

Differences in Gender Perceptions of Access to Credit: The Case of Rwanda

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Major Paper presented to the
Department of Economics of the University of Ottawa
in partial fulfillment of the requirements of the M.A. Degree
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Ottawa, Ontario
January 2016

1. Introduction

Financial exclusion is often said to be one of the main hindrances that women face in the developing world, standing in the way of women's economic progress and social advancement. It has been argued that a lack of access to formal credit retards empowerment and entrepreneurship among women, which impacts their ability to access formal education, secure decent jobs and enter the workforce. Developing countries have put gender financial equality on the top of their agendas as credit is viewed as crucial in facilitating employment generation, skill development, education advancement and enterprise growth and expansion in a time of economic uncertainties and global financial crises. Given the insufficient financial products and services as well as weak financial regulation, Africa represents an especially challenging environment for women trying to access formal credit.

In Sub-Saharan Africa, a number of studies point out that not only women find it more difficult to access formal financing than men (Johnson, 2004), but they are likely to be charged higher interest rates (Muravyev, Schafer and Talavera, 2007). In addition, they are less able to raise informal and formal venture capital than their male counterparts (Brush, Carter, Gatewood, Greene and Hart, 2004). In some cases, banks require signatures of a male family member in order to open a bank account for women which would allow them to access any financial services or products (Narain, 2009). This points to the ongoing discrimination and bottlenecks faced by women on the continent in accessing finance and other financial services, which would be an impediment to their participation in the formal economy.

This paper analyzes to what extent the gender composition of the owners of Rwandan firms impacts their perception of accessing finance for their businesses. Rwanda is a particularly useful country for the study of this topic as it may be the current "best-case scenario" for female empowerment in Sub-Saharan Africa. The

conflict in 1994 had an unprecedented impact on the country's demographics. According to the African Development Bank Group (AFDB) (2008), in the immediate post-conflict period, as many as 70 percent of households were headed by women and children, as a result of the high loss of male lives and their exile. The Government of Rwanda recognized the importance of women as key players in the post-conflict reconstruction of the country's political, economic and social infrastructure. Promotion of gender equality became one of the main goals and targets of the newly emerging post-genocide nation. New reforms and policies were put in place to foster economic and social development, particularly geared towards women's empowerment. Among many others, these include the Law on Matrimonial Regimes, Donations, Succession and Liberalities (1999), the Gender Policy (2004) and the Organic Land Law (2005), which ensures gender equality to land ownership (AFDB, 2008).

By 2008, Rwanda was the first country in the world to have a majority women-led Parliament. In 2014, the country became a world leader in the number of women in parliament. In that year, women held as many as 63.8 percent of seats in the Lower House and 38.5 percent in the Upper House, outshining even countries such as Sweden and Finland (UNCTAD, 2014). However, according to Blair (2015), only 35 percent of women in Rwanda have access to a bank account, although as the Ministry of Gender and Family Promotion (2015) points out that they make up the majority (put at 52 percent) of the total population. This suggests that financial inclusion remains a problem for many Rwandan women.

In this paper, I examine the differences in how female entrepreneurs in Rwanda perceive access to finance as an obstacle in comparison with their male counterparts. For this purpose, I use the World Bank 2011 Enterprise Survey. It provides firm-level data for the private sector, specifically for the services and manufacturing sectors in Rwanda. Using this data, I show that firms with a majority of female owners perceive a 35 percent higher probability in facing problems accessing credit than their male counterparts.

Including controls for firm size and sector does not change the sign or the magnitude of the coefficient and it remains statistically significant at 1 percent level of significance.

Furthermore, the results point out that the gap on how access to formal credit is perceived by men and women is positive and statistically significant for firms operating in the services sector. The gap is negative, although much smaller and not statistically significant for firms in the manufacturing sector. Similar results were observed when I add interaction of size and gender composition of ownership to the baseline regression. Small and medium firms headed by at least the majority of women perceive access to finance as more problematic than the same sized firms owned by men. The gender gap becomes negative and statistically significant for large firms. Moreover, surprisingly we observe that the gender gap in perception of access to finance does not change even for firms which already hold different financial products such as bank accounts or line of credit.

This paper is structured in the following manner. Section 2 presents a review of the literature on the subject. The review outlines research conducted on gender differences in access to finance across the continent, including both the Sub-Saharan region and country case studies. In section 3, I present the data and restrictions imposed for the purpose of this study to answer the question of interest. In part 4, I introduce the econometric model. Section 5 discusses the regression results. Lastly, section 6 concludes and provides relevant policy recommendations.

2. Literature review

Many of the empirical studies on gender differences in accessing finance point to women being more credit constrained than their male counterparts. Aterido, Iacovone and Beck (2013) conducted a study of 37

countries in Africa over the period of 2005 to 2009 using the World Bank–IFC Enterprise Surveys. Results of the probit regression show the existence of an unconditional negative gender gap in the use of financial services, within the country rather than across countries. Adding additional controls for industry fixed effects and separately for size, reduces or eliminates this gap. The authors indicate that such results could be affected by selection biases. They point out that females are less likely to own a sole proprietorship, and more likely to run a small businesses and to innovate which could negatively affect access to finance. In addition, it is indicated that due to the cross-sectional nature of their analysis, their results should not be interpreted as causal but rather as conditional correlations. However, the gender gap is reported to be statistically significant when they run regressions looking at companies with a single owner. They also showed that controlling for firm’s characteristics such as age, location, exporters and foreign ownership have no impact on the actual gender differences in accessing formal finance. Authors applied the Oaxaca–Blinder decomposition and concluded that more than a quarter of the gender gap in use of financial services could be explained by the size of the businesses and an additional 7 percent of the gap could be attributed to age, export status and foreign ownership.

Asiedu, Kanyama, Ndikumana and Addae (2013) use the same data to study gender based financial constraint. The sample studied includes 90 developing countries over 2006-2011 period analyses. They run regressions for each of the regions: Sub-Saharan Africa (SSA), Latin America and Caribbean (LAC), East Asia and Pacific (EAP), and East and Central Europe (ECE) using country and firm-specific controls similar to those used by Aterido et al., (2013). The authors estimated the model using different specifications. Firstly, they use ordered probit regression to account for binary dependent variable and country dummy variables. The results clearly indicate that the gender gap in access to finance mostly prevails in Africa where it is positive and statistically significant at 1 percent level. The outcome of their regressions also points out that the size of the firm impacts its capability to access finance. Large enterprises

are less financially constrained than their small counterparts. The authors indicate that using this method may lead to potential omitted variable bias as they cannot control for unobserved country specific characteristics. They also list differences in survey techniques across countries and potential country-level biases in survey responses that could result in biased estimates. To address those potential problems, other methods are used. To capture fixed effects in a discrete choice model they applied conditional logit regression. Secondly, they run a fixed effects ordinary least square (OLS) and lastly to address the influence of outliers, they use the iteratively reweighted least squares (IRLS) procedure. Applying alternative estimation methods and controlling for observed and unobserved country characteristics does not change the results.

Hansen and Rand (2011) studied firms in the manufacturing sector. They used the World Bank data from Investment Climate Assessment surveys carried out in 2006-2007 in Sub-Saharan Africa. Authors concluded that female owned firms had a lower probability to be credit constrained than male-headed businesses. Furthermore, the analysis shows that micro and small female-owned firms had a lower likelihood to be credit constrained than their male counterparts. On the other hand, it is observed that for the medium sized enterprises, the male-owned ventures find access to credit less problematic than female-headed businesses. Similarly to the above-mentioned studies, the authors employed the generalized Blinder-Oaxaca decomposition to study whether the gender gap in access to credit could be explained by the differences in observable characteristics between male and female-headed enterprises. However, the results suggest that the gender credit gap can only be accounted for by unexplained variation in the returns to gender composition.

There are many other factors that may hinder women's likelihood to access formal debt or their ability to do so. Jappelli (1990) uses data from the U.S Survey of Consumer Finances (1983) to identify credit

constrained households and their characteristics that may impact their access to finance. He shows that current income, wealth and age of an individual are the main factors that determine whether loans are accepted or denied. For the purpose of their study, they used households that answered "yes" to the question: "Was there any time in the past few years that you (or your husband/wife) thought of applying for credit at a particular place but changed your mind because you thought you might be turned down?" These households were classified as the discouraged borrowers. The statistics from the survey show that the discouraged borrowers share many characteristics with the consumers whose loan applications were rejected. Thus, the above implies that the discouraged borrowers had good reasons for not applying for loans in the first place. Garwe and Fatoki (2012) pointed out to a similar conclusion in terms of gender differences. They find that women entrepreneurs' demands for loans are significantly lower than men's, and argue that these differences are caused by the fact that women are afraid of having their credit applications rejected.

The results of Ghimire and Abo (2013) for Cote D'Ivoire as a country case show that the rate of rejected loan applications are considerably higher for women, put at almost 86 percent, in contrast to 60 percent for their male counterparts. Those figures were estimated using probability sampling, cross-tabulation and correspondence analysis techniques. The authors acquired their data from questionnaires answered by managers and owners of SMEs who recently applied for loan in one of the country's four major banks. In addition to gender of the owner, their analysis revealed many other factors that are correlated with the rate of credit approval. Among many, they point out firm size and age, owners' level of education as well as collateral, location and ownership structure as firm characteristics that are correlated with and explain loan approval.

The disparities between women and men-owned businesses in accessing finance may also related to the fact

that the two sexes have different borrowing patterns. Their credit histories and banking experiences differ significantly. Robb and Wolken (2002) studied the differences in borrowing patterns for female and male owned enterprises in great detail. The data used in their study originates from a U.S 1998 Survey of Small Business Finances (SSBF) conducted by the Federal Reserve Board every five years. They found that although firms owned by both genders reported comparable self-reported credit histories, female-owned establishments were perceived as higher credit risks. Women-owned firms have fewer debts and used credit cards or trade credit less frequently than male-owned businesses.

Muravyev et al., (2007) used the Business Environment and Enterprise Performance Survey (BEEPS) 1999, 2002 and 2005 to conduct their research covering parts of Eastern and Western Europe. They focused on two questions: whether the gender of a firm owner impacts the probability of getting a loan and second, whether the gender of the owner impacts the level of interest rates charged. Using probit and linear models, they find that women have approximately 5 percentage point lower probability of getting a loan than men and pay 0.6 percentage point higher interest rates.

3. Data

This paper is based on the World Bank's Enterprise Survey. Conducted since 1989, the survey covers a wide range of issues, such as corruption, finance, innovation and technology, gender and trade among many others. It covers 130,000 firms in some 135 countries using two different questionnaires, one for manufacturing and the other for the services sector. The number of interviews conducted ranges from 150 in small economies to up to 1800 in larger ones. In this paper, I present Rwanda as a country case study based on a survey conducted between June 2011 and February 2012 in the country. Although data from previous years is available, the questionnaires were changed from one period to another so that creating a

panel of data for multiple years was not feasible. So I use a single year of data, the latest data available. The interviews are conducted with owners and top managers in 241 firms in the non-agricultural formal sector, excluding firms with 100% government ownership. The sample used in this study is stratified random. The strata used in the survey are firm size, firm sector and region. It covers micro, small, medium and large firms in Kigali and Butare, particularly in the manufacturing and services sectors.

The main weakness of this sample is its small size. Collecting data from private firms is challenging, especially in developing countries. The World Bank indicates that the number of realized interviews per firm contacted was 0.48 and the number of rejections per contact was 0.11. This sample suffers from item non-response, selection bias and faulty sampling frames, which is not only the case of Rwanda but for all enterprise surveys. To analyse the differences in the perceptions of access to finance as an obstacle by gender composition of business owners, I imposed the following restrictions on the sample. Some of the responders answered, “don’t know” or “do not apply” to the question pertaining to the gender of owners. I omitted these observations from the sample, which resulted in a drop of observations by 23, thus 216 observations were used for the benchmark regression. Furthermore, to run supplementary regressions, 12 additional observations were dropped, as responders answered “don’t know” to questions about having a checking account, overdraft and/or line of credit. Out of these 12 observations, 11 represented male-headed firms. Another 4 observations were dropped for those whose answers were incomplete to a question about the source of finance for working capital, of which 3 were male-led enterprises. As a result, a sample of 200 observations was used for these regressions.

For the purpose of this study, I created the dependent variable; “access to finance as an obstacle” as a binary one. The survey question corresponding to this variable was “to what degree is access to finance an obstacle to the current operations of this establishment?” I combined the responses “no obstacle” or “minor

obstacle” into one category and responses “moderate” “major” and “severe” into another. Similarly, the gender composition of the owners’ variable was created as categorical, grouping “all men”, “majority of men” and “half women half men” as one group as well as “all women” and “majority of women” as a second category. I also created a dummy variable for the sector in which the enterprises operated, where 1 is equal to firms in services and 0 in manufacturing sector. Lastly, the variable “size of the firm” was categorized in the same manner into 3 groups, combining “micro” and “small” into one group, “medium” into a second and “large” into a third group. All the variables were used in the baseline specification.

The summary statistics of the variables included in the baseline regression are presented in Table 1. Almost 57 percent of firms indicated access to finance as a moderate to severe obstacle. Among those, 38 percent perceived access to finance as a moderate obstacle while nearly 46 percent viewed it as a major obstacle and 16 percent considered it as a very severe obstacle. After splitting the variable “gender composition of owners” into two gender categories, approximately 13 percent of firms had majority or all women ownership structures while ventures owned by half male half female and majority male constituted 87 percent. This is comparable with 10.4 percent of firms that have majority female ownership in the Sub-Saharan Region for the whole Enterprise Survey dataset. Among the female-headed firms as many as 87 percent stated access to finance as a barrier in comparison to 52 percent of male-owned businesses.

Table 1 also shows that majority of the firms operate in the services sector, accounting for close to 85 percent of the survey. Of firms in services, 54 percent see access to finance as moderate, major or severe obstacle whereas 72 percent of firms in manufacturing sector report the same. Approximately 68 percent of enterprises are of small (5 to 19 employees) and micro size and more than 26 percent are medium sized (20 to 99 employees). This is consistent with the figures from the rest of the globe, where more than 95 percent

of businesses fall into small to medium size category (Beck et.al., 2014). A much lower percentage consists of large sized ventures, just above 5 percent.

In some regressions, I use variables that were created as interactions with the gender composition of ownership variable. First interactions were with the sector in which firms operated and the size of the businesses. Furthermore, I created three additional variables, indicating firms' existing relationships with financial institutions. The first variable is based on the survey question, "does this establishment have a checking and/or saving account?" Approximately 70 percent of firms answered "yes" to this question. The second variable is based on the question, "at this time, does the establishment have an overdraft facility?" As presented in Table 2, approximately 44 percent of businesses gave a positive answer. Lastly, 44 percent of interviewees answered, "yes" to the inquiry "establishment has a line of credit or loan from a financial institution?" As mentioned earlier, creation of these three variables resulted in 12 observations being dropped as answers to those questions that were missing.

In addition, a fourth dummy variable was introduced representing firms which working capital was formally financed in full or partially. This variable was created to represent firms that have existing relationships with financial institutions. For this purpose, I used five questions that indicated percentage of working capital which was financed from different sources. Two of them represented informal financing of working capital: "% of working capital financed from internal funds/retained earnings" and "% of working capital financed by other" (money lenders, friends, relatives etc.) The remaining three questions I summed up to create the share of working capital formally financed variable: "% of working capital borrowed from banks," "% of working capital borrowed from non-bank financial institutions" and "% of working capital purchased on credit/advances from suppliers/customers" which was divided by 100 for consistency with other measures. Next, the variable was divided into two groups where 1 is equal to firms with partially or

fully formally financed capital and 0 for firms which working capital was informally financed. The summary statistics show that 53 percent of firms had their working capital partially formally financed in full or partially. As mentioned earlier, introduction of this variable led me to drop four additional observations, as the sum of the five variables did not sum to a 100 percent.

4. Econometric model

For this study, I used linear probability regression to estimate two specifications. The first specification is the baseline model illustrated below. In the second specification, I expand the baseline model by adding different controls to analyze the gender gap in perceiving finance as an obstacle across firms' specific characteristics. I use weights for these regressions according to the sample weights. The following is the baseline model used in this paper.

$$\Pr(FINACCESS_i=1| X) = \beta_0 + \beta_1 OWNERFEM_i + \beta_2 SECTSERV_i + \beta_3 SMALL_i + \beta_4 MEDIUM_i \quad (1)$$

Where Pr is probability and $FINACCESS_i$ is a binary variable equal to one if access to finance is viewed as a major obstacle and equal to zero otherwise. Subscript i in this model represent enterprise. $OWNERFEM_i$ is the variable of interest representing gender composition of ownership. The baseline regression is built in three steps where I start with regressing the $OWNERFEM_i$ on the dependent variable, further expanding it by adding sector and size in each step. Dummy variable $SECTSERV_i$, denotes sector in which the business operates and variables $SMALL_i$ and $MEDIUM_i$ represent the number of employees in each group that was described in the data section.

For the second specification, I added interaction terms into the principal regression in three steps aimed at examining the heterogeneity of gender differences across various firm categories. As for the previous model, I use linear probability weighted regression to estimate the coefficients. The model used for this purpose is as follows:

$$\Pr(FINACCESS_i=1|X) = \beta_0 + \beta_1 OWNERFEM_i + \beta_2 SECTSERV_i + \beta_3 SMALL_i + \beta_4 MEDIUM_i + \gamma OWNERFEM_i \times Z_i \quad (2)$$

In this model, Z_i represents a vector of firm specific characteristics. Firstly, I interact the variable of interest with the other two controls from the baseline regression. Similarly to the approach with the baseline model, I use three steps to build up the regressions. I extend the baseline model by the interaction between the $OWNERFEM_i$ variable and the sector in the first step. In second stage, I add interaction between $OWNERFEM_i$ variable and the size. Lastly, in the third step, I combine both of the interactions with the baseline model. The results for this specification are presented in Table 3.

I also analyze whether gender differences in perception on access to finance changes for firms with a pre-existing relationship with the banks. One could assume that having financial products, especially existing loan or credit would alter the firm perception of finance as an obstacle. For this purpose, I use four variables: $CHECKACC_i$, $OVERDRFT_i$, $LINOFURED_i$, $FORMFIN_i$ and their interaction with the $OWNERFEM_i$. Respectively, they represent firms holding checking or saving account, overdraft facilities, line of credit or loan and enterprises which working capital is formally financed partially or in full. I run four separate regressions for each of the interactions using linear probability weighted regression and finally combine them all in the fifth.

5. Empirical results

Results for the baseline regressions are presented in Table 3. Column (1) presents the estimates for the simple regression where I regress gender composition variable on perceived access to finance. As expected, the estimated coefficient for the variable of interest is positive and statistically significant at 1 percent level of significance. This indicates that the probability of viewing finance as an obstacle increases by approximately 36 percentage points for firms with at least majority of women owners. These results are consistent with much of the literature (e.g., Muravyev et al., 2007; Asiedu, et al., 2013). The estimate is statistically significant as the increase in the probability is substantial.

Column (2) in Table 3 presents the results for the second regression in which I control for the sector of the establishment. The addition of this variable changes neither the sign nor magnitude of the estimated coefficient on the gender composition variable. Estimation results suggest that the probability of viewing access to finance as an obstacle is lower for firms in the services sector at 5% level of significance. This may be due to the fact that different industries have different demands for credit. Robb and Wolken (2002) point out that firms in the services sector require less credit than the manufacturing sector.

In the third specification illustrated in column (3) of Table 3, I further expand the model by controlling for size of the establishment. The decision to add this variable was driven by evidence identifying it as one of the determinants that could help to explain the difficulty in accessing credit (Beck, Demirguc-Kunt & Maksimovic, 2008; Beck, Demirguc-Kunt, Laeven and Levine, 2008). This control has no impact on the gender composition variable coefficient estimate sign, magnitude or statistical significance. Variables indicating size are statistically significant at the 5% significance level. Holding large size enterprises as a reference group, the results suggest higher probability of viewing access to finance as an impediment

among smaller and medium firms. These outcomes are in line with the expectations and prevailing literature. For example, Kuntchev, Ramalho, Rodriguez-Meza and Yang (2012) conducted research using the World Bank Enterprise Survey. They point out a drop in probability of being hindered by access to credit with the increase of size of the venture. Their findings indicate that approximately 10 percent of large firms view access to finance as a major obstacle in comparison with 28 percent for small firms on the continent.

Finally, the last regression is done for informative purposes to justify my choice of adding firms with half male and half female ownership into the same category as firms owned by majority or male only. This regression includes all the control variables with the gender composition of ownership variable being split into three separate groups. Column (4) of Table 3, shows the results of adding a dummy for the gender equally divided group. One can observe that the magnitude of the average perception of access to finance as an obstacle for majority female owned firms does not change significantly. It is also evident that the estimated coefficient of the dummy for the half/half group is statistically insignificant, thus it was not necessary to keep it as a separate category. In addition, I tested a hypothesis that the coefficient estimate for majority female-headed business is equal to the coefficient estimate of the half/half group. The finding implies that the hypothesis cannot be rejected at 5 percent level of significance pointing out to statistical insignificance. However, test results imply statistical significance at 10 percent level of significance.

Table 4 illustrates results of the baseline regression expanded for interactions of the gender of ownership variable with sector and size subsequently. This is done to analyze whether gender gap in perceptions of finance as a hindrance varies across sectors and/or firm sizes. Adding such interactions allow me to better understand separate effects of sectors and size on the way that women-owned firms view finance as a constraint in comparison to male-headed ventures. The results of this study echo estimates from Hansen and

Rand (2012) when it comes to the gender-gap in the manufacturing sector, although my results are statistically insignificant. One of the shortcomings of the above mentioned-study is that the authors only analyze the manufacturing sector in which the number of firms owned by women is one of the lowest in comparison to other sectors. The results presented in column (1) clearly indicate that the gap between female-owned firms in services and their male-owned counterparts in the same sector is positive and statistically significant at 1 percent. It is worth pointing out that although as mentioned before in section 3 of this paper, more firms in the manufacturing sector see access to finance as an obstacle than in the services sector, the gender gap in these perceptions prevail with great magnitude and significance among firms in the services and not in the manufacturing sector. It is clear that firms in services sector drive the baseline results in this study.

Column (2) in Table 4 accounts for interactions between the gender of the owner and the size of the firm. The gap between the perceptions on access to finance of female-owned firms in small sized enterprises and large ones is again positive and statistically significant at the 5 percent level. Similarly, the gender gap between medium and large female-owned enterprises is also positive at 1 percent level of significance. Interestingly, the opposite is observed across large firms. Gender gap in the way firms see access to finance as a barrier is negative and statistically significant at the 1 percent level, suggesting that male-headed large firms find access to finance more problematic than their female-owned counterparts. Column (3) combines the two interaction variables with the baseline model into one specification. Having done so, the results remain the same. All interaction variables' coefficients remain positive and statistically significant.

Based on the above discussions, it is very clear that the baseline results are driven by firms in the services sector as well as by small and medium sized enterprises. This is important to note that in Africa, the vast majority of firms owned by women are small and medium in size (Spring, 2009). It is also worth noting that

the sample used in this study indicates that over 85 percent of firms owned by at least a majority of females operate in the services sector.

Lastly, I examine whether having existing relationship with the banks in the form of overdraft facilities, line of credit, checking or saving accounts impact the gender gap. Following the previous specifications, I first add to the baseline regression an interaction variable between gender and having a checking or saving account. Subsequently, I repeat the process for interactions between gender and having an overdraft facility as well as for gender and having a line of credit or loan. All three specifications presented in Table 5 show no evidence of differences in having any of the three financial instruments on the gender gap perception on access to finance.

In column (4) of Table 5, I further extend the model by interacting the working capital formally financed with the gender composition of ownership and results yield the same conclusion as the above. Having working capital partially or in full formally financed does not impact the gap on how access to finance is perceived by the two sexes. The results indicate that this coefficient is statistically insignificant. Lastly, I run the baseline regression expanded to include all four interaction variables. Combining them all does not change any results except one can see that the variable representing establishments that have a line of credit or loan becomes statistically significant at 5 percent level, which may suggest that having a loan at a financial institution is negatively related the overall perception on access to finance as an obstacle regardless of the gender of the owner.

In conclusion based on the results from Table 5, one can see that the existing relationship with the formal financial institution does not alter the gender perceptions when it comes to access to finance. It is somehow surprising as this suggests that having pre-existing relationship with the banks does not impact the relative

perceptions of access to finance across the two sexes. We might have expected that especially for firms which already have any type of formal credit, the gender gap would decrease.

Although the estimates of interest presented in this study are in line with the prevailing literature on this topic, the model may suffer from endogeneity problems due to omitted variable bias. There are many gender specific characteristics that impact the perceptions of access to finance, yet are not observable and thus not controlled for in the model examined in my paper. Bajpai (2014) points out that women in general have lower self-confidence and willpower in comparison to their male counterparts. Women are also more risk-averse and have less optimistic attitudes. The fear of failure and committing mistakes often impacts their perceptions and actions when it comes to business decisions and management styles.

As evident in other studies, it is clear that there are other explanatory variables that are crucial in explaining the gender differences in perceptions of access to finance, particularly the level of foreign ownership, firms age, availability of collateral and educational levels. (e.g., Asiedu et.al., 2013; Kuntchev et.al., 2012; Muravyev et.al, 2007). Due to unavailability of such information in the data studied in this paper, I cannot rule out possibility of other observed business and gender specific characteristics that could impact the gender perceptions of access to finance. Lack of collateral, which is essential to obtain formal finance is one of the biggest obstacles faced by women entrepreneurs. UN WOMEN (2012) points out that land and property laws have traditionally been more favorable to men than women. As such, it has a detrimental effect on females' ability to obtain required collateral. Consequently, to the above-mentioned issues, estimates in this paper should therefore be interpreted with care. In addition, I employ robust estimation of standard errors to allow for potential heteroscedasticity in the model.

It is also very important to point out that studying perceptions may create problems in establishing

causality. The subjective character of the questions used in the survey may distort the findings presented in this paper. Bertrand and Mullainathan (2001) point out that using subjective data as a dependent variable is problematic given that the measurement error is more likely to be correlated with the explanatory variables. The authors point out that attitudes of the responders could cause the mean of error term to not be equal to zero. Also, the interpretation of my estimates is further complicated by the fact that actual access to credit may affect firm characteristics for which I control, such as size.

6. Conclusion

This paper adds to the body of knowledge around the perceived challenges and obstacles faced by women in accessing finance in Africa, Sub-Saharan Africa, and in this case, Rwanda. Access to finance is seen as one of the most important constraints faced by African and in particular, Rwandan women in penetrating the formal economy and realizing their full potential as productive members of society. I explored to what extent gender composition of firm ownership impacts the firm's perception of accessing finance when it comes to doing business in Rwanda. Evidence from the literature and results of this study point to much higher probability of viewing access to finance as a barrier by women-owned firms in comparison to the enterprises held by men.

It is also clear that perceptions among firms in Rwanda in terms of access to finance differ across the sectors they operate and are impacted by size of their businesses. Overall based on the dataset used in this study, firms in manufacturing sector perceive access to finance more problematic than in the services sector. That being said, when it comes to gender perceptions, the gap discussed above prevails only among firms in the services sector. It is critical to compare the gender gap in perceptions of access to finance as an

obstacle in those two sectors as it provides a compelling case on the shortcomings in analyzing only one sector.

It is evident that women majority-led small firms perceive access to credit as a greater obstacle than small firms led by men, while the opposite is true for large firms. Results of this study show that regardless of the gender of the owner, small and medium sized firms view access to credit as more of an obstacle than large firms. Large firms, which find access to debt less problematic, are more likely to raise further funding and expand their business even further while creating additional employment opportunities. Women have traditionally run the majority of small to medium sized firms in Rwanda.

Some of the reasons for gender gap in perceptions may reside outside the financial market and into other facets pertaining to their ability to fully participate in the formal economy as productive members of society that contribute to economic growth and development. In analyzing the gender gap in perceptions of access to finance shaped by firms' pre-existing relationship with banks, I found that the gap surprisingly is unchanged between firms with and without such a relationship. In addition to my findings, other literature points to a number of additional factors that impact gender-based financial inclusion including financial transparency and technological capabilities among others (Asiedu et.al, 2013).

Based on the results of this study and prevailing literature on this topic, it is increasingly apparent that much work still needs to be done to eliminate perceived gender-based financial barriers. Women owners of enterprises often complain that it is often impossible to access financial instruments from formal lending institutions. Targeted government intervention is required to promote more female-owned businesses, especially small and medium sized ones in accessing formal credit. Governments in the region need to remove obstacles and put in place safeguards to strengthen policies aimed at improving financial

inclusiveness in the context of gender equity. This would help ensure women-run businesses become more competitive and capable of contributing to Africa's economic transformation as their male counterparts. At the same time, banks need to do more to tailor financial instruments that are more appropriate for women entrepreneurs who may not otherwise qualify for formal financial services based on traditional banking processes.

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TABLE 1

Summary statistics weighted according to sample weights :
means and standard deviations in brackets

	Weighted observations	
<i>A. Perceived Access to Finance</i>		
Moderate to very severe obstacle	0.569	(0.496)
<i>B. Gender Composition of Ownership</i>		
Female	0.131	(0.338)
<i>C. Sector</i>		
Services	0.844	(0.363)
<i>D. Size</i>		
Small	0.684	(0.466)
Medium	0.262	(0.441)
Large	0.054	(0.226)
<i>Observations</i>	216	

TABLE 2

Summary statistics weighted according to sample weights :
means and standard deviations in brackets

	Weighted observations	
<i>A. Establishment has</i>		
Checking or saving account	0.698	(0.460)
Overdraft facility	0.436	(0.497)
Line of credit or loan	0.444	(0.498)
Working capital formally financed	0.530	(0.500)
<i>Observations</i>	200	

TABLE 3

Linear Probability Regression Results

	(1)	(2)	(3)	(4)
<i>A. Gender Composition of Ownership</i>				
Female	0.356 (0.070)***	0.359 (0.074)***	0.346 (0.075)***	0.364 (0.077)***
Equally divided				0.126 (0.133)
<i>B. Sector</i>				
Services		-0.179 (0.080)**	-0.205 (0.077)***	-0.218 (0.078)***
<i>C. Size</i>				
Small			0.304 (0.117)**	0.312 (0.119)***
Medium			0.274 (0.122)**	0.265 (0.123)**
Constant	0.523	0.674	0.418	0.407
R-squared	0.060	0.076	0.095	0.102
<i>Observations</i>	216	216	216	216

Note: Binary dependent variable Access to Finance=1 when access to finance is perceived as a major obstacle, 0 otherwise. Heteroscedasticity robust standard errors are in parentheses. All regressions are weighted according to sample weights. *p<0.1, **p< 0.05, ***p<0.01.

TABLE 4

Linear Probability Regression Results with interactions I

	(1)	(2)	(3)
<i>A. Gender Composition of Ownership</i>			
Female	-0.065 (0.149)	-0.478 (0.117)***	-0.511 (0.119)***
<i>B. Sector</i>			
Services	-0.264 (0.082)***	-0.223 (0.078)***	-0.268 (0.083)***
<i>C. Size</i>			
Small	0.290 (0.114)**	0.260 (0.120)**	0.268 (0.120)**
Medium	0.253 (0.120)**	0.212 (0.127)*	0.212 (0.127)*
<i>D. Interactions of gender composition of ownership with</i>			
Services	0.480 (0.167)***		0.409 (0.170)**
Small		0.815 (0.155)**	0.485 (0.189)**
Medium		0.976 (0.153)***	0.670 (0.181)***
Constant	0.482	0.478	0.511
R-squared	0.108	0.105	0.119
<i>Observations</i>	216	216	216

Note: Binary dependent variable Access to Finance=1 when finance is perceived as a major obstacle, 0 otherwise. Heteroscedasticity robust standard errors are in parentheses. All regressions are weighted according to sample weights. *p<0.1, **p< 0.05, ***p<0.01.

TABLE 5

Linear Probability Regression Results with interactions II	(1)	(2)	(3)	(4)	(5)
<i>. Gender Composition</i>					
Female	0.347 (0.157)**	0.343 (0.102)***	0.300 (0.096)**	0.365 (0.115)***	0.343 (0.206)*
<i>B. Sector</i>					
Services	-0.174 (0.084)**	-0.175 (0.083)**	-0.176 (0.085)	-0.177 (0.085)**	-0.183 (0.093)*
<i>C. Size</i>					
Small	0.275 (0.127)**	0.273 (0.128)**	0.244 (0.131)*	0.284 (0.127)**	0.253 (0.130)*
Medium	0.237 (0.135)*	0.235 (0.134)*	0.220 (0.139)	0.239 (0.133)*	0.219 (0.138)
<i>D. Establishment has</i>					
Checking or saving account	0.007 (0.108)				0.005 (0.107)
Overdraft facility		-0.006 (0.099)			0.059 (0.106)
Line of credit of loan			-0.132 (0.097)		-0.216 (0.109)**
<i>C. Financing of Working Capital</i>					
Working capital formally financed				0.053 (0.099)	0.125 (0.103)
Interactions of gender composition of ownership with having:					
Checking or saving account	-0.014 (0.178)				-0.009 (0.187)
Overdraft facility		-0.020 (0.154)			-0.077 (0.163)
Line of credit of loan			0.059 (0.168)		0.056 (0.178)
Working capital formally financed				-0.054 (0.150)	-0.011 (0.151)
Constant	0.418	0.428	0.512	0.391	0.453
R-squared	0.080	0.081	0.096	0.083	0.112
Observations	200	200	200	200	200

Note: Binary dependent variable Access to Finance=1 when access to finance is perceived as a major obstacle, 0 otherwise. Heteroscedasticity robust standard errors are in parentheses. All regressions are weighted. *p<0.1, **p< 0.05, ***p<0.01.