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# Access to Finance in Sub-Saharan Africa: Is There a Gender Gap?

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**Abstract:** This paper assesses whether there is a gender gap in the use of financial services by businesses and individuals in Sub-Saharan Africa. We show the existence of an unconditional gender gap, as the absolute use of financial services is higher for males than females. However, when key observable characteristics of the enterprises or individuals are taken into account the gender gap disappears. In the case of enterprises, we explain our finding with differences in key characteristics and a potential selection bias – females owned ones are smaller, younger and less likely to run sole proprietorships than men, furthermore these are more likely to innovate and more prevalent in sectors that tend to rely less on access to external finance. In the case of individuals, the lower use of formal financial services by women can be explained by gender gaps in other dimensions related to the use of financial services, such as their lower level of income and education, and by their household and employment status. Exploring the reasons for not applying or being unbanked shows that traditional bank barriers such as higher interest rates, lack of formal income or job are more binding for females than for males. This suggests that, conditional on their observable characteristics, females do not have inherently lower demand nor that there is taste-based discrimination.

**JEL Classification:** G21; J16

**Keywords:** Access to financial services; Gender; Entrepreneurship

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## 1. Introduction

Access to and use of financial services by both enterprises and households is of increasing concern to policy makers across Africa and the developing world. Recent data collection efforts on both the enterprise and household levels have enabled a more rigorous analysis (World Bank, 2007). One important dimension in the access to finance debate, which has been less analyzed, is the gender gap. Specifically, it has often been argued that lack of access to finance impedes female entrepreneurship and prevents women from participating in the modern market economy. Given the overall lack of financial service provision, with fewer than one in five households having access to formal financial services, this problem is potentially more pressing in Sub-Saharan Africa than in other developing regions of the world (Honohan and Beck, 2007).

As documented by an extensive and still growing literature, access to credit is important for firm growth, especially that of small firms (Beck, Demirguc-Kunt and Maksimovic, 2005)<sup>1</sup>, and for new business creation (Klapper, Laeven and Rajan, 2006). Country-specific studies and randomized field experiments confirm that access to capital can be critical for firm growth (Banerjee and Duflo, 2008; De Mel, McKenzie and Woodruff, 2008). However, credit is not the only financial service that seems to matter. Recent evidence shows that access to savings services can also increase enterprise investment, especially among female entrepreneurs (Dupas and Robinson, 2009). Broad access to financial services is not only important for individuals, but also for the economy at large; credit constraints reduce the efficiency of capital allocation and intensify income inequality by impeding the flow of capital to poor individuals with investment opportunities with high expected returns (Galor and Zeira, 1993; Aghion and Bolton, 1997; Galor and Moav, 2004, Beck, Demirguc-Kunt and Levine, 2007; Lopez and Servén, 2009). Gender differences in

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<sup>1</sup> Aterido, Hallward-Driemeier and Pagés (2011) find this effect for small firms but not for very small.

access to and use of financial services can therefore have direct negative repercussions not only for female entrepreneurs and individuals but for the overall economy.

There are several theoretical reasons explaining a possible gender gap in access to financial services. First, there might be taste discrimination in the sense that the financial system is dominated by men and the barriers to accessing financial services are consequently higher for women than men, partly due to bank-level barriers, partly due to barriers in institutional framework underpinning financial service provision as discussed below. Second, there might be statistical discrimination, in the sense that the lower degree of education and involvement in the former market economy is a barrier for women to access to formal financial services. Third, this lower involvement in the formal market economy might also reflect a traditional role distribution in society, with women focused on household activities and men focused on market economies, this being reflected in the use of formal financial services. Gauging whether such a gender bias exists and the reason for it has important policy repercussions.

A recent global data compilation shows the extent to which Sub-Saharan Africa (SSA) countries tend to be characterized by a degree of gender discrimination that is different from other regions. Figure 1 shows how SSA countries are ranked in terms of gender discrimination as measured by the *Women, Business and the Law index* with respect to other countries in the world. This index, developed by the World Bank Group, varies between 0 and 1 and includes 9 dimensions of equality in Law<sup>2</sup> such as ownership rights, inheritance, capacity before the law, rights of married men compared to married women, as well as a set of work related issues.<sup>3</sup> Figure 1 indicates that the *Women, Business and the Law index* is

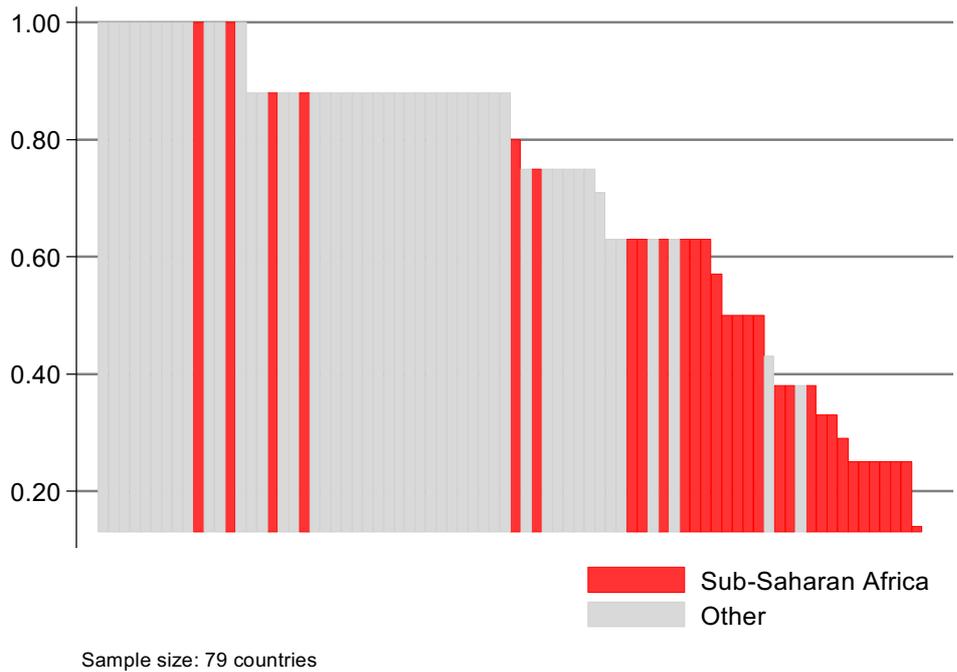
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<sup>2</sup> It is constructed by averaging 9 dummy variables that have a value of 1 if there is gender equality in a specific area and a 0 if there is not; lower values indicate therefore more pronounced gender discrimination.

<sup>3</sup> Such as tax liability, industry or work hours discrimination, and within these issues, discrimination towards women who are pregnant or nursing

substantially lower in SSA than in the rest of the world; the average index value in SSA is 0.5, while for the rest of the world it is 0.85. This suggests that the legal and business environment in SSA countries is characterized by a higher degree of gender discrimination. Our study takes this fact as starting point and addresses whether there is empirical evidence that this SSA *de jure* inequality translates into a differential in female use of financial services.

This paper analyzes gender differences in access to credit by enterprises and use of formal and informal financial services by individuals in SSA. Specifically, we use enterprise surveys to assess whether enterprises with female owners in SSA are less likely to rely on formal bank finance than enterprises with purely male owners. Additionally, for those that have not applied for a loan, we explore differences in the reasons for not applying between female and male entrepreneurs. We also use recent FinScope and FinAccess surveys across nine countries in Southern and East Africa to assess gender differences in the use of formal and informal financial services by individuals as well as explore gender differences in the reasons for being unbanked. We thus carefully distinguish between the access to and the use of formal financial services. While firms and individuals with access but no need for financial services are of less concern for policy makers, constrained access that translates into a reduced use of formal financial services constitutes a challenge.



**Figure 1: Women, Business and Law index across the world.**

This paper relates to a growing literature on the gender gap in access to credit (see Klapper and Parker, 2010, for a survey). Cross-country studies have shown that women are less likely to get financing from a formal financial institution or are charged higher interest rate than men (Muravyev, et al., 2009) and generally raise less formal and informal venture capital than men (Brush, et al., 2004). Bruhn (2009), on the other hand, does not find any evidence for Latin America for a gender gap in access to credit by enterprises. Richardson, Howarth and Finnegan (2004) find for Sub-Saharan Africa that women entrepreneurs are more likely than male entrepreneurs to rely on internal or informal financing. This gender gap is also reflected in higher financing obstacles reported by women. The literature has also explored the reasons behind such a gender gap. Buvinic and Berger (1990) find that female entrepreneurs struggle more with loan applications, while Lusardi and Tufano (2009) find lower overall financial literacy among women. However, behavioral differences might also be important, leading to taste rather than statistical discrimination (Beck, Behr and

Madestam, 2011). Evidence from Africa shows that in many instances, only male heads of households are able to successfully receive formal credit (Johnson, 2004).

Among institutional factors explaining gender differences in access to credit might be property right restrictions for women. Such restrictions might include requirements for married women to obtain their husband's signature and approval for all banking transactions.<sup>4</sup> Women can also be affected by a husband's adverse credit history, which might require his wife to repay the debt or be denied credit (Naidoo and Hilton, 2006).

The observation of a gender gap has led many NGO supported microcredit institutions to focus on women rather than men. Given the limitations of microcredit, both in volume and in outreach, however, it is important to understand differences in the use of formal banking services (Honohan, 2004). In addition to formal financial services, many individuals and enterprises across the developing world use informal financial services, ranging from money lenders to informal savings clubs. In our empirical work, we will therefore also consider the use of informal financial services by households.

The empirical findings of the enterprise analyses confirm that firms with female ownership participation are unconditionally less likely to use formal bank credit than firms with male ownership, however this gap disappears when controlling for observables firm characteristics (i.e. industry, size, ownership type, age, export orientation, foreign ownership, location). Further, we show that females owned businesses are unconditionally more likely to be rejected when applying for a loan but not more likely to be discouraged from applying than males owned ones. Having found evidence of an unconditional gender gap we analyze the extent to which observables characteristics do explain these results. In addition, we argue that the results about the lack of gender difference in access to finance, conditional on

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<sup>4</sup> See "Empowering Women. Legal Rights and Economic Opportunities in Africa" (Hallward-Driemeier and Hasan, 2013') for more detailed information and broader coverage of countries in SSA.

controlling for firm characteristics, can be actually explained by the existence of a selection process. Our regression analysis suggests that size, age and a lower likelihood to be an exporter and have foreign participation, explain why, *prima facie*, women owned companies tend to be less likely to have access to finance. Furthermore, we point to four additional important findings. First, female entrepreneurs are less likely to own sole proprietorships than men and face higher regulatory burden than men, especially in Africa. Second, enterprises with female ownership are smaller, younger, less likely to be engaged in export activities and have foreign participation, accordingly tend have less access to the financial markets, and women are less likely to be entrepreneurs. Third, female owned enterprises are more likely to innovate what could be explained by the fact that female entrepreneurs need to be especially capable in order to be able to enter the formal sector and in fact have characteristics that make them more attractive for financial institutions. Fourth, we find some limited support for the hypothesis of a “sectoral selection” as female ownership tend to be more prevalent in sectors that, on average across countries, tend to rely less on access to external finance.

Similarly, the household analysis shows that while unconditional comparisons present a lower use of formal banking services by women, there is no significant gender difference once we control for other individual characteristics, including education, income, work status, geographic location, and education. While gender differences in the use of informal financial services vary across countries, women are not more or less likely to be excluded from any financial service than men, at least in our sample of nine countries. Lower income and education, a lower likelihood to be formally employed and their role within the household explain why, *prima facie*, women are less likely to use formal financial services. These barriers that women face as individuals to access formal financial services might also explain the selection bias among female entrepreneurs mentioned above, though we cannot formally

test for it. On the other hand, we find that women in several countries are more likely to use informal financial services. Considering gender differences in the reasons for being unbanked, we find that females are more likely to report the lack of income or a formal job as reasons for not being banked, while males are more likely to state the lack of need or bank-related reasons, such as geographic distance or high minimum balances and fees), consistent with the hypothesis that women are disadvantaged along other dimensions correlated with the use of formal financial services.

Our paper contributes to the literature on access to finance along several dimensions. First, while most studies so far have been limited to one country, this is a cross-country exploration of gender differences in access to and use of financial services for both enterprises and households.<sup>5</sup> Second, this paper considers access to and use of all financial services, not just credit as done in large parts of the literature. In addition, it also looks beyond formal financial services to informal financial services. Third, this paper contributes to the literature on gender differences in Sub-Saharan Africa. As rigorous analysis for SSA is often impeded by the lack of appropriate data, the data compilations used in this paper offer a unique opportunity to explore gender differences in the participation in formal and informal economies in SSA.

The remainder of this paper is organized as follows. The next section focuses on the gender gap in enterprise finance using a large cross-section of firm-level surveys. Section 3 presents results on the gender gap in the use of financial services by individuals and section 4 concludes.

## **2. Gender and Enterprise Use of Formal Finance**

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<sup>5</sup> See World Bank (2007) for an overview of studies on access to finance.

This section assesses whether there is a gender gap in enterprises' use of formal finance. Specifically, using firm-level survey data, we analyze whether businesses with female ownership participation are less likely to use a formal financing channel (e.g. loan or overdraft) and whether there are gender differences in the reasons for not using formal finance. Differences in the use of formal financial services between male and female-owned enterprises would suggest potentially tougher financial conditions for women's enterprises, though not necessarily imply a causal relationship, as female enterprises may opt for less aggressive operations requiring less finance. On the other hand, if the analysis does not find a gender gap between male and female enterprises, we can interpret this as suggesting that there is no gender discrimination.

## **2.1. Data**

To explore the relationship between gender and enterprise use of formal finance, we use the World Bank-IFC Enterprise Surveys. The Enterprise Surveys have been conducted over the past eight years in over 100 countries with a consistent survey instrument.<sup>6</sup> The surveys try to capture business perceptions on the most important obstacles to enterprise operation and growth, but also include detailed information on management and financing arrangements of companies. Data are collected using either simple random or random stratified sampling. The sample includes formal and informal SSA enterprises of all sizes, different ownership types and across nine sectors in manufacturing, construction, services and transportation. Firms from different locations, such as capital city, major cities and small towns, are included. Our sample includes 37 African countries covering in total 11,382

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<sup>6</sup> See [www.enterprisesurveys.org](http://www.enterprisesurveys.org) for more details. Similar surveys were previously conducted under the leadership of the World Bank and other IFIs in Africa (RPED), and world-wide in 2000 (World Business Environment Survey). Enterprise Surveys still go under different names in some regions, e.g. BEEPS in the Central Asia and Eastern European transition economies had first been launched in 1999 and was then modified to be comparable with the broader global initiative.

formal firms during 2005 to 2009 (Appendix Table A1). In addition, we focus on 2,406 informal enterprises, mostly micro-firms for a sample of 25 African countries. While we have information on the gender of owners for all firms in our sample, we have gender information on the manager for a subsample of 2,428 formal firms across 16 countries.

The Enterprise Surveys offer several advantages for our purpose. First, the surveys collect comparable information for several firm characteristics across all the countries. This comparability allows us to document cross-country and within-country variation in the profiles of firms that have female ownership participation. Second, the surveys collect information on financing at the firm level as well as several other relevant firm characteristics. These include the firm size and age, measures of technology adoption, firms' international openness, i.e. export activity, and sources of capital. In addition, there is also detailed information on the firm's geographical location and its sector of activity (3-digit-*ISIC* classification).

Table 1 provides descriptive statistics of the variables used in the analysis. We use four different variables to measure firms' use of formal banking services. Specifically, we use two dummy variables indicating whether (i) a firm has an overdraft or loan and (ii) whether a firm has a bank account or credit line<sup>7</sup>. We find that 31 percent have an overdraft or loan and 77 percent have a bank account or credit line, on average

The Enterprise Surveys also provide information on owners' gender. Specifically, we have information whether one of the principal owners is a woman. Our main variable, 'female participation in ownership' defines a wide circle of firms as 'female', however and

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<sup>7</sup> Additionally we also use information on firms' financing patterns: the share of their fixed asset investment financed through formal commercial institutions and the share of their working capital needs covered with bank finance. In robustness tests, we also evaluate gender differences in the use of informal finance using the share of their fixed asset investment and the share of their working capital needs financed through informal financial sources.

thus may lead to lower bound estimates on the extent to which gender may matter.<sup>8</sup> To address this issue, we will present results for the whole sample as well as for the subsample of sole proprietorships, as this allows us to isolate enterprises that are completely run by a female owner. Looking at sole proprietors does address the ownership-decision maker distinction, but the average size of the firm is smaller. We will also use the variable ‘female manager’ that identifies female-run firms, although the sample is smaller. Our sample has 24 percent of formal firms with at least one female owner and 13 percent (in a smaller subsample) have a female manager. There are significant differences between formal and informal enterprises in terms of gender gap in ownership. Specifically, 30 percent of companies have female ownership participation in the case of informal firms.

In addition to presenting unconditional results, we also focus on results where we control for several firm characteristics, described in Table 1, including size, legal status, exporter status, location, age and ownership. 19 percent of formal firms across the sample have five or fewer employees, 52 percent of formal enterprises are sole proprietorships, eight percent of firms export at least 10 percent of their sales and 16 percent have foreign owners holding at least 10 percent of capital. In terms of location, 20 percent are located in the capital or cities with populations of one million or more. The average age of firms is 13.7 years.

## **2.2. Multivariate Regression Results**

We start from estimating the following regression where our outcome variable of interest is measured at the level of the firm  $i$  in country  $c$  belonging to sector  $s$  at time  $t$ .

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<sup>8</sup> Aterido and Hallward-Driemeier (2011) show that up to half of the firms that have multiple owners of which at least one is female, do not have women among their prime decision makers.

$$y_{icst} = \beta_0 + \beta_1 Fem_{ict} + \beta_2 Empl_{icst} + \psi M_{ct} + \theta I_s + \varepsilon_{icst} \quad (1)$$

where  $y$  is a dummy variable that takes value one if the firm has access to a formal financing channel (e.g. overdraft or loan),  $Fem$  is a dummy variable indicating female ownership participation,  $Empl$  is the log of the number of employees, an indicator of enterprise size,  $M$  are survey-fixed effects<sup>9</sup> in order to control for potential shocks or measurement errors across different country-years where the surveys are done, and  $I$  are industry fixed effects to control for demand-side differences in external financing. We include survey-fixed effect as we expect that countries with more developed financial institutions may be more likely to have services tailored to reach out to more women's enterprises. Our focus is therefore on an unconditional "gender gap" within-country rather than across countries. Regression (1) is estimated with a probit but the reported coefficients are the probit marginal effects.<sup>10</sup> Our results should not be interpreted in a causal manner but rather as unconditional correlations exploiting within-country variation between females versus males owned businesses.

The results in Table 2 provide some initial evidence about the existence of an unconditional negative gender gap. First, in column 1 we include all formal companies in our sample and find evidence of a negative gender gap even if this statistically non-significant. Respectively adding, in column 2 and 3, industry or size controls reduces and eliminates the presence of this gap pointing towards the importance of these two channels as key drivers of the gender gap: selection into specific sectors and size. However, female ownership participation may identify the fact that a woman is one of the many owners, and possibly includes cases when her ownership share is irrelevant. For this reason, in columns 4-6 we only include companies with a single owner, which confirms the previous results providing

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<sup>9</sup> Each survey is implemented in a specific country and year.

<sup>10</sup> We do estimate a Dprobit as clarified in each table's notes.

some additional evidence about the existence of a gender gap to access finance. In this case, the evidence of the unconditional gender gap is statistically significant, and, as before, it is weakened by the inclusion of industry or size controls (respectively in columns 5 and 6). Finally, in column 7-9 we focus on a smaller subset of countries for which we can identify not only the gender of the owner but also the gender of the manager. Here the results are substantially stronger and clearly confirm the existence of an unconditional negative gender gap. As before, this gender gap is weakened by the inclusion of industry or size controls but, differently from the previous regressions, remains statistically significant despite these controls. In sum, the results presented in Table 2 provide evidence towards the existence of an unconditional gender gap to access finance; they even suggest the importance of size as a key channel explaining an important part of this gap and the selection of female owned, or managed, businesses into specific sector as an additional characteristic explaining it.

Having presented these “unconditional regressions” we now turn to a model where we include a larger set of firm-level controls and estimate the following regression

$$y_{icst} = \beta_0 + \beta_1 Fem_{icst} + \beta_2 Empl_{icst} + \beta_3 Empl_{icst} * Fem_{icst} + \theta I_s + \psi M_{ct} + X_{icst} \gamma + \varepsilon_{icst} \quad (2)$$

where in addition to the variables included before we also include an array of firm characteristics ( $X$ ) such as the age of the company, a dummy variable identifying location in a large city<sup>11</sup>, a dummy variable identifying exporters and a dummy variable identifying foreign ownership. All models are estimated with probit but, as before, the reported coefficients are the probit marginal effects.

The flexible specification in regression (2) allows us to analyze whether enterprises with female ownership participation are more financially constrained than other companies

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<sup>11</sup> Defined as capital cities or with population of one million or more.

(coefficient  $\beta_1$ ) and whether these effects are different for firms of different sizes (coefficient  $\beta_3$ ). Once more, it is important to stress that results should not be interpreted in a causal manner as they only present conditional correlations. Specifically, there may be differences in the operations of female-owned firms that affect their financing patterns, which are observable to both firm and financial institution but not to the researcher.

Table 3 reports the estimates for regression (2), with the specifications across different columns differing in the controls included. In column (1) we include just the *Fem* dummy variable and firm size variable *Empl*, in addition to controlling for industry and survey (country and year) dummies, in column (2) we also add a set of dummies for ownership type – omitting public-owned firms, in column (3) we add the interaction *Empl\*Fem*, and in column (4) we add a set of firm characteristics such as the log of age, dummy variables for whether firm exports and whether it has foreign owned capital, and whether the firm is located in the capital or large city. Columns (5) and (6) repeat the exercise for informal firms – although reducing the number of controls due to little variation of these variables among informal firms.<sup>12</sup>

The results in Table 3 show that, on average, conditional on firm's characteristics there is no statistically significant relationship between female ownership and use of formal finance. The dummy variable indicating female ownership participation does not enter significantly in any of the regressions. Not surprisingly, larger enterprises are more likely to have access to external finance, consistent with Beck, Demirguc-Kunt and Maksimovic (2008). There is no significant size effect for female enterprises as shown by the interaction term between the female dummy and employment. Sole proprietors are less likely to use formal finance than public or privately-owned firms, even controlling for size. We also find, consistent with other

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<sup>12</sup> 82 percent of informal enterprises are sole-proprietors, two percent are exporters, and nine percent are foreign owned.

studies, that older firms, exporters, and firms with foreign ownership are more likely to access finance. As shown in columns (5) and (6), these results hold also for the informal firms, as there is no significant difference in use of finance by gender and there are no gender differences in the relationship between use of finance and firm size. We note, however, that the Pseudo R-squared are significantly lower for the regressions of informal enterprises, suggesting a much lower fit of the overall model.

The results in Table 4, once again displaying the probit marginal effects, confirm the robustness of the previous results in a subsample of formal and informal sole proprietors. Focusing on sole proprietors allows us to isolate enterprises that are 100 percent owned by a female. In addition, in a subsample of 16 countries with information available, we also test whether the results remain when we specifically identify whether the enterprise is managed by a woman or a man. Consistently with previous results, the marginal effect of the female variable remains insignificant, once we have conditioned for key firm characteristics. Similarly as before, firm size is positively associated with use of formal finance and this effect is the same for both companies with and without female owners. Furthermore, if we focus on the variable identifying the gender of the manager rather than female participation in ownership - columns (5) and (6) - the results again show no gender gap in the use of formal finance once we condition for firms characteristics. We also find that formal sole proprietors use more financial services if they are in smaller cities, are exporters and older. The Pseudo R-squared provide mixed evidence on the fit of the models, which are especially low for the regressions using data on the manager gender<sup>13</sup>.

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<sup>13</sup> Results not reported (available upon request) show the robustness of the findings to the use of alternative measures of the use of formal finance. Concretely, use of formal finance is measured by whether the firm has a bank account or credit line, the percentage of investments financed externally, and the percentage of working capital financed externally. We also measure gender differences in the use of informal financial sources. The results confirm that, on average, once we control for key firm's characteristics there is no statistically significant difference between businesses with and without female ownership participation regardless of how use of formal finance is measured.

In Table 5, we use the Oaxaca-Blinder decomposition, a standard tool for measuring contributions of endowments and coefficients in explaining gaps such as those between male and females (Oaxaca, 1973; Blinder, 1973). Since we have a non-linear model, we use the method suggested by Fairlie (2006) for the decomposition. It computes the difference in the probability of access to finance between female and male, quantifying the contribution of group differences in the independent variables and estimating the separate contributions of the individual independent variables. The decomposition technique involves one-to-one matching of cases between the two groups (female and male). Because the groups have different sizes, a sample is drawn and the process is repeated a 100 times reporting the mean results. The biggest effect explaining the financial access gap is driven by size differences between male and female owned business which account for more than a quarter of the gap. Other variables explaining the gap are age, export status and foreign ownership, together these explain close to 7 percent of the gap as female owned businesses tend to be younger, less likely to be engaged in export activities and have foreign participation. Finally, an interesting result, even if statistically weak, is that about sole proprietorship which goes into the opposite direction.

So far, we have focused on gender differences in the use of formal finance. Firms using little or no formal finance, however, might or might not have access to these financing sources. We can capture such differences by exploiting survey questions that relate to reasons for not applying or to rejections in loan applications. In unreported regressions, we therefore also analyze whether there are gender differences across financially constrained enterprises that did not apply but indicated that they needed a loan and compare to enterprises that did not apply because they did not need a loan. Similarly, we focus on enterprises that applied for a loan and evaluate whether there are gender differences in the likelihood of being rejected.

We cannot find any gender differences in either specification, suggesting that, once we control for key firm's characteristics, there are no gender differences in access to external bank finance, either through discouragement or rejection. In additional regressions, we also find that firms without female participation are less likely to state that they did not apply to a loan because they "would not be accepted".

The result that companies with female ownership participation, conditional on controlling for various key firm characteristics, do not tend to be disadvantaged in the use of formal finance seems at first rather surprising, especially considering the strong gender bias reported in Figure 1. However, as discussed this is not inconsistent with our results as we confirmed the existence of an unconditional gender gap. Furthermore, we show that a first mechanism driving the results is related to the fact that firms with female ownership participation tend to have specific characteristics that explain the unconditional gap (i.e. size, sector, foreign participation, export status, age). Additionally, another possible reason for lack of conditional gender discrimination may be the existence of a selection bias. Such a selection bias would imply that females are discriminated against, *de facto or de jure*, in a first stage when trying to establish and run a formal company in the first place, so that female entrepreneurs must be particularly capable or, in other words, must have characteristics that set them apart from male entrepreneurs owning companies with similar characteristics. While enterprise surveys do not allow detecting direct evidence for such a selection bias, Gajigo and Hallward-Driemeier (2010) find suggestive evidence in four African countries that there are gender differences in capital in the start up phase. Although differences are higher across sectors than across gender, the median capital for male entrepreneurs is more than twice that than of female entrepreneurs. This signals that female entrepreneurs may face larger entry barriers than their male counterparts, but that once they enter, they do not face larger constraints.

In order to evaluate this possible selection mechanism through various steps, we assess the possibility of such a bias in three ways. First, we look at the sample composition and evaluate to what extent enterprises with female ownership participation are more or less likely to be informal, sole proprietors or innovators and have smaller or larger enterprises than enterprises without female owners. For this purpose, Table 6 shows the share of female and male entrepreneurs across different firm types. While 82 percent of our sample is formal, we find that in the case of firms with female ownership participation the share of formal firms is lower (78 percent). The share of sole proprietorships compared with other types of firms is high in our sample (52 percent) but is only 46 percent for firms with female ownership participation. 22 percent of firms with female ownership participation are micro-enterprises, while only 18 percent of firms with male ownership participation. This unconditional distribution of firms seems to indicate that female participation in our sample is typically in informal and smaller firms and with other owners ---women are less likely to be sole proprietors. Obviously, this is very suggestive evidence that cannot be interpreted in a causal way, as financing constraints also determine firm growth and thus size.

Second, we test whether, other things equal, certain enterprise characteristics differ by gender ownership participation. While we cannot test for gender differences in inherent characteristics, we can test for observable differences, such as tendency to innovate. We therefore estimate the following regression (3) where the dependent variables are indicators of product innovation and process innovation. Specifically, these are dummy variables that indicate whether the firm has (i) introduced a new product over the past three years or (ii) has improved the production process over the past three years. Overall, as presented in Table 1, 57% of the firms in our sample indicate that they have introduced a new product, while 50%

indicate that have improved their production process. These means are higher, however, for firms with female ownership participation than for firms without female owners.<sup>14</sup>

$$X_{icst} = \beta_0 + \beta_1 Fem_{icst} + \psi M_{ct} + \theta I_s + Z_{icst} \gamma + \varepsilon_{icst} \quad (3)$$

where the variables are the same as in regressions (1) and (2).

The results in Table 7a show that, on average, female enterprises are significantly more likely to undertake product innovation, but not process innovation.<sup>15</sup> On average, firms with female ownership participation are five percent more likely to innovate than other firms, although, these results do not hold for sole proprietorships and in the case of process innovation the effect is no longer significant once firm characteristics are controlled for (column 6). It is important to interpret these findings with caution, as the sample for which we have information available on innovation is significantly smaller than our overall sample, both in terms of countries (20) and in the number of firms within these countries. In addition, there are concerns of endogeneity, as financing constraints might reduce the possibility to innovate.

Finally, we test whether female entrepreneurs are more likely to be active in sectors with lower needs for external finance. Since the regressions in Tables 2 and 7a focus on intra-industry variation (as they include industry fixed effects), they are not able to pick up such a selection bias. We therefore run the following regression

$$Fem_{icst} = \beta Finance_s + \psi M_c + \varepsilon_{icst} \quad (4)$$

where – as above - *Fem* is a dummy variable indicating female ownership participation and *Finance* is the average of all firms in sector *s* across all sample countries for the following

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<sup>14</sup> Refer to Table 1 for these descriptive statistics.

<sup>15</sup> As for previous probit regression we are displaying the marginal effects.

variables: (i) a dummy variable that takes value one if the firm has access to a formal financing channel (e.g. overdraft or loan), (ii) a dummy variable that takes value one if the firm has a bank account or credit line, (iii) the percentage of fixed asset investment financed by financial institutions, and (iv) the percentage of working capital financed by financial institutions. By using averages across countries, we are able to control for reverse causation to a certain extent. The coefficient  $\beta$  thus indicates whether enterprises with female ownership participation are more or less likely to operate in sectors that – on average – use more external finance. By including survey fixed effects, we control for country and year differences in access to external finance.

The results, presented in Table 7b, do not provide any evidence that firms with female ownership participation are more likely to be in sectors characterized by lower use of finance. The female dummy enters negatively, but not significantly at the five percent level in any of the regressions.

We interpret these results as, on the one hand, partially supporting our hypothesis of a selection bias among female entrepreneurs who have to be more capable than their male counterparts in order to be part of the formal enterprise universe –as it is shown by the innovation results in Table 7a. On the other hand, all other things equal, on average, businesses with female ownership participation are more likely to be smaller and therefore, for this reason, less likely to access formal external finance.

Concluding, this section shows that while African countries seem to be less equal towards female entrepreneurs shown by the existence of a gender gap in our unconditional regressions, once we control for key firm's characteristics enterprises owned by females do not appear more financially constrained than those without female ownership participation. However, we find that larger businesses have systematically better access to external finance, and companies with female ownership participation tend to be smaller than their counterparts

owned purely by males. Going deeper into the mechanism, our results suggest that it is indeed size and industry the key characteristics behind the existence of the unconditional gender gap. Additional characteristics driving the unconditional gender gap are age, foreign ownership, export status and ownership type characterized female owned businesses. In addition, we provide some support towards the fact that this lack of difference in terms of accessing finance could be partially explained by the fact that the female entrepreneurs appear to be a “selected sample” with characteristics that may explain our findings. Females tend to be less likely to be owners of a formal company, and once they are able to break this “glass ceiling” it is because female entrepreneurs appear to be significantly more likely to innovate terms of new products. However, despite the possible biases due the existence of this selection effect our results are important in identifying that, for the sample of existing companies, we find that the existence of the unconditional gender gap is crucially driven by a set of key characteristics, size being the most important among them. The finding about the existence of an unconditional gender gap is for this reason consistent with the other finding that there is not a gender gap once we control for key firms characteristics such as size, industry, etc.

### **3. Gender and Household Access to Financial Services**

This section explores gender differences in the use of different financial services by individuals. Unlike in the previous section, we therefore focus more on savings and payments than credit services. We consider both formal and informal financial services. This section first discusses the data and simple comparisons in the use of financial services by men and women, before turning to multivariate regressions.

#### **3.1. Data and Ocular Econometrics**

To explore the relationship between gender and use of financial services, we use household surveys across nine Sub-Saharan African countries, co-branded as FinScope or FinAccess surveys. Specifically, we have data for Botswana, Kenya, Malawi, Namibia, Rwanda, South Africa, Tanzania, Uganda and Zambia. These surveys, first undertaken in South Africa in 2002, are surveys with up to 7,600 observations and sampled with cluster stratified probability. They are based on individuals rather than households. While this might reduce the accuracy in terms of financial services that the individual has indirect access to through other household members and might reduce the representativeness, it has the advantage that we can focus specifically on the gender gap (Cull and Scott, 2010). For this study, we have a total of nine surveys available. While several countries have undertaken multiple surveys, we only include the most recent one available. All surveys used in this section were undertaken between 2004 and 2009.

The FinScope surveys distinguish between four different population segments – (i) users of formal banking services, (ii) users of other formal financial services, such as insurance companies, mobile phone services and regulated microfinance institutions, (iii) users informal financial services, including unregulated Savings and Credit Cooperative Organizations (SACCO), Accumulating Savings and Credit Associations (ASCA) and Rotating Savings and Credit Association (ROSCA), and (iv) individuals excluded from any service. In the following, we will follow focus on (i) users of formal banking services, (ii) users of informal financial services (who could also use formal banking services) and (iii) individuals excluded from formal and informal services. In unreported robustness tests, we have also explored the gender gap among users of other formal financial services; for reasons of space, however, we do not focus on this segment.

Figure 2 shows that, on average, women are less likely to use formal financial services than men, while gender differences in the use of informal financial services vary across

countries. Here, we graph the share of surveyed in each country that (i) uses formal banking services, (ii) uses informal services, and (iii) is excluded from any financial service, separately for men and women. All observations are weighted according to their representativeness. We also present standard t-tests for differences across the two groups.

Panel A shows that women are less likely to use formal banking services across all nine countries, although the gender differences vary across countries. In Botswana, the gender gap is less than two percent and not significant, whereas in Kenya, the gender gap is 11 percent, with 32 percent of men using formal banking services, but only 21 percent of women. The Panel A graphs also show the large cross-country variation in use of formal banking services, documented elsewhere, with almost 70 percent of surveyed in South Africa using formal banking services, while only 17 percent using formal banking services in Zambia.

The Panel B graphs show that the gender gap in the use of informal financial services varies across countries. In Kenya, South Africa and Tanzania, women are more likely to use informal financial services than men, while the reverse holds in Namibia and Rwanda. The graphs also show the wide-spread variation in the use of informal services across the nine sample countries, ranging from 50 percent in Kenya to only one percent in Namibia.

The Panel C graphs show that women are either as likely or more likely to be excluded from any financial service as men. Specifically, in Malawi, Namibia, Rwanda, Tanzania, Uganda and Zambia, they are more likely to be excluded from any financial service, while in the other countries there is no significant difference between men and women. These graphs also indicate the high degree of financial exclusion across Southern and Eastern Africa, ranging from 80 percent in Zambia to 19 percent in South Africa.

These findings are consistent with the hypothesis of a gender gap in the use of formal banking services. They also give a first indication that this gender gap is not driven by lower

demand for formal financial services, as in several countries women are more likely to use informal financial services than men. However, these comparisons do not control for other individual characteristics. Next, we will therefore turn to multi-variate regressions to explore whether these unconditional differences still hold once we control for other factors that can explain the use of formal and informal financial services.

### **3.2. Multiivariate Results**

We next turn to multivariate regression analysis to explore whether the gender differences in the use of financial services hold when we control for other characteristics of individuals and households. Specifically, we use probit regressions of the following form:

$$y_i = \beta_0 + \beta_1 Fem_i + X_i\gamma + \varepsilon_i \quad (5)$$

where  $y$  is access to financial services measured by the use of (i) formal banking services and (ii) informal financial services. In addition, we use (iii) a dummy variable that indicates whether a person is financially excluded, i.e. uses neither formal nor informal financial services. The regression is weighted and stratified on the rural-urban level. The coefficient of interest is  $\beta$ , which indicates whether women are more or less likely to use financial services. We run these regressions both country-by-country as well as a pooled version with country-fixed effects. While the results from the pooled regressions give us an indication of the average effect across countries, they do not allow for slope differences across countries. In addition to using country-specific weights, we weight by the inverse of the respective population in each country in the case of the pooled regression. As in the previous section, we report marginal effects in the Tables.

We include a wide array of other individual characteristics that might explain variation in the use of financial services (see Appendix Table A2). Appendix Table A3 presents the descriptive statistics for all characteristics, for each country. First, we control for

geographic location by including a dummy variable *Rural* indicating whether the individual lives in a rural district. Geographic barriers such as larger distance to the nearest bank office would suggest a negative relationship between *Rural* and use of formal financial services, while the use of informal financial services might not necessarily vary across different geographic areas. We control for the education level of individuals, by including dummy variables that indicate whether the individual has (i) no education or less than primary, (ii) primary completed, (iii) secondary level completed, and (iv) at least an undergraduate college degree. We expect individuals with higher levels of education to be more likely to use formal and informal financial services. We also include the *Age* of the individuals as well as its square. While there might be a positive relationship between the age of individuals and the use of financial services, this relationship might be non-linear and turn negative at higher ages when individuals leave the labor market. We also include an income measure where available. With the exception of Kenya (individual expenses), and Uganda (household income), we include the log of individual monthly income.<sup>16</sup> We expect higher-income individuals to be more likely to be able to afford formal financial services, while the relationship of income with the use of informal financial services is not clear, *a-priori*. Finally, we include dummy variables indicating what the main income source of the individual is. Specifically, *Employed*, and *Self-employed* are dummy variables indicating the employment status and sector, with the omitted category being dependent on pension or family. We also control for the ownership of a mobile phone, which might indicate stronger commercial needs and therefore demand for financial services. It might also indicate, however, openness to new technologies and therefore bank delivery channels. Since the possession of a mobile phone might be endogenous to having a formal bank account, we run

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<sup>16</sup> In the case of the pooled regression, we convert all income measures into USD, using average-year exchange rates.

the below regressions in unreported robustness tests without the mobile phone dummy and confirm all our findings.

We control for the personal circumstances of the individual by including dummy variables for (i) being married, (ii) whether the survey respondent is head of household and – where available – (iii) whether the respondent is the main earner and decision taker. All these factors might increase the probability of using financial services, be they formal or informal, as being married and/or being head of household imply stronger economic responsibilities.

The results in Table 8 show that - on average – women are not significantly more or less likely to use formal financial services. We report first the pooled regression with country dummies and then nine country-specific regressions. The pooled regression includes only variables that are available for all surveys. The regression in column 1 of Table 8 shows an insignificant coefficient on the female dummy. This is confirmed by considering the country-level regressions. Only in South Africa does the female dummy enter significantly and negatively, suggesting that females have a 11.8 percent lower probability of using formal financial services. Unlike in the univariate comparisons of Figure 2, we therefore cannot find a gender gap in the use of formal banking services, once we control for other individual characteristics.

The use of formal banking services is correlated with an array of other individual factors. Individuals with higher income are more likely to use formal banking services, as are users of mobile phones. Even controlling for the fact that users of mobile phones have, on average, higher incomes, they are between 8.2 and 30.5 percent more likely to use formal banking services. Formally and self-employed individuals are more likely to use formal banking services than non-employed. Perhaps surprisingly, the relationship between using formal banking services and rural residence is not consistent across countries. On the other

hand, education is a strong predictor of the use of banking services, with the use increasing linearly in most countries – with the notable exception of South Africa -, from individuals with primary education to individuals with secondary education to individuals with tertiary education. Older individuals are more likely to use formal banking services in almost all countries, although there is evidence for a non-linear effect, as the quadratic term enters negatively. We find that married individuals and household heads are more likely to use formal banking services, though these results are driven by a few countries.

The country dummies in the pooled regression provide evidence for the cross-country variation in the use of financial services beyond differences in population composition. We find that relative to Botswana – the omitted country - all countries except for Namibia and South Africa have lower levels of formal banking use. The differences range from 37 percent in Kenya to 14 percent in Zambia. Individuals in Namibia and South Africa are as likely to use formal banking services as individuals in Botswana, controlling for the characteristics of individuals.

The results in Table 9 show that – on average across the nine surveys – women are more likely to use informal financial services. The effect is also economically large, with women being 5.8 percent more likely to use informal financial services than men. Looking behind the average effect across countries, we find that this is driven by Botswana, Kenya, and Tanzania, with the effect being especially strong in Kenya (14.7 percent). On the other hand, there is no gender difference in the use of informal financial services in Malawi, Namibia, South Africa, and Zambia and even a negative relationship between being female and the likelihood of using informal finance in Rwanda.

Many of the individual characteristics that explain the use of formal banking services also explain the use of informal financial services. It is important to note, however, that significant coefficients in the pooled regressions are often driven by a few countries. The

relationship between income and the use of informal financial services is positive in some but not all countries. In some countries owners of mobile phones are more likely to use informal financial services while in others it does not make a difference or they are less likely. There are no consistent relationships between employment status, rural residence, education and use of informal financial services. The relationship between use of informal services and age is again non-linear, with the level entering positively and the square term entering negatively. Married individuals are more likely to use informal financial services in most, though not all, countries. If individuals are the main earner in the household, they are more likely to use informal financial services in Tanzania, but less likely in Malawi. The main decision maker is more likely to use informal financial services only in Kenya. The country dummies in the pooled regression suggest that individuals in all countries are less likely to use to informal financial services than individuals in Botswana.

Table 10 shows that, on average, women are less likely to be excluded from financial services, with significant cross-country variation behind the result from the pooled regression. Specifically, women in Botswana, Kenya, Tanzania, and Uganda, are less likely to be excluded from financial services (note that women in these same countries are more likely to use informal financial services), while women in Rwanda are more likely to be excluded. There is no significant gender gap in financial exclusion in the other countries.

The other individual characteristics that are significantly correlated with the use of formal and informal financial services are also significantly correlated with the likelihood of being excluded, though with the opposite sign. As before, the pooled regression results are often driven by a few countries. Across all countries, higher income individuals are less likely to be excluded, and controlling for this income effect, owners of mobile phones are less likely to be excluded in most countries. Self-employed are less likely to be excluded in Kenya, Namibia, and Zambia while formally employed individuals are less likely to be excluded in

most countries. Rural residence does not consistently predict financial exclusion across countries. Education is an important predictor of the likelihood of not being excluded, with the relationship between the likelihood of exclusion and educational attainment decreasing in a linear measure in all countries, except for South Africa. As before, the relationship between age and the likelihood of being financially excluded is non-linear, first decreasing then increasing. Married individuals are less likely to be excluded in most countries, while heads of household are no more or less likely to be excluded in most countries. The survey dummies in the pooled regression suggest that the probability of exclusion is higher in all countries compared to Botswana, with the exception of Rwanda and South Africa, for which the difference is insignificant.

In robustness tests, we re-ran the regressions in Tables 8, 9 and 10 without the household head dummy, given the high correlation with the female dummy (43%). There are few differences. While the female dummy turns negative and significant in Uganda<sup>17</sup>, it turns positive and significant in Malawi. It continues to enter negatively and significantly in South Africa and insignificantly for all other countries and the pooled regression. Excluding the household head variable from the regressions in Tables 9 and 10 does not yield any material difference in terms of coefficient size or significance.

In order to gain additional insights into the gender gap in the use of formal banking services, we explore gender differences in the reasons for not being banked, similar to the analysis in the previous sections on enterprises. Specifically, individuals without use of formal financial services were asked for the reason of being unbanked. We categorize these different reasons into three groups; first, demand-side reasons, including lack of regular income or job, insufficient money, illiteracy, and being too young or too old; second, supply-side reasons, including decline of application, lack of identification documents or other

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<sup>17</sup> This is consistent with findings by Johnson and Nino-Zarazua (2011)

qualifications, high minimum balances or fees, geographic distance and bad customer service; third, deliberate choice due to lack of need, lack of trust and preference for cash.<sup>18</sup> In Table 11, we use the sample of individuals without formal financial services and use a multinomial regression model with dummy variables that take the value one if they state a reason categorized either as demand-side, supply-side or choice-related, on the female dummy as well as country-fixed effects. We find that females are more likely to state demand-side reasons and less likely to state supply-side or choice-related reasons for being unbanked than male respondents. This points to statistical rather than taste-based discrimination and disadvantages of females in other areas than access to finance.

In order to understand which individual characteristics explain why women are less likely to use formal financial services, we use the Oaxaca-Blinder decomposition, a standard tool for measuring contributions of endowments and coefficients in explaining gaps such as those between male and females (Oaxaca, 1973; Blinder, 1973). Since we have a non-linear model, we use the method suggested by Fairlie (2006) for the decomposition. The regression results in Table 12 show that 78% of the variation in the use of formal financial services across gender groups can be explained by differences in individual characteristics rather than coefficients. Education seems to be the strongest factor in explaining the different use of formal financial services, especially the lower share of females with secondary education. The lack of formal employment is another strong explanatory factor of why females are less likely to use formal financial services...

Overall, the results in Table 12 suggest that the fact that women have lower income, are less formally educated, are less likely to be head of household and are less likely to be formally employed across the countries in our sample explains why they are less likely to use formal banking services. This is consistent with the results in Table 11 that point to demand-

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<sup>18</sup> A similar classification for self-stated reasons of being unbanked has been used by Porteous (2007)

side constraints, including lack of income or formal job as main barriers to using formal banking services by females. This suggests that it is not discrimination in the banking system or lower inherent demand by women that drives their lower use of banking services, but rather disadvantages in other areas. However, these results also suggest that some of the findings might be driven by the survey methodology of interviewing individuals rather than households; women might have indirect access to formal financial services through their formally employed husbands that function as household heads.

In sensitivity tests not shown<sup>19</sup>, we also explored whether the relationship between education, income, household head and married, on the one hand, and the use of financial services, on the other hand, varied between men and women. Few of the interaction terms, however, enter significantly, and mostly with differing signs across surveys. Overall, there seems little evidence that education and marital status are differently related with use of financial services across genders. We also differentiated according to the financial service individuals are or are not using – credit, savings, insurance and transaction services. Here we follow the definition by Porteous (2007) that captures both formal and semi-formal financial service providers. We find that females in Malawi and Tanzania (2006) are more likely to use transaction services, while there is no significant difference at the 5 percent level in other countries. Females in Botswana, Kenya and Zambia are more likely to use savings services, while they are less likely to use them in Rwanda. There are no significant gender differences in credit and insurance services.<sup>20</sup>

#### **4. Conclusions**

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<sup>19</sup> Results available upon request

<sup>20</sup> Results available upon request.

This paper assesses gender differences in the use of financial services by enterprises and households in Sub-Saharan Africa. While we find some evidence about the existence of an unconditional gender gap, once we control for firms and household characteristics we find no additional evidence of a conditional gender gap either for enterprises or individuals. Once controlling for an array of characteristics such as size, industry, ownership type, foreign participation, export status and age, enterprises with female ownership participation in Sub-Saharan Africa use as much external financing as enterprises without female ownership participation and female individuals are as likely to use formal financial services as male individuals. While this might seem surprising, our results suggest that one has to look beyond simple gender comparisons and explore the reasons why we find a lower financial market participation of women. In the case of enterprises, key driver of the gender gap are exactly these key firm characteristics, especially size: female ownership participation tend to be of smaller size, and smaller firms have, on average, less access to external finance. Further, we provide some evidence of selection bias, i.e., female entrepreneurs have to overcome higher barriers in the first place, as evidenced by their higher tendency to innovate and higher legal burden in African countries compared to their male peers. Finally, we find some limited support for the hypothesis of a “sectoral selection” as female ownership tend to be more prevalent in sectors that tend to rely less on access to external finance. In the case of individuals, univariate comparisons show a lower formal financial sector participation rate of females as they score lower on many other dimensions related to the use of financial services, including income, education and formal employment, but also personal life factors such as not being head of household. These barriers that women face as individuals to access formal financial services might also explain the selection bias among female entrepreneurs that we found in the first part of the paper. This is also consistent with gender differences in self-

reported reasons for being unbanked, with females more likely than males quoting personal circumstances such as lack of formal income or job.

Are African women disadvantaged in access to financial services? Yes, but the reasons seem to lay mainly outside the financial sector, they lie in other dimensions related to female participation in the modern market economy. As discussed by World Bank (2011), women are disadvantaged among many dimensions, including participation in the labor force and education, which has repercussions for their participation in the modern market economy, including the formal financial sector. Policies to expand access to financial services by women have to address these other dimensions if women are to reap the benefit of financial services as much as men. By the same token, however, these results suggest the need for more innovative ways for banks to reach out to female customers that do not qualify for formal banking services based on traditional characteristics.

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**Table 1. Summary Statistics Enterprise Surveys (Formal)**

<i>Variable</i>	<i>Variable description</i>	<i>Obs</i>	<i>Mean</i>	<i>Mean</i>	<i>Mean</i>	<i>sd</i>	<i>Min</i>	<i>Max</i>
				<i>(male)</i>	<i>(female)</i>			
Loan_overdraft	1 if loan or overdraft	11382	0.31	0.32	0.29	0.46	0	1
Bankacc_creditln	1 if checking/saving account or credit line	11440	0.77	0.76	0.79	0.42	0	1
Fin_inv	% Investments financed by formal institutions	5228	7.56	6.79	10.22	23.8	0	100
Fin_wkcap	% Working capital financed by formal institutions	11363	3.78	3.55	4.55	13.2	0	100
Fininv_inf	% Investments financed informally	2019	4.8	4.24	6.45	17.4	0	100
Finwkc_inf	% Working capital financed informally	3729	4.09	4.09	4.10	13.5	0	100
Female	At least 1 principal owner is female	11445	0.24	0.00	1.00	0.42	0	1
Female_mng	Manager is female	2428	0.13	0.00	1.00	0.33	0	1
logEmployment	Number of permanent workers -log	11445	2.72	2.76	2.59	1.28	0	11
Informal	1 if informal enterprise	11445	0	0.00	0.00	0	0	0
Micro	1-5 employees	11445	0.19	0.18	0.22	0.39	0	1
Small	6-10 employees	11445	0.29	0.28	0.29	0.45	0	1
Medium	11-49 employees	11445	0.35	0.35	0.35	0.48	0	1
Large	50 or more employees	11445	0.18	0.19	0.14	0.38	0	1
Private	Private, limited ownership	11431	0.33	0.32	0.36	0.47	0	1
Sole_Proprietor	Sole proprietor	11431	0.52	0.53	0.46	0.5	0	1
Partnership	Partnership ownership	11431	0.12	0.11	0.15	0.32	0	1
Public	Government ownership	11431	0.02	0.02	0.01	0.13	0	1
Other_ownership	Other ownership	11431	0.02	0.02	0.02	0.14	0	1
Innov_prod	Firm improved products in last 3yrs	3362	0.57	0.55	0.62	0.5	0	1
Innov_proc	Firm improved production process in last 3yrs	3365	0.5	0.49	0.53	0.5	0	1
Exporter	Firm exports directly at least 10% of total sales	11429	0.08	0.08	0.08	0.27	0	1
Foreign	10% or more owned by foreign	11431	0.16	0.17	0.14	0.37	0	1
lgCity	In the capital city or population 1Mn or more	11445	0.20	0.2	0	0.4	0	1
Age	Age of firm	11270	13.69	13.99	12.73	13.3	0	190

**Table 2: Gender Gap in Access to Finance - Formal Firms**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	All Formal			Sole Proprietor			Female Manager		
Female	-0.014	-0.006	0.008	-0.020	-0.017	-0.007			
	[0.011]	[0.011]	[0.011]	[0.011]*	[0.011]	[0.011]			
Female_mng							-0.148	-0.136	-0.077
							[0.031]***	[0.031]***	[0.033]**
Survey fe	yes	yes	yes	yes	yes	yes	yes	yes	yes
Industry fe	no	yes	no	no	yes	no	no	yes	no
Employment control	no	no	yes	no	no	yes	no	no	yes
Observations	11400	11400	11382	5863	5863	5854	2428	2428	2414
pseudo_r2	0.21	0.22	0.28	0.22	0.23	0.26	0.06	0.06	0.07

Dprobit regressions. Robust standard errors in brackets

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

**Table 3: Explaining Access to Finance: Formal Enterprises**

	(1)	(2)	(3)	(4)	(5)	(6)
Dependant Variable:						
Loan or overdraft		All Formal			Informal	
Female	0.016 [0.011]	0.010 [0.011]	0.013 [0.029]	0.011 [0.029]	0.009 [0.024]	0.005 [0.024]
logEmployment	0.122 [0.004]***	0.107 [0.005]***	0.107 [0.005]***	0.095 [0.005]***	0.080 [0.015]***	0.072 [0.015]***
Fem_logEmp			-0.001 [0.009]	0.001 [0.009]	0.010 [0.023]	0.012 [0.024]
Private		0.018 [0.035]	0.018 [0.035]	0.022 [0.036]		
Sole Proprietor		-0.095 [0.035]***	-0.095 [0.035]***	-0.081 [0.036]**		
Partnership		-0.044 [0.034]	-0.044 [0.034]	-0.038 [0.034]		
Other Ownership		0.038 [0.048]	0.038 [0.048]	0.033 [0.048]		
logAge				0.018 [0.006]***		0.025 [0.008]***
Exporter				0.078 [0.020]***		
Foreign				0.029 [0.014]**		
lgCity				-0.033 [0.023]		-0.031 [0.022]
industry fe	yes	yes	yes	yes	yes	yes
survey fe	yes	yes	yes	yes	yes	yes
Pseudo-Rsq	0.28	0.29	0.29	0.29	0.16	0.17
Observations	11382	11369	11369	11170	2406	2384

Dprobit regressions. Robust standard errors in brackets

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

Note: omitted variable public owned

**Table 4: Explaining Access to Finance - Robustness**

Dependant Variable:	(1)	(2)	(3)	(4)	(5)	(6)
Loan or overdraft	Formal-Sole Proprietors		Informal-Sole Proprietor		Female Manager	
Female	-0.007	-0.007	0.005	0.003		
	[0.030]	[0.030]	[0.026]	[0.026]		
Fem_logEmp	0.002	0.003	0.012	0.014		
	[0.013]	[0.013]	[0.026]	[0.026]		
Female_mng					0.041	0.033
					[0.085]	[0.086]
Femmng_logEmp					-0.035	-0.029
					[0.029]	[0.030]
logEmployment	0.069	0.061	0.068	0.062	0.120	0.107
	[0.006]***	[0.006]***	[0.016]***	[0.016]***	[0.011]***	[0.012]***
Private					-0.010	-0.001
					[0.059]	[0.060]
Sole Proprietor					-0.155	-0.130
					[0.057]***	[0.059]**
Partnership					-0.056	-0.051
					[0.062]	[0.064]
Other Ownership					0.043	0.039
					[0.068]	[0.069]
Exporter		0.080				0.047
		[0.033]**				[0.043]
Foreign		0.008				0.079
		[0.019]				[0.030]***
lgCity		-0.053		-0.035		0.081
		[0.017]***		[0.025]		[0.055]
logAge		0.017		0.019		0.017
		[0.006]***		[0.009]**		[0.014]
industry fe	yes	yes	yes	yes	yes	yes
survey fe	yes	yes	yes	yes	yes	yes
Observations	5854	5774	1954	1938	2402	2311
Pseudo-Rsq	0.26	0.27	0.18	0.18	0.15	0.15

Dprobit regressions. Robust standard errors in brackets

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

Note: omitted variable public owned

**Table 5: Non-Linear Decompositions of Female/Male Gaps in Use of Loan or Overdraft**

	All Formal	Sole Proprietor
Number of obs	11170	6656
N of obs Male	8503	5199
N of obs Female	2667	1457
Male Loan/Overdraft Use Rate	0.314	0.180
Female Loan/Overdraft Use Rate	0.289	0.141
Male/Female Gap	0.025	0.039
Total explained	0.036	0.041
<i>Contributions from gender differences in:</i>		
logEmployment	0.010 [0.001]*** 27.97%	0.008 [0.001]*** 19.66%
Private	-0.001 [0.002] -2.80%	
Sole_Proprietor	-0.006 [0.003]* -16.78%	
Partnership	0.001 [0.002] 2.80%	
Other_ownership	0.000 [0.000] 0.15%	
logAge	0.001 [0.000]** 2.80%	0.000 [0.000] 0.00%
Exporter	0.000 [0.000]*** 1.36%	0.000 [0.000] 0.00%
Foreign	0.001 [0.000]** 2.80%	0.000 [0.000] 0.00%
lgCity	-0.001 [0.001] -2.80%	0.000 [0.000] 0.00%

Standard errors are reported in brackets below contribution estimates.

Contribution estimates are mean values of the decomposition.

Number of replications performed in decompositions is 100.

**Table 6. Distribution of Companies by Gender**

		Male	Female	Total
Formal	n.obs.	8,742	2,703	11,445
	%	83.07	77.67	81.73
Informal	n.obs.	1,782	777	2,559
	%	16.93	22.33	18.27
<b>Total</b>	<b>n.obs.</b>	<b>10,524</b>	<b>3,480</b>	<b>14,004</b>
	<b>%</b>	<b>100</b>	<b>100</b>	<b>100</b>
public	obs	163	33	196
	%	1.87	1.22	1.71
private, limited	obs	2,792	976	3,768
	%	31.98	36.13	32.96
sole proprietor	obs	4,642	1,247	5,889
	%	53.17	46.17	51.52
partnership	obs	939	397	1,336
	%	10.76	14.7	11.69
other	obs	194	48	242
	%	2.22	1.78	2.12
<b>Total</b>	<b>n.obs.</b>	<b>8,730</b>	<b>2,701</b>	<b>11,431</b>
	<b>%</b>	<b>100</b>	<b>100</b>	<b>100</b>
Micro 1-5	n.obs.	1,561	582	2,143
	%	17.86	21.53	18.72
Small 6-10	n.obs.	2,474	792	3,266
	%	28.3	29.3	28.54
Medium 11-49	n.obs.	3,086	947	4,033
	%	35.3	35.04	35.24
Large 50+	n.obs.	1,621	382	2,003
	%	18.54	14.13	17.5
<b>Total</b>		<b>8,742</b>	<b>2,703</b>	<b>11,445</b>
	<b>%</b>	<b>100</b>	<b>100</b>	<b>100</b>

**Table 7a: Characteristics of Formal Enterprises**

Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Product Innovation				Process Innovation			
Sample	All	Sole Proprietors			All	Sole Proprietors		
Female	0.051 [0.022]**	0.047 [0.022]**	0.018 [0.034]	0.015 [0.034]	0.037 [0.022]*	0.034 [0.023]	-0.039 [0.034]	-0.039 [0.034]
logEmployment	0.082 [0.009]***	0.082 [0.010]***	0.084 [0.016]***	0.072 [0.017]***	0.091 [0.010]***	0.104 [0.010]***	0.097 [0.017]***	0.104 [0.017]***
Private	0.030 [0.109]	0.034 [0.111]			0.109 [0.115]	0.039 [0.112]		
Sole Proprietor	0.002 [0.111]	-0.001 [0.113]			0.062 [0.117]	-0.018 [0.114]		
Partnership	0.055 [0.110]	0.050 [0.112]			0.064 [0.118]	-0.013 [0.116]		
Other Ownership	-0.122 [0.151]	-0.118 [0.153]			-0.074 [0.158]	-0.149 [0.145]		
logAge		-0.016 [0.012]		-0.013 [0.018]		-0.028 [0.012]**		-0.028 [0.017]
lgCity		0.071 [0.028]**		0.089 [0.036]**		0.035 [0.030]		0.029 [0.037]
Exporter		-0.008 [0.034]		0.098 [0.077]		-0.035 [0.034]		0.004 [0.085]
Foreign		0.007 [0.029]		-0.001 [0.075]		-0.016 [0.030]		-0.087 [0.073]
industry fe	yes							
survey fe	yes							
Observations	3361	3315	1740	1716	3362	3316	1743	1719
Pseudo-Rsq	0.07	0.07	0.05	0.06	0.08	0.08	0.06	0.07

Dprobit Regressions. Robust standard errors in brackets

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

Note: omitted variable public owned

**Table 7b: Industry Specific Access to Finance of Female Formal Enterprises**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Sole		Sole		Sole		Sole
Dep. Var.: Female	All Formal	Proprietor	All Formal	Proprietor	All Formal	Proprietor	All Formal	Proprietor
Loan_overdraft_s	-0.235 [0.163]	-0.457 [0.276]*						
Bankacc_creditln_s			-0.063 [0.250]	-0.153 [0.434]				
Fin_inv_s					-0.004 [0.006]	-0.006 [0.009]		
Fin_wkcap_s							-0.008 [0.011]	-0.008 [0.018]
survey fe	yes	yes	yes	yes	yes	yes	yes	yes
Observations	11465	5898	11465	5898	11465	5898	11465	5898
Pseudo-Rsq	0.06	0.05	0.06	0.05	0.06	0.05	0.06	0.05

Dprobit regressions. Standard errors in brackets

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

Notes: se clustered at the industry level

**Table 8. Use of Banking Services**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Sample	ALL	Botswana	Kenya	Malawi	Namibia	Rwanda	S.Africa	Tanzania	Uganda	Zambia
Female	0.017	0.027	-0.018	0.024	-0.019	-0.008	-0.118	-0.002	-0.029	0.005
	[0.019]	[0.041]	[0.030]	[0.018]	[0.040]	[0.018]	[0.050]**	[0.008]	[0.025]	[0.006]
Rural	0.015	0.175	-0.071	-0.057	-0.048	-0.011	-0.057	-0.002	-0.016	0.010
	[0.023]	[0.084]**	[0.029]**	[0.022]**	[0.050]	[0.021]	[0.038]	[0.009]	[0.029]	[0.007]
Primary	0.194	0.246	0.148	-0.013	0.079	0.109	0.216	0.027	0.084	0.014
	[0.027]**	[0.062]**	[0.034]**	[0.018]	[0.069]	[0.021]**	[0.059]**	[0.010]**	[0.027]**	[0.010]
Secondary	0.444	0.367	0.335	0.146	0.211	0.369	0.324	0.182	0.294	0.200
	[0.027]**	[0.067]**	[0.040]**	[0.032]**	[0.073]**	[0.092]**	[0.056]**	[0.038]**	[0.065]**	[0.032]**
Tertiary	0.656	0.520	0.564	0.618		0.801	0.256	0.696	0.439	0.679
	[0.023]**	[0.080]**	[0.069]**	[0.102]**		[0.085]**	[0.028]**	[0.099]**	[0.162]**	[0.152]**
Age	0.120	0.124	0.139	0.077	0.161	0.111	0.065	0.003		0.048
	[0.032]**	[0.079]	[0.043]**	[0.025]**	[0.077]**	[0.032]**	[0.079]	[0.011]		[0.015]**
Age_sq	-0.006	-0.009	-0.010	-0.007	-0.017	-0.011	0.001	0.001		-0.004
	[0.003]*	[0.008]	[0.004]**	[0.003]**	[0.009]*	[0.003]**	[0.008]	[0.001]		[0.002]**
Employed	0.409	0.109	0.125	0.127	0.342	0.020	0.166	0.103	-0.001	0.229
	[0.020]**	[0.058]*	[0.039]**	[0.034]**	[0.054]**	[0.037]	[0.056]**	[0.036]**	[0.040]	[0.034]**
Self_employed	0.242	-0.022	0.070	-0.007	0.158		0.051	-0.009	-0.048	0.085
	[0.028]**	[0.071]	[0.040]*	[0.026]	[0.066]**		[0.087]	[0.010]	[0.033]	[0.023]**
Married	0.108	0.125	-0.041	-0.026	0.140	0.018	-0.025	0.010	0.001	0.017
	[0.021]**	[0.064]**	[0.030]	[0.020]	[0.052]**	[0.020]	[0.053]	[0.008]	[0.023]	[0.006]**
HH_head	0.090	-0.012	0.025	-0.010	0.041		-0.021	0.003	0.050	0.002
	[0.022]**	[0.061]	[0.036]	[0.020]	[0.050]		[0.057]	[0.009]	[0.024]**	[0.011]
Owns_mobile	0.313	0.197	0.295	0.181	0.305		0.117	0.124	0.287	0.082
	[0.021]**	[0.044]**	[0.024]**	[0.020]**	[0.046]**		[0.056]**	[0.018]**	[0.032]**	[0.018]**
Earner		0.114		0.009	0.027			-0.019		0.016
		[0.058]*		[0.032]	[0.046]			[0.020]		[0.011]
Income_log		0.077	0.145	0.036	0.050	0.036	0.026	0.010	0.034	
		[0.010]**	[0.017]**	[0.005]**	[0.009]**	[0.014]**	[0.008]**	[0.003]**	[0.008]**	
Decision_mkr			0.110	0.025		0.049		-0.003		
			[0.033]**	[0.019]		[0.027]*		[0.007]		
Kenya	-0.372									
	[0.038]**									
Malawi	-0.242									
	[0.027]**									
Namibia	0.031									
	[0.092]									
Rwanda	-0.192									
	[0.043]**									
SouthAfrica	0.075									
	[0.074]									
Tanzania	-0.304									
	[0.020]**									
Uganda	-0.245									
	[0.030]**									
Zambia	-0.142									
	[0.055]**									
local regional fe	yes									
Observations	33872	974	6589	4712	1065	1894	3345	5864	1674	3990
Pseudo-Rsq	0.43	0.37	0.46	0.36	0.47	0.32	0.27	0.40	0.41	0.53

Dprobit regressions. Omitted Botswana. Robust standard errors in brackets

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

**Table 9. Use of Informal Services**

	(1)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	ALL	Bostwana	Kenya	Malawi	Namibia	Rwanda	S.Africa	Tanzania	Uganda	Zambia
Female	0.058 [0.010]***	0.105 [0.034]***	0.147 [0.029]***	-0.013 [0.018]	-0.000 [0.000]	-0.086 [0.032]***	0.011 [0.011]	0.063 [0.019]***	0.041 [0.029]	-0.000 [0.002]
Rural	0.010 [0.014]	-0.066 [0.065]	-0.004 [0.031]	0.191 [0.017]***	0.000 [0.001]	0.006 [0.040]	0.039 [0.015]***	-0.051 [0.025]**	0.009 [0.035]	-0.002 [0.003]
Primary	0.029 [0.013]**	0.167 [0.050]***	0.067 [0.030]**	-0.009 [0.017]	-0.001 [0.001]	-0.060 [0.031]*	-0.012 [0.012]	0.073 [0.021]***	0.032 [0.026]	-0.003 [0.002]
Secondary	0.032 [0.015]**	0.173 [0.062]***	-0.047 [0.038]	-0.048 [0.025]*	-0.001 [0.001]	-0.200 [0.041]***	-0.035 [0.013]***	-0.005 [0.037]	-0.003 [0.048]	-0.009 [0.003]***
Tertiary	0.078 [0.035]**	0.257 [0.106]**	-0.226 [0.065]***	-0.139 [0.037]***	-0.000 [0.000]		-0.030 [0.005]***	-0.194 [0.028]***	0.241 [0.151]	-0.006 [0.002]***
Age	0.099 [0.017]***	0.320 [0.065]***	0.138 [0.040]***	0.010 [0.024]	-0.001 [0.001]	-0.030 [0.049]	0.021 [0.012]*	-0.035 [0.033]		0.003 [0.004]
Age_sq	-0.009 [0.002]***	-0.026 [0.007]***	-0.016 [0.004]***	-0.001 [0.003]	0.000 [0.000]	0.001 [0.005]	-0.002 [0.001]*	0.002 [0.004]		-0.000 [0.000]
Employed	0.150 [0.016]***	0.199 [0.053]***	0.111 [0.035]***	-0.022 [0.027]	0.000 [0.000]	-0.098 [0.044]**	0.011 [0.014]	-0.098 [0.044]**	-0.097 [0.047]**	0.041 [0.015]***
Self_employed	0.080 [0.019]***	0.027 [0.066]	0.108 [0.035]***	-0.007 [0.025]			-0.017 [0.006]***	0.052 [0.035]	-0.068 [0.048]	0.016 [0.007]**
Married	0.069 [0.012]***	0.092 [0.050]*	0.032 [0.028]	-0.024 [0.018]	0.007 [0.008]	-0.025 [0.031]	-0.018 [0.007]**	0.024 [0.020]	0.071 [0.025]***	0.004 [0.002]*
HH_head	0.026 [0.012]**	-0.047 [0.047]	-0.007 [0.034]	-0.026 [0.020]	0.000 [0.000]		-0.010 [0.013]	0.003 [0.019]	0.044 [0.030]	-0.009 [0.004]**
Owns_mobile	0.052 [0.012]***	0.137 [0.038]***	0.064 [0.027]**	-0.023 [0.018]	0.000 [0.000]		-0.018 [0.010]*	-0.004 [0.022]	0.056 [0.029]*	-0.006 [0.003]**
Earner		0.082 [0.049]*		-0.069 [0.037]*				0.098 [0.028]***		0.001 [0.003]
Income_log		0.026 [0.009]***	0.026 [0.013]**	0.006 [0.003]**	0.000 [0.000]	0.011 [0.010]	0.000 [0.001]	0.006 [0.004]*	0.011 [0.008]	
Decision_mkr			0.099 [0.030]***	-0.034 [0.021]		-0.015 [0.037]		-0.002 [0.019]		
Kenya	-0.104 [0.018]***									
Malawi	-0.085 [0.008]***									
Namibia	-0.157 [0.021]***									
Rwanda	-0.087 [0.009]***									
SouthAfrica	-0.102 [0.007]***									
Tanzania	-0.068 [0.014]***									
Uganda	-0.069 [0.012]***									
Zambia	-0.117 [0.019]***									
local regional fc	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	33173	974	6589	4712	228	1869	3345	5864	1674	3990
Pseudo-Rsq	0.33	0.29	0.10	0.07	0.33	0.05	0.19	0.05	0.08	0.25

Dprobit regressions. Robust standard errors in brackets

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

Omitted Botswana

**Table 10. Excluded from Financial Services**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	ALL	Botswana	Kenya	Malawi	Namibia	Rwanda	SouthAfrica	Tanzania	Uganda	Zambia
Female	-0.068 [0.020]***	-0.127 [0.040]***	-0.076 [0.021]***	0.017 [0.025]	0.019 [0.040]	0.090 [0.035]***	0.055 [0.032]*	-0.076 [0.023]***	-0.067 [0.037]*	-0.004 [0.011]
Rural	-0.010 [0.025]	-0.070 [0.078]	0.039 [0.023]*	-0.157 [0.028]***	0.035 [0.051]	0.018 [0.046]	-0.009 [0.023]	0.074 [0.030]**	0.017 [0.047]	-0.006 [0.013]
Primary	-0.163 [0.025]***	-0.241 [0.052]***	-0.068 [0.018]***	0.033 [0.022]	-0.096 [0.069]	-0.075 [0.036]**	-0.145 [0.041]***	-0.118 [0.026]***	-0.079 [0.036]**	0.001 [0.014]
Secondary	-0.366 [0.026]***	-0.300 [0.061]***	-0.145 [0.023]***	-0.138 [0.036]***	-0.229 [0.073]***	-0.175 [0.071]**	-0.191 [0.040]***	-0.251 [0.044]***	-0.322 [0.059]***	-0.164 [0.027]***
Tertiary	-0.498 [0.019]***	-0.400 [0.037]***	-0.120 [0.037]***	-0.468 [0.040]***		-0.460 [0.058]***	-0.137 [0.019]***	-0.482 [0.068]***	-0.397 [0.114]***	-0.649 [0.135]***
Age	-0.159 [0.031]***	-0.173 [0.078]**	-0.099 [0.024]***	-0.098 [0.032]***	-0.182 [0.077]**	-0.105 [0.057]*	-0.071 [0.055]	0.008 [0.038]		-0.057 [0.023]**
Age_sq	0.011 [0.003]***	0.011 [0.008]	0.009 [0.002]***	0.009 [0.003]***	0.018 [0.009]**	0.012 [0.006]*	0.002 [0.006]	-0.001 [0.004]		0.005 [0.003]*
Employed	-0.418 [0.019]***	-0.186 [0.056]***	-0.086 [0.022]***	-0.102 [0.037]***	-0.346 [0.054]***	0.082 [0.063]	-0.146 [0.038]***	-0.233 [0.060]***	0.104 [0.071]	-0.308 [0.034]***
Self-employed	-0.230 [0.024]***	-0.003 [0.073]	-0.083 [0.021]***	-0.012 [0.033]	-0.178 [0.063]***		-0.020 [0.055]	-0.043 [0.040]	0.102 [0.064]	-0.111 [0.026]***
Married	-0.174 [0.020]***	-0.175 [0.053]***	-0.051 [0.020]**	0.051 [0.025]**	-0.136 [0.052]***	-0.076 [0.035]**	0.038 [0.041]	-0.070 [0.024]***	-0.078 [0.033]**	-0.048 [0.010]***
HH_head	-0.080 [0.022]***	-0.015 [0.059]	-0.012 [0.024]	0.051 [0.027]*	-0.046 [0.050]		0.007 [0.038]	-0.017 [0.025]	-0.103 [0.036]***	0.008 [0.019]
Owns_mobile	-0.298 [0.021]***	-0.189 [0.042]***	-0.211 [0.025]***	-0.166 [0.023]***	-0.303 [0.046]***		-0.056 [0.040]	-0.221 [0.027]***	-0.298 [0.038]***	-0.088 [0.020]***
Earner		-0.083 [0.056]		0.045 [0.042]	-0.023 [0.046]			-0.100 [0.041]**		-0.026 [0.018]
Income_log		-0.052 [0.009]***	-0.056 [0.009]***	-0.026 [0.004]***	-0.048 [0.009]***	-0.066 [0.017]***	-0.016 [0.005]***	-0.025 [0.005]***	-0.049 [0.012]***	
Decision_mkr			-0.021 [0.023]	-0.006 [0.027]		-0.013 [0.044]		0.014 [0.023]		
Kenya	0.403 [0.053]***									
Malawi	0.323 [0.042]***									
Namibia	0.302 [0.088]***									
Rwanda	0.095 [0.068]									
SouthAfrica	0.049 [0.080]									
Tanzania	0.306 [0.054]***									
Uganda	0.299 [0.050]***									
Zambia	0.308 [0.059]***									
local regional fe	yes									
Observations	33872	974	6589	4712	1065	1894	3345	5864	1674	3990
Pseudo-Rsq	0.43	0.35	0.31	0.11	0.48	0.10	0.31	0.18	0.19	0.44

Dprobit regressions. Robust standard errors in brackets

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

Omitted Botswana

**Table 11: Reasons for not Banking**

	Demand	Supply	Choice
Female	0.072 [0.036]*	-0.065 [0.038]	-0.115 [0.043]**
Kenya	-0.508 [0.139]**	1.745 [0.162]**	1.673 [0.198]**
Malawi	-1.743 [0.131]**	-0.055 [0.155]	-0.703 [0.196]**
Namibia	-0.915 [0.157]**	-0.58 [0.194]**	-0.469 [0.242]
Rwanda	0.182 [0.161]	1.235 [0.183]**	-0.309 [0.270]
SouthAfrica	-0.758 [0.148]**	0.191 [0.173]	0.767 [0.208]**
Tanzania	0.135 [0.144]	2.19 [0.166]**	1.483 [0.202]**
Uganda	-2.056 [0.132]**	-0.978 [0.159]**	-0.316 [0.195]
Zambia	-0.151 [0.138]	0.159 [0.164]	0.312 [0.202]
Constant	2.431 [0.127]**	0.311 [0.152]*	-0.299 [0.190]

Number of obs = 25754

Prob > chi2 = 0.0000

Wald chi2(27) = 5838.91

Multinomial probit regression. Standard errors in brackets

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

Reasons Included in *Demand* : don't have regular income or job; have little money; can't read; is too young or too old.

Reasons Included in *Supply* : was declined, does not have ID, does not qualify, need to keep minimum balance, does not know how to open an account, does not want to pay fees, charges are too high, bank is too far, it takes too long to get money back, could not speak their language, they are rude, not for people like me, not comfortable.

Reasons included in personal *Choice* : don't need a bank account, prefer dealing in cash, don't trust banks.

**Table 12: Non-Linear Decompositions of Female/Male Gaps in Use of Banking Rates**

Number of obs	33883
N of obs Male	15740
N of obs Female	18143
Male Banking Use Rate	0.293
Female Banking Use Rate	0.225
Male/Female Gap	0.068
Total explained	0.078
<i>Contributions from gender differences in:</i>	
Rural	-0.001 [0.000]*** -1.29%
Primary	-0.004 [0.000]*** -5.15%
Secondary	0.018 [0.001]*** 23.16%
Tertiary	0.004 [0.000]*** 5.15%
Age	-0.002 [0.003] -2.57%
Age_sq	0.007 [0.003]** 9.01%
Employed	0.014 [0.001]*** 18.01%
Self_employed	-0.001 [0.000]*** -1.29%
Married	0.001 [0.001]*** 1.29%
Owns_mobile	0.008 [0.000]*** 10.29%
HH_head	0.02 [0.003]*** 25.73%

Standard errors are reported in parenthesis below contribution estimates.

Contribution estimates are mean values of the decomposition.

Number of replications performed in decompositions is 100.

**Table A1a. Enterprise Surveys Sample**

<i>country</i>	<i>obs</i>	<i>country</i>	<i>obs</i>
Angola2006	540	Liberia2009	150
Benin2009	150	Madagascar2009	558
Botswana2006	444	Malawi2005	160
Burkina Faso2006	139	Malawi2009	150
Burkina Faso2009	516	Mali2007	619
Burundi2006	407	Mauritania2006	361
Cameroon2006	172	Mauritius2009	484
Cameroon2009	483	Mozambique2007	599
Cape Verde2006	98	Namibia2006	429
Cape Verde2009	271	Niger2005	125
Chad2009	150	Niger2009	150
Congo, Dem. Rep.2006	444	Nigeria2007	2,387
Congo, Dem. Rep.2009	151	Rwanda2006	340
Côte d'Ivoire2009	618	Senegal2007	625
Eritrea2009	179	Sierra Leone2009	150
Gabon2009	179	SouthAfrica2007	1,057
Gambia, The2006	301	Swaziland2006	429
Ghana2007	616	Tanzania2006	484
Guinea-Bissau2006	296	Togo2009	145
Guinea2006	327	Uganda2006	663
Kenya2007	781	Zambia2007	603
Lesotho2009	151	<b>Total</b>	<b>18,081</b>

**Table A1b. Household Surveys Sample (Finscope)**

<i>country</i>	<i>obs</i>
Bostwana2004	1,200
Kenya2009	6,598
Malawi2008	4,993
Namibia2004	1,200
Rwanda2008	2,000
SouthAfrica2008	3,900
Tanzania2009	7,680
Uganda2006	2,959
Zambia2005	3,998
<b>Total</b>	<b>34,528</b>

**Table A2. Description Variables Household Surveys**

<i>Variable</i>	<i>Variable description</i>
Banking	uses now banking services
Informal	uses now unregistered financial services
Excluded	not banked; not formal or informal financial institutions
Transactions	able to deposit, withdraw, or transfer money
Savings	has savings cc/oo any kind of institution
Credit	has a cash loan from a formal institution
Insurance	has any kind of short/long-term insurance (health, funeral, crops, house, life, car...)
Female	1 if respondent female
Age	age respondent divided by 10
Age_sq	age respondent divided by 10 and squared
Rural	lives in a rural area
No-education	less than primary
Primary	primary complete (and) less than secondary complete
Secondary	secondary or vocational training complete (and) less than tertiary complete
Tertiary	tertiary complete or more
Employed	(main) source of income is from a wage (company or individual)
Self_employed	(main) source of income is from own business
Married	1 if married
HH_head	1 if household head
Owns_mobile	owns/uses pre-paid or contract cell phone
Income_log	log individual monthly income -LCU (ALL in USD)
Earners	1 if household main earner
Decision_mkr	makes financial decisions (self or with spouse)

**Table A3. Summary Statistics Household Surveys**

Variable	ALL					Bostwana					Kenya					Malawi					Namibia				
	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
Banking	34528	0.25	0.43	0	1	1200	0.43	0.5	0	1	6598	0.25	0.44	0	1	4993	0.19	0.39	0	1	1200	0.53	0.5	0	1
Formal	34528	0.14	0.35	0	1	1200	0.49	0.5	0	1	6598	0.35	0.48	0	1	4993	0.17	0.37	0	1	1200	0.17	0.38	0	1
Informal	34528	0.25	0.43	0	1	1200	0.31	0.46	0	1	6598	0.5	0.5	0	1	4993	0.25	0.43	0	1	1200	0.01	0.08	0	1
Excluded	34528	0.5	0.5	0	1	1200	0.46	0.5	0	1	6598	0.32	0.47	0	1	4993	0.55	0.5	0	1	1200	0.46	0.5	0	1
Female	34528	0.54	0.5	0	1	1200	0.51	0.5	0	1	6598	0.59	0.49	0	1	4993	0.52	0.5	0	1	1200	0.5	0.5	0	1
Rural	34528	0.68	0.47	0	1	1200	0.67	0.47	0	1	6598	0.71	0.45	0	1	4993	0.81	0.39	0	1	1200	0.55	0.5	0	1
Primary	34040	0.48	0.5	0	1	1200	0.36	0.48	0	1	6598	0.32	0.46	0	1	4993	0.55	0.5	0	1	1200	0.44	0.5	0	1
Secondary	34040	0.19	0.39	0	1	1200	0.32	0.47	0	1	6598	0.23	0.42	0	1	4993	0.13	0.34	0	1	1200	0.4	0.49	0	1
Tertiary	34040	0.03	0.16	0	1	1200	0.06	0.23	0	1	6598	0.02	0.14	0	1	4993	0.02	0.15	0	1	1200	0.03	0.16	0	1
Age	34359	3.625	1.531	1.6	10.5	1200	3.509	1.515	1.8	8.7	6597	3.87	1.671	1.6	10.5	4993	3.645	1.572	1.8	9.8	1198	3.374	1.344	1.6	8.8
Age_sq	34359	15.49	13.85	2.56	110	1200	146.04	135.17	32.4	757	6597	177.73	157.45	25.6	1103	4993	157.59	149.07	32.4	960.4	1198	131.88	114.78	25.6	774
Employed	34528	0.18	0.39	0	1	1200	0.37	0.48	0	1	6598	0.22	0.42	0	1	4993	0.15	0.36	0	1	1200	0.4	0.49	0	1
Self_employed	34528	0.16	0.37	0	1	1200	0.1	0.29	0	1	6598	0.2	0.4	0	1	4993	0.15	0.35	0	1	1200	0.11	0.31	0	1
Married	34525	0.58	0.49	0	1	1197	0.21	0.4	0	1	6598	0.6	0.49	0	1	4993	0.74	0.44	0	1	1200	0.25	0.43	0	1
HH_head	34517	0.49	0.5	0	1	1199	0.41	0.49	0	1	6598	0.49	0.5	0	1	4993	0.5	0.5	0	1	1200	0.38	0.48	0	1
Owms_mobile	34528	0.36	0.48	0	1	1200	0.38	0.48	0	1	6598	0.47	0.5	0	1	4993	0.33	0.47	0	1	1200	0.37	0.48	0	1
Income_log	29680	3.02	3.36	-9.1	12.11	1023	3.16	3.44	-2.24	8.58	6590	4.66	1.09	-1.24	9.37	4737	2.9	2.82	-5.638	9.28	1091	2.77	3.71	-2.56	8.95
Earnr	21000	0.71	0.46	0	1	1154	0.4	0.49	0	1	0					4968	0.95	0.23	0	1	1200	0.24	0.43	0	1
Decision_mkr	21271	0.74	0.44	0	1	0					6598	0.73	0.44	0	1	4993	0.8	0.4	0	1	0				
Variable	Rwanda					SouthAfrica					Tanzania					Uganda					Zambia				
	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max	n. obs.	mean	st.dev.	min	max
Banking	2000	0.14	0.35	0	1	3900	0.7	0.46	0	1	7680	0.11	0.32	0	1	2959	0.16	0.37	0	1	3998	0.14	0.35	0	1
Formal	2000	0.07	0.25	0	1	3900	0.03	0.16	0	1	7680	0.05	0.22	0	1	2959	0.07	0.26	0	1	3998	0.01	0.11	0	1
Informal	2000	0.26	0.44	0	1	3900	0.08	0.28	0	1	7680	0.27	0.44	0	1	2959	0.21	0.41	0	1	3998	0.03	0.17	0	1
Excluded	2000	0.53	0.5	0	1	3900	0.19	0.39	0	1	7680	0.57	0.49	0	1	2959	0.62	0.48	0	1	3998	0.83	0.38	0	1
Female	2000	0.64	0.48	0	1	3900	0.5	0.5	0	1	7680	0.53	0.5	0	1	2959	0.52	0.5	0	1	3998	0.5	0.5	0	1
Rural	2000	0.75	0.44	0	1	3900	0.24	0.43	0	1	7680	0.77	0.42	0	1	2959	0.71	0.45	0	1	3998	0.68	0.47	0	1
Primary	2000	0.5	0.5	0	1	3900	0.46	0.5	0	1	7666	0.64	0.48	0	1	2485	0.43	0.5	0	1	3998	0.47	0.5	0	1
Secondary	2000	0.06	0.24	0	1	3900	0.37	0.48	0	1	7666	0.09	0.28	0	1	2485	0.11	0.31	0	1	3998	0.26	0.44	0	1
Tertiary	2000	0.01	0.12	0	1	3900	0.11	0.31	0	1	7666	0.01	0.08	0	1	2485	0.02	0.13	0	1	3998	0.01	0.11	0	1
Age	2000	3.787	1.575	1.8	9.1	3900	3.8	1.6	1.6	9.9	7680	3.7	1.4	1.6	9.9	2801	3.5	1.5	1.8	9.5	3990	3.0	1.2	1.6	8.9
Age_sq	2000	168.2	145.5	32.4	828	3900	170.4	138.3	25.6	980.1	7680	154.2	127.3	25.6	980.1	2801	146.9	136.2	32.4	902.5	3990	108.2	99.8	25.6	792.1
Employed	2000	0.1	0.3	0	1	3900	0.37	0.48	0	1	7680	0.04	0.2	0	1	2959	0.15	0.35	0	1	3998	0.19	0.4	0	1
Self_employed	2000	0.11	0.31	0	1	3900	0.07	0.26	0	1	7680	0.18	0.38	0	1	2959	0.28	0.45	0	1	3998	0.17	0.38	0	1
Married	2000	0.55	0.5	0	1	3900	0.38	0.49	0	1	7680	0.73	0.44	0	1	2959	0.55	0.5	0	1	3998	0.51	0.5	0	1
HH_head	2000	0.51	0.5	0	1	3900	0.48	0.5	0	1	7672	0.54	0.5	0	1	2957	0.55	0.5	0	1	3998	0.42	0.49	0	1
Owms_mobile	2000	0.07	0.25	0	1	3900	0.73	0.44	0	1	7680	0.26	0.44	0	1	2959	0.28	0.45	0	1	3998	0.2	0.4	0	1
Income_log	1894	2.3	1.57	-7	8.61	3345	3.69	3.42	-2.8	8.93	5886	2.75	2.76	-7.88	7.04	1956	2.59	1.56	-2.397	12.11	3158	0.27	6.27	-9.1	7.76
Earnr	2000	0.36	0.48	0	1	0					7680	0.89	0.31	0	1	0					3998	0.45	0.5	0	1
Decision_mkr	2000	0.77	0.42	0	1	0					7680	0.69	0.46	0	1	0					0				

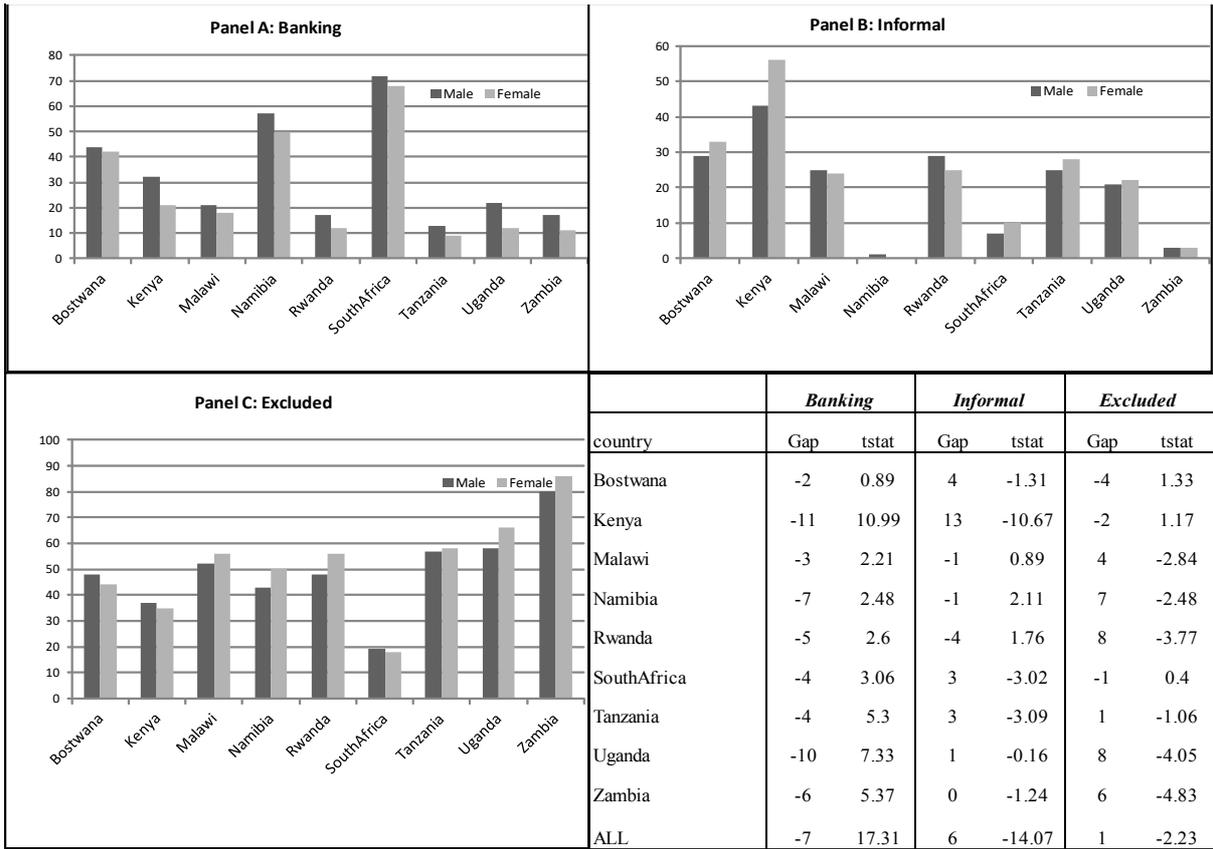


Figure 2. Gender Gap in the Use of Financial Services