

Gender bias in microfinance

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ABSTRACT

While most gender studies on microfinance have concentrated on possible women empowerment, few have asked why some microfinance institutions (MFIs) target women while others do not. This paper provides empirical evidence on the existence and consequences for an MFI of having a conscious gender bias towards women in microfinance. Specifically, using a global dataset of 379 MFIs in seventy-three countries, we investigate what characterizes MFIs that have a gender bias and how this bias affects various aspects of financial performance. The results indicate that a conscious gender bias is associated with group lending methodologies, international orientation, female leadership, smaller loans, and a noncommercial legal status. With respect to performance we find that having a conscious gender bias significantly improves repayment but does not enhance overall profitability. We find that the positive repayment effect associated with a focus on women is offset by higher costs related to smaller loans, leading to similar overall profitability measures.

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GENDER BIAS IN MICROFINANCE

INTRODUCTION

While the microfinance literature is rich on studies focusing on possible effects for female microfinance customers little knowledge exists on whether it is good business for microfinance institutions (MFIs) to focus on women. The main empirical questions that will be answered in this paper are what characterizes the MFIs that have a specific focus on women, and how does this gender bias influence their overall profitability.

Microfinance and women have always been intrinsically linked. From the starting point of experimental schemes in Asia and Latin America in the 1970s, microfinance has been above all a matter of women. Many initiatives have been celebrated for their ability to reach out to women and enhance their welfare. Even today, the gender argument continues to be at the forefront. The objective of the Microcredit Summit Campaign, which plays a central role in the promotion of microfinance, is *‘to ensure that 175 million of the world’s poorest families, especially women, receive credit for self-employment and other financial and business services’* [our emphasis]¹. When the Nobel Prize was awarded to Mohammad Yunus and the Grameen Bank, the Nobel Committee highlighted the role of microcredit in women liberation (Norwegian Nobel Committee, 2006). Among many, Morduch (1999) argues that one of the main reasons for the success of microfinance in the public eye is the targeting of women. The focus on women within microfinance has been widely documented in the literature (Mody, 2000; Yunus, 2002). In this study’s dataset covering 379 MFIs from seventy-three countries, women represent 73 per cent of microfinance customers on average² and 42 per cent of MFIs declare a conscious gender bias towards women.

With the growing commercialization of microfinance, however, it remains to be seen whether women will continue to be the main focus of microfinance in the future. A growing number of socially oriented nonprofit microfinance organizations have shifted towards for-profit objectives. The paradigm of ‘financial sustainability’ (Zeller and Meyer, 2002) is nowadays recognized as a necessary pre-condition for the development and survival of modern microfinance initiatives.

¹ See <http://www.microcreditsummit.org>.

² This figure is close to that in earlier literature (see, e.g., Cull et al. 2007; Daley-Harris, 2007).

However, this evolution towards commercially oriented and self-sustainable institutions has triggered serious debate within the field.

As many authors argue, commercialization might lead to a ‘mission drift’, where MFIs turn to more profitable customers, that is. mainly urban, upper poor, and *male* (Christen, 2001; Copestake, 2007; Cull et al., 2008; Dichter and Harper, 2007). Others argue that female targeting and financial sustainability are perfectly compatible, since female targeting within microfinance has often been attributed to increased efficiency through high female repayment rates (Armendariz and Morduch, 2005; Mayoux, 1999). Although the win-win principle, that is, microfinance being profitable while still targeting the poor, is often heard in this respect, it remains highly contested (Balkenhol, 2007; Morduch, 1999).

In sum, the link between female targeting and microfinance performance is highly controversial. Some fear that female targeting might not be profitable enough and might lead to female exclusion. Others argue that microfinance would instrumentalize women by using their discipline and docility to ensure good repayment rates and therefore increased profitability (Fernando, 2006; Molyneux, 2002; Rankin, 2002). These two counterarguments might not even be contradictory: they simply reflect the fact that profitability is both a matter of repayment and costs and it is likely that female targeting has contrasting effects on each aspect.

From an empirical perspective, the link between female targeting and microfinance performance has been poorly explored. This paper wants to elucidate this issue by means of a global empirical investigation of the consequences of having a deliberate focus on women. The main purpose of the paper is to understand how a gender bias towards women affects MFI design and MFI performance. To do so, we make use of a global dataset spanning 379 MFIs in seventy-three countries over ten years. We investigate which MFI-characteristics are associated with a conscious gender bias towards women and how this bias affects different aspects of the MFI’s financial performance.

Our main findings can be summarized as follows. First, gender bias is associated with collective methods, international orientation, smaller loans, female leadership, and a noncommercial legal status. Second, a conscious gender bias is significantly associated with lower portfolio-at-risk and smaller loans. Finally, there is no significant effect of conscious gender bias on overall profitability measures such as operational self-sufficiency (OSS), financial self-sufficiency (FSS), return on assets (ROA), and return on equity (ROE).

These findings suggest that, from a financial perspective, there are both positive and negative aspects to focusing on women. On the one hand, women do repay better, which lowers risk and increases profitability. On the other hand, MFIs that focus on women usually make use of smaller loans, which increases their operational costs. The net result is that MFIs with a female focus have, on average, similar overall profitability measures.

The rest of this paper proceeds as follows. Section 2 discusses the relevant literature and derives the main hypotheses to be tested. Section 3 explains the dataset and the statistical methodologies employed, while Section 4 reports the main empirical findings. Section 5 presents conclusions and this study's main implications.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Women and Microfinance

Throughout the old history of microfinance, women have not always been the centre of attention. In Europe and North America, the first initiatives of the cooperative and mutualist movement showed little interest for women. Lemire (2001) finds that the proportion of women in the cooperative movement hardly reached 10 per cent. With a quarter of female clients, mostly widows and unmarried, the 18th century Irish funds were an exception, possibly because of their very small loan amounts (Hollis, 2001).

Similarly, the first attempts to provide credit in developing countries through development banks and cooperative movements also showed little interest for women (Fournier and Ouédraogo, 1996). However, this rapidly changed with the development of modern MFIs and these quickly gained interest in women. For instance, the proportion of female clients of the Grameen Bank steadily increased from 44 per cent in October 1983 to 95 per cent in 2001 (Armendariz and Morduch, 2005). How can we explain this sudden enthusiasm for female targeting and why do many microfinance organizations today still choose to focus on women? Three main arguments are usually put forward by donors or practitioners in favour of targeting women: (1) gender equality, (2) poverty reduction, and (3) MFI efficiency (Mayoux, 2001).

With respect to gender equality, microfinance is considered an effective means of promoting women's empowerment. Drawing on the findings of household economics developed over the

last three decades³, it is suggested that gender inequalities result in great part from inequalities in bargaining power in the context of decision making within the household. It is also suggested that women's weaker bargaining power results from their smaller contribution to household cash flows and market-based income-generating activities. By enabling women to develop or strengthen income-generating activities, microfinance is likely to increase their monetary income, their control over their income, and their bargaining power within the household. These effects are expected to lead to various mutually reinforcing social, psychological, and even political effects: better self-esteem and self-confidence, an improvement in status within the family and the community, better spatial mobility, and greater visibility of women in public spaces, and so forth.

As far as poverty reduction is concerned, it is argued that women invest their income to nurture the well-being of their families, whereas this is not always the case for men. For instance, Khandker (2003) finds that a 100 per cent increase in the volume of borrowing to a woman leads to a 5 per cent increase in the per capita household non-food expenditure and a 1 per cent increase in the per capita household food expenditure, whereas for men such an increase results in only a 2 per cent increase in non-food expenditures and a negligible change in food expenditures. This finding is echoed in various empirical studies conducted all over the world⁴: a dollar loaned to a woman seems to have a greater development impact than a dollar loaned to a man (World Bank 2007, p. 165).

As far as MFI efficiency is concerned, a high female repayment rate is often the main argument. As described by Armendariz and Morduch (2005), the Grameen Bank originally had a majority of male clients but quickly decided to concentrate almost entirely on women due to repayment problems related to male customers. Also, far beyond the Grameen Bank's example, it seems that the increasing emphasis on women in microfinance programs since the 1990s has been inspired by the evidence of high female repayment rates combined with the rising influence of gender lobbies within donor agencies and nongovernmental organizations (NGOs) (Fernando, 2006; Mayoux, 1999; Weber, 2006). According to Mayoux (2001), if gender lobbies have been

³ See, for instance, Sen (1990).

⁴ See, for instance, Chant (1985), Haddad and Hoddinod (1995), Kabeer (1997), Senauer (1990), and Thomas (1990).

able to argue for targeting women, it is mainly on the grounds of high female repayment rates and the contribution of women's economic activity to economic growth.

The previous discussion shows that many studies have advanced theoretical arguments concerning female targeting as well as its consequences. However, as has been noted by Armendariz and Morduch (2005), most of them are not backed by any empirical evidence. It is in light of these voids in the empirical research that our efforts must be seen. First, although many studies document the magnitude of female focus (Mody, 2000; Yunus, 2002; among others), no study of which we know has attempted to identify in detail the characteristics of those MFIs that focus on women.

Second, empirical evidence usually confirms that women do indeed repay better than men (D'Espallier et al., 2009; Kevane and Wydick, 2001; Khandker et al., 1995; Sharma and Zeller, 1997). However, MFI financial performance is more than just repayment. The financial efficiency of female targeting is far from obvious. It can also be argued that targeting women is more costly for various reasons: They borrow smaller amounts, they are less mobile and less educated, and they need additional services (health, education, literacy, child care, etc.) and maybe additional monitoring. Therefore, a focus on women and overall MFI financial performance goes beyond repayment rates and deserves further attention.

Gender Bias and MFI Characteristics

This sub-section discusses the hypotheses that will be tested with respects to the MFI characteristics that underlie a conscious gender bias towards women. Specifically, we derive hypotheses with respect to *international orientation*, *lending methodology*, *average loan size*, *female leadership*, *legal status*, and *regulation*.

a. International Orientation

The idea that microfinance should target women has largely been driven by international organizations such as Women's World Banking (WWB), Consultative Group to Assist the Poor (CGAP), USAID and the World Bank (Fernando, 2006; Mayoux, 2001). These networks and aid organizations constitute an important part of the international community's development policy and therefore value the poverty reduction effect attached to focusing on women. In line with this,

we expect that MFIs that are internationally initiated and more internationally oriented would focus more on women. This line of reasoning can be described by following hypotheses:

H1a. Having an international initiator is positively related with focus on women

H1b. Membership in an international network is positively related with focus on women

b. Lending Methodology

Within microfinance a broad scale of different lending methodologies exist, such as *village banking*, *solidarity groups*, and *individual-based* lending (Kevane and Wydick, 2001; Sharma and Zeller, 1997). Group methodologies are usually considered ‘female’ methods: Women accept joining groups and spending time in group meetings more easily, either because they are more sensitive to collective activities or simply because they lack physical collateral and are required to engage in collective activities (Armendariz and Morduch, 2005; Mayoux, 2001). Lending approaches are usually correlated with broader social missions. Village banks and solidarity group lenders generally aim to reach poorer households, including women (Cull et al., 2008).

Similarly, the provision of nonfinancial services—such as health services, basic literacy training, and business training— alongside microfinance, often referred to as ‘microfinance plus’, might also have an impact on gender bias. Those MFIs providing nonfinancial services normally do so to service poorer and more marginalized customers (Lensink and Mersland, 2009). It also argued that women more readily accept nonfinancial services, while also needing them more (Armendariz and Morduch, 2005; Mayoux, 2001, forthcoming). In conclusion, focus on women might be influenced by the MFI’s lending methodology and we expect such a focus to be greater in collective methods, which can be summarized in the following hypotheses:

H2a. Village banks focus more on women

H2b. Solidarity groups focus more on women

H2c. Finance plus activities are associated with a greater focus on women

c. Loan Size

Women are likely to get smaller loans because of either demand issues or supply issues. As far as demand is concerned, women are usually engaged in small-scale activities that require less capital. It is also argued that they are more risk adverse and therefore less likely to ask for large loans that exceed their repayment capacity (Armendariz and Morduch, 2005; Phillips and Bhatia-Panthaki, 2007). As far as supply is concerned, Fletschner (2009) argues that the lack of physical collateral may prevent MFIs from providing large loans to women. In conclusion, we expect that focus on women is associated with smaller average loans, which can be described by the following hypothesis:

H3. A smaller average loan is associated with greater focus on women

d. Female Leadership

Female CEOs may be more concerned with empowerment and social engagement towards women. Similarly, female leadership might help identify and address female market issues (Cheston, 2007; Mersland and Strøm, 2009). In highly patriarchal contexts, female staff and female leadership might even be essential to reaching women (Mayoux, forthcoming). Therefore, we expect focus on women to be influenced by female leadership, which can be described by the following hypothesis:

H4. Having a female CEO is associated with a greater focus on women

e. Legal Status and Regulation

MFIs come in different legal forms and gender focus might differ with the MFI's legal status. For instance, nonprofit organizations such as NGOs tend to have broader objectives and governance forms that make them more likely to reach marginalized customers such as women (Mersland, 2009). Regulation is often associated with mission drift, which is usually understood as less attention being paid to poor clients and women (Copestake, 2007; Cull et al., 2008). Following these arguments, the following hypotheses can be derived:

H5a. A nonprofit status is associated with a greater focus on women

H5b. Regulated MFIs are associated with a lesser focus on women

Conscious Gender Bias and Profitability

What is the impact of focusing on women on MFI performance? This sub-section discusses the hypotheses that will be tested with respect to the relation between female focus and profitability. We suggest that female focus may have a differential impact on two main aspects of the MFI's overall profitability, *repayment* and *costs*.

a. Repayment

The assertion that women are good credit risks is regularly put forward by microfinance advocacy networks and sponsors. As argued before, many studies document that women do indeed pay better than men (Armendariz and Morduch, 2005; D'Espallier et al., 2009; Gibbons and Kasim, 1991; Hossain, 1988; Hulme, 1991; Kevane et Wydick, 2001; Khandker et al. 1995; World Bank, 2007). Therefore the impact of focusing on women might positively influence repayment, which can be described by the following hypothesis:

H6. A greater focus on women is associated with higher loan repayment rates.

b. Costs

Microfinance organizations have different options to reduce costs: scales economies through extending their client base or increasing the profit margin through serving existing customers with larger loans and more services. Cull et al. (2008) find that the second option is the most efficient and that transacting small loans significantly increases costs. Since women are likely to get smaller loans either because of demand issues (women prefer smaller, less risky loans; the scale of women's activities is usually smaller) or supply issues (women have less collateral at their disposal), we expect focus on women to be associated with the larger costs associated with smaller loans. Similarly, other gender aspects may induce additional costs associated with female focus. For instance, lower literacy levels and lower geographic mobility may induce higher transaction costs. In conclusion, we expect a positive relation between female focus and operational costs, which can be summarized as follows:

H7. A greater focus on women is associated with higher costs related to smaller loans

c. Overall profitability

Since any profit function includes both income and costs and we expect a differential impact of female focus on different aspects of profitability, the relation between focus on women and overall profitability is *a priori* unclear. This hypothesis can be summarized as follows:

H8. A greater focus on women could have a positive or negative effect on overall MFI profitability.

DATA AND METHODOLOGY

Data and Summary Statistics

Financial and general data for this study were collected from 379 MFIs operating in seventy-three different countries worldwide. The data have been extracted from rating assessment reports gathered by specialized rating agencies supported by the Rating Fund of CGAP (www.ratingfund.org). At each rating up till four years of data were obtained and the ratings were performed during the period 2001–2008.

No dataset is perfectly representative of the microfinance field. In particular, our dataset contains relatively few of the megasized MFIs and it does not cover the virtually endless number of small savings and credit cooperatives. The former are rated by such agencies as Moody's and Standard & Poor's, while the latter are not rated.

Different inflation rates in the seventy-three countries make comparisons difficult for all monetary variables. We solve this problem by converting the monetary variables into US dollar amounts at the going exchange rate. From the purchasing power parity theorem of international finance (Solnik and McLeavey, 2004), conversion into US dollars implies that local inflation has been adjusted for.

Table 1 provides a detailed description of the main variables that were used as well as a number of summary statistics. The variables are divided into *general* and *financial variables*; variables

related to *gender* and *organizational* variables, and variables related to *MFI methodology*. The variables related to *gender*; *organization*, and *methodology* are dummies, whereas the *general* and *financial* variables are continuous variables. For the latter category, variables that are naturally skewed have been transformed to their natural logs to avoid any problems related to normality assumptions.

As can be seen from the *general* and *financial* variables, the mean natural logarithm of total assets is 14.68, which corresponds to total assets of US\$ 6,122,000. Similarly, the mean natural logarithm of the average loan size is 5.85, which corresponds to an average loan of 712 dollars. The mean MFI is fourteen years old, has an ROA of 1 per cent, an ROE of 5 per cent, an OSS of 1.24, and a FSS of 0.97. The debt rate, calculated as total debt divided by total assets, is 0.48 and the expense rate, defined as total operational costs divided by total assets, is 0.19.

Two variables related to *gender* are used, namely, conscious gender bias and female CEO. Conscious gender bias is defined as a dummy variable that is equal to 1 if the MFI has a conscious gender bias towards women and 0 otherwise. This dummy variable is constructed based on information from the rating reports. As can be seen, in 42 per cent of cases MFIs have a conscious gender bias towards women. The variable female CEO indicates that in 29 per cent of the cases MFIs have a female leader.

The variables related to *organizational structure* reveal the following: In 32 per cent of cases, the MFI is part of an international network, 27 per cent are regulated by a banking authority, and 38 per cent of the MFIs are initiated by an international founder. Finally, in 31 per cent of cases, the MFI is a bank or some other type of shareholder financial institution.

Looking at the variables related to *methodology*, 18 per cent of the MFIs operate as village banks and 27 per cent employ mainly a solidarity group lending methodology. 82 per cent of the MFIs are not involved in microfinance plus activities and 23 per cent of the MFIs operate in rural areas. Finally, in 35 per cent of cases, MFIs offer voluntary savings in addition to loans.

< Insert Table 1 around here >

Estimation Methods

The first empirical question in this paper relates to characterizing the variables that are significantly related to a conscious gender bias towards women. To address this issue we

perform a logit analysis where the dependent variable is the dummy for conscious gender bias. In line with our hypotheses, we use a wide variety of independent variables related to *international orientation* (international initiator and international network), *female leadership* (female CEO), *lending methodology* (village banks, solidarity groups, finance plus), *legal status* (ownership and regulatory status), and *average loan size* while controlling for a number of other effects such as *size*, *age*, *rural*, and *regional* dummies. To check the robustness of the results we also report probit estimates for the same regressions.

The second empirical question relates to analysing how a conscious gender bias affects different aspects of profitability. To address this issue we employ a random effects (RE) regression, where the dependent variables are profitability measures and the independent variable is conscious gender bias together with a variety of controls⁵. In line with our hypotheses, we look at *portfolio-at-risk* to measure repayment, *average loan size* to analyse the size of the loan amounts, and *profitability* in terms of OSS, FSS, ROA, and ROE. We experiment with a wide variety of controls that have been suggested in previous performance studies and experiment with time and regional dummies.

We provide two important robustness checks for the RE model in case some of the assumptions underlying the RE estimation are violated. First, the RE model assumes that regressors are uncorrelated with the unobserved effect μ_i . If, however, some unobserved variable is omitted from the analysis that is correlated with one of the regressors, μ_i will be correlated with that regressor, making the estimates on that parameter biased or inconsistent. Therefore, besides looking at the RE model, we also re-estimate some of the equations using the Hausman–Taylor approach. This is in essence an instrumental variables approach that fits RE models where some of the covariates might be correlated with the unobserved institution-specific effect μ_i (Hausman and Taylor, 1981).

Second, the variable conscious gender bias is time invariant over the observed sample period. In addition, the MFI's legal status and geographical focus (*urban* versus *rural*) and the regional dummies are also time-invariant variables. Therefore, we re-estimate some of the regressions

⁵ An RE model has a number of important benefits that have made it popular in prior performance studies. First, the RE model takes into account all unobserved institution-specific residual variations in MFI performance in the term μ_i , thereby reducing any bias resulting from potential omitted variables (Stock and Watson, 2007). Second, the RE model is better suited to tackle the time-invariant nature of some of the covariates than, for instance, the fixed effects model that eliminates time-invariant variables by first-differencing (Hartarska, 2005; Lensink and Mersland, 2009; Stock and Watson, 2007).

using the fixed effects vector decomposition (FEVD) estimator developed in Plümer and Troeger (2007), designed to tackle time-invariant covariates in models that take up unobserved institution-specific effects. This estimator employs a three-step estimation approach to produce efficient parameter estimates when covariates are time invariant and has been used in the microfinance context in a recent paper by Lensink and Mersland (2009).

EMPIRICAL RESULTS

Univariate Statistics

Table 2 univariately presents differences between MFIs with and without conscious gender bias. It gives us a first indication whether MFIs with a female focus are substantially different from those that have no female focus. Column (3) presents *t-stats* and *significance levels* for an unpaired mean comparison test that analyses whether the observed differences between the groups are statistically significant. Overall, the results indicate significant differences between MFIs that have a conscious gender bias and those that do not.

The first two variables indicate that MFIs with a conscious gender bias are more often part of an *international network* and more frequently initiated by an *international founder*, the differences being highly significant. This is in support of hypotheses *1a* and *1b* that predict that international orientation is associated with greater female focus. The variables *village bank*, *solidarity groups*, and *finance only* indicate that MFIs with a conscious gender bias more frequently employ group-lending methodologies and more often provide finance-plus services. The differences are highly significant and in support of hypotheses *2a*, *2b*, and *2c*, which predict that female focus is associated with collective methods.

Similarly, we find that a conscious gender bias is significantly associated with a lower *average loan size* and *female CEO*, in line with hypotheses *3* and *4*, which predict that female focus is associated with smaller loans and female leadership. Finally, we find that MFIs with a conscious gender bias are less often *banks* or other types of shareholder *financial institutions* and are less often *regulated* by banking authorities. This is in support of hypotheses *5a* and *5b*, which predict that a noncommercial legal status is associated with greater female focus.

Regarding the different profitability measures, we see that *portfolio-at-risk* is significantly lower and *expense rate* significantly higher for MFIs with a conscious gender bias. This finding indicates that MFIs that focus more on women get better repayment rates and therefore have a lower portfolio-at-risk (hypothesis 6). However, female focus is also associated with more costs resulting from the smaller loans (hypothesis 7). The overall profitability measures *ROA*, *ROE*, *FSS*, and *OSS* suggest no significant differences in terms of overall profitability between MFIs with conscious gender bias and their counterparts. This suggests that the positive repayment effect is offset by higher costs associated with smaller loans, with the net result of similar overall profitability measures.

< Insert Table 2 around here >

What MFI Characteristics Are Associated with Conscious Gender Bias?

Table 3 summarizes the results from the logit regression that analyses the main determinants of having a conscious gender bias (hypotheses 1–5). The different columns represent different controls that were added subsequently. Columns (4)–(6) present the same regressions, but here a probit analysis is conducted to assert the robustness of the results. As can be seen, the results remain quite robust to the inclusion of additional controls such as MFI *size* and *age* in column (2), as well as regional dummies in column (3). Similarly, the results usually do not change when probit is used instead of logit.

When going through Table 3, it can be seen that the results are very similar to the univariate analysis carried out in Table 2. Having an *international network* and an *international initiator* is significantly related to a conscious gender bias, in support of hypotheses 1*a* and 1*b*. Collective methods are also significantly related to a conscious gender bias, as can be seen from the variables *village banks* and *solidarity groups*, in line with hypotheses 2*a* and 2*b*. However, the coefficient for *finance only* is always close to zero and never statistically significant. This indicates that, controlling for other factors, providing additional services besides financial ones is not significantly related to having a conscious gender bias, such that we find no significant evidence of hypothesis 2*c*.

Furthermore, a lower average loan size and a female CEO are significantly related to having a conscious gender bias, in support of hypotheses 3 and 4. Also, the coefficient for banks and

financial institutions indicate that a conscious gender bias is significantly associated with a *noncommercial* legal status, in support of hypothesis 5a.

< Insert Table 3 around here >

How Does Conscious Gender Bias Affect Profitability?

Table 4 summarizes the estimation results from regressing conscious gender bias as well as a number of control variables on overall profitability measures (hypotheses 6–8). Panel A of Table 4 analyses the impact of conscious gender bias on *ROA* and *OSS*. Robustness checks are carried out for *ROE* and *FSS* as profitability measures. Panel B analyses the impact of conscious gender bias on *portfolio-at-risk* and *average loan size*.

The control variables were taken from prior performance studies conducted by Hartarska (2005), Mersland and Strøm (2008, 2009), and Lensink and Mersland (2009) and include *size*, *age*, (*natural logarithm of*) *total costs*, *debt rate*, *lending methodology*, *legal status*, *geographical focus*, and *regulation*. We also experiment with regional and time dummies that are subsequently introduced in the regression equation in the different columns.

As can be seen from panel A in Table 4, a conscious gender bias does not significantly affect overall profitability in terms of *ROA* or *OSS*—columns (1)–(3) and columns (4)–(6), respectively—controlling for other factors. The coefficients for conscious gender bias are never statistically significant in any of the regressions. Using *ROE* and *FSS* yields similar results and the results are also robust to the inclusion of regional and time dummies. This finding confirms that female focus does not influence overall profitability measures, in line with the univariate analysis. The control variables are usually significant and in line with prior performance-studies. Specifically, higher profitability is significantly associated with lower costs, larger MFIs, an efficient staff, a lower debt rate, individual-based lending, and providing financial services only. Column (1) in panel B of Table 4 shows that a conscious gender bias is negatively related with *portfolio-at-risk* after controlling for other factors. The coefficient is always significant at the 5 per cent significance level and is robust to the inclusion of regional and time dummies—see columns (2) and (3). These findings are in line with the univariate analysis and reflect that MFIs with a deliberate female focus have better repayment rates.

Columns (4)–(6) investigate the impact of a conscious gender bias on the average loan size. As can be seen, the coefficient is always negative and highly significant, confirming the finding that a conscious gender bias is associated with smaller loans. The coefficient is robust to the inclusion of regional or time dummies. The coefficient of $\ln(costs)$ is also always significantly negative, indicating that more costs are associated with smaller loans.

Overall, the results confirm hypotheses 6–8 that were drawn with respect to profitability. MFIs with a conscious gender bias do get better repayment rates and therefore exhibit lower portfolio-at-risk. However, they also face higher costs associated with smaller loans. It seems that the positive repayment effect associated with women is offset by the higher costs associated with smaller loans, leading to similar overall profitability measures.

< Insert Table 4 around here >

Robustness Checks

Table 5 re-estimates some of the regressions using the Hausman–Taylor regression approach. As argued previously, this approach accounts for the fact that parameter estimates from the RE model might be biased because regressors might be correlated with the unobserved institution effect. The results are very similar to those returned by the RE estimator. As can be seen from columns (1) and (2), conscious gender bias has a significant impact on *OSS* and *ROA*. Columns (3) and (4) again indicate a significantly negative impact of gender bias on *portfolio-at-risk* and *average loan size*.

< Insert Table 5 around here >

Table 6 re-estimates the same regressions using the FEVD estimator. As previously argued, this estimator accounts for the fact that many covariates, including conscious gender bias, are time invariant. The results are very similar to what was found in previous tables. Again, conscious gender bias has a highly negative impact on portfolio-at-risk and average loan size, whereas there is no significant impact on overall profitability in terms of *ROA* or *OSS*.

< Insert Table 6 around here >

CONCLUSIONS

This study aims to provide empirical evidence of the reasons and effects of having a conscious gender bias towards women in microfinance. Specifically, we want to know the main characteristics associated with a conscious gender bias and how it affects overall performance. Although in the previous literature many studies have documented that many MFIs do indeed favor women (Mody, 2000; Yunus, 2002) and that these MFIs usually have better repayment records (Kevane and Wydick, 2001; Khandker et al., 1995; among others), no empirical studies of which we know have been able to identify in detail the motives and consequences of having a conscious gender bias towards women.

Based on a large global dataset of 379 MFIs active in seventy-three countries worldwide, we find that a conscious gender bias is significantly related with *international orientation*, *collective methods*, *female leadership*, *smaller loans*, and a *noncommercial* legal status. With respect to financial performance, we find that a conscious gender bias positively affects repayment, leading to lower *portfolio-at-risk*. However, a conscious gender bias is also associated with higher costs resulting from lower *average loan sizes*. The net result is that MFIs with a conscious gender bias have overall profitability measures similar to those of their counterparts in terms of *OSS*, *FSS*, *ROA*, and *ROE*. These findings are confirmed both univariately and multivariately and the multivariate analyses are robust to different estimation methods, controls, and the inclusion of time and regional dummies.

These findings bring out a number of implications that might be of interest to academics and practitioners in the field. First, our results shed light on the debate on the relation between commercialization and poverty reduction. As many authors point out, the commercialization and formalization the microfinance market is undergoing could lead to mission drift in the sense that MFIs will seek more profitable customers at the expense of the poorest, who are often women (Christen, 2001; Copestake, 2007; Cull et al., 2008; Dichter and Harper, 2007). Others argue that a win-win situation is possible where financial sustainability is perfectly compatible with a focus on the poor.

Our results indicate that a commercial status is indeed related to a lesser focus on women, which could reflect the fact that MFIs are turning towards more profitable customers at the expense of

women. In this respect, the results support the fear expressed by many, that the commercialization of microfinance could be incompatible with MFIs' social mission, including a gender mission. At the same time, the results also indicate that MFIs that focus on women have, despite higher costs, better repayment records and maintain similar profitability measures. This evidence indicates that serving women and still obtaining reasonable profitability measures are indeed not incompatible. Moreover, it seems that if MFIs that focus on women were better able to control costs, the enhanced repayment effect could become an important advantage to enhance overall profitability. In this respect our results seem in line with those of Mayoux (2007), who argues that the increased commercialization of microfinance is both a threat and an opportunity in terms of gender. It is a threat because mission drift could drive MFIs away from women. However, commercialization together with recent advances in technology could also lead to reduced costs, which could lead to increased access to financial services for women.

Second, our results indicate that financial performance is a complex issue consisting of different aspects that should be evaluated simultaneously. Most of the studies in the literature on gender within microfinance have looked at repayment only while ignoring all other aspects of MFI profitability. However, a conscious gender bias seems to have a different impact on different aspects of profitability, that is, a positive repayment effect but a negative effect on total operating expenses. Rather than studying one aspect in isolation, different aspects of profitability should be evaluated simultaneously so that we can fully understand the impact of gender on MFI performance.

Our research can be extended in several directions. First, *costs* have been measured in terms of total expenditures as well as the expense rate (total expenditures divided by total assets). However, we have not been able to diversify between different sorts of costs. Future research could be aimed at analysing how a female focus impacts different aspects of an MFI's cost function.

Second, in terms of gender, we have focused mainly on a dummy variable that indicates whether or not MFIs have a conscious gender bias towards women. Although we believe that rating agencies are in a good position to evaluate MFIs' gender policies, it would be interesting to extend this research by considering other gender-related variables. Finally, our findings are based upon an aggregate global analysis, which means that the relations identified hold *on average* or *across* the worldwide sample that was studied. However, as gender relationships and cultural

norms can vary considerably across regions, it would be interesting to study the observed relations in detail within different regions and cultural settings.

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Table 1. Variables and Summary Statistics

This table provides a description and a number of summary statistics for the main variables used throughout this study. Variables are divided into general and financial variables, variables related to gender, organizational variables, and variables regarding the methodology used by the MFI.

Variables	Description	n	Mean	St. dev.	Min	Max
General and financial variables						
Size	<i>total assets (in \$ 1,000)</i>	1,299	6,122	1,420	19	248,000
lnTA	<i>natural logarithm of total assets</i>	1,299	14.68	1.37	9.86	19.32
Age	<i>years of experience as an MFI</i>	1,323	14.84	8.49	2	86
Average loan size	<i>natural logarithm of the average loan size</i>	1,188	5.85	1.20	0	10.11
ROA	<i>return on assets</i>	1,244	0.01	0.12	-0.99	0.34
ROE	<i>return on equity</i>	1,153	0.05	0.27	-0.91	0.56
OSS	<i>operational self-sufficiency</i>	754	1.24	0.57	0.08	3.00
FSS	<i>financial self-sufficiency</i>	735	0.96	0.37	0.06	3.00
PaR30	<i>portfolio-at-risk (30 days or more in arrears)</i>	1,196	0.07	0.09	0	0.97
Debt rate	<i>total debt divided by total assets</i>	1,295	0.48	0.29	0	0.97
ln(costs)	<i>natural logarithm of total expenses</i>	1,292	12.79	1.36	7.04	17.44
Expense rate	<i>total expenses divided by total assets</i>	1,299	0.19	0.15	0.002	1
Gender						
Conscious gender bias	<i>1 if MFI has conscious gender bias towards women and 0 otherwise</i>	1,275	0.42	0.49	0	1
Female CEO	<i>1 if the MFI has a female CEO and 0 otherwise</i>	1,125	0.29	0.45	0	1
Organizational						
International network	<i>1 if the MFI is part of an international network and 0 otherwise</i>	1,316	0.32	0.47	0	1
Regulated	<i>1 if the MFI is regulated by a banking authority and 0 otherwise</i>	1,278	0.27	0.45	0	1
International initiator	<i>1 if the MFI is initiated by a governmental program and 0 otherwise</i>	1,311	0.38	0.49	0	1
Bank and NBF	<i>1 if the MFI has the legal status of bank or non-bank financial institution</i>	1,318	0.31	0.46	0	1
Methodology						
Village Bank	<i>1 if the MFI is a village banker and 0 otherwise</i>	1,310	0.18	0.38	0	1
Solidarity Groups	<i>1 if the MFI operates by solidarity groups and 0 otherwise</i>	1,305	0.27	0.44	0	1
Finance only	<i>1 if the MFI provides financial services only and 0 otherwise</i>	1,295	0.82	0.38	0	1
Rural	<i>1 if the MFI operates only in rural areas and 0 otherwise</i>	1,116	0.23	0.42	0	1
Voluntary savings	<i>1 if the MFI offers voluntary savings and 0 otherwise</i>	1,310	0.35	0.48	0	1

Table 2. Differences in Conscious Gender Bias

*This table analyses differences between MFIs with a conscious gender bias (conscious gender bias = 1) and without a conscious gender bias (conscious gender bias = 0) for a selection of variables. The third column provides t-stats for an unpaired mean comparison test. Here *, **, and *** denote statistical significance at the 10, 5, and 1% significance levels, respectively.*

	Conscious gender bias = 1	Conscious gender bias = 0	t-Stat
International network	0.46	0.22	-9.43***
International initiator	0.49	0.30	-6.72***
Village bank	0.28	0.07	-9.99***
Solidarity group	0.33	0.21	-4.81***
Finance only	0.76	0.86	4.40***
Average loan size	5.32	6.28	14.53***
Female CEO	0.36	0.22	-5.12***
Bank and NBF	0.18	0.42	9.36***
Regulated	0.19	0.34	6.30***
PaR30	0.05	0.07	2.99***
Expense rate	0.21	0.17	-4.13***
ROA	0.004	0.007	0.47
ROE	0.04	0.05	0.71
OSS	1.30	1.20	-2.15**
FSS	0.98	0.93	-1.74*

Table 3. What Characteristics Are Associated with Conscious Gender Bias?

*This table analyses which variables influence whether or not MFIs operate under a conscious gender bias towards women. Columns (1)–(3) report results from the logit analyses where different controls were subsequently added. Columns (4)–(6) report probit regression results. Robust standard errors are provided in parentheses. Here *, **, and *** denote statistical significance at the 1, 5, and 10%-levels, respectively.*

Dependent variable gender bias (yes = 1/no = 0)		Logit			Probit		
		(1)	(2)	(3)	(4)	(5)	(6)
Organization	International network	0.96 (0.175)***	1.03 (0.192)***	1.23 (0.218)***	0.58 (0.104)***	0.60 (0.110)***	0.72 (0.120)***
	Bank regulated	0.12 (0.246)	0.17 (0.250)	0.21 (0.260)	0.07 (0.140)	0.08 (0.142)	0.10 (0.149)
	International initiator	0.61 (0.188)***	0.50 (0.195)**	0.69 (0.211)***	0.34 (0.108)***	0.27 (0.111)**	0.41 (0.122)***
	Female CEO	0.94 (0.193)***	0.92 (0.193)***	0.96 (0.198)***	0.54 (0.112)***	0.53 (0.112)***	0.57 (0.114)***
Methodology	Village bank	1.11 (0.288)***	1.15 (0.295)***	1.14 (0.311)***	0.64 (0.165)***	0.67 (0.167)***	0.66 (0.175)***
	Solidarity groups	0.52 (0.235)***	0.49 (0.235)***	0.46 (0.248)**	0.32 (0.139)***	0.30 (0.140)***	0.27 (0.146)***
	Average loan size	-0.70 (0.109)***	-0.74 (0.116)***	-0.70 (0.132)***	-0.41 (0.062)***	-0.43 (0.065)***	-0.41 (0.075)***
	Finance only	0.01 (0.223)	-0.08 (0.224)	0.05 (0.233)	0.01 (0.131)	-0.03 (0.131)	0.04 (0.135)
	Rural	0.04 (0.245)	0.02 (0.249)	0.01 (0.256)	0.05 (0.135)	0.05 (0.137)	0.02 (0.142)
Legal status	Bank and NBF	-0.85 (0.238)***	-0.95 (0.243)***	-0.87 (0.251)***	-0.48 (0.136)***	-0.53 (0.138)***	-0.48 (0.143)***

Dependent variable gender bias (yes = 1/no = 0)		Logit			Probit		
		(1)	(2)	(3)	(4)	(5)	(6)
Controls	lnTA		0.08 (0.073)	0.06 (0.074)		0.04 (0.041)	0.04 (0.042)
	Age		-0.02 (0.013)	-0.03 (0.014)		-0.01 (0.007)	-0.02 (0.008)**
Region	LA			1.20 (0.351)***			0.73 (0.196)***
	MENA			1.64 (0.415)***			0.99 (0.232)***
	S-AFRICA			0.92 (0.426)			0.56 (0.236)*
	ASIA			1.04 (0.518)			0.62 (0.291)
Statistics							
N		813	813	808	813	813	808
Wald χ^2		172***	168***	193***	205***	200***	239***
Pseudo R ²		0.26	0.26	0.28	0.25	0.26	0.28

Table 4. How Does Conscious Gender Bias Affect Performance?

This table reports the regression results from regressing conscious gender bias and necessary controls on a number of performance measures such as ROA, OSS (panel A), average loan size, and PaR30 (panel B). A random coefficients model is used that allows for unobserved heterogeneity in the performance variables. Robust standard errors are provided in parentheses. Here *, **, and *** denote statistical significance at the 10, 5, and 1% significance levels, respectively.

Panel A.	ROA			OSS		
	(1)	(2)	(3)	(4)	(5)	(6)
Gender bias (yes = 1/no = 0)	-0.01 (0.012)	-0.01 (0.012)	-0.001 (0.012)	0.09 (0.061)	0.10 (0.062)	0.15 (0.062)
lnTA	0.09 (0.008)***	0.09 (0.008)***	0.09 (0.007)***	0.33 (0.043)***	0.34 (0.045)***	0.31 (0.045)***
Age	-0.003 (0.001)	-0.002 (0.001)	-0.002 (0.001)	-0.01 (0.013)	-0.01 (0.003)	-0.01 (0.003)
Rural	-0.04 (0.012)***	-0.04 (0.013)***	-0.04 (0.012)***	-0.19 (0.071)***	-0.18 (0.074)**	-0.16 (0.072)***
Bank regulated	-0.01 (0.013)***	-0.01 (0.014)	0.00 (0.014)	-0.02 (0.070)	0.00 (0.072)	-0.02 (0.069)
Village bank	0.01 (0.015)	0.01 (0.015)	0.01 (0.015)	0.09 (0.086)	-0.14 (0.091)	-0.11 (0.088)
Solidarity group	-0.02 (0.012)**	-0.02 (0.012)*	-0.02 (0.014)**	-0.01 (0.076)	-0.02 (0.078)	-0.05 (0.075)
Staff efficiency	0.03 (0.007)***	0.04 (0.008)***	0.03 (0.007)***	0.11 (0.039)***	0.11 (0.040)***	0.10 (0.039)**
ln(costs)	-0.07 (0.008)***	-0.07 (0.008)***	-0.07 (0.008)***	-0.30 (0.043)***	-0.28 (0.045)***	-0.27 (0.044)***
Debt rate	-0.04 (0.016)***	-0.06 (0.017)***	-0.06 (0.017)***	-0.15 (0.085)**	-0.19 (0.088)**	-0.23 (0.087)**
Voluntary savings (yes=1/no = 0)	-0.03 (0.013)***	-0.02 (0.015)**	-0.03 (0.014)**	-0.20 (0.074)***	-0.21 (0.077)***	-0.20 (0.075)***
Regional dummies	<i>excluded</i>	<i>included</i>	<i>included</i>	<i>excluded</i>	<i>included</i>	<i>included</i>
Time dummies	<i>excluded</i>	<i>excluded</i>	<i>included</i>	<i>excluded</i>	<i>excluded</i>	<i>included</i>
N	952	945	945	606	606	606
Wald χ^2	198***	219***	280***	101***	108***	145***
R ² (overall)	0.20	0.23	0.25	0.17	0.18	0.21

Notes:

- Using ROE instead of ROA as the dependent variable yields similar results. Using FSS instead of OSS as the dependent variable yields similar results.
- A robustness check was carried out that uses the subsidy-adjusted AROA and AROE as a dependent variables instead of ROA and ROE. This check yields similar results.
- Staff efficiency is the natural logarithm of personnel productivity, which is the total number of credit clients divided by the total number of employees. All other variables are defined as in Table 1.
- A robustness check was carried out where the percentage of female clients was used instead of the dummy conscious gender bias. This check yields similar results.

<i>Panel B.</i>	Par30		Average loan size				
	(1)	(2)	(3)	(4)	(5)	(6)	
Gender bias (yes = 1/no = 0)	-0.02	-0.01	-0.02	-0.46	-0.39	-0.34	
	(0.009)**	(0.009)*	(0.009)**	(0.097)***	(0.083)***	(0.079)***	
ln(costs)	0.01	0.00	0.00	-0.10	-0.13	-0.13	
	(0.006)	(0.006)	(0.006)	(0.032)***	(0.032)***	(0.033)***	
lnTA	-0.01	-0.01	-0.01	0.53	0.50	0.49	
	(0.006)*	(0.006)*	(0.006)	(0.035)***	(0.035)***	(0.036)***	
Age	0.00	0.00	0.00	-0.02	-0.01	-0.01	
	(0.001)	(0.001)	(0.001)	(0.005)	(0.005)	(0.005)	
Rural	-0.02	-0.03	-0.02	-0.22	0.02	0.096	
	(0.011)**	(0.010)**	(0.011)*	(0.105)**	(0.094)	(0.088)	
Bank regulated	-0.02	-0.03	-0.03	-0.09	-0.03	-0.08	
	(0.011)**	(0.011)**	(0.011)**	(0.096)	(0.087)	(0.311)	
Village bank	-0.02	-0.01	-0.01	-0.47	-0.35	-0.34	
	(0.012)	(0.011)	(0.012)	(0.089)***	(0.083)***	(0.084)***	
Solidarity group	0.01	0.01	0.01	-0.65	-0.49	-0.51	
	(0.008)	(0.008)	(0.008)	(0.102)***	(0.091)***	(0.094)***	
Staff efficiency	-0.03	-0.03	-0.03	-0.59	-0.58	0.57	
	(0.007)	(0.007)	(0.007)	(0.037)***	(0.036)***	(0.036)***	
Debt rate	0.02	0.02	0.02	0.17	0.29	0.28	
	(0.013)	(0.014)	(0.013)	(0.077)**	(0.076)***	(0.076)***	
Voluntary savings (yes=1/no = 0)	0.03	0.03	0.03	-0.14	0.17	0.16	
	(0.010)	(0.011)	(0.011)	(0.095)	(0.091)*	(0.092)*	
Regional dummies	<i>excluded</i>	<i>included</i>	<i>included</i>	<i>excluded</i>	<i>included</i>	<i>included</i>	
Time dummies	<i>excluded</i>	<i>excluded</i>	<i>included</i>	<i>excluded</i>	<i>excluded</i>	<i>included</i>	
N	930	925	925	904	896	896	
Wald χ^2	88***	106***	114***	976***	1283***	1288***	
R ² (overall)	0.15	0.22	0.23	0.58	0.69	0.69	

Notes:

- Staff efficiency is the natural logarithm of personnel productivity, which is the total number of credit clients divided by the total number of employees. All other variables are defined as in Table 1.
- A robustness check was carried out where the percentage of female clients was used instead of the dummy conscious gender bias. This check yields similar results.

Table 5. Instrumental Variables

This table reports the regression results from regressing conscious gender bias and necessary controls on performance variables such as ROA, OSS, PaR30, and average loan size, as in Table 4. However, this time the parameters are estimated using the Hausman–Taylor IV regression to account for potential ‘endogeneity’ of the variable conscious gender bias.

Dependent variable	ROA		OSS		PaR30		Average loan size	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gender bias (yes = 1/no = 0)	0.01 (0.067)	0.01 (0.231)	-0.12 (0.052)**	-0.64 (0.549)***				
ln(costs)	-0.09 (0.023)***	-0.29 (0.069)***	0.01 (0.012)	-0.06 (0.066)*				
lnTA	0.08 (0.025)***	0.34 (0.052)***	-0.01 (0.012)	0.65 (0.063)***				
Age	-0.002 (0.001)	-0.02 (0.014)	0.00 (0.001)	-0.01 (0.007)				
Rural	-0.04 (0.018)**	-0.19 (0.206)	-0.02 (0.015)	0.20 (0.144)				
Bank regulated	0.01 (0.017)	-0.03 (0.011)	-0.04 (0.013)**	0.05 (0.133)				
Village bank	-0.02 (0.025)	-0.03 (0.375)	0.03 (0.023)	-0.04 (0.207)				
Solidarity group	-0.03 (0.019)*	-0.02 (0.351)*	0.03 (0.013)**	0.00 (0.172)				
Staff efficiency	0.01 (0.019)	0.13 (0.203)	-0.01 (0.012)	-0.51 (0.064)***				
Debt rate	-0.08 (0.032)***	-0.24 (0.112)**	0.06 (0.024)**	0.23 (0.196)**				
Voluntary savings (yes=1/no = 0)	-0.03 (0.031)	-0.20 (0.074)*	0.04 (0.018)**	0.06 (0.126)				
Regional dummies	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>				
Time dummies	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>				
N	945	606	925	896				
Wald χ^2	196***	5666***	557***	421***				

Notes:

- To obtain robust standard errors and confidence intervals, bootstrap estimation was used.

- Besides the Hausman–Taylor procedure, we also experimented with the Amemiya–MaCurdy estimator, which places stricter requirements on the instruments. This yields similar results.

Table 6. FEVD

This table reports the regression results from regressing conscious gender bias and necessary controls on performance variables such as ROA, OSS, PaR30, and average loan size, as in Table 4. However, this time the parameters are estimated using the FEVD estimator developed in Plümper and Troeger (2007) to account for any bias resulting from variables that are constant (or rarely varying) over time.

Dependent variable	ROA		OSS		PaR30		Average loan size	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gender bias (yes = 1/no = 0)	0.01 (0.031)	0.09 (0.031)	-0.03 (0.005)***	-0.29 (0.017)***				
ln(costs)	-0.11 (0.005)***	-0.37 (0.027)***	0.02 (0.004)***	-0.04 (0.014)***				
lnTA	0.14 (0.005)***	0.48 (0.028)	-0.02 (0.004)***	0.65 (0.013)***				
Age	0.00 (0.003)	0.00 (0.007)	0.00 (0.001)	0.00 (0.001)				
Rural	-0.05 (0.006)***	-0.14 (0.039)***	-0.03 (0.005)***	-0.03 (0.021)***				
Bank regulated	0.00 (0.006)	-0.02 (0.038)	-0.03 (0.006)***	-0.12 (0.022)***				
Village bank	-0.02 (0.006)***	-0.01 (0.188)	-0.01 (0.023)	-0.49 (0.021)***				
Solidarity group	-0.01 (0.005)***	0.05 (0.146)***	-0.02 (0.006)	-0.23 (0.021)***				
Staff efficiency	0.02 (0.004)***	0.16 (0.107)***	0.00 (0.003)	-0.52 (0.012)***				
Debt rate	-0.12 (0.009)***	-0.35 (0.053)***	0.09 (0.008)***	0.16 (0.028)***				
Voluntary savings (yes=1/no = 0)	-0.09 (0.007)***	-0.37 (0.042)***	0.07 (0.006)***	0.23 (0.022)***				
Regional dummies	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>				
Time dummies	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>				
N	952	606	930	904				
F-stat	89***	49***	67***	981***				
Adj. R ²	0.63	0.56	0.55	0.96				
RMSE	0.06	0.20	0.01	0.03				