bank of Italy, held in Rome on March 7th, 2012. We would like to thank Renée Adams, Magda Bianco, Francesca Lotti, Marco Paccagnella, Fabiano Schivardi, Roberta Zizza and the participants at the seminar held in Rome at the Bank of Italy (September 2011), at the IFABS 2012 Conference in Valencia (June 2012) and at the 53rd Conference of the "Società Italiana degli Economisti" in Matera (October 2012). The views expressed therein are those of the authors and do not necessarily reflect those of the Bank of Italy.

[2] According to a survey run in 2010 on behalf of the Bellisario Foundation over a sample of Italian firms operating in 24 different sectors, women in middle management and upper positions were only 4.1 per cent in the banking sector, the lowest presence except for the oil sector. The highest female representation was found in the "textile and cloth" sector (15.1 per cent). It is worth noting that the low presence of women in bank boards is in contrast with the relative high female representation in other service sectors. See Bellavigna and Zavanella (2010).

[3] Using BankScope data, Mateos de Cabo *et al.* (2012) show that in 2006 the percentage of women in bank Board of Directors in Italy was only 2.8 per cent, the lowest rate in UE25, excluding Portugal (1.9 per cent). The highest share was the one of Sweden (18.7 per cent) and the mean value was 7 per cent.

[4] Based on this evidence, Authorities have intervened in many countries on the gender composition of corporate boards. In some European countries the example of Norway has been followed, where, in 2003, a quota system was approved. Other countries have rather preferred to adopt a "comply or explain" approach to companies' adherence to recommendations on corporate governance codes.

[5] C. Lagarde, *The New York Times*, 11 May 2010.

[6] See also Foti (2011).

correlations between women's involvement in corporate governance strategies, through their participation in different kinds of boards (e.g. Board of Directors, Board of Statutory Auditors, Supervisory Board, etc.), and past bank performance, with a particular attention to portfolio riskiness. Following the branch of the gender literature which has found a higher risk aversion in female behaviour, the idea is to provide new evidence on this point, in order to motivate how past outcomes can affect subsequent board composition. Preliminary findings using performance equations show a negative correlation between ex post risk exposure and female presence on bank boards which may be in line with the evidence on women being more risk averse than men. This result can therefore contribute to a better risk assessment for the banking sector, where controlling and monitoring credit riskiness are very relevant. In the financial crisis this question has become even more urgent, since there is a widespread awareness that turmoil can be to an important extent attributed to failures and weaknesses in corporate governance arrangements (Kirkpatrick, 2009).

This paper uses a unique Bank of Italy's archive on all bank board memberships combined with data on performance, riskiness and other balance sheet information from Bank of Italy's Supervisory Reports. The richness of the dataset enables to present descriptive evidence on women's participation on Italian bank boardrooms and its evolution since the mid-nineties. Moreover, it allows investigating determinants of women's participation on bank boards and its correlation with bank performance. To the best of our knowledge, there are no previous studies on the Italian banking sector analysing determinants and first effects of female participation in bank boardrooms. Therefore, the evidence shown in this paper may provide some first insights on the opportunity to boost female involvement in bank boards, which is recently attracting an increasing attention, both in the media and at the policy level.

The rest of the paper is organized as follows. Section 2 summarizes the theoretical framework and the previous findings on gender diversity and firm or bank performance; Sections 3 describes data and variables. Some stylised facts are presented in Section 4. Section 5 shows the econometric set-up, Section 6 discusses empirical results and, finally, Section 7 concludes and highlights some policy implications.

2. Main empirical evidence from related literature

Most of the empirical evidence on gender diversity and on the impact of women involvement in boardrooms on performance concerns non-financial firms and not-regulated economic activities.[7]

These topics are recent issues for banking industry. However, during the financial crisis more attention has been devoted to the composition of the Board of Directors of banks. As a matter of fact, it was even suggested that among the causes of governance failure in financial institutions one should take into account the lack in gender diversity, which might have reduced the availability of different perspectives.

The literature focuses on two related questions. The first is concerned with the determinants of women's participation in corporate boards, in order to promote gender equality, while the second relates to the impact of an increase in gender diversity on firm's performance, with the aim to implement efficiency and risk-controlling.

[7] Even if the most of the medium-sized and large Italian banks are listed companies, with a more contestable ownership, they have about 3 per cent of women among their board members (see also Foti, 2011).

Referring to the first question, the literature (on non financial firms) generally finds a positive correlation between women's participation and board size, which may be interpreted as a signal of "preference for homogeneity" (Adams and Ferreira, 2007 and 2009; Bianco *et al.*, 2012)[8]; large boards may indicate that the CEO is open to different opinions and therefore is not worried by gender diversity. This literature usually discusses the presence of "tokenism" (Kanter, 1977), whereas female representation is limited to one or only a few members, who are not given real power. A positive relationship between gender diversity and the size of the board tends to exclude tokenism, since it reveals that once a woman is appointed, the incentive to designate others does not disappear.

The second question has not received a clear-cut answer. Some authors have found a positive correlation between a larger presence of women on boards, shareholder value (Carter *et al.*, 2003) and profitability, or better governance (Adams and Ferreira, 2009). Others have shown a negative correlation between gender and performance (Shrader, Blackburn and Iles, 1997), arguing that greater gender diversity on boards leads to over-monitoring activity (Adams and Ferreira, 2007). Some studies have pointed out mixed results depending on firm characteristics (Adams and Ferreira, 2009). Finally, other authors found no significant correlations (Bianco *et al.*, 2012) between governance and performance.

As mentioned, the literature on banking boards' composition is more recent, particularly with respect to European countries. Mateos de Cabo *et al.* (2012), focusing on a sample of EU banks, find evidence of "preference for homogeneity" but not for tokenism, detecting a positive correlation between gender diversity and board size, as for non-financial firms. Using a three-year panel of European listed banks, Foti (2011) finds that women are more represented on larger and younger bank boards, with a larger share of independent male members, and in family-owned banks.

Turning to gender and performance in the banking sector, Mateos de Cabo *et al.* (2012) find evidence for European banks of a positive correlation between higher share of women on boards and bank capitalization and a negative correlation with performance volatility (measured by the standard deviation of ROA). A negative correlation between women's participation in boardrooms and bank riskiness is found in Gulamhussen and Fonte Santa (2009), who consider a cross-section of data concerning large banks from OECD countries. Riskiness is approximated by loss reserves, loan loss provision and impaired loan ratio, and results are confirmed when they have controlled for reverse causality. However, Berger *et al.* (2012), using difference-in-difference techniques to tackle endogeneity problems, have found in a sample of German banks that younger executive teams increase risk-taking as do board changes that result in a higher proportion of female executives.

A negative correlation between the number of women on boards and risk is consistent with the empirical literature suggesting that women are more risk-averse than men. Most of this literature is based on experimental data (see Croson and Gneezy, 2009, for a survey), which also detect some exceptions: for corporate managers differences in risk preferences by gender tend to disappear, due to either selection or adaptive behaviour. Guiso and Rustichini (2011), on a sample of Italian small and medium entrepreneurs, and Adams and Funk (2011), on a survey on Swedish directors of public-traded firms, find that female directors may even be more risk-prone than their male counterparts. More recently, Adams *et al.* (2012), using data on mandatory announcements of new directors appointments for publicly traded firms in Australia, argue that the gender of directors is value-relevant and

[8] When (suppose) a Chief executive officer (CEO) does not want to be monitored too closely by the Board of Directors, s/he would try to have few "friendly" members in the board, preferably of the same gender. In this case, women can be seen as an annoying element.

that shareholders value the addition of female directors more relevant than that of male directors.

Finally, related to the literature on different attitudes towards risks by gender, some papers analyse the relevance of gender in bank-firm relationship. Beck *et al.* (2009) find that loans granted by female officers tend to present a lower probability of default than those allowed by their male colleagues. Since this result does not depend on different ability or experience, the difference may arise because of women's higher monitoring effort and/or capability. Bellucci *et al.* (2010) state that female loan officers tend to grant less credit to new and unestablished borrowers, as compared to their male colleagues, consistently with their higher risk aversion.

European comparisons show that Italy is among the EU countries where women are least represented in banking boardrooms. However, to our knowledge there is little evidence on the Italian banking case (see, Tarantola and Magliocco, 2007; ABI, 2011).[9] The further analysis will try to fill this gap.

3. Sources and description of data

The main two questions of this study are analysed by using a panel dataset built combining information on bank board members with data on the characteristics and performance of the banks where they sit. The panel includes three kinds of data: 1) individual features relating to board members that are collected from the OR.SO. ("*Organi sociali*" – Bank Boards) Bank of Italy's database; 2) bank characteristics (i.e. legal form, size, geographical area of the administrative headquarters, etc.), which are collected from the Bank of Italy's Census; 3) data on bank performance and riskiness that are from the Bank of Italy's Supervisory Register and balance sheet data. Data range from 1994 to 2010, but are systematically recorded since 1995.

The OR.SO. database is a historical archive of information on boards of all banks and financial intermediaries under the supervision of the Bank of Italy. Data include census information on members (name, date and place of birth, residence, educational degree, etc.), information on the role in the board and its duration (appointment date, cessation date, causes of cessation, etc.). The boards considered in this study are the following: Boards of Directors, Supervisory Boards or Boards of Statutory Auditors, General Management and the boards nominated in default procedures.[10]

Following the 2003 company law reform, Italian banks can choose either a traditional or a two tier (dual) board regime.[11] The traditional regime has a Board of Directors (*Consiglio di amministrazione*), with some committees (Executive Committee, *Comitato esecutivo;*

[9] Both studies highlighted the *Italian gender gap case* among the major European countries, particularly in the banking sector. Tarantola and Magliocco (2007) pointed out this *vertical discrimination* showing that, at the half of the last decade, the representation of women in all Italian banking boards was less than 5 per cent; the share decreased at 1.5 per cent focusing on large banks and on top-decisional memberships. On the other hand, the ABI's (*Italian Banking Association*) report confirms the lower presence of female directors in top boards and, at the same time, shows an increasing number of women in lower hierarchical levels over the last decade, as branch officer managers or similar. This evidence suggests that gender is not a discriminatory feature for employment but it becomes a severe constraint for women's career opportunities.

[10] That is procedures like: *Amministrazione controllata*, *Amministrazione straordinaria*, *Liquidazione coatta amministrativa*, *Fallimento.*

[11] See D.Lgs. 17.1.2003, n. 6, which came into force from 1.1.2004. The law includes also the possibility of a monistic regime, that no Italian bank has adopted so far. The dual regime has been adopted only by a few banks, starting from 2007.

internal control committee, nomination committee, etc.), and a Board of Statutory Auditors (*Collegio sindacale*). The two tier model has a Supervisory Board (*Consiglio di sorveglianza*), and a Management Board (*Consiglio di gestione*). For the purposes of this paper, all the members of *Consiglio di amministrazione* in the traditional regime and of *Consiglio di gestione* in the dual one are considered as "board members". The members of both *Collegio sindacale* (traditional regime) and *Consiglio di sorveglianza* (dual regime) are instead considered as "members of Supervisoy Boards".[12] This study also takes into account information on the General Management (*Direzione generale*).

As for individual board member characteristics, age, tenure and education are taken directly from OR.SO. Education is a dummy variable (*B.A. degree*) assuming the value of one if the member has at least a B.A. degree (*laurea*). To investigate the role of family affiliation with the controlling agent, a dummy variable (*family bank*) is introduced in the model; it takes the value of one if the board member belongs to the family that controls the bank. The dummy for membership in the same birth municipality takes into account the role of the knowledge that the board member has of the local environment in which each bank operates, as well as the fact that the member is known in the same environment: the variable assumes the value of one if the board member lives in the same municipality where s/he was born.

As for bank-level variables, the log of total assets (*sizebank*) is used as a measure of the bank size.[13] The legal form of the bank is taken into account through four dummy variables (limited dependent bank - *società per azioni* -, cooperative bank - *banca popolare* -, mutual bank - *banca di credito cooperativo* - or a branch of foreign bank). Dummy variables are also introduced to control for the geographical location of the headquarters, grouping Italian regions in four areas (North-West, North-East, Centre and South), and to control whether the bank is listed on the Italian Stock Market or not (dummy *listed bank*).

Data on bank performance include the ratio between operating costs and the income margin (*ceffbank*), which is a measure of cost efficiency. The profitability of a bank is measured through the ratio between profits before taxes and total assets (*roabank).* The ratio between non-performing loans and total loans (*riskbank*) provides information on the riskiness of the bank portfolio.

Descriptive statistics on the whole dataset used in the subsequent econometric analysis are summarised in Table a1, jointly with variable definition.

The panel dataset at individual level has about 253,000 observations and is used to present some descriptive statistics on female representation on bank boardrooms and to estimate the probability of gender-diversity on boards. On average in the whole period, an Italian bank board member was 54 years old and maintained the position for 5 years and 3 months (Table a1). One member over two has at least a B.A. degree and a slightly higher share was born in the same municipality where s/he lives and works. Both results seem to be driven by the presence of a large number of small (and particularly mutual) banks in the sample, which reduces the average share of members holding a B.A. degree and increases the share of members born in the same municipality where they operate (around 54 per cent). Finally, less than 2 per thousand of total board members are in boards of banks belonging to their own family, considering the very little number of family banks in Italy.

[12] In some Poisson regressions and robustness checks (Section 6) the effects of the dual governance regime adopted by some banks are however taken into account through a dummy variable (Dummy dual governance).

[13] In some estimates a dummy variable (small bank) is also inserted, based on Bank of Italy's categorical classification which takes into account bank total assets.

The analysis on possible correlations between the number of women in boardrooms and bank performance has been run at a bank level, thus collapsing the previous dataset. The resulting dataset includes more than 15,000 observations (bank-year), considering those banks having at least a member in their boards as a condition for being in activity. In order to clean balance sheet data, the outliers of performance indicators have been set to the 1st and 99th percentile of their annual distribution and those of the riskiness indicators to the 5th and 95th percentile.

4. Women in Italian bank boardrooms: some stylized facts

At the end of 2010 the share of women in all kinds of bank boards was only 7 per cent,[14] even though data show a sensible increase from 1995, when the share was around 2 per cent (Figure a1).

Women are more represented on "Supervisory Boards" (Table a2), in line with the result of Adams and Ferreira (2009) for US non-financial firms.[15] Moreover, the share of women decreases while approaching the top board membership, as it is shown at European level in Quack and Hancké (1997). Specifically, women on boards represent only 1.1 per cent of Chairman (0.2 per cent in 1995) but 6.3 per cent of directors that are neither Chairman nor Deputy Chairman nor CEOs (1.4 per cent in 1995); as for Supervisory Boards, the share of women as President raises to 5.3 per cent (1.6 per cent in 1995), and women are the 12.6 per cent of other memberships.

Consistently with the evidence concerning Italian listed firms (Bianco *et al.,* 2012), in most cases when a woman sits on a bank board, she is the only one: in 2010 61.8 per cent of Italian banks had at least one female membership in top positions (25.5 per cent in 1995; Figure a2); however, among those banks with female presence, in half cases there was only one woman, while in 25.6 per cent there were two.

In 2010 the average (and median) number of board members was 16.9 (16.1 in 1995); the largest boards had 70 members (58 in 1995; Table a3). The maximum number of female memberships in top boards was 7 (4 in 1995).[16]

Women are in general younger than male board members, even though the age gap has decreased over time (Table a4). In 2010 women were on average 48 years old, 9 years younger than their male colleagues (the difference was 11 years in 1995). Their tenure was shorter: in 2010 a woman kept on average a position for 5 years and 10 months, while the corresponding length for male members was 8 years.[17] Education, by contrast, was higher for male members, even though on the whole sample the difference is not statistically

[14] The analysis also considers boards in case of default procedures. However, since these are very rare events, the main results presented in this paper do not change if these observations are excluded from the sample.

[15] Adams and Ferreira (2009) find that women's participation is higher in monitoring-related committees within the Board of Directors. Even if the kind of the boards considered in this paper (Supervisory Boards or Boards of Statutory Auditors) are not exactly the same as the ones examined by Adams and Ferreira, their prominent scope presents some similarities.

[16] Considering that the mean number of women memberships was 1.2 in 2010, there were 15 memberships for each female directorship (in 1995 the average number of women per board was 0.3 and women memberships were 1 over 52).

[17] The tenure gap seems to be increased in the recent years. It is important to notice that the tenure of memberships is underestimated in OR.SO., mainly in the first years after the foundation of that database (in the half-Nineties), since the fact that some members were already in office in previous years is not always correctly recorded.

significant: in 2010 54.3 per cent of men held at least a B.A. degree against the 52.5 per cent of women (respectively, 45.1 and 43.3 per cent in 1995).

In case of family affiliation, women are more represented on boards, with an average number of 1.5 and a maximum of 4 in 2010. In 1995 the average number was 0.7 and the maximum was 3.

5. The econometric set-up

In order to account for gender diversity in decision-making roles within Italian banks, some regressions are run using information on each top management position at individual level. The analysis is restricted to those roles that, in the Italian case, are associated with decisional power on bank strategies and lending policies, namely the Chairman of the Board of Directors, the Chief Executive Officer (CEO), the members of the Executive Committee and the General Manager. The purpose is first of all to test whether female board members are equally likely to reach top positions as compared to their male counterparts. In other words, this analysis allows to detect the existence of a "second glass ceiling" (the first being the one that prevents women from sitting on boards as simple members).[18]

The likelihood of being in high decision-making positions is estimated, conditional on being a board member, by using the panel with the information on each *j* individual, having a mandate in bank *i* at time *t*. Thus, one is able to control for individual characteristics (summarized in vector X_j, such as age, tenure, family affiliation, and particularly gender), for bank-level features (Z_i) potentially correlated with the board composition (size, headquarters' localization, governance framework and bank performance), and finally for cyclical effects, accounted by time dummies (d_t), as in equation (1):

$$\Pr(y_{jit} = TopMember) = f(\alpha, \beta X_j, \delta Z_{i,} d_t, \varepsilon_{jit}) \quad \text{with } TopMember=1,0 \qquad (1)$$

where *y* is a dummy variable that is equal to 1 when the individual *j* sits in a boardroom of bank *i* at time *t* in one of the positions mentioned before, and zero otherwise.

The richness of the dataset at individual level enables to study whether gender matters in the bank removal strategy, by estimating the probability of turnover of board members using equation (2):

$$\Pr(y_{jit} = Turnover) = f(\alpha, \beta X_j, \delta Z_{i,} d_t, \varepsilon_{jit}) \quad \text{with } Turnover=1,0 \qquad (2)$$

where *y* is a dummy that is equal to 1 at time *t* if the individual *j* leaves at *(t+1)* the position in bank *i* that s/he held at time *t,* zero in the previous years when the individual *j* was still in charge in bank *i* and missing values in years in which the individual was not in charge. The dependent variable is further restricted to turnover events that are classified as removal strategy, so excluding those cases related to death or retirement.[19]

Equations (1) and (2) are fitted by using a probit pooled regression with robust standard errors (potentially biased for repeated observations), by taking into account the

[18] Unfortunately, we do not have the chance to investigate determinants of the first glass ceiling, since we observe individual characteristics only of those people appointed as top board members.

[19] Moreover, in the definition of the dependent variable the year 2010 is not considered, since it is the last year of the dataset.

White's correction for heteroskedasticity and the Moulton's cluster correction for groups of observations (alternatively individuals and banks).

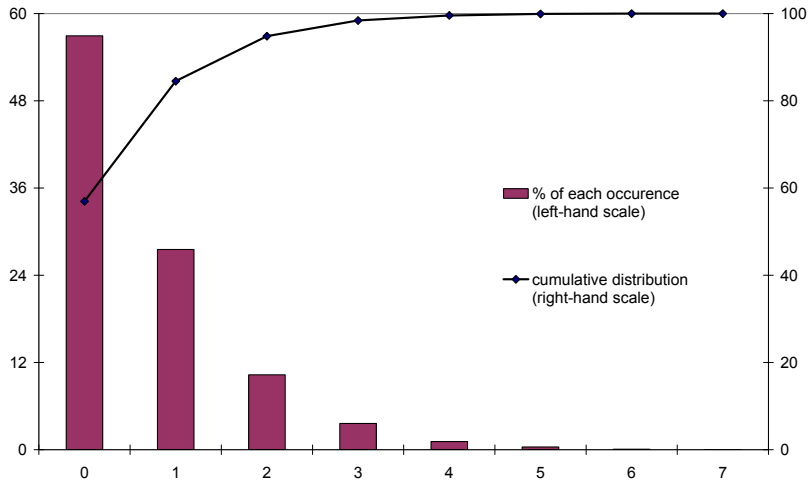
In the next step the analysis is carried out through a panel Poisson regression, in order to measure the links among women's participation in bank boards, performance and riskiness. The aim is to investigate the relationship between the number of women serving on all kinds of Italian bank boards – with a focus on the Boards of Directors – and the explanatory variables presented in previous equations, accounting for individual-level characteristics and for bank-level features. To this purpose, following the econometric strategy by Mateos de Cabo *et al.* (2012), the endogenous variable is defined as the number of women on bank boardrooms (Y_{it}). This variable can take discrete integer values ranging from zero to the maximum number of board members in different years, so it seems adequate to consider it as a Poisson variable. Poisson-distributed data have the feature of presenting high frequencies of zeros and a high proportion of the sample that clusters on a relatively few, integer (small) values, which is clearly the case when the variable is the number of women in a bank board. In the panel of banks that is considered here over the period 1995-2010, there are no women in bank boards in the around 60 per cent of the (bank-year) observations and in less than 30 per cent there is only a woman (see Figure 1).

In a Poisson regression, each observation y_{it} is the outcome of a random variable with a Poisson distribution of parameter λ_i. So, the probability that the number of women sitting on all kinds of boards at time t is equal to a given number y_{it} will follow equation (3):

$$\Pr[Y_{it} = y_{it} \mid X_{it}] = \frac{(\lambda_i)^{y_{it}}}{y_{it}!} e^{-\lambda_i} \quad \text{with } y_{it} = 1, 2, 3, \ldots \qquad (3)$$

where λ_i will also represent the expected number of women on the boards. This parameter can be modeled to variate in accordance to a non-negative function, as follows: $\lambda_i = e^{\beta x}$, where X_{it} is the vector of independent variables, including board average characteristics, governance related banks' features and performance indicators.

Figure 1 – Frequency and cumulative distribution function of number of women in Italian bank boards



The Poisson distribution is characterized by the so-called equidispersion property, that is mean and variance are equal. In applied exercise this condition is rarely satisfied, because

real distributions are often overdispersed. In the dataset used in this paper the overall mean and variance of number of women on boards are quite similar (0.66 and 0.88, respectively) and the overdispersion hypothesis has been rejected through an appropriate test.[20] Thus, after having collapsed the dataset at bank *i*-level, with mean values for board characteristics, the parameters are estimated by using a panel Poisson distribution, controlling for relevant bank-level variables varying over time and potentially correlated with governance choices. Moreover, with the aim of providing robustness checks, estimations are also run by using both panel Poisson estimations with random and bank fixed effects and alternative estimation techniques, such as negative binomial and probit models, using appropriate transformations of the dependent variable in the last case.

Finally, in order to directly investigate the impact of gender diversity on bank performance and riskiness – and the role of diverse gender risk aversion – performance equations have also been estimated, as follows:

$$PerformanceIndex_{it} = \alpha + \beta(DummyFemale)_{it-2} + \varphi X_{it-1} + \nu_i + d_t + e_{it} \quad (4)$$

where the dependent variable is alternatively a bank performance indicator (risk, profitability, cost measure, etc.), *X* stands for a vector of explicative variables concerning board and bank level characteristics, *v* represents the vector of bank specific effects (time invariant and unobservable under fixed effect estimations), *d* are time dummies for cyclical common effects, and *DummyFemale* is a dummy variable (the focus of the analysis) that is equal to 1 if there was at least a woman on bank boards two years before (that is, at time *t-2*).

6. Main econometric results

6.1 Gender diversity on board and decisional power

The main findings of the probit estimation of equation (1) on the panel dataset at individual level suggest that there is a real gender gap in Italian banking system (Table a5), in line with the evidence found by the literature for other countries.

In particular, being a woman reduces the probability of being appointed in key decisional positions by around 15 percentage points with respect to male directors;[21] so, this result confirms the existence of a second glass ceiling.[22] The lower estimated probability of women to sit on decisional key-roles keeps the same magnitude and higher statistical significance (1 per cent) in all the different models that are used to estimate equation (1).

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[20] More precisely, the presence of overdispersion for the baseline regression has been excluded running the test proposed by Cameron and Trivedi (2005).

[21] Given the estimated marginal effect of the dummy female (-15 percentage points) and given that the fraction of top executive members, in charge in the overall period, is on average 32 per cent in the dataset, this means that women are roughly 50 per cent less likely to be appointed in a top executive position than men.

[22] In particular, Adams and Ferreira (2009), using linear probability models on a sample of non-financial firms in OECD countries, find that women are significantly more likely to sit on audit committee than men (see also Section 2). Following their methodology, that is by estimating equation (1) with linear probability models (OLS), one obtains an economic impact on the women's probability of being a top executive that is 40-50 per cent lower than their male counterparts, as suggested by the probit estimation (see previous footnote).

Concerning the other individual characteristics, the probability of being in higher-decisional positions is positively affected by age, by the tenure of the membership in a given bank, and by the number of different memberships in the same bank (Table a5, Model III). It is plausible that the expertise acquired by a person during a longer membership, or through different mandates (e.g. from General Manager to Chairman of Board of Directors), is an important requisite to be appointed in decision-making positions. Hence, these key-roles are more likely to be assigned to senior men experiencing longer tenure in the same bank. This evidence can also explain why the presence of a B.A. degree reduces the probability of being in top positions, since senior men are generally characterized by a lower level of education. Being a family member, in the case of a family-controlled bank, exerts a positive effect (more than 30 percentage points). Finally, living and working in the same municipality where a given member was born decrease the estimated probability: empowerment is more likely in large banks and requires faster turnover and geographical mobility.[23]

Turning to bank-level variables, being appointed in decisional positions is more likely in larger banks with larger boards and a higher number of top positions (see also Section 6.3).[24] Nevertheless, bank performance, and in particular bank portfolio riskiness, does not exert any effects on the estimated probability (the marginal effect is close to zero).[25]

6.2 Gender diversity on board and turnover

In order to evaluate whether gender discrimination occurs in case of removal, the probability of turnover of board members is estimated, using equation (2) (Table a6).

The dummy female is almost never statistically significant. The probability of being removed from the board decreases if the member is appointed in top memberships or when there is a family affiliation. Moreover, the number of memberships in a given bank and a higher educational level (at least a B. A. degree) reduce the top managers' turnover, while, on the contrary, age and tenure increase the likelihood.

Cooperative and mutual banks, which generally have smaller boards, are characterized by a lower turnover. The probability of turnover is also smaller for those members located in their birth municipality.[26] Indeed, for smaller and more local banks the connection with the local environment may be seen as an "asset" to preserve and this can prevent removal.

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[23] These results highlight that having decisional powers in bank headquarters is mainly determined by specific individual skills. So, in order to take into account differential effects stemming from individual skills in case of female directorships, the dummy female has been interacted with the other individual characteristics (age, tenure, family affiliation, education). In regressions that are not report for shortness, interaction terms are not generally statistically significant, except for the age variable (positive and significant), signalling that the probability for a woman to sit on top decisional roles is further higher the higher is her seniority.

[24] Indeed, being in top executive positions is more likely in large banks than in smaller ones and in limited companies with respect to mutual and cooperative banks. By contrast, the likelihood of being a top manager increases in case of foreign banks. Affiliation to intermediaries headquartered in North-West regions, where most of the top 5 banking groups are located, further increases the probability for an individual of being appointed in higher decision-making positions, relatively to banks located in other geographical areas.

[25] With the aim to estimate differential effects of bank characteristics on female participation in top administrative and executive positions, the dummy female has been interacted with the other bank-level dummy variables (small bank, mutual bank, southern bank, etc.) and with riskiness indicators. Results (not reported) on interaction terms come generally out not statistically significant, with the exception (negative effect) for mutual banks, in which the probability of being a top-decisional manager is slightly lower for women than in other kind of banks.

[26] Battistin *et al.* (2012) have a similar result since they find that the probability of manager's turnover is inversely related with the distance (in kilometres) between the province of the bank's headquarter and the manager's province of birth.

By contrast, turnover is more likely for individuals in banks headquartered in Southern regions than in Northern ones, or in banks that did not perform well in the past (using 3-year lag), both in terms of profitability and of portfolio riskiness. The latter result is consistent with an interpretation of turnover in terms of efficiency, related to the need to change the vertex with the purpose of improving bank performance.

Following once again Adams and Ferreira (2009), the bank profitability variable (the 3-year lagged value of the ROA) has been interacted with both the dummy female and the share of women on bank boards, to test for a different reaction to past bank profitability. The coefficient of the interaction term is negative and statistically significant in both cases, but with a different economic interpretation. In Table a6, Model IV, the coefficient of the interaction term between bank (lagged) ROA and the dummy female is almost three times as large as the lagged profitability index. Hence, even if there is no gender discrimination *per se* in removal strategy, the probability of being removed after underperformance is higher for female board members. Model V shows that women are tougher monitors: the higher the share of women in any kind of bank boards, the higher the probability of being removed. Consequently, having women's memberships may affect in a significant way governance choices, such as retention decisions and corporate controls. The interaction between the share of women and the lagged value of ROA is statistically significant but its marginal effect is almost null (maybe due to the fact that the share of women on boards is very close to zero itself). However, this evidence suggests a further sensitivity of turnover to past bad performance in banks with women on their boards and it can therefore be seen as an indirect impact of more severe monitoring strategy correlated to women's active presence on supervisory boards.

6.3 Women in boardrooms: board features and past bank performance

In order to analyse the correlation between women's participation on bank boards and (past) bank performance, a Poisson model is estimated as in equation (3), using the panel of banks observed during the period 1995-2010. With the aim to preserve board information, many individual level characteristics have been collapsed at their mean values, calculated at bank-year level. Through panel estimation approach and by using appropriate lags of bank performance, one can reduce reverse causality problems and endogeneity concerns that can arise in a more severe way in cross-section analysis.

The main findings are shown in Table a7. Model I, where the dependent variable is the number of women in any bank boards (the basic specification), shows that such number is correlated with both board characteristics and past bank performance. In particular, the positive correlation of board size with the presence of women seems to be in contrast with the hypothesis of "tokenism behaviour", confirming a "preference for homogeneity", in line with the evidence highlighted in the literature (see Section 2). However, a non-linear effect of board size also arises, because when the number of members on board is particularly high, then the (squared) board size inversely correlates with the number of women. This inverted U-shape effect is also detected by Andrés and Vallelado (2008) in the case of board size and performance, and it is possible that for very large boards a tokenism behaviour could appear.

As expected, the share of memberships with a family affiliation positively affects the number of women on bank boards, as a further signal of the homogeneity approach. Moreover, younger boards are more likely to be open to gender diversity, while education and the share of members living and operating in the same municipality where directors were born negatively correlate with the number of women on boards. These apparently

surprising results may be explained as additional signals supporting tokenism in corporate governance choices, particularly in the case of banks managed by senior men with consolidated connections with their local environment. In the latter context, these negative effect may also be interpreted as indirect proxies of the so-called *"reduced pool of women candidate"* to manager positions, by this meaning all those socio-cultural obstacles (lack of long-term career commitment, familiar responsibility, a greater taste for fringe benefits or working conditions, etc.) which drive women to sacrifice their personal career and their relationship experience (an important prerequisite in banking sector) in favour of their family and private life (see also Bertand and Hallock, 2001).

The effects of board characteristics generally hold in the subsequent models of Table a7, once having controlled for more bank-level features, and in particular in Model IV, when the dependent variable is restricted to those women serving on Boards of Directors or on General Management.

Focusing on bank-related characteristics, estimates reveal that the presence of women positively correlates with the *status* of cooperative bank (*banche popolari*) and negatively with that of foreign bank, while there are not statistically significant differences between banks located in different Italian regions. Being listed exerts a significant and positive effect on women's participation, after having controlled for the membership in the top-five banking groups (positively correlated with women's presence) and for banks with branches or subsidiaries abroad (negatively correlated with the gender diversity). Listed banks seem to favour women's participation on boards also running the estimation on a more recent sub-sample period, beginning from 2000, when the number of listed banks increased as consequence of their privatization (Model III). Nevertheless, all these bank characteristics are not relevant (Model IV), if one restricts the focus on women on the Board of Directors or serving on General Management.

To measure the correlation of the past performance and riskiness with the current number of women, some financial and profitability controls (size, capital, cost-to-income ratio, ROA) have been added to the estimates with one-year lag as well as the index of portfolio risk (bad loans on total loans) with 2-year lag, since impaired and non performing loans need at least two years to be recorded as bad loans. Models I and II show that the past profitability is not always significant, while the cost to income ratio and the incidence of capital and reserves on total assets (a proxy of leverage in banks) are inversely correlated with the presence of women on all boards without distinction of scope.[27] The negative coefficient got on the cost-to-income ratio, a measure of efficiency of the banking sector, seems to be consistent with Becker's theory (Becker, 1957), claiming that gender discrimination is lower in more competitive and dynamic markets. Finally, the presence of women is higher the higher the incidence of bad loans in the past, that is women are more common in banks whose credit portfolio needed to be restructured, a result just similarly found in the empirical literature.[28]

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[27] The size of the bank (measured by the natural log of the total assets) is negatively related to gender diversity on boards, hinting that in larger banks, when the volume of activity increases, the tokenism may operate in a more severe way (a further non-linear effect of bank size).

[28] Ryan and Haslam (2008) argue that when a woman is appointed in a top position, it is more likely for her (than for a man) that that position is risky or precarious, since it more often concerns a problematic organization. In other words, after being appointed at the top of a firm, it is more likely for a woman to find herself on top of a "glass cliff". Using data on FTSE 100 the authors find that in a time of a general financial downturn in the stock market, companies that appointed a woman had experienced consistently poor performance in the five months preceding the appointment. In contrast, when the stock market was more stable, companies that appointed a woman had experienced positive (but fluctuating) performance. Nevertheless they also find that the appointment of a woman to the Board of Directors was not associated

In general, findings on women's presence on bank boards are consistent with their participation being more sensitive to past performance, which is also related to the fact that they are more risk averse, and more inclined to monitor and control bank outcomes. Such results can also be seen as a signal of *statistical discrimination* in the sense proposed by Schubert *et al.* (1999). In these terms, the perception that female board members are less risk-prone than men means that they are considered to be less reliable in making the risky decisions that may be necessary for a bank's success and consequently excluded from positions involving a greater degree of risk. Their presence can, on the other hand, be crucial when more rigorous credit policies are needed or in the case of bad performance, as in the recent economic and financial crisis. This kind of discrimination based on different gender risk aversion may also explain why these findings on past bank performance tend to disappear by focusing only on women sitting on Board of Directors (Model IV). The latter result suggests that in those cases women are presumably more risk-loving and more similar to men's attitude.

6.4 Robustness checks: alternative estimation techniques

In order to test the robustness of the main results, the link between women's presence on banking boards and past performance has been estimated using alternative estimation techniques instead of the Poisson regression with random effects (see Table a8).

The first aim is to verify if the hypothesis of random effects is plausible, by estimating equation (3) using the panel Poisson regression with bank fixed effects. The concern is that, even if the set of bank-level characteristics among explicative variables is quite large, there may be relevant omitted variables, which are time-invariant (i.e. bank culture and organization) and correlated with the independent indicators (above all performance indexes). The main findings from the baseline specification hold also with the alternative estimation (Table a8, Model I), both for board characteristics and for bank features.[29]

A second robustness check is built on the fact that since it is plausible that λ of the Poisson regression is close to 1, then estimating a Poisson equation is quite equivalent to estimate a binomial model.[30] In the case discussed in this paper, by using a negative binomial technique with bank random effects, one actually obtains similar results in the magnitude of estimated coefficients, as well as in their statistical significance (Table a8, Model II). The advantage of the negative binomial relatively to the Poisson is that the former deals more carefully with distributions with higher incidence of zeros, as in the dataset. So, since findings are very similar, the robustness of the Poisson results seems to be confirmed.

In a third econometric exercise the baseline specification has been estimated by using a panel probit regression (a dichotomised model) with random effects to control for many bank level characteristics. In this case the dependent variable is a dummy that is equal to 1 if the bank *i* at time *t* has got at least a woman sitting on its boards. Once again, results are

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with a subsequent drop in company performance. The "glass cliff" hypothesis is not confirmed by Adams, Guptha and Leeth (2009), using data on CEOs in US firms.

[29] Estimated coefficients are quite similar; moreover, the Hausman test (not reported) supports the goodness of the random effect choice.

[30] In fact, the Poisson distribution can be derived from the binomial distribution as the number of trials goes to infinity and the expected number of successes remains fixed (i.e. law of rare events). Therefore the Poisson distribution can be used as an approximation of the binomial distribution if n is sufficiently large (more than 100) and the probability p is sufficiently small. There is a rule of thumb stating that the Poisson distribution is a good approximation of the binomial distribution if n is at least 20 and p is smaller than or equal to 0.05, and an excellent approximation if $n \geq 100$ and $np \leq 10$.

similar to those obtained in the baseline estimation with the Poisson regression (Table a8, Model III).

6.5 Preliminary evidence on gender and bank performance

Even though the main purpose of this paper is explaining individual and bank-level determinants of gender diversity in boardrooms, previous results suggest that past bank performance may significantly affect the current female presence on top boards. The correlation between gender diversity and ex-post bank performance can be further investigated through the direct estimate of performance equations, as shown in equation (4).

Estimating performance equations may therefore be seen as a first attempt to shed light on the link between male and female different risk-aversion on bank performance. Actually, the expected evidence emerges when the focus is on bank portfolio risk (Models I and II), while board composition does not seem to have a significant effect on profitability and costs (even controlling for idiosyncratic banks' features; see Table a9, Models III and IV).

In what follows results concern the estimation using as dependent variable the share of bad loans over total loans, but evidence is similar considering alternative risk indicators. In this case, everything being equal, there is a negative correlation between women's presence on bank boards in the recent past (two years before) and the current level of bank portfolio riskiness[31]. Even though this result is not highly significant (10 per cent; see Model I), it is a further signal of a more prudent behaviour when women sit on boards (which may be linked to their generally higher risk-aversion), since their presence originates monitoring spillovers on corporate governance, particularly beneficial in case of financial collapse. This evidence of a lower portfolio riskiness in case of female presence on boards persists by estimating the performance equation using bank fixed effects (see Model II) to better control for specific bank characteristics, which are time-invariant (organization, history, etc.) or which vary slowly across time (as location, size, etc.) and which could be correlated with board composition or other explicative variables.[32] So, this result seems to be in line with that strand of the literature supporting higher women's risk-aversion, a special skill in a financial turmoil.

[31] A similar result is obtained by Adams and Ragunathan (2012) using IV estimation in an equation where the (log) fraction of bad loans is regressed on the fraction of women on boards.

[32] It is important to point out that (as suggested by previous papers) the composition of the board may be endogenously determined. In this respect past and expected performance may influence the appointment of independent or female members. Ryan and Haslam (2008) have demonstrated that female directors are more likely to be appointed to boards of listed firms where change is required following poor performance. Even if the estimations of gender effects on performance are based on a panel of banks, which allows to employ lagged values for explicative variables (firstly for the dummy signalling the presence of women in top boards), the strategy of Gulamhussen and Fonte Santa (2009) can be followed to better disentangle causality. Performance equations have therefore been re-estimated by using a 2SLS regression where the gender variable is instrumented by further lags of the same variable and with lagged values of bank size (measured in terms of log of total assets). The findings on the effect of female presence on riskiness are robust to these alternative IV estimations.

7. Concluding remarks

Comparisons across countries show "the Italian Case" in banking sector, since Italy is ranked among the EU countries with the lowest representation of women in bank boardrooms.

Using a unique dataset on board composition and bank characteristics, the main findings of this paper are consistent with gender discrimination within Italian bank boardrooms, with reference to board memberships, while there are no significant gender differences in turnover. As highlighted by others studies concerning the major European countries and the United States, women are less likely to sit on high-decisional levels, as well as Chairman of the Board of Directors, CEO or General Manager, thus hinting the presence of a second glass ceiling, over and above the first one, that is the one which prevents women from sitting on boards. In a male-dominated context, this result may be due to some preference for homogeneity, related to socio-cultural factors. Consistently with previous evidence and with the stylized facts, in the Italian banking sector the presence of women at the top-decisional level is still very low, even if it has increased during the last fifteen years. Women are more likely to serve on supervisory boards than in decisional and executive ones. If women are expected to be more conservative investors than men, they may consequently be excluded from those positions that are more related to risks, and that may be necessary for a bank's success. Nevertheless, their presence can become crucial and a very valuable "asset" (which may be labelled *gold dust*) in case of more rigorous credit policies or bad performance. In fact, analysing the correlations between women's participation on bank boards and past performance and riskiness, the presence of women turns out to be higher in the case of family affiliation, in large and medium-sized banks, belonging to the most important banking groups, with larger and younger boards. Moreover, female memberships are more relevant in more efficient banks, in terms of cost-efficiency, or in banks with higher share of non-performing loans in the past, and with the need to be restructured. Preliminary evidence on the effects of female presence on the ex post risk-exposure seems to support a lower risk in banks promoting women's participation in corporate governance choices.

These results may provide some insights into the debate on the possibility of increasing female participation on bank boards, an issue attracting growing interest especially during the present financial crisis, which has highlighted the importance of corporate governance presidium and risk control. The risk averse attitude of women, who are also more inclined than men to monitor bank activity, could be considered an asset in the implementation of credit strategy in order to better control and contain risk exposure. So, the recent introduction of quotas for Italian listed banks, which will boost women's presence up to 30 per cent of total memberships, for both Boards of Directors and Supervisory Boards, will represent a good "natural experiment" to better evaluate the effects of female participation on strategic decisions about Italian banks in years to come.

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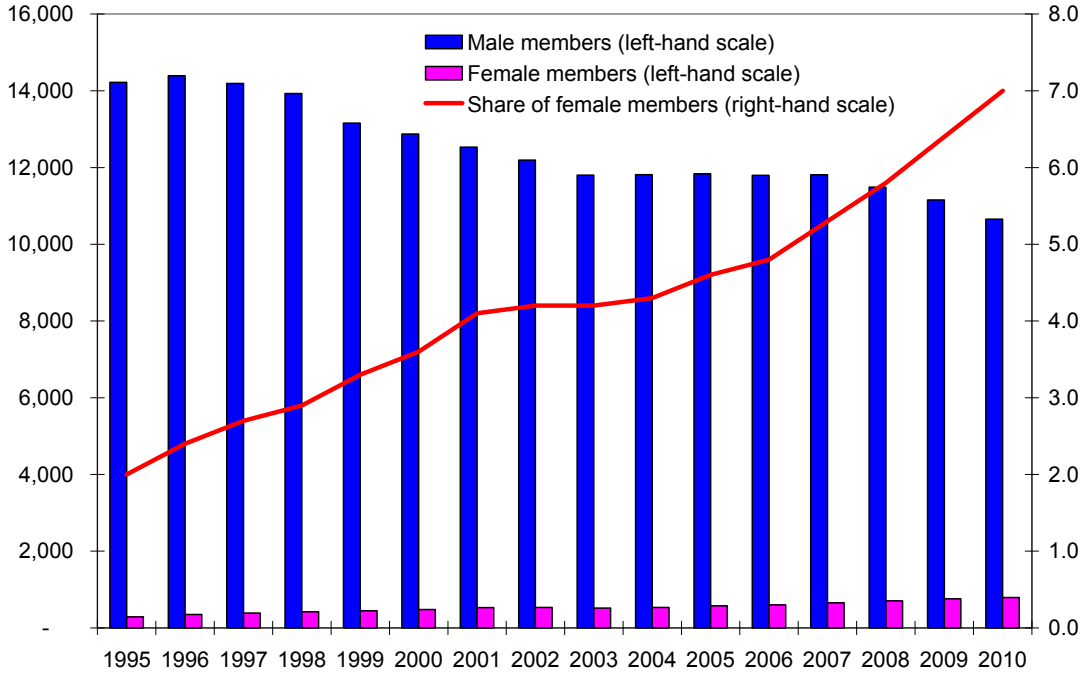
APPENDIX:

Figures and Tables

Figure a1 – Share of women on bank boards

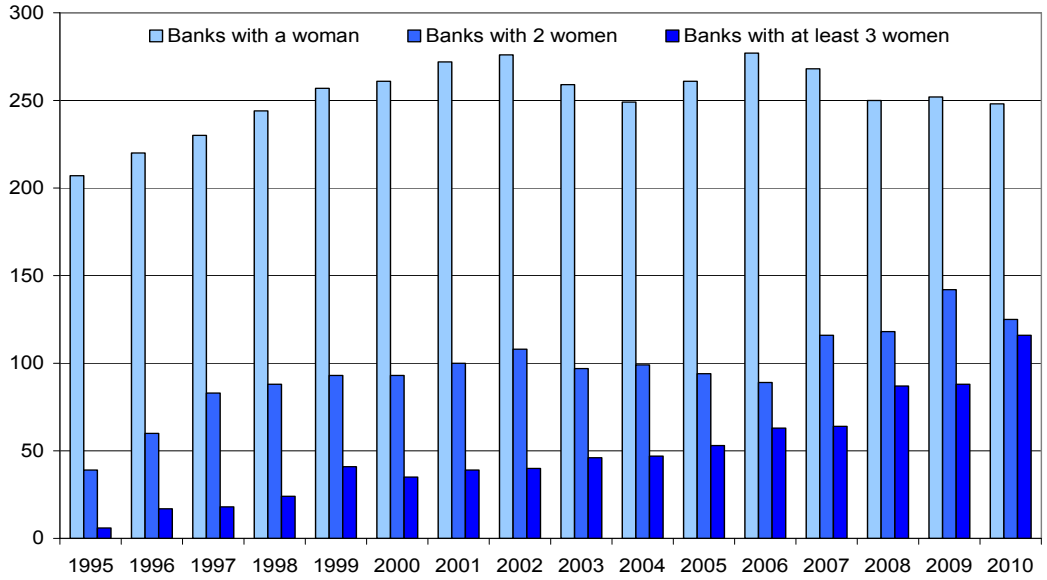
(units and percentage values)



Source: computations on the Bank of Italy's OR.SO database.

Figure a2 – Distribution of banks for number of women in all kinds of boards

(units)



Source: computations on the Bank of Italy's OR.SO database.

Table a1 – Description of the explicative variables and main descriptive statistics

Variable Name	Variable Definition	n. obs.	mean	median	std. dev.
Variables at board member level					
Age	Age of board members	253,033	54.34	54	11.16
Tenure	Length of *charge* per board member in the same bank	253,033	5.38	4	4.37
Dummy family bank	Dummy variable assuming value equal to one if the board member is affiliated to the family that controls the bank	253,033	0.002	0	0.04
Dummy B.A. degree	Dummy variable assuming value equal to one if the board member holds at least a B.A. degree	253,033	0.50	1	0.50
Dummy membership in the same birth municipality	Dummy variables assuming value equal to one if the birth municipality coincides with the one in which s/he lives (that is the person has a board membership in the same municipality in which s/he was born)	253,033	0.54	1	0.49
Nr. memberships in the same bank	Number of different memberships that a given person had in the same bank during the sample period (e.g. General Manager and Chairman of the Board of Directors or CEO or others)	253,033	1.54	1	0.81
Variables at bank level					
Sizeboard	Number of board members	15,167	16.68	16	7.31
Sizeboard-squared	Square of the number of board members	15,167	331.78	256	293.87
Share of women	Share of women (in percentage points) in all kind of bank boards (administrative and supervisory boards) at the vertex of each bank	15,167	4.14	0	7.25
Dummy limited company bank	Dummy variable assuming value equal to one if the bank is a limited company bank (*società per azioni*)	15,167	0.31	0	0.46
Dummy mutual bank	Dummy variable assuming value equal to one if the bank is a cooperative (*banca popolare*)	15,167	0.06	0	0.24
Dummy cooperative bank	Dummy variable assuming value equal to one if the bank is a mutual bank (*banca di credito cooperativo*)	15,167	0.56	1	0.50
Dummy foreign bank	Dummy variable assuming value equal to one if the bank is a branch of a foreign bank (*filiale di banca estera*)	15,167	0.07	0	0.26

Dummy North West bank	Dummy variable assuming value equal to one if the administrative headquarter of the bank is in a North-Western Italian region	15,167	0.26	0	0.44
Dummy North East bank	Dummy variable assuming value equal to one if the administrative headquarter of the bank is in a North-Eastern Italian region	15,167	0.32	0	0.47
Dummy Centre bank	Dummy variable assuming value equal to one if the administrative headquarter of the bank is in a Central Italian region	15,167	0.20	0	0.40
Dummy South bank	Dummy variable assuming value equal to one if the administrative headquarter of the bank is in a Southern Italian region	15,167	0.22	0	0.41
Dummy listed bank	Dummy variable assuming value equal to one if the bank is listed	15,167	0.03	0	0.18
Sizebank	Total assets (log of euros)	13,465	19.49	19.22	1.89
Ceffbank	Ratio between operating costs and the income margin of the bank (percentage), that is the cost/income ratio	13,288	71.47	67.29	33.95
Riskbank	Ratio between non performing loans and total loans (percentage)	12,214	6.19	3.35	7.67
Roabank	Ratio between profit before taxes and total assets (percentage)	13,231	0.80	0.90	1.57
Indcap	Ratio between bank capital and reserves, and total assets (percentage)	13,130	11.19	9.66	8.11
Dummy for foreign presence	Dummy variable assuming value equal to one if the bank has branches or subsidiaries abroad	15,167	0.03	0	0.16
Dummy for banks belonging to a top5 bank group	Dummy variable assuming value equal to one if the bank belongs to one of the top 5 Italian banking groups (Unicredit, Intesa Sanpaolo, Banca Monte dei Paschi di Siena, Unione di Banche Italiane, Banco Popolare)	15,167	0.04	0	0.21
Dummy dual governance	Dummy variable assuming value equal to one if the bank has a dual governance regime, for years after 2007	15,167	0.00	0	0.04
Dummy year	For each year in the dataset				

Sources: computations on the dataset employed in the estimations and matching individual level-characteristics (OR.SO. database) with bank-level features (Supervisory Reports).

Table a2 – Share of women's memberships by different kinds of bank boards

(percentage values)

Year	Share of women (all member-ships) (1)	*Board of Directors*				General Manage-ment (5)	*Supervisory Board*		*Default procedure Boards*
		Chairman (and CEO) (2)	Deputy Chairman (and CEO) (3)	CEO and/or member of the executive com-mittee (4)	other Directors		President	Other member-ships	Member-ships
1995	**1.9**	0.2	1.1	0.7	1.4	1.1	1.6	4.2	1.8
1996	**2.4**	0.2	1.1	0.9	1.7	1.2	2.1	5.1	1.4
1997	**2.7**	0.6	1.4	1.3	2.0	1.4	2.1	5.7	1.3
1998	**3.0**	0.7	1.6	1.5	2.2	1.6	2.2	6.3	0.0
1999	**3.5**	0.7	2.3	1.7	2.3	1.7	2.7	7.6	1.6
2000	**3.6**	0.5	1.6	1.7	2.6	1.7	2.6	8.0	1.9
2001	**3.9**	0.8	1.8	1.8	2.8	1.7	2.7	8.7	2.5
2002	**4.2**	0.8	3.0	2.3	2.9	2.0	3.4	9.4	5.1
2003	**4.2**	0.7	2.5	2.4	3.0	1.8	2.7	9.3	6.6
2004	**4.3**	0.5	2.7	2.4	3.2	2.3	2.7	9.3	2.9
2005	**4.6**	0.5	3.0	2.7	3.5	1.9	3.5	10.1	3.4
2006	**4.8**	0.8	2.8	2.9	3.5	2.1	3.8	10.3	3.6
2007	**5.1**	1.0	3.4	3.0	4.0	2.3	4.2	10.5	0.0
2008	**5.7**	1.0	3.0	3.6	4.9	2.5	5.0	11.4	5.0
2009	**6.1**	1.0	3.4	4.2	5.4	2.8	4.8	11.7	3.4
2010	**6.8**	1.1	5.0	4.8	6.3	3.2	5.3	12.6	5.0

Sources: computations on the Bank of Italy's OR.SO database. – (1) Data include, also for fractions of year, memberships in each kind of bank boards (administrative, executive, supervisory boards and boards set in case of default procedures). The sum of different kinds of board memberships exceeds the total because a person can be member of several boards in a given bank in a given year. – (2) It includes the Chairman of the Board of Directors also when s/he has other positions at the same time, including the one of CEO. – (3) It includes the Vice president of the Board of Directors also when s/he has other positions at the same time, including the one of CEO. – (4) Excluding the case in which the CEO is also either the Chairman or the Deputy Chairman of the Board of Directors. – (5) It includes the General Manager, the Deputy General Manager and equivalent positions.

Table a3 – Descriptive statistics on Italian banks' boards

(percentage values)

Year	Statistics on all Banks			Statistics on board memberships (2)			
	Banks (1)	*of which: mutual banks*	*of which: large and medium-sized banks*	Mean	Median	Max	Max for women's memberships
1995	989	*593*	*62*	16.1	15	58	4
1996	991	*609*	*60*	17.0	16	49	5
1997	995	*587*	*59*	17.1	17	46	5
1998	986	*585*	*60*	17.2	16	55	6
1999	969	*573*	*57*	17.4	17	49	6
2000	936	*543*	*57*	16.9	17	50	5
2001	902	*511*	*53*	17.1	17	48	5
2002	873	*481*	*56*	17.1	17	77	5
2003	848	*456*	*59*	16.9	17	53	5
2004	819	*444*	*57*	16.9	17	46	5
2005	822	*441*	*58*	16.8	17	53	6
2006	827	*438*	*57*	16.8	17	62	5
2007	828	*440*	*61*	17.0	17	58	5
2008	828	*432*	*55*	16.6	16	52	6
2009	814	*429*	*55*	16.9	17	57	6
2010	791	*421*	*54*	16.9	17	70	7

Sources: computations on the Bank of Italy's OR.SO database. – (1) The number of banks in the sample is generally slightly higher than the one of the Bank of Italy's Annual Reports referred to the end of the year. Computations consider instead banks operating during the year, also if they operate only for fraction of it. – (2) Data include, also for fractions of year, memberships in each kind of bank boards (administrative, executive, supervisory boards and boards set in case of default procedures).

Table a4 – Individual characteristics of board members (1)

(years, percentage values)

Year	Age (years)		B.A. degree (%)			Tenure (years)	
	Female	Male	Share of women over memberships with a BA degree	female	male	female	male
1995	42.6	53.9	1.8	43.3	45.1	2.5	2.9
1996	42.1	53.8	2.5	46.3	43.4	2.7	3.4
1997	42.0	53.9	2.8	46.3	44.7	3.0	3.9
1998	42.3	53.9	2.9	46.1	46.3	3.3	4.3
1999	42.5	53.8	3.5	48.7	48.0	3.3	4.6
2000	43.1	54.0	3.6	50.1	49.5	3.5	4.9
2001	43.8	54.2	3.9	50.3	50.7	3.7	5.2
2002	44.4	54.4	4.0	49.8	51.9	4.1	5.5
2003	44.9	54.6	4.0	49.9	52.6	4.5	5.9
2004	45.3	54.9	4.2	50.6	52.5	4.9	6.2
2005	45.6	55.2	4.4	51.0	52.6	5.2	6.6
2006	46.3	55.6	4.6	51.9	53.3	5.5	7.0
2007	46.5	55.8	4.9	52.2	53.8	5.7	7.2
2008	47.0	56.1	5.5	52.0	54.0	5.6	7.5
2009	47.4	56.4	5.9	52.4	54.3	5.7	7.8
2010	47.9	56.7	6.6	52.5	54.3	5.8	8.0

Sources: computations on the Bank of Italy's OR.SO database. – (1) Data include, also for fractions of year, memberships in each kind of bank boards (administrative, executive, supervisory boards and boards set in case of default procedures).

Table a5 – Probability of being a Top Executive in Italian Banks (1)

Dependent variable: a dummy variable that is equal to 1 when the membership is one of the following: Chairman of the Board of Directors, member of the Executive Committee, CEO or General Manager	**Model I**	**Model II**	**Model III**
Age	0.001***	0.001***	0.001***
	[0.000]	[0.000]	[0.000]
Tenure	0.020***	0.020***	0.016***
	[0.001]	[0.001]	[0.001]
Dummy female	-0.150***	-0.152***	-0.145***
	[0.011]	[0.011]	[0.012]
Dummy family bank	0.336***	0.345***	0.296***
	[0.066]	[0.066]	[0.081]
Dummy small bank	-0.100***	-0.102***	-0.117***
	[0.009]	[0.009]	[0.009]
Dummy cooperative bank (*banca popolare*)	-0.006	-0.008	-0.036***
	[0.010]	[0.010]	[0.010]
Dummy mutual bank (*banca di credito cooperativo*)	-0.044***	-0.060***	-0.077***
	[0.007]	[0.007]	[0.008]
Dummy foreign bank	0.692***	0.691***	0.690***
	[0.003]	[0.003]	[0.004]
Dummy North East bank	-0.019**	-0.022***	-0.015*
	[0.007]	[0.007]	[0.008]
Dummy Centre bank	-0.018**	-0.017**	-0.020**
	[0.008]	[0.008]	[0.008]
Dummy South bank	-0.072***	-0.064***	-0.056***
	[0.008]	[0.008]	[0.009]
Dummy membership in the same birth municipality		-0.036***	-0.040***
		[0.006]	[0.006]
Dummy B.A. degree		-0.045***	-0.056***
		[0.006]	[0.007]
Riskbank (bad loans/total loans)			0.000*
			[0.000]
Nr. memberships in the same bank			0.151***
			[0.003]
Dummy year	YES	YES	YES
Observations	245,690	245,690	212,023
Pseudo-R^2	0.0581	0.0604	0.1071

(1) Probit pooled estimation including a constant term (not reported) on the probability of being a top board member in Italian banks. Marginal effects are reported and robust standard errors are in brackets and are adjusted for cluster correction for groups of individuals (cluster correction for groups of banks produces similar results).

* significant at 10%; ** significant at 5%; *** significant at 1%.

Table a6 – The probability of top board members' turnover (1)

Dependent variable: Turnover is a dummy variable that is equal to 1 at time *t* if the individual *j* will be removed in the following (t+1) year; it assumes missing values in years in which the individual is not in charge and zero in the years s/he is in charge before the removal (up to *t-1*).	**Model I**	**Model II**	**Model III**	**Model IV**	**Model V**
Dummy Top Member	-0.018***	-0.018***	-0.017***	-0.017***	-0.017***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
Age	0.001***	0.001***	0.001***	0.001***	0.001***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Tenure	0.002***	0.002***	0.002***	0.002***	0.002***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Nr memberships in the same bank	-0.050***	-0.040***	-0.041***	-0.041***	-0.041***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
Dummy female	-0.002	0.000	0.000	0.005	-0.010***
	[0.004]	[0.004]	[0.004]	[0.005]	[0.003]
Dummy family bank	-0.085***	-0.078***	-0.077***	-0.075***	-0.076***
	[0.010]	[0.005]	[0.006]	[0.006]	[0.006]
Dummy membership in the same birth municipality	-0.009***	-0.010***	-0.010***	-0.010***	-0.010***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
Dummy B. A. degree	-0.006***	-0.007***	-0.006***	-0.006***	-0.006***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
Dummy small bank	-0.045***	-0.044***	-0.054***	-0.053***	-0.052***
	[0.010]	[0.011]	[0.011]	[0.011]	[0.011]
Dummy cooperative bank (*banca popolare*)	-0.063***	-0.051***	-0.049***	-0.049***	-0.048***
	[0.008]	[0.007]	[0.007]	[0.007]	[0.007]
Dummy mutual bank (*banca di credito cooperativo*)	-0.038***	-0.041***	-0.051***	-0.049***	-0.051***
	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]
Dummy foreign bank	-0.002	0.009	0.003	-0.002	-0.004
	[0.012]	[0.015]	[0.011]	[0.011]	[0.012]
Dummy North East bank	-0.013**	-0.012**	-0.020***	-0.019***	-0.018***
	[0.006]	[0.005]	[0.005]	[0.005]	[0.005]
Dummy Centre bank	-0.003	0.001	-0.002	-0.002	-0.002
	[0.007]	[0.006]	[0.006]	[0.006]	[0.006]
Dummy South bank	0.036***	0.016**	0.017**	0.017***	0.016**
	[0.008]	[0.007]	[0.007]	[0.006]	[0.007]
Lag3_Riskbank (bad loans/total loans)		0.001***			
		[0.000]			
Sizebank (log. of total assets)		-0.003	-0.006***	-0.006***	-0.005***
		[0.002]	[0.002]	[0.002]	[0.002]
Lag3_Ceffbank			0.000		
			[0.000]		
Lag3_Roabank (gross profit/total assets)	-0.004***			-0.002***	-0.002**
	[0.001]			[0.001]	[0.001]
Lag3_Roabank*Dummy female				-0.006**	
				[0.002]	
Share_women					0.002***
					[0.000]
Lag3_Roabank*Share_women					-0.000*
					[0.000]
Dummy year	YES	YES	YES	YES	YES
Observations	174,015	161,637	171,024	170,147	170,147
Pseudo-R^2	0.0475	0.0423	0.0413	0.0419	0.0429

(1) Probit pooled estimation including a constant term (not reported) on the probability of being removed from bank boards in the subsequent year. Marginal effects are reported and robust standard errors are in brackets and are adjusted for cluster correction for groups of banks (cluster correction for groups of individuals produces similar results).
* significant at 10%; ** significant at 5%; *** significant at 1%.

Table a7 – Poisson regression on a panel of Italian banks on the period 1995-2010 considering bank random effects in the estimations (1)

Dependent variable	**Model I:** *Nr.of women on all Boards*	**Model II:** *Nr.of women on all Boards*	**Model III:** *Nr.of women on all Boards (since 2000)*	**Model IV:** *Nr. women on Boards of Directors or General managers*
Sizeboard	0.073***	0.073***	0.060***	0.073***
	[0.010]	[0.010]	[0.011]	[0.014]
Sizeboard-squared	-0.001***	-0.001***	0.000	0.000
	[0.000]	[0.000]	[0.000]	[0.000]
(mean) Age	-0.075***	-0.075***	-0.063***	-0.078***
	[0.006]	[0.006]	[0.007]	[0.009]
(mean) Tenure	-0.004	0.000	-0.032**	-0.007
	[0.012]	[0.012]	[0.014]	[0.018]
Share of membership in family banks	4.301***	4.448***	3.824**	7.081***
	[1.300]	[1.296]	[1.538]	[1.611]
Share of membership with B.A. degree	-0.224*	-0.208	-0.306*	-0.173
	[0.134]	[0.134]	[0.157]	[0.207]
Share of membership in the same birth municipality	-0.268*	-0.283**	-0.329**	-0.556***
	[0.137]	[0.137]	[0.164]	[0.211]
Dummy cooperative bank (*banca popolare*)	0.258*	0.303**	0.192	0.332
	[0.145]	[0.146]	[0.185]	[0.216]
Dummy mutual bank (*banca di credito cooperativo*)	0.110	0.159	0.325**	0.000
	[0.116]	[0.117]	[0.128]	[0.182]
Dummy foreign bank	-1.198***	-1.155***	-1.264***	-0.660
	[0.301]	[0.302]	[0.334]	[0.417]
Dummy North East bank	-0.070	-0.066	-0.018	-0.261
	[0.106]	[0.106]	[0.113]	[0.159]
Dummy Centre bank	0.088	0.078	0.035	-0.087
	[0.117]	[0.117]	[0.124]	[0.175]
Dummy South bank	0.131	0.132	0.111	0.056
	[0.120]	[0.120]	[0.134]	[0.187]
Dummy listed bank	0.133	0.240*	0.305**	0.051
	[0.132]	[0.137]	[0.152]	[0.173]
Lag1 Sizebank (log. total assets)	-0.068**	-0.062**	-0.038	-0.001
	[0.030]	[0.031]	[0.035]	[0.045]
Lag1 Ceffbank (operating costs/income margin)	-0.003**	-0.003**	-0.003**	-0.003
	[0.001]	[0.001]	[0.001]	[0.002]
Lag2 Riskbank (bad loans/total loans)	0.008***	0.009***	0.011***	0.004
	[0.003]	[0.003]	[0.004]	[0.004]
Lag1 Roabank (gross profit/total assets)	-0.010	-0.011	0.010	-0.036
	[0.019]	[0.019]	[0.022]	[0.028]
Lag1 Indcap (capital & reserves/total assets)	-0.009*	-0.008*	-0.006	-0.007
	[0.005]	[0.005]	[0.005]	[0.007]
Dummy for foreign presence		-0.420***	-0.460**	-0.525***
		[0.162]	[0.195]	[0.202]
Dummy for banks belonging to a top5 bank group		0.227**	0.318***	0.092
		[0.090]	[0.104]	[0.114]
Dummy dual governance		0.168	0.260	-0.350
		[0.328]	[0.351]	[0.448]
Dummy year	YES	YES	YES	YES
Constant	5.041***	4.838***	3.991***	3.395***
	[0.723]	[0.728]	[0.827]	[1.082]
Observations (*Number of banks*)	10,756 (*1,066*)	10,756 (*1,066*)	7,549 (*928*)	10,756 (*1,066*)
Wald χ^2	1305.52***	1316.29***	712.60***	790.88***

(1) Panel Poisson regressions with bank random effects. Estimated coefficients are reported and standard errors are in brackets.
* significant at 10%; ** significant at 5%; *** significant at 1%.

Table a8 – Robustness checks: alternative estimation techniques (1)

	Model I: Poisson, bank FE	**Model II: Negative Binomial, bank RE**	**Model III: Panel Probit, bank RE**
Dependent variable	*Nr. women on all Boards*	*Nr. women on all Boards*	*Dummy equal to 1 if there is at least a woman on Boards*
Sizeboard	0.073***	0.073***	0.169***
	[0.011]	[0.010]	[0.019]
Sizeboard-squared	-0.000**	-0.001***	-0.002***
	[0.000]	[0.000]	[0.000]
(mean) Age	-0.085***	-0.075***	-0.155***
	[0.007]	[0.006]	[0.010]
(mean) Tenure	0.009	-0.004	0.085***
	[0.013]	[0.012]	[0.019]
Share of membership in family banks	5.225***	4.301***	7.595**
	[1.623]	[1.300]	[3.114]
Share of membership with B.A. degree	-0.265*	-0.224*	-0.279
	[0.160]	[0.134]	[0.227]
Share of membership in the same birth municipality	-0.196	-0.268*	-0.312
	[0.161]	[0.137]	[0.226]
Dummy cooperative bank (*banca popolare*)	0.651***	0.258*	0.357*
	[0.181]	[0.145]	[0.202]
Dummy mutual bank (*banca di credito cooperativo*)	0.000	0.110	0.324
	[0.000]	[0.116]	[0.222]
Dummy foreign bank	0.000	-1.198***	-1.768***
	[0.000]	[0.301]	[0.534]
Dummy North East bank	-0.224	-0.070	-0.137
	[0.469]	[0.106]	[0.198]
Dummy Centre bank	0.099	0.088	0.487**
	[0.415]	[0.117]	[0.224]
Dummy South bank	0.574	0.131	0.336
	[0.445]	[0.120]	[0.220]
Dummy for foreign presence	-0.435**		-0.769***
	[0.185]		[0.212]
Dummy for banks belonging to a top5 bank group	0.201**		0.341***
	[0.102]		[0.127]
Dummy listed bank	0.241	0.133	0.524**
	[0.159]	[0.132]	[0.208]
Dummy dual governance			-0.186
			[0.488]
Lag1 Sizebank (log. total assets)	-0.114**	-0.068**	-0.059
	[0.056]	[0.030]	[0.055]
Lag1 Ceffbank (operating costs/income margin)	-0.003**	-0.003**	-0.005***
	[0.001]	[0.001]	[0.002]
Lag2 Riskbank (bad loans/total loans)	0.006**	0.008***	0.014***
	[0.003]	[0.003]	[0.005]
Lag1 Roabank (gross profit/total assets)	-0.018	-0.010	-0.053*
	[0.020]	[0.019]	[0.030]
Lag1 Indcap (capital & reserves/total assets)	-0.014**	-0.009*	-0.005
	[0.006]	[0.005]	[0.007]
Dummy year	YES	YES	YES
Constant		23.760	7.916***
		[107.724]	[1.304]
Observations (*Number of banks*)	8,210 (*706*)	10,756 (*1,066*)	10,756 (*1,066*)
Wald χ^2	--	1305.53***	1242.80***

(1) For panel Poisson FE and negative binomial RE (model I and II) coefficients are reported and standard errors (not robust) are in brackets; in case of panel probit RE estimate (model III) coefficient are reported and relative standard errors (corrected for heteroskedasticity) are in brackets.
* significant at 10%; ** significant at 5%; *** significant at 1%.

Table a9 – Effects of gender diversity on bank riskiness and performance: first panel estimations (1)

	Model I: Bank RE	**Model II: Bank FE**	**Model III: Bank FE**	**Model IV: Bank FE**
Dependent variable	*Riskbank index : Bad loans on total loans*	*Riskbank index : Bad loans on total loans*	*Profitability index (ROA): Gross profit on total assets*	*Cost-efficiency index: Operating costs on income margin*
Dummy for "at least a woman in bank boards" (Lag2)	-0.293*	-0.338*	-0.021	-0.120
	[0.187]	[0.198]	[0.041]	[0.489]
Sizeboard	0.023			
	[0.018]			
(mean) Age	-0.001			
	[0.040]			
(mean) Tenure	0.045			
	[0.071]			
Share of membership in family banks	-6.137			
	[4.992]			
Dummy cooperative bank (*banca popolare*)	0.557			
	[0.984]			
Dummy mutual bank (*banca di credito cooperativo*)	0.813			
	[0.853]			
Dummy foreign bank	-1.844			
	[1.185]			
Dummy North East bank	-0.569			
	[1.108]			
Dummy Centre bank	2.573**			
	[1.033]			
Dummy South bank	9.484***			
	[1.678]			
Dummy listed bank	-0.401			
	[0.889]			
Lag1 Sizeboard		-0.005	-0.002	0.078
		[0.019]	[0.004]	[0.057]
Lag1 Sizebank (log. total assets)	0.705**	1.521**	-0.353***	-5.016***
	[0.306]	[0.595]	[0.111]	[1.586]
Lag1 Ceffbank (operating costs/income margin)	-0.015**	-0.014*	-0.008***	
	[0.007]	[0.007]	[0.002]	
Lag1 Riskbank (bad loans/total loans)			-0.014***	0.205**
			[0.005]	[0.094]
Lag1 Roabank (gross profit/total assets)	-0.995***	-0.928***		-4.756***
	[0.178]	[0.174]		[0.511]
Lag1 Indcap (capital & reserves/total assets)	0.013	0.044	-0.022*	0.063
	[0.049]	[0.055]	[0.013]	[0.208]
Bank fixed effects	NO	YES	YES	YES
Dummy year	YES	YES	YES	YES
Constant	-10.560	-24.022**	8.361***	174.617***
	[7.376]	[12.058]	[2.295]	[32.916]
Observations	10,226	10,305	10,093	10,098
(*Number of banks*)	(*1,081*)	(*1,093*)	(*1,056*)	(*1,059*)
R^2 between (*b*) or within (*w*)	R^2-*b*=0.3923	R^2-*w*=0.1484	R^2-*w*=0.1131	R^2-*w*=0.1282

(1) Panel of banks in the period 1995-2010. Estimations with bank random effects or bank fixed effects. Robust standard errors (corrected for heteroskedasticity) are in brackets.
* significant at 10%; ** significant at 5%; *** significant at 1%.