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Macroeconomics implications of female entrepreneurs facing financial frictions in credit access: a DSGE model approach in Cameroon

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In 2012, with support of the UK Department for international Development (DfID or UK Aid) and the International Development Research Centre (IDRC) of Canada, PEP launched a new program to support and build capacities in "Policy Analyses on Growth and Employment" (PAGE) in developing countries.

This brief summarizes the main features and outcomes of one of the projects supported under the 2nd round of the PAGE initiative (2014-2015).

In this project, a team of local researchers aim to assess the effects of financial frictions faced by female entrepreneurs on macroeconomic outcomes in Cameroon

Financial frictions and female entrepreneurship in Cameroon

Financial inclusion in developing economies remains a major concern nowadays, both for national policymakers and international stakeholders. For a country like Cameroon, aspiring to an emergence in 2035, the key challenge is to identify and overcome obstacles in financial access for vulnerable sectors or groups, such as female entrepreneurs.

Over the last decades, Cameroon authorities have successfully achieved a number of important milestones in the pursuit of gender equality, especially in the areas of education, health, employment and political participation. However, despite Government efforts to promote female entrepreneurship, the ability of female to become entrepreneurs remains at a very low 5%, while the rates of firms with female top managers is at 10% and those with female participation ownership is at 16%.

If these sluggish ratios of female participation in entrepreneurial activities can been explained by various factors, it appears that one of the key constraints faced by female entrepreneurs is related to their access to financial services (Table 1 - World Economic Forum, 2014).

Table 1: Top constraints faced by female entrepreneurs

Constraint factors	% of resp.
Corruption	24
Access to financing	23
Inadequate supply of infrastructure	14
Tax regulations	9
Inefficient Government bureaucracy	8
Tax rates	6
Poor work ethic in national labor force	4
Insufficient capacity to innovate	3.5

Generally, the financial system in Cameroon lags behind the median indicators of those in Sub-Saharan Africa and other low-and-middle income countries. In fact, neither of the two financial markets currently competing in Cameroon – the Securities Exchange of Central Africa (from Gabon) and the Douala Stock Exchange (Cameroon) - represents a significant alternative to bank lending, as they are both shallow and fragmented. Consequently, the banking sector holds the most prominent part of the country's financial system, with more than 90% of its assets.

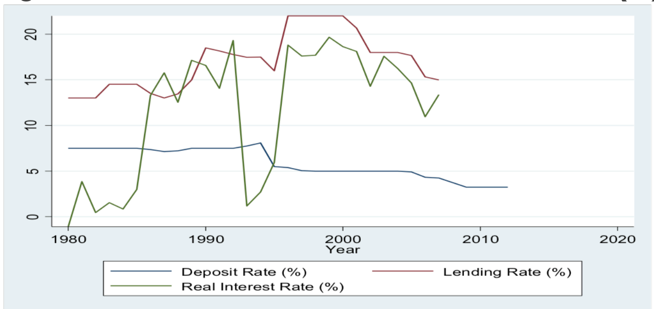
And yet, access to banking services remains low in Cameroon, with only 20.7% of the adult population holding a formal bank account - slightly above the average of the CEMAC region (18,5%) but still behind the average of LICs' (24%). Importantly, in 2013, the female banking rate was around 11%, vs 19% for males.

The low level of banking rate is also related to the weak bank density in Cameroon where, in average, around 49,096 people share one bank desk - far greater than the average 23,203 people per desk in CEMAC. Hence, the role of banks in saving mobilization is limited and bank lending remains a marginal source of funding - with long-term lending constituting less than 1.5% of total loans, due mainly to financial frictions.

The existing frictions can be found, in particular, through collaterals or banks' commissions and fees. The idea of female entrepreneurs' lower creditworthiness is usually justified when looking for collaterals. The lack of female-owned properties - such as land, real estate, paid employment or wages (which are standard assets used as collateral by the banking sector in Cameroon) - inhibits their ability to offer collaterals and obtain credit. Female entrepreneurs may also sometimes need assent from their husband or head of the family to use the assets that they present as collateral.

Another constraint to financing female entrepreneurs comes from high interest rates. To preserve themselves from the risk and uncertainty ensued from less creditworthy customers, the banking sector tends to increase the commissions and fees of banks' operations, which account for about 40% of the banking sector's income in Cameroon. The high costs of financial intermediation create disincentives for female entrepreneurs to use bank accounts and overdraft protection, let alone to contract loans, establish businesses and make investments. Figure 1 (World Bank, 2014) shows the evolution of interest rates in Cameroon over the past three decades, including a huge gap between deposit rates and lending rates.

Figure 1: Evolution of interest rates in Cameroon (%)



The mainstream message from theoretical literature is that that female entrepreneurship enhances economic efficiency and improves macroeconomics outcomes. Meanwhile, empirical literature emphasizes that the study of macroeconomic implications of financial frictions is exclusively based on Dynamic Stochastic General Equilibrium (DSGE) models, which can be "Real Business Cycle" approach or "New Keynesian" approach.

While previous studies on the issue focus mainly on the relationship between gender and inequality, there is no literature emphasizing the macroeconomic effects of gender-specific financial frictions. **This study focuses on the effects of financial frictions faced by female entrepreneurs on macroeconomic performance in Cameroon, as well as on the policies most likely to waive those frictions.**

Methodology

In line with existing empirical literature, the researchers have developed a DSGE model with financial micro-foundations (based on the preferences of decision-makers) to analyze the problem of gender-specific financial frictions and their macroeconomic implications in Cameroon.

The model features two sectors, one populated by female entrepreneurs and the other by male entrepreneurs. When both sectors are financially constrained, the female sector is more constrained than the male one.

The model's financial sector is characteristic of African economies, dominated by a banking sector, and with features reflecting business as usual, including frictions in the financial intermediation process that affect how much entrepreneurs can borrow.

In the model, financial frictions appear because both types of entrepreneurs face a collateral constraint when borrowing from the bank and credit limits are affected by the quantity and value of this collateral. In turn, the collateral's value can be affected by the size of the credit limits. This dynamic interaction between credit limits and collateral is a powerful transmission channel for the shocks affecting the financial sector to spill over to the "real sector" (i.e. affecting growth, employment, investment, etc.).

Specifically, since physical capital is used both as collateral to obtain loans and as an input to production, a shock that reduces the productive capacity of entrepreneurs also reduces their ability to borrow, forcing them to cut back on their investment expenditures and, thus, on their demand for capital. This situation can spill over to the subsequent periods, reducing revenues, production and investments even further.

Key findings

The analysis of both the static and dynamic effects of differentiated levels of financial frictions reveals that, in Cameroon:

- Collateral constraints appear as the key financial frictions faced by female entrepreneurs
- The least financially constrained sector is capital intensive in the production process, while the most financially constrained sector is labor intensive.
- The sector of female entrepreneurs is relatively more labor intensive whilst the male sector is capital intensive.
- When the female sector is granted credit as much as the male sector, it performs better in term of value-added in GDP than the male sector.

The benchmark analysis shows that:

- Financial frictions in the credit market contribute to the stagnation of macroeconomic outcomes.
- Due to the financial constraints that it faces, the female sector contributes to the shrinking of aggregate labor demand, investment, consumption and output.

The analyses of counterfactual scenarios suggest that:

- Loosening financial constraint by 30% improves the female sector's productivity by 40% and job creation by 50%, with expansionary effects on the macroeconomic outcomes.
- The male and female sectors are complementary in sustaining economic activity when the conjuncture slumps.
- Furthermore, when the level of financial constraint is symmetric and "light" (or extremely low) in both sectors, the national economy gains a 5% increase in GDP, 50% in investments and 60% in job creation.
- The banking sector plays a key role in amplifying the magnitude of the macroeconomic indicators' response to shocks, through the channels of asset-price and collateral constraints.

Table 2: Reactions of economic features (macro effects) to differentiated levels of financial frictions

Macro features / effects	**Baseline** Tight financial conditions in female sector	**Scenario 1** Financial conditions are "loosened" in female sector	**Scenario 2** Financial conditions are symmetric and light in both sectors
	The female sector becomes more capital intensive		
Share of capital in female production sector	6.31	+ 51%	+ 47%
Share of capital in male production sector	13.03	- 9%	- 8%
	The male sector becomes more labor intensive		
Female sector's portion of the economy workforce	0.60	- 25%	- 20%
Male sector's portion of the economy workforce	0.39	+ 23%	+ 22%
	Female entrepreneurs consume less and cumulate potential collateral		
Share of female sector consumption over total production	0.047	- 61%	- 23%
Share of male sector consumption over total production	0.031	- 16%	- 12%
	Female entrepreneurs' investment capabilities increase towards the level of the male entrepreneurs'		
Contribution of female sector investment to total production	0.080	+ 32%	+ 27%
Contribution of male sector investment to total production	0.10	+ 12%	+ 9%

Source: constructed by authors using MatLab Dynamic Analysis results.

Implications and recommendations for policy

Financial incentives are critical for female entrepreneurs to adopt new technologies and practices that will enhance their productivity and income, which will in turn drive investments towards development and economic growth. Below are some implications that these results may have in terms of policy options to waive those key financial frictions faced by female entrepreneurs in Cameroon.

1. Access of female entrepreneurs to financing should be eased or increased by at least 40% - via, for instance, inclusion in the financial markets (Douala Stock Exchange Market or the Central Africa Exchange Market).
2. The creation of a national agency, aside from the banking sector, which would provide collateral and guarantees for female entrepreneurs' loan contracts, may contribute to alleviate frictions in the credit market and enhance female entrepreneurship.
3. Law enforceability is needed to guarantee equal rights between men and women in regards to family properties - such as land, real estate or shares - in order to allow female entrepreneurs to use these properties, directly, as collaterals.
4. The Central Africa Banking Commission should adopt a new strategy to relaxes collateral constraints, in order to avoid implicit discrimination by the banking sector between male and female entrepreneurs.
5. Another option is for Cameroonian authorities to adopt a national policy to increase the financing of female entrepreneurship by 30%, using public bonds or securities with end of collecting financings from citizens and directly finance female entrepreneurs projects.

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To find out more about the research methods and findings, read the working paper 2016-02