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Access to finance – mind the gender gap

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Abstract

Studies on financial inclusion have so far focused on understanding the determinants of overall access to finance, while a small but growing literature has attempted to study the impediments that women face when trying to access finance. This paper contributes to this literature by understanding the underlying factors of gender gaps in terms of accessing the various services provided by the financial sector, paying particular attention to the structure of the banking system and to women's socio-economic participation. We construct a database combining information from bank-level data with other variables to examine the association between banking system ownership structure and concentration, the regulatory framework and other socio-economic variables reflecting women's participation in the labour market and gender disparities in access to property across countries. We also compare the association of these variables with overall access to finance. A weighted least squares analysis is used to identify the correlations with the gender gaps. Our results suggest that women are more likely to be excluded from the formal financial sector in countries where: (i) laws and norms discriminate against women; (ii) women have lower participation in the labour market; and (iii) state-owned banks have a big share in the banking system.

Keywords: gender gap, financial inclusion, access to finance

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1. Introduction

Financial inclusion is generally defined in the literature as the delivery, by institutional players, of appropriate financial products and services to various sections of society, including the vulnerable, disadvantaged and low income groups. Attention has recently shifted in the literature from studying financial depth to addressing issues of financial outreach and inclusion – the extent to which formal financial services are used by households and firms. An influential body of empirical research shows that improved access to finance has a critical role in helping firms overcome liquidity constraints and thus improve resource allocation in the economy (Love, 2003 and Wurgler, 2000), and in enabling them to exploit growth and investment opportunities (Beck, Demirguc-Kunt and Maksimovic, 2005). At the household level, improved access to finance is also believed to help in smoothing consumption, and reduce financial hardship and over-indebtedness that result from a lack of appropriate banking services, affordable credit and accessible savings products.

To date, however, studies on financial inclusion have focused on assessing determinants to overall access to finance, including the level of economic development, the quality of the institutional and regulatory environment, the degree of development of the information and physical infrastructure and the banking ownership structure (see for example Beck and de la Torre, 2007; Beck, Demirguc-Kunt and Martinez Peria, 2007a). However, little is known about the gender gap that limits women's access to the opportunities and services provided by the financial sector, compared with that of men. This is particularly important given the fact that women can contribute substantially to the quality and direction of economic and social development. In that sense, achieving gender equality in financial inclusion is an important way of unlocking resources for economic empowerment and fostering growth, by enhancing access to economic opportunity for a wide segment of society. This is particularly critical given that gender gaps in other areas have been shown to have a significant negative impact on economic development. For instance, GDP per capita losses attributable to gender gaps in the labour market are estimated at 23 per cent in South Asia, 27 per cent in the Middle East and North Africa, and a loss of around 15 per cent in the rest of the world (Cuberes and Teignier, 2012). Addressing gender gaps will change women's lives by giving them voice and improving their decision-making capabilities (GiZ, 2012).

This paper contributes to the literature on access to finance by focusing on the gender angle of financial exclusion, and examining the factors that are associated with the gender gaps, which may or may not be different from the factors that create hardship for everybody. In particular, we analyse the effects of the banking system ownership structure, of the regulatory and institutional framework, in addition to the other factors that have been traditionally examined in the literature, such as socio-economic variables reflecting women's participation in the labour market and gender disparities in access to property, on the gender gaps in access to finance. These determinants are expected to shed light on the relative situation of women regarding their access to finance. We also assess whether these determinants differ from those of overall access to finance.

The paper is structured as follows. The next section summarises the literature and current empirical evidence on overall access to finance and gender financial inclusion. Section 3 presents key stylised facts on gender gaps in the use of a number of financial services across our sample countries. Section 4 describes the data and methodology used and our results are then reported in section 5. Section 6 draws conclusions and policy implications.

2. Review of the literature

Financial inclusion/exclusion is increasingly becoming a subject of interest, examining the degree to which individuals have or lack equal access to opportunities offered by the financial sector. One of the oldest definitions was introduced by Leyshon and Thrift (1995) and referred to financial exclusion as "those processes that prevent poor and disadvantaged social groups from gaining access to the financial system". Likewise, Carbo et al. (2005) broadly define financial exclusion as "the inability and/or reluctance of particular societal groups to access mainstream financial services". The growing interest has emerged from a better understanding of the important role of financial inclusion in achieving economic and social sustainable development by mobilising resources and channelling them for productive purposes in the form of loans. Economic theory suggests that finance is at the core of the development process, and that the access dimension that makes financial services available to all is important in spreading equality of opportunity and tapping the full potential in an economy. The challenge is to ensure that as many people as possible have access to basic financial services, because financial inclusion helps to enhance the capabilities of vulnerable groups by reducing their dependence on personal wealth or internal resources, or their use of unreliable and expensive sources of finance to invest in their education, create their business, or benefit from growth opportunities.

Accordingly, studies on financial inclusion have focused on assessing determinants to overall access to finance, which include the level of economic development, the quality of the institutional environment, the degree of credit information sharing, the development of the financial infrastructure, the cost of enforcing contracts, the degree of government and foreign ownership of banks and the level of creditor rights protection across countries.

Beck et al. (2007a) present some indicators of banking sector outreach across 99 countries and investigate its determinants. They examine whether outreach (defined as: (i) the access and the possibility to use financial services; and (ii) the actual use of financial services) is associated with the same factors that are found to drive financial sector depth and find many similarities but also some differences in the determinants of outreach. For instance, their results suggest that a country's level of economic development and overall institutional environment are positively associated with the outreach indicators. While the outreach indicators are correlated with the credit information environment, the specific rights of creditors do not seem to affect financial sector outreach. With regards to the ownership structure, the share of government-owned banks

appears to have a negative impact on some of the access indicators (such as the branch and ATM ratios) and no significant effect on the loan and deposit indicators. They also find that the presence of foreign banks is negatively and significantly associated only with the loan and deposits per capita indicators.

Among all the determinants of financial access, the issue of foreign ownership has received particular attention. This may be due to the expected benefits of foreign banks, in particular with regards to fostering domestic competition and increasing credit availability. In terms of contribution to banking stability, cross-country evidence indicates that, on average, the entry of foreign banks with internationally diversified asset portfolios provides a stabilising influence, especially when the host country avoids too much exposure to banks from a single country (Demirguc-Kunt et al., 1999; Clarke et al., 2002; Claessens, 2006; and Cull and Martinez Peria, 2010). They are also perceived as being less susceptible to political pressures and less inclined to lend to connected parties. These factors imply a positive relationship between foreign bank presence and indicators of financial sector performance and greater outreach. However, some studies find more ambiguous results, showing that foreign banks "cherry pick" borrowers (Detragiache, Gupta and Tressel, 2006; and Beck and Martinez Peria, 2008).

In an attempt to identify the obstacles to access, Beck et al. (2007b) use information from 209 banks in 62 countries to develop indicators of barriers to banking services and explore their association with bank and country characteristics suggested by theory as potential determinants. They find that country characteristics linked with financial depth, such as the effectiveness of creditor rights, contract enforcement mechanisms, and credit information systems, are weakly correlated with barriers. They also find that barriers are higher where banking systems are predominantly government-owned and are lower where there is more foreign bank participation.

Focusing on transition economies, Beck and Brown (2011) use survey data for 29,000 households from 29 countries to explore how the use of banking services is related to household characteristics, bank ownership structure and the development of the financial infrastructure. At the household level, they find a positive effect of income, wealth and education on financial access in most countries. They also show that foreign bank ownership is associated with more bank accounts among high-wealth, high-income and educated households. However, they find no evidence that state bank ownership leads to a broader use of banking products among low-income or rural households.

Some studies examine both the supply and demand side frictions that can lead to lower overall access. For example, Beck and de la Torre (2007) point to different types of limitations that make financial services inaccessible to some groups, including geographic and socio-economic limitations as well as the limitation of opportunities for those who lack fixed collateral or are not well connected. Beck (2006) argues that efficiency with which financial markets and institutions overcome these frictions depends on the macroeconomic environment, market structure, and overall contractual and informational environment. For instance, the legal rights of borrowers and creditors, the predictability of their fair and impartial enforcement, the protection of private property rights and enforcement of contracts are all important pillars of an effective financial system. Likewise, credit registries can dramatically reduce the time and costs of obtaining credit history information from individual sources and therefore reduce the total costs of financial intermediation.

As discussed above, most of the existing literature on financial inclusion has focused on analysing determinants to the overall access to financial services or on the cost of using financial services. Little attention has been given to the gender angle of financial exclusion, and to the factors that are likely to affect the gender gaps. While the former analysis offers useful insights on barriers to access to finance, a sole focus on overall financial inclusion may mean other important aspects are missed. The determinants of the gender gaps in access to finance may or may not be different from the factors that create hardship for both men and women. Therefore emphasis should be put on measuring the relative situation of women with regards to their access to finance and on identifying the most significant determinants to these gaps.

Only a few studies have focused on women's access to finance at a micro level, such as a paper by Demirguc-Kunt et al. (2013), which uses individual-level data from 98 developing countries to document and analyse gender differences in the use of financial services. In their analysis of the significant gender gaps in using financial services, legal discrimination against women (legal restrictions in their ability to work, head a household, choose where to live, and receive inheritance) and gender norms (the level of violence against women and the incidence of early marriage for women) are found to explain some of the cross-country variation in access to finance for women. Aterido et al. (2011), also using individual-level survey data for nine countries in Sub-Saharan Africa, examine the gender gap in financial services and find that the lower use of formal financial services by women in these countries can be explained by gender

differences in education and income levels, formal employment, and being the head of household.

A study by Chamlou (2008) on the environment for women's entrepreneurship in the Middle East and North Africa region notes that access to capital is one of the big challenges faced by women in this particular region. Chavan and Birajdar (2009) also analyse the subject from a gender point of view, but instead focus on microfinance as means of credit-based poverty alleviation and financial inclusion. They use secondary and primary data on self-help groups (SHGs) in India in order to evaluate the role played by these institutions towards financial inclusion of the groups/regions excluded from the formal financial system, and find that female members belonging to mature SHGs continue to rely on informal sources of finance, thus raising a concern over the cost, in the form of high rates of interest of SHG loans and their affordability.

Empirical work on gender gaps in access to finance is growing but still scarce. Enhancing access to finance and reducing gender access disparities remains a major challenge in many countries across the world, requiring actions/interventions from policy-makers. Women usually face greater barriers to formal banking services and tend to be more credit-constrained than men. This following section explores which bank and country-level characteristics can explain the gender gaps in accessing finance across countries, with a focus on the market structure and regulatory framework.

3. Characterising gender gaps in the use of banking services across countries

To examine the gender gaps in access and usage of financial services, we use the 2011 Global Findex database. The data are collected through interviews with more than 150,000 individuals aged 15 and older, randomly selected in 148 economies.[1] In this paper we focus on transactional, saving and credit services, to account for different aspects of financial services.

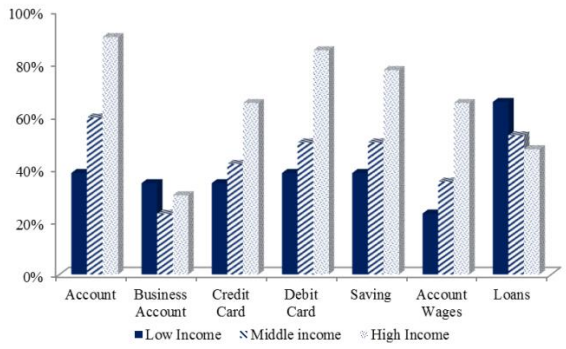
Generally speaking, gender gaps in access to finance are prevailing in the vast majority of our 141 countries. In about 79 per cent of the countries, women have less access and/or usage of bank accounts than men. The same applies to 87 per cent of the countries for business accounts, 82 per cent of the countries for savings in a financial institution and 78 per cent for obtaining loans. Likewise, 79 per cent and 78 per cent of the countries have gender gaps in the use of credit and debit cards, respectively.

There are significant variations in gender gaps across countries. In terms of income group, a higher percentage of high income countries have a gender ratio above 80 per cent, compared with low or middle income countries. For instance, 90 per cent of the high income countries have a gender ratio of more than 80 per cent – reflecting a small gender gap – while only 59 per cent of middle income countries and 39 per cent of low income countries have a similar gender gap with regards to having a formal account. The same applies for using accounts for saving or to receive wages, and for holding credit and debit cards, where high income countries perform better than middle and low income countries. However, with regards to using an account for business services or obtaining loans, gender gaps tend to be larger in high and middle income countries than in low income countries. For instance, only 30 per cent and 48 per cent of high income countries have a gender ratio above 80 per cent in business accounts and in obtaining loans respectively, against 35 per cent and 65 per cent in low income countries (Chart 1a).

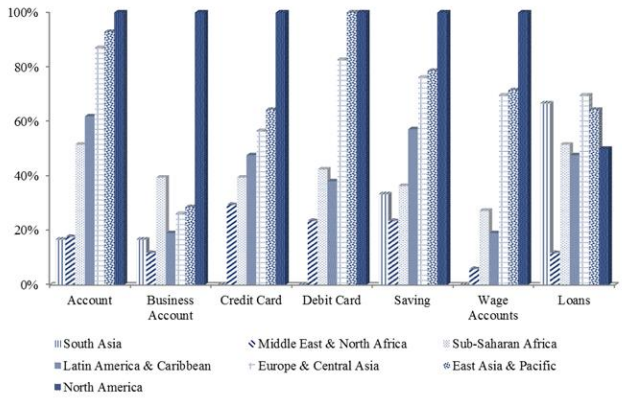
[1] The complete individual-level database and detailed country-level information about the data collection can be found at: www.worldbank.org/globalfindex.

Chart 1: Percentage of countries with more than 80 per cent female-to-male ratio

(a) By income group



(b) By region

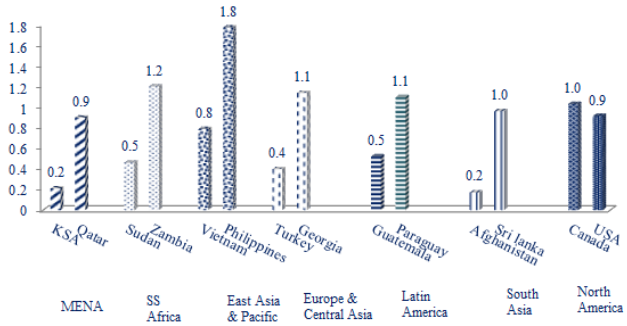


Source: Global Findex 2011 and authors' calculations

Gender gaps also vary across geographical regions. South Asia and the Middle East and North Africa regions suffer from large gender gaps in a variety of financial services. For instance, only 12 per cent of the Middle East countries and 17 per cent of South Asian countries have a female-to-male ratio above 80 per cent in the use of business accounts, which is far below the 87 per cent witnessed in Europe and Central Asia, and even below the 39 per cent of countries of Sub-Saharan Africa. The Middle East also has the largest gender gaps in terms of savings and obtaining loans, with only 24 per cent and 12 per cent of the countries having a female-to-male ratio above 80 per cent. On that front (obtaining loans), it is the only region that performs much worse than the high income countries in terms of equality in obtaining loans (Chart 1b).

Within the same region, indicators of gender gaps in financial access vary sharply across countries. In the Middle East for instance, the female-to-male ratio for having an account is 90 per cent in Qatar and 85 per cent in Kuwait, while this same ratio falls miserably in Saudi Arabia (20 per cent). The same applies for the Latin American region where Guatemala and Honduras have a female-to-male ratio of around 50 per cent, while in Uruguay and Paraguay, the ratio is above 1, indicating that women have more access to formal accounts than their male counterparts (Chart 2).

Chart 2: Female-to-male ratios in using accounts, selected countries



Source: Global Findex 2011 and authors' calculations

It is worth noting that gender gaps also vary within the same country depending on the type of financial service under consideration. In Japan, while there is equal usage of formal accounts, the female-to-male ratio drops to 40 per cent when it comes to obtaining loans. The difference in usage of accounts at a formal financial institution is also striking in countries in transition,[2] where gender gaps are either small or non-existent for having an account, but relatively large in using those accounts for business purposes. For instance, the ratio in Belarus, Cyprus, Estonia, Hungary, Poland, Serbia and Slovenia is above 90 per cent for having formal accounts and indicative of a small gap, but it falls below 50 per cent when the accounts are used for business (Chart 3).

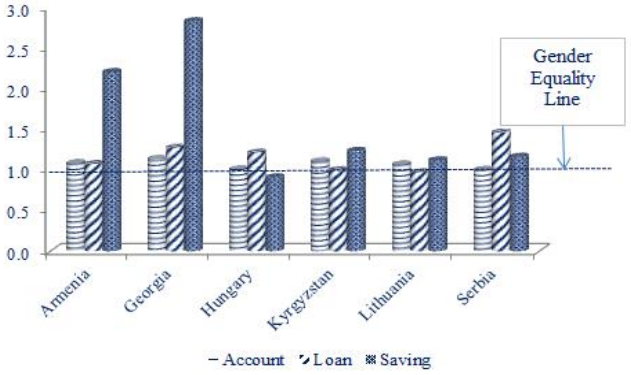
Chart 3: Within-countries variation in female-to-male ratios, transition countries

Source: Global Findex 2011 and authors' calculations

[2] As per the EBRD definition, these include Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Egypt, Estonia, FYR Macedonia, Georgia, Hungary, Jordan, Kazakhstan, Kosovo, Kyrgyz Republic, Latvia, Lithuania, Moldova, Mongolia, Montenegro, Morocco, Poland, Romania, Russia, Serbia, Slovak Republic, Slovenia, Tajikistan, Tunisia, Turkey, Turkmenistan, Ukraine and Uzbekistan.

Nevertheless, some countries are doing really well and show small or no gender gaps at all, and sometimes even higher than one female to male ratio. For instance, Cambodia and the Philippines are two countries where the ratio exceeds one for all our selected financial services and where the usage by women can even be double or triple the usage of their male counterparts.

Chart 4: Countries in transition with small/no gender gaps



Source: Global Findex 2011 and authors' calculations

4. Data and methodology

Economic theory and existing empirical work suggest that a number of factors can explain the existence of barriers to financial inclusion, which has guided the choice of the specification used in the paper.

Our approach is to include four broad dimensions to shed light on cross-country variation in gender gaps with regards to financial inclusion. The first dimension captures *basic country characteristics* such as the country's level of development, the level of its financial development and education. The second dimension captures the *institutional environment* and includes indicators assessing the extent of credit information sharing, the degree to which collateral and bankruptcy laws facilitate lending, transparency on ownership and financial information. The third dimension is meant to reflect *women's participation* in the labour market and gender disparities in access to property. Lastly, we examine an additional number of *banking sector structural characteristics* such as concentration and bank ownership structures.

4.1 Data

The "gender gaps" of these financial services are constructed as the female-to-male ratios of the variables. For each type of financial service, a higher ratio in the percentage of respondents who confirm using the service points to a lower disadvantage for women in that particular country. A ratio of one would indicate parity between males and females in access to opportunities and services offered by the financial sector. One of the advantages of the Global Findex data is that they refer to individual behaviour and not the household level, which allows for a measurement of women's direct control over their finances, an important component of economic empowerment.

Indicators on financial services are obtained from the 2011 Global Findex database. We focus in particular on six dimensions of financial inclusion reflecting how people manage, save and borrow money: (i) ownership of an account at a formal financial institution; (ii) having an account used for business purposes; (iii) holding a credit card and a debit card; (iv) using an account to receive wages; (v) saved at a financial institution in the past year; and (vi) having obtained a loan from a financial institution in the past year. The first four variables capture the basic transactional function of financial services, while the last two capture the saving and access

to credit dimensions, respectively. The "gender gaps" of these financial services are constructed as the female-to-male ratios of the variables.

To construct the variables reflecting the banking system ownership structure and concentration we use bank-level data from the Bankscope database and extract asset values for 16,117 active banks in 141 countries, covering commercial banks, saving banks, cooperative banks and Islamic banks. Banks are then classified according to their ownership, domestic or foreign. A bank is considered foreign-owned if 50 per cent or more of its shares are owned by a shareholder located in another country.

We also classify banks according to their ownership sector. A bank is considered state-owned if its shareholders, owning together 50 per cent or more, are one of the following types: public authorities, states or governments. These two classifications are then used to compute the share of foreign-owned banks (FOB) and state-owned banks (SOB) in terms of asset values in each country. To control for the level of asset concentration in the banking sector we also include the Herfindahl-Hirschman Index (HHI), which is computed as the sum of the squares of the shares of total assets held by each bank in each country.

A number of variables are included to capture the level of financial sector development, the strength of the regulatory framework, and women's participation in the labour market. These variables include: (i) the total assets held by deposit money banks as a share of GDP as a measure of financial depth; (ii) the Credit Information Index to reflect the quality of credit information available through public or private credit registries; (iii) the Strength of Legal Rights index reflecting the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending; and (iv) women's participation rate in the labour market.[3]

To account for the social institutions related to gender inequality, we also use country-level indicators that might affect women's access to financial services, as compared with men's, in particular their ability to use, control and own non-land assets. Our data indicate that formal equality under the law is guaranteed for women and men in about 68 per cent of our countries. Only in 5 countries (that is, 4 per cent of our group of countries) does the law not guarantee women and men the same rights to own and administer property, or women have no legal rights

[3] Appendix 1 reports more details about variables definitions, scales and sources.

to own and administer property other than land. Between these two legal arrangements, in about a third of our countries, the law guarantees the same rights to both women and men, but there are some customary, traditional or religious practices that discriminate against women.

The group of countries included in our analysis is large and heterogeneous, both in terms of income per capita and geographically, encompassing 131 countries.[4]

4.2 Country-level regressions

The correlations between the banking system structure and that of the regulatory and institutional framework on the gender gaps in access to finance have not been examined before. Our constructed database allows us to understand the association between these characteristics and the gender gaps, and assess whether this interaction is different from the one identified for the overall level of access to financial services. Due to the nature of our estimations, we interpret results as correlations and we refrain from making inferences regarding causality.

Two cross-section models are used to examine the correlations between banking sector ownership and structure, country-specific characteristics, and regulatory and institutional framework on the one hand, and a number of financial access indicators on the other hand. We also use country-level legal indicators that might affect women's access to financial services, as compared with men's, such as their ability to use, control and own non-land assets. The first model [1] examines the association to gender gaps, while the second model [2] examines whether our explanatory variables have the same interaction with the overall access to financial services, regardless of the gender gap.

The use of ordinary least squares (OLS) is not appropriate due to the presence of heteroscedasticity in the residuals, a common problem in cross-section analyses. We conduct a Breusch-Pagan test which confirms a heteroscedasticity problem (see test results in Appendix 3).

We use a weighted least squares (WLS) model (weighting proportional to GDP and transparency) with the absolute value of the residuals, to run several versions of the following two specifications:

[4] See Appendix 2 for the full list of countries.

[1] $RATIO_k = \beta_0 + \beta_1 Fdepth_k + \beta_2 HHI_k + \beta_3 FOB_k + \beta_4 SOB_k + \beta_5 CII_k + \beta_6 LR_k + \beta_7 fpart_k + \beta_8 property_{k+} \varepsilon_k$

where the dependent variable *RATIO* refers to the female to male ratio (reflecting the gender inclusion gaps) in the use of each type of financial services in country k, namely having a bank account, having an account used for business purposes, using an account to receive wages, having saved, holding a credit and debit card and having obtained a loan from a financial institution in the past year.

Fdepth is measuring financial depth through the total assets held by deposit money banks as a share of GDP, *HHI* is the Herfindahl-Hirschman Index for asset concentration, *FOB* and *SOB* are, respectively, the share of foreign-owned and state-owned bank assets in the total banking assets, *CII* is the Credit Information Index, *LR* is the Strength of Legal Rights index, *fpart* is the women's rate of participation in the labour market, and *property* is a measure of gender equality in access to property, measuring whether women and men have equal and secure access to non-land assets use, control and ownership.

The second specification explores the correlations between our explanatory variables on the overall access to finance, measured as the percentage of respondents (men and women) who report using the specific financial service. In other words, we regress our variables reflecting how people use accounts, save, hold cards and obtain loans on the independent variables reflecting the banking sector characteristics, financial sector and labour market development, and structure across countries, the regulatory framework, as well as the social institutions related to gender inequality.

[2] $ACCESS_k = \beta_0 + \beta_1 Fdepth_k + \beta_2 HHI_k + \beta_3 FOB_k + \beta_4 SOB_k + \beta_5 CII_k + \beta_6 LR_k + \beta_7 tpart_k + \beta_8 property_{k+} \varepsilon_k$

where *ACCESS* refers to the percentage of respondents using the same seven financial services in country k, without distinction between males and females. Because we are not looking at the gaps for this specification, we use the total rate of participation (*tpart*) as a measure for labour market participation rate instead of the women's rate of participation previously used.

A number of other factors are expected to interact strongly with access to finance variables, but are not included in the specification for various reasons. For instance, the country's level of economic development is expected to affect demand for financial services, but the real GDP per capita variable is highly correlated with the other explanatory variables and could not be included in the specification to avoid multicollinearity problems. A number of other variables have been initially tested but turned insignificant and were therefore excluded from the analysis. These include a measure for education through the illiteracy rate variable, the business extent of disclosure index (a measure of transparency on ownership and financial information), financial freedom (an indicator of banking efficiency and a measure of independence from government interference) and equal pay for equal work (a measure of the country's progress in aligning national policy with the terms of the ILO Equal Remuneration Convention).

Our results indicate that in more concentrated banking markets, firms of all sizes face higher financing obstacles. This effect decreases as we move from small to medium and large firms. Further, there seems to be an important interaction between bank concentration on the one side, and regulatory and institutional country characteristics and the ownership structure of the banking system on the other. The relation of bank concentration and financing obstacles turns insignificant in countries with high levels of GDP per capita, well-developed institutions, an efficient credit registry, and a high share of foreign banks. Public bank ownership, a high degree of government interference in the banking system, and restrictions on banks' activities, on the other hand, exacerbate the impact of bank concentration on financing obstacles.

5. Results and interpretation

Regression results of the first model examining the gender gaps are shown in Table 1 of the Appendix 3. Each column represents a separate regression for each type of financial service.

5.1 Gender gaps, institutions and labour market participation

Results from the first specification model reveal that female-to-male ratios of different types of financial services are negatively and significantly associated with the lack of equal rights and de facto access to non-land assets. This includes the usage, control and ownership of such assets. We find that women are less likely to have an account, use it to receive money for work, save and hold credit and debit cards in countries with greater discrimination against women.[5]

At the institutional and regulatory level, women's access to finance seems to be correlated to the strength of legal rights, that is the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending. Our findings demonstrate that the gender gap in access to loans, use of debit cards and use of bank accounts for work purposes, declines with the strength of these legal rights.

Lastly, we find that the gender ratio for having a bank account, using it for business purposes and using it to receive wages significantly increase with higher participation of women in labour markets. The finding is intuitive, since working women are more likely to have an account to receive electronic payments from their employer, and have an increased ability to save.

5.2 Gender gaps and banking sector characteristics

Most banking sector characteristics with the exception of state ownership do not seem to affect the gender gap in terms of accessing different types of financial services. For instance, we find no significant effect of foreign bank presence and high concentration on women's relative usage of financial services. However, the only banking sector characteristic in our model that seems to be of relevance is that the prevalence of state-owned banks as a bigger share is associated with larger gaps in accessing financial services. Our results show that the share of state-owned banks

[5] The categorical variable is based on a scale of three categories (0, 0.5 and 1) where 0 represents no discrimination and 1 represents a high level of discrimination.

significantly and negatively affects women's ability, compared with men's, to have an account, use it for business purposes, receive wages and to own a debit card. One explanation is that state-owned banks are less likely to be commercially run and less motivated to expand their customer base or improve their outreach, especially if they are more focused on lending to the government and/or state-owned enterprises. As a consequence, state-owned banks may exert less effort in attracting women or innovating/introducing new products.

5.3 Overall access to financial services

Table 2 shows the regression results using overall level of access to the various financial services. Our results highlight that a country's level of financial depth, as measured by the total assets held by deposit money banks as a share of GDP, is positively associated with the overall access to all our selected financial services. Our results are consistent with the literature on the positive link between countries' levels of development and the overall institutional environment on the one hand, and the outreach indicators on the other. The overall financial access indicators are positively associated with the credit information environment, suggesting that credit registries may play a positive role in increasing the availability of credit history information and, therefore, reduce the cost of financial intermediation. More specifically, our results show that the quality of credit information available through public or private credit registries has a significant and positive correlation with having a bank account and using accounts to receive wages, having a credit and debit cards, as well as with obtaining loans. However, the strength of legal rights that protect the rights of borrowers does not seem to particularly interact with financial sector outreach.

With regards to the ownership structure, it is worth noting that the negative association of state-owned banks with gender ratios has disappeared in the specification measuring the overall access to financial services. This suggests that the apparent insignificance of state-ownership on overall access may be hiding the fact that men enjoy a disproportionate level of access to financial services compared with that enjoyed by women in countries with high levels of state ownership. We also find no significant effect of foreign bank presence on overall use of financial services, which is consistent with a number of empirical studies supporting the argument that foreign banks may be cherry picking customers.

6. Conclusion and policy recommendations

Achieving gender equality in financial inclusion is an important way to unlock resources for economic empowerment and growth, by enhancing access to economic opportunity for a wide segment of society. It is also important at the micro level, as it improves women's lives by giving them voice and improving their decision-making capabilities.

Our results suggest that women are more likely to be excluded from the formal financial sector in countries where: (i) laws and norms discriminate against women; (ii) women have lower participation in the labour market; (iii) state-owned banks have a bigger share in the banking system; and (iv) collateral and bankruptcy laws protect the rights of borrowers and lenders are weaker.

Hence, policies aimed at reducing gender gaps can benefit a lot from addressing inequalities in women's access to property rights and labour markets. This is particularly important given that guaranteeing property rights for women increases their creditworthiness and their ability to secure collateral for a formal loan. Our variable measuring discrimination against women in this particular area shows that, in most countries, the law guarantees the same rights to own and administer property to both women and men but there are implementation gaps related to some customary, traditional or religious practices that discriminate against women. This suggests that efforts aimed at addressing this type of discrimination against women should go beyond the amendments of legal texts and provisions. For instance, more efforts should be devoted to increasing social awareness of women's rights and enforcing existing regulations. At the same time, there is a need to introduce various female-specific solutions into the frameworks for improving credit access, for example though public credit guarantee schemes or lower collateral requirements for women-owned SMEs.

Our results also suggest that women's access to finance can benefit from an increase in their economic opportunities through their participation in the labour force. This may be explained by a woman entrepreneur's greater need to obtain loans, or by women's need to use financial services to receive payments and save for greater financial security. This suggests that women's participation in labour markets and their access to financial services are tightly linked and affect each other. Hence governments – and international organisations – should continue to place more

emphasis on investing in women's and girls' education and on providing training to empower women and facilitate their integration into the labour market.

State ownership in the banking sector also seems to provide fewer opportunities for women to use banking services for different purposes. The finding is associated with lower incentives for state-owned banks to diversify their portfolio of clients and increase their outreach to include women and other groups that may be perceived as more risky or less creditworthy. Governments should pay more attention to monitoring and influencing state-owned bank behaviour to ensure equal access for women to their financial services.

What is also important to note from our results is that the factors associated with gender gaps in accessing financial services are different from the ones associated with the overall level of access, which seems to depend more on the country's degree of financial depth and on some traits of the regulatory framework, such as the availability and quality of credit information. This means that men are not affected by the same restrictions regarding work and asset ownership that women face, and that closing the gender gaps in financial inclusion needs a specific focus on women's economic empowerment.

A simple bank account at a formal financial institution can increase women's inclusion, as it provides a safe place to save, obtain loans and obtain a reliable payment connection with an employer or the government. It is also a first step towards obtaining loans, often important for investing in education or in a business. Countries that aim to close the gender gap in access to finance should design, implement and enforce laws and measures that improve women's equal access to property rights and increase their integration into the labour markets, and also enforce legal rights for all in order to level the playing field.

Appendix 1- List of variables and sources

Variable	Measuring	Source
Foreign-owned banks (FOB)	Share of assets for banks owned by foreign shareholders to the total banking assets in the country.	Authors' computation, based on Bankscope data.
State-owned banks (SOB)	Share of assets for banks owned by public authorities, states or governments to the total banking assets in the country.	Authors' computation, based on Bankscope data.
Herfindahl-Hirschman Index (HHI)	A measure of banking concentration, computed as the sum of the square of the market share of each bank in each country.	Authors' computation, based on Bankscope data.
Depth of credit information index (CII)	Measures rules affecting the scope, accessibility and quality of credit information available through public or private credit registries. The index ranges from 0 to 8, with higher values indicating the availability of more credit information, from either a public registry or a private bureau, to facilitate lending decisions.	World Bank, Doing Business project
Strength of legal rights index (LR)	Measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending. The index ranges from 0 to 12, with higher scores indicating that these laws are better designed to expand access to credit.	World Bank, Doing Business project
Women's rate of participation in the labour market (fpart)	Labour force participation rate, female (% of female population aged 15+)	World Bank, World Development Indicators (WDI)
Total labour force participation rate (tpart)	Labour force participation rate, total (% of total population aged 15+)	
Financial depth (fdepth)	Total assets held by deposit money banks as a share of GDP.	World Bank, World Development Indicators (WDI)

Access to property (property)	Whether women and men have equal and secure access to non-land asset use, control and ownership. Categorical variables are based on a scale of three categories (0, 0.5 and 1) where 0 represents no discrimination and 1 represents a high level of discrimination. • 0: The law guarantees the same rights to own and administer property other than land to both women and men. • 0.5: The law guarantees the same rights to own and administer property other than land to both women and men, but there are some customary, traditional or religious practices that discriminate against women. • 1: The law does not guarantee the same rights to own and administer property other than land to women and men, or women have no legal rights to own and administer property other than land.	OECD, Social Institution and Gender Index (SIGI)
Financial Inclusion (FINDEX)	Measuring how adults save, borrow, make payments and manage risk:	World Bank, Global Financial Inclusion (Global Findex) database, 2011
account	▪ Percentage of respondents with an account at a financial institution	
account_female	▪ Percentage of respondents with an account at a financial institution, (% female, aged 15+)	
account_male	▪ Percentage of respondents with an account at a financial institution, (% male, aged 15+)	
account_bus	▪ Percentage of respondents who report using their accounts at a formal financial institution for business purposes (% aged 15+)	
account_bus_female	▪ Percentage of respondents who report using their accounts at a formal financial institution for business purposes (% female, aged 15+)	
account_bus_male	▪ Percentage of respondents who report using their accounts at a formal financial institution for business purposes (% male, aged 15+)	
save	▪ Percentage of respondents who report saving at a formal financial institution in the past 12 months (% aged 15+)	
save_female		

save_male	▪ Percentage of respondents who report saving at a formal financial institution in the past 12 months (% female, aged 15+)
ccard	▪ Percentage of respondents who report saving at a formal financial institution in the past 12 months (% male, aged 15+)
ccard_female	▪ Percentage of respondents with a credit card (%, aged 15+)
ccard_male	▪ Percentage of respondents with a credit card (% female, aged 15+)
dcard	▪ Percentage of respondents with a credit card (% male, aged 15+)
dcard_female	▪ Percentage of respondents with a debit card (%, aged 15+)
dcard_male	▪ Percentage of respondents with a debit card (% female, aged 15+)
loan	▪ Percentage of respondents with a debit card (% male, aged 15+)
loan_female	▪ Percentage of respondents who report borrowing money from a financial institution in the past 12 months (% aged 15+)
loan_male	▪ Percentage of respondents who report borrowing money from a financial institution in the past 12 months (% female, aged 15+)
wages	▪ Percentage of respondents who report borrowing money from a financial institution in the past 12 months (% male, aged 15+)
wages_female	▪ Percentage of respondents who report using their accounts at a formal financial institution to receive payments for work or from selling goods in the past 12 months (% aged 15+)
wages_male	▪ Percentage of respondents who report using their accounts at a formal financial institution to receive payments for work or from selling goods in the past 12 months (% female, aged 15+)
	▪ Percentage of respondents who report using their accounts at a formal financial institution to receive payments for work or from selling goods in the past 12 months (% male, aged 15+)

Appendix 2 – List of countries

AFGHANISTAN
ALBANIA
ALGERIA
ANGOLA
ARGENTINA
ARMENIA
AUSTRALIA
AUSTRIA
AZERBAIJAN
BAHRAIN
BANGLADESH
BELARUS
BELGIUM
BENIN
BOLIVIA
BOSNIA AND HERZEGOVINA
BOTSWANA
BRAZIL
BULGARIA
BURKINA FASO
BURUNDI
CAMBODIA
CAMEROON
CANADA
CENTRAL AFRICAN REPUBLIC
CHAD
CHILE
CHINA
COLOMBIA
CONGO
COSTA RICA
CROATIA
CYPRUS
CZECH REPUBLIC
DEM. REP. OF CONGO
DENMARK
DJIBOUTI
DOMINICAN REPUBLIC
ECUADOR
EGYPT
EL SALVADOR
ESTONIA
FINLAND
FRANCE
GABON
GEORGIA
GERMANY
GHANA
GREECE
GUATEMALA
GUINEA
HAITI
HONDURAS
HONG KONG
HUNGARY
INDIA
INDONESIA
IRAN
IRAQ
IRELAND
ISRAEL
ITALY
JAMAICA
JAPAN
JORDAN
KAZAKHSTAN
KENYA
KOREA
KOSOVO
KUWAIT
KYRGYZ REP.
LAOS
LATVIA
LEBANON
LESOTHO
LITHUANIA
LUXEMBOURG
FYR MACEDONIA
QATAR
MADAGASCAR
MALAWI
MALAYSIA
MALI
MALTA
MAURITIUS
MEXICO
MOLDOVA
MONTENEGRO
MOROCCO
MOZAMBIQUE
NEPAL
NETHERLANDS
NEW ZEALAND
NICARAGUA
NIGER
NIGERIA
OMAN
PAKISTAN
PANAMA
PARAGUAY
PERU
PHILIPPINES
POLAND
PORTUGAL
QATAR
ROMANIA
RUSSIAN FEDERATION
RWANDA
SAUDI ARABIA
SENEGAL
SERBIA
SIERRA LEONE
SINGAPORE
SLOVAK REP.
SLOVENIA
SOUTH AFRICA
SPAIN
SRI LANKA
SUDAN
SWAZILAND
SWEDEN
SYRIAN ARAB REPUBLIC
TAIPEI CHINA
TAJIKISTAN
TANZANIA
THAILAND
TOGO
TRINIDAD AND TOBAGO
TUNISIA
TURKEY
TURKMENISTAN
UGANDA
UKRAINE
UAE
UNITED KINGDOM
URUGUAY
USA
UZBEKISTAN
VENEZUELA
VIETNAM
ZAMBIA

Appendix 3 – Tests and regressions results

Results for the Breusch-Pagan test

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Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: HHI SOB FOB fdepth CII LR fpart property

         chi2(8)      =   132.56
         Prob > chi2  =   0.0000
```

The Breusch-Pagan tests the null hypothesis that the error variances are all equal versus the alternative hypothesis stating that the error variances increase (or decrease) as the predicted values of Y increase. The large chi-square in our test, with a p value of 0.0000, indicates that we can very soundly reject the no hypothesis of no-heteroscedasticity.

Table 1: Gender gaps in access to financial services
WLS cross-sectional regressions – type: proportional to abs(e)

	Drop-out probability						
	RATIO_acco~t b/t	RATIO_busacc b/t	RATIO_save b/t	RATIO_ccard b/t	RATIO_dcard b/t	RATIO_loan b/t	RATIO_wages b/t
HHI	-0.102	-0.447	0.063	-0.137	0.090	-0.200	-0.144
	(-0.81)	(-1.59)	(0.28)	(-0.40)	(0.51)	(-0.85)	(-0.67)
SOB	-0.002**	-0.004*	-0.001	0.001	-0.002*	0.001	-0.003**
	(-2.64)	(-2.13)	(-1.12)	(0.38)	(-2.23)	(0.40)	(-3.08)
FOB	0.000	0.000	0.000	-0.001	0.000	0.001	0.001
	(0.51)	(0.46)	(0.31)	(-0.51)	(0.37)	(1.02)	(0.89)
CII	0.005	-0.022	0.022	-0.034	-0.005	-0.017	0.012
	(0.60)	(-1.37)	(1.67)	(-1.67)	(-0.44)	(-1.19)	(0.95)
LR	0.010	0.004	0.017	0.020	0.022**	0.025*	0.020*
	(1.75)	(0.32)	(1.54)	(1.22)	(2.72)	(2.24)	(2.06)
fdepth	0.000	-0.000	-0.001	-0.001	0.000	-0.001	-0.000
	(1.85)	(-0.65)	(-1.45)	(-1.28)	(1.06)	(-1.90)	(-0.09)
fpart	0.002**	0.009***	0.001	0.002	-0.001	0.003	0.003*
	(3.07)	(4.60)	(0.69)	(0.94)	(-0.54)	(1.61)	(2.42)
Women access to pr~t	-0.307***	-0.172	-0.309*	-0.663***	-0.333**	-0.123	-0.319*
	(-3.92)	(-1.18)	(-2.38)	(-3.44)	(-2.93)	(-0.91)	(-2.41)
Constant	0.710***	0.375*	0.679***	0.906***	0.771***	0.678***	0.503***
	(9.74)	(2.27)	(5.17)	(4.56)	(7.43)	(4.90)	(4.08)
N	131	130	131	130	131	131	131
R-squared	0.41	0.25	0.17	0.11	0.28	0.12	0.26

*p<0.05, **p<0.01, ***p<0.001

Note: The regression estimated is: $RATIO_k = \beta_0 + \beta_1 Fdepth_k + \beta_2 HHI_k + \beta_3 FOB_k + \beta_4 SOB_k + \beta_5 CII_k + \beta_6 LR_k + \beta_7 fpart_k + \beta_8 property_{k+} \varepsilon_k$
RATIO refers to the female-to-male ratio reflecting the gender inclusion gaps in the use of each type of financial service]; *Fdepth* is the total assets held by deposit money banks as a share of GDP, *HHI* is the Herfindahl-Hirschman Index for asset concentration, *FOB* and *SOB* are, respectively, the share of foreign-owned and state-owned bank assets in the total banking assets, *CII* is the Credit Information Index, *LR* is the Strength of Legal Rights index, *fpart* is the women's rate of participation in the labour market, and *property* is a measure of gender equality in access to property. The regression is run using WLS. t-values are reported in parentheses. * p<0.05, ** p<0.01, *** p<0.001

Table 2: Overall access to financial services
WLS cross-sectional regressions – type: proportional to abs(e)

	Drop-out probability						
	RATIO_acco~t b/t	RATIO_busacc b/t	RATIO_save b/t	RATIO_ccard b/t	RATIO_dcard b/t	RATIO_loan b/t	RATIO_wages b/t
HHI	5.037	2.428	8.269	9.710	2.160	-2.996	2.493
	(0.35)	(0.71)	(1.11)	(1.42)	(0.17)	(-0.70)	(0.29)
SOB	0.035	-0.030	-0.057	-0.027	0.048	0.023	-0.068
	(0.34)	(-0.97)	(-0.99)	(-0.46)	(0.48)	(0.76)	(-1.06)
FOB	-0.011	-0.028	-0.058	-0.014	0.060	-0.019	0.013
	(-0.17)	(-1.56)	(-1.67)	(-0.43)	(1.01)	(-1.00)	(0.34)
CII	2.499**	0.169	0.603	1.528***	1.908*	0.526*	1.506**
	(2.92)	(0.73)	(1.32)	(3.54)	(2.43)	(2.07)	(2.87)
LR	1.187	0.151	0.766	0.085	0.393	0.272	0.740
	(1.47)	(0.64)	(1.72)	(0.19)	(0.51)	(1.16)	(1.48)
fdepth	0.428***	0.115***	0.221***	0.252***	0.384***	0.030*	0.237***
	(9.58)	(6.41)	(8.15)	(8.10)	(8.05)	(2.50)	(8.33)
Total Labor Force ~	-0.160	0.014	0.151	0.041	-0.107	0.094	-0.116
	(-0.99)	(0.33)	(1.76)	(0.50)	(-0.73)	(1.96)	(-1.17)
Women access to pr~t	-1.299	1.795	2.638	2.414	-0.528	-1.963	-4.785
	(-0.19)	(1.07)	(0.74)	(0.73)	(-0.09)	(-0.94)	(-1.14)
Constant	13.546	-0.145	-10.604	-8.584	2.818	0.384	5.890
	(1.05)	(-0.04)	(-1.53)	(-1.29)	(0.24)	(0.10)	(0.74)
N	131	131	131	131	131	131	131
R-squared	0.64	0.36	0.50	0.53	0.54	0.25	0.61

*p<0.05, **p<0.01, ***p<0.001

Note: The regression estimated is: $ACCESS_k = \beta_0 + \beta_1 Fdepth_k + \beta_2 HHI_k + \beta_3 FOB_k + \beta_4 SOB_k + \beta_5 CII_k + \beta_6 LR_k + \beta_7 fpart_k + \beta_8 property_{k+} \varepsilon_k$
ACCESS refers to the percentage of respondents using the same seven financial services in country k; *Fdepth* is the total assets held by deposit money banks as a share of GDP, *HHI* is the Herfindahl-Hirschman Index for asset concentration, *FOB* and *SOB* are, respectively, the share of foreign-owned and state-owned bank assets in the total banking assets, *CII* is the Credit Information Index, *LR* is the Strength of Legal Rights index, *fpart* is the women's rate of participation in the labour market, and *property* is a measure of gender equality in access to property. The regression is run using WLS. t-values are reported in parentheses. * p<0.05, ** p<0.01, *** p<0.001

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