Macroeconomic Implications of Female Entrepreneurs facing Financial Frictions to Access to Credit in Cameroon

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Cameroon's Gender Parity Success

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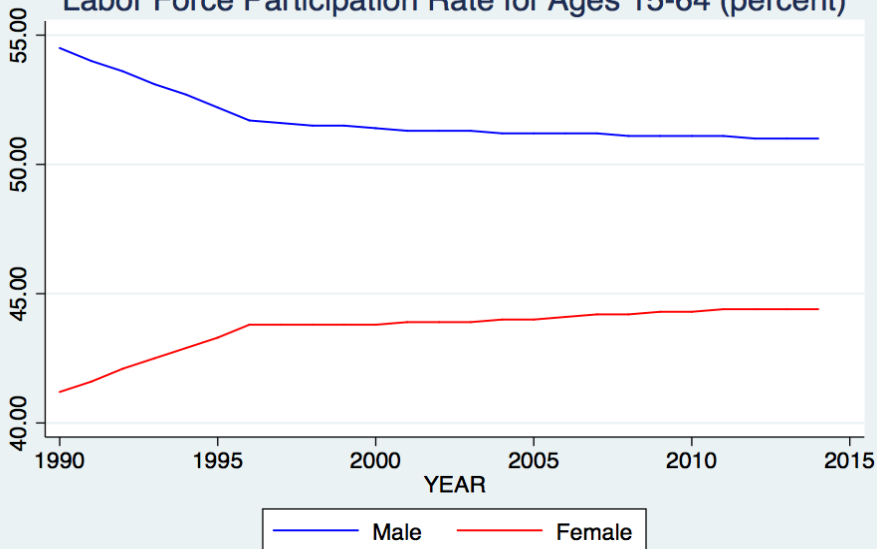Cameroon Global Gender Gap Index has improved with a score of 68 percent in 2016 contrast to 58 percent in 2006.

- Education : score of 86 percent (2016) from 82 percent (2006)

- Health : score of 97 percent (2016) from 96 percent (2006)

- Political Empowerment : score of 18 percent (2016) from 6 percent (2006)

Labor Force Participation Rate for Ages 15-64 (percent)

Source: World Bank Gender Indicators (2016)

Entrepreneurship and Gender in Cameroon

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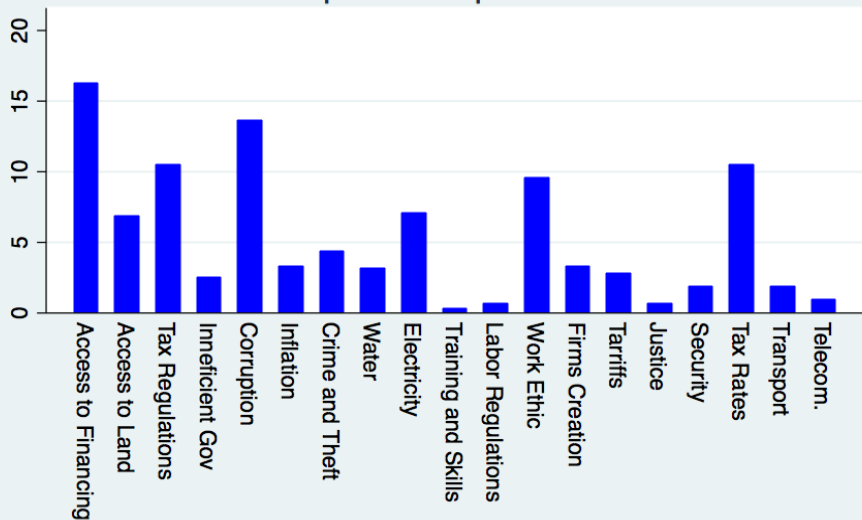Despite government efforts to promote female entrepreneurship.

- Ability of female to become entrepreneurs sits : 4.1 percent versus 95 percent (Male)

- Rate of firms with female top managers : 10 percent versus 90 percent (Male)

- Rate of firms with female participation in ownership : 16 percent versus 84 percent (Male)

Female Entrepreneurship Constraints Factors

Source: CEREG Survey of Enterprises data (2016)

Financial System

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- Cameroon faces two competing financial markets, which are shallow and fragmented, and do not represent significant alternatives to bank lending.

- The banking sector dominates the financial system.

- Bank lending remains a marginal source of funding, due mainly to financial frictions.

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- Female entrepreneurs may face cultural obstacles to pledge collateral.

- They are thus less likely to provide collateral and appear less creditworthy than male entrepreneurs.

DSGE Models with Financial Frictions

1 External Finance Premia

- Bernanke and Gertler, 1989: Costly State Verification.

2 Collateral Constraints

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- Further authors: Carlstrom and Fuerst, 1970; Christensen and Dib, 2008; Queijo Von Heideken, 2009; Gilchrist et al., 2009; Christiano et al., 2010; Badarau and levieuge, 2011.

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2 Collateral Constraints

- Iacoviello, 2005: Costly State Enforcement.

- Further authors: Hart and Moore, 1994; Kiyotaki and Moore, 1997; Chari et al., 2007; Gerali et al., 2010; Brunnermeier and Sannikov, 2011; Guerrieri and Iacoviello, 2014.

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- Frictions are severe in female-dominated sector, less so in male-dominated one.

- Calibrate the model to a Low-Income Developing Country as a case study.

- Assess the dynamic implications of these differentiated frictions.

Model Structure

1 Preferences and Production
  - Patient Households

2 Financial Sector

3 Quantitative Analysis

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   - Banks
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3. **Quantitative Analysis**
   - Calibration

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- Financial frictions appear because entrepreneurs face a collateral constraint when borrowing from the bank.

- Limited commitment and enforcement give rise to borrowing constraint wherein entrepreneurs need to accumulate and to pledge capital in order to receive loans.

- Amount of loans one entrepreneur can obtain is constrained by the quantity and value of the collateral he or she can pledge.

Model: Households

Maximises lifetime utility:

$$U_0 = E_0 \sum_{t=0}^{\infty} \beta_H^t (\varpi_t log c_t^H + \vartheta_t log(1 - n_t))$$

given labor supply to two sectors:

$$n_t = [(1 - \theta_H)^{1/\tau}(n_t^F)^{\tau-1/\tau} + (\theta_H)^{1/\tau}(n_t^M)^{\tau-1/\tau}]^{\tau/\tau-1}$$

and intertemporal budget constraint:

$$c_t^H + D_t = w_t^F n_t^F + w_t^M n_t^M + R_{D,t-1} D_{t-1} + \Xi_t - T_t$$

Model: Female Entrepreneurs Sector-I

Maximises lifetime utility:

$$U_0 = E_0 \sum_{t=0}^{\infty} (\beta_F)^t log c_t^F$$

subject to intertemporal budget constraint:

$$c_t^F + w_t^F n_t^F + R_{L,t-1}^F L_{t-1}^F + q_t k_t^F = p_t^F y_t^F + L_t^F + q_t(1-\delta)k_{t-1}^F$$

and borrowing constraint:

$$R_{L,t}^F L_t^F \leq V_t^F ((1-\delta)k_t^F) E_t[q_{t+1}]$$

Model: Female Entrepreneurs Sector-II

Each female entrepreneur has access to the production function:

$$y_t^F = a_t^F (n_t^F)^{1-\alpha} (k_{t-1}^F)^{\alpha}$$

Evolution of capital:

$$k_t^F = (1-\delta)k_{t-1}^F + i_t^F$$

Model: Male Entrepreneurs Sector-I

Maximises lifetime utility function:

$$U_0 = E_0 \sum_{t=0}^{\infty} (\beta_M)^t log c_t^M$$

subject to intertemporal budget constraint:

$$c_t^M + w_t^M n_t^M + R_{L,t-1}^M L_{t-1}^M + q_t k_t^M = p_t^M y_t^M + L_t^M + q_t(1-\delta)k_{t-1}^M$$

and borrowing constraint:

$$R_{L,t}^M L_t^M \leq V_t^M((1-\delta)k_t^M)E_t[q_{t+1}]$$

Model: Male Entrepreneurs Sector-II

Each male entrepreneur has access to the production function:

$$y_t^M = a_t^M (n_t^M)^{1-\alpha} (k_{t-1}^M)^{\alpha}$$

Evolution of capital:

$$k_t^M = (1 - \delta) k_{t-1}^M + i_t^M$$

Model: Banking Sector

Maximises discounted sum of dividends:

$$MaxE_0 \sum_{t=0}^{\infty} (\lambda_t/\lambda_{t-1})\beta_H^t DIV_t$$

subject to flow of funds:

$$DIV_t + R_{D,t-1}D_{t-1} + L_t^F + L_t^M = D_t + R_{L,t-1}^F L_{t-1}^F + R_{L,t-1}^M L_{t-1}^M$$

and balance sheet identity:

$$D_t = L_t^F + L_t^M$$

Model: Final goods

The final goods production function:

$$y_t = \left[(1 - \theta_y)^{1/\mu}(y_t^F)^{\mu-1/\mu} + (\theta_y)^{1/\mu}(y_t^M)^{\mu-1/\mu}\right]^{\mu/\mu-1}$$

Subject to ressources constraint:

$$y_t = i_t^M + i_t^F + c_t^h + c_t^M + c_t^F + g_t$$

Calibration of Parameters

1. Benchmark
   - Household discount factor: $\beta_H = 0.99$

2. Lighter Financial Constraint in Female Entrepreneur Sector

3. Symmetric Financial Constraint in both Sectors

Calibration of Parameters

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   - Household discount factor: $\beta_H = 0.99$
   - Female Entrepreneur discount factor : $\beta_F = 0.94$

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Findings

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2. Macroeconomic Outcomes following Productivity Shock

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1. Dynamic Analysis

Dynamic Analysis : Benchmark

Variables	Benchmark	Less Fin Constraint	Sym Fin Constraint
Capital-Labor ratio in sector F	6.31	10.53	12.03
Capital-Labor ratio in sector M	13.03	12.23	12.03
Value added from sector F	0.52	0.5	0.5
Value added from sector M	0.47	0.49	0.5
Sector F investment to GDP	0.080	0.10	0.11
Sector M investment to GDP	0.10	0.11	0.11
Sector F hours over total hours	0.60	0.52	0.5
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Dynamic Analysis : Second Scenario

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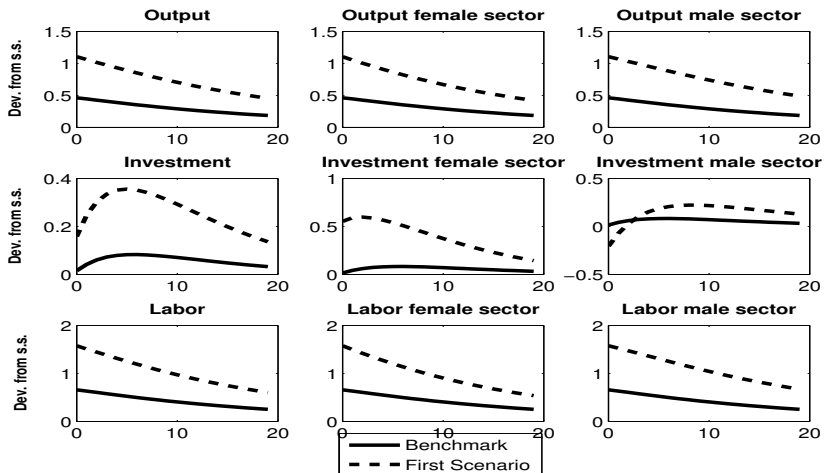
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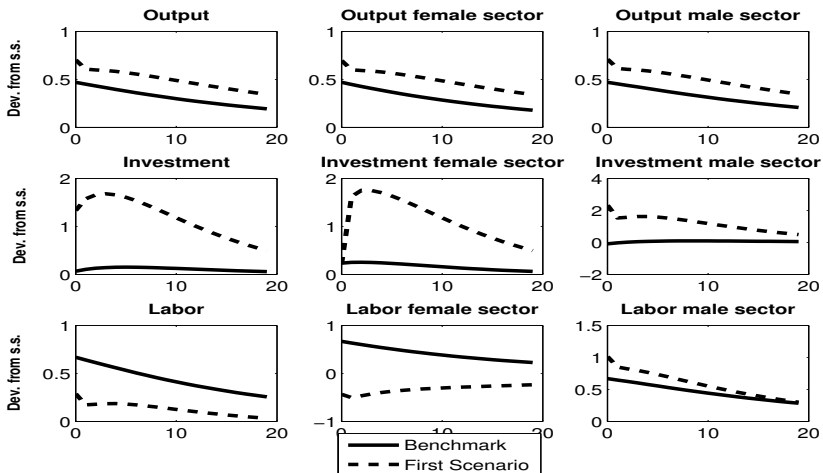
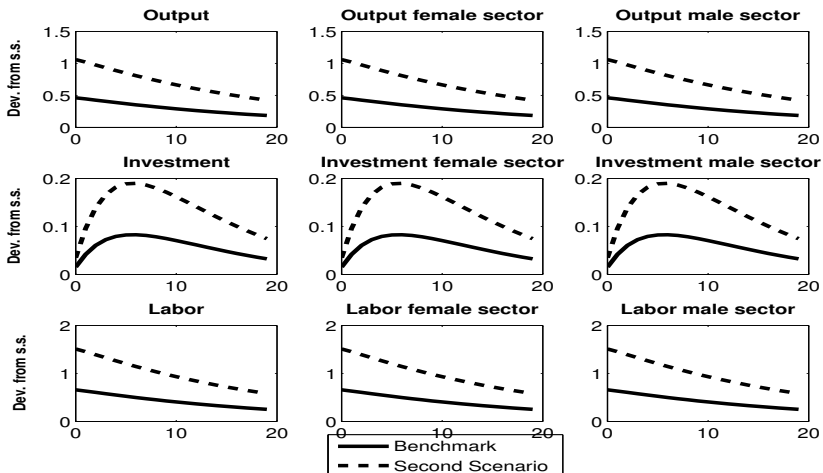# Productivity Shock in a case of Second Scenario
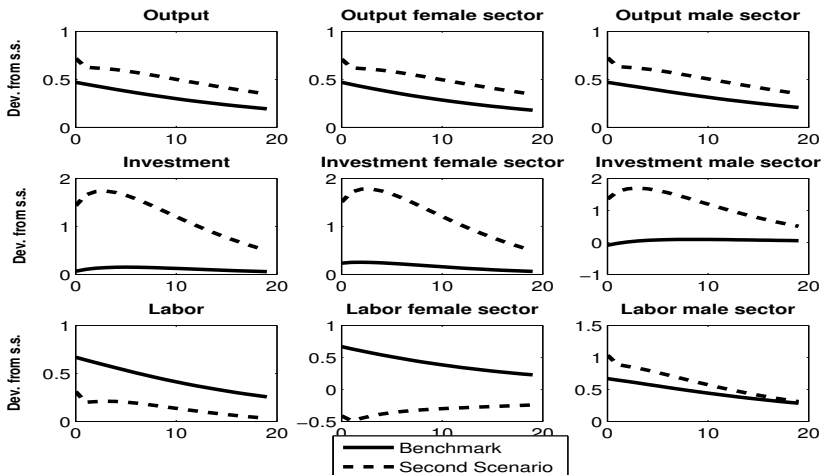
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Fiscal Policy Shock in a case of First Scenario

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Conclusion

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- Alleviating financial friction improves female entrepreneurs productivity and job creation with expansionary effects on macroeconomic outcomes.

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- Alleviating financial friction improves female entrepreneurs productivity and job creation with expansionary effects on macroeconomic outcomes.

- Male sector and female sector are complementary in sustaining economy activity when the conjuncture slumps.

- Banking sector plays a key role in amplifying the magnitude by which female entrepreneurship affects macroeconomics indicators.

Policy Recommendations

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- Cameroonian authorities can adopt a Targeted Policy of loosening female entrepreneurship financing, using public bonds or securities, by collecting funds from citizens and financing female entrepreneurs' projects.

THANK YOU