

# Gender Discrimination in Entrepreneurship

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# Stylized Facts

- Female entrepreneurs exhibit lower productivity than male entrepreneurs
- The large majority of micro, small, and medium enterprises are run by women, and the percentage of female ownership tend to decline with firm size
- Female entrepreneurs are also more likely than their male counterparts to be “necessity” entrepreneurs (to view entrepreneurship as a choice of last resort) and less likely to be “opportunity” entrepreneurs

**BUT ...**

- Female-owned firms tend to operate in a restricted number of sectors, populated by smaller firms and characterized by low value added and low growth potential (part of the explanation of the lower performance)
- Performance gaps also decline significantly after distinguishing between formal and informal businesses

## Emerging Explanations

- Gender differences in time use imply that women face important fixed costs associated with market work and thus are more likely to value flexible work arrangements (WDR 2012)
- Female entrepreneurs have less access to land and credit than their male counterparts and seem to pay higher interest rates (reasons include barriers to market access, including discrimination and differential pricing in land and credit markets, and institutional constraints, including land rights and financial rules and regulations)

## Emerging Explanations (cont'd)

- Limited access to information and networks
- Apparent gender neutral barriers that weight more on female entrepreneurs than men such as
- Difference in risk aversion behaviors

- Firms Heterogeneity:
  - Melitz, M. J., 2003
  - Helpman, Itskhoki and Redding 2008
- Gender Inequality:
  - J. Ederington, J. Minier and K. Troske (2009)
  - Juhn, C., Ujhelyi, G. and C. Villegas-Sanchez (2012)
- NAFTA:
  - Nicita 2004 ...

# Aim of the Paper

- Build a theoretical model that mirror the stylized facts observed by literature (Sector concentration, lower size of female firms, and tendency to be informal)
- Look at the theoretical roles of the emerging explanation in dictating these outcomes (focus is on the role of external constraints in access to inputs and credit summarized by a fixed costs, role of time summarized in amount of hours supplied by labor)
- Provide a theoretical framework to look at impact trade liberalization policies in these outcomes and test empirically the predictions

# Main Elements of the Model

- Within sector heterogeneity
  - Sectors produce the same differentiated variety (Dixit-Stiglitz monopolistic competition)
  - additional fixed production costs due to discrimination
- Two sub-sectors
  - formal sector
  - informal sector
- Female and male entrepreneurs
- One factor of production: Labor,  $L$



## Formal Sector

- Production costs if producing domestically
  - Taxes on Sales
  - Fixed production costs
    - $f_D$  if male-owner
    - $f_F = f_D \times \lambda$  with  $\lambda > 1$  if female-owner (discrimination costs)
- Production costs if exporting
  - $f_X, \tau$  ... plus taxes on sales

## Informal Sector

- Firm production costs
  - Same fixed production cost as in Melitz (2003) but...
  - ... no taxes on sales
  - Probability of being caught depends on the size of the firm  
monitoring cost  $\rightarrow e > t$
- Firms in the informal sector **Do Not** export

# Main Results

- The trade-off here is between being formal or informal (for both female and male firms)
- Justify why we model female and male entrepreneurs (why only for formal...)
- Number of firms
- etc...

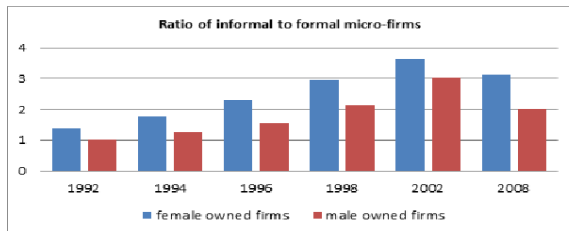
# Outline

- Introduction
- Stylized Facts
- The Model
  - Closed Economy
  - with Trade
- Econometric Evidence ...
- Conclusion

- repeated cross-sectional data from Mexico's National Survey of Micro Enterprises (ENAMIN)
- 1992, 1994, 1996, 1998, 2002 and 2008
- the surveys include a sample of around 10,000 firms with 5 or fewer workers
- it captures unregistered (informal) enterprises in addition to registered enterprises

# Facts: Plots

Proportion of informal to formal firms for women and men



- women are more likely to own an informal business

# The Model

- Utility

$$U = \left[ \int_{v \in V} c(v)^{(\sigma-1)/\sigma} dv \right]^{\frac{\sigma}{\sigma-1}}$$

- Given preferences across varieties have the standard CES form, the demand function for  $c_i(v)$  units of variety  $v$  is

$$c_i(v) = \frac{Y_i}{P_i^{1-\sigma}} p_i(v)^{-\sigma}$$



## Differentiated Good

- Consider the sub-utility function for differentiated good
- Given preferences across varieties have the standard CES form, the demand function for  $c_i(v)$  units of variety  $v$  is

$$c_i(v) = \frac{Y_i}{P_i^{1-\sigma}} p_i(v)^{-\sigma} \quad (1)$$

while country  $j$  demands for varieties produced in  $i$  is

$$c_j(v) = \frac{Y_j}{P_j^{1-\sigma}} (\tau p_i) (v)^{-\sigma} \quad (2)$$

# Technology and Market Structure

- A developing country with discrimination
- One factor of production: Labor,  $L$
- Two types of sectors: Formal and Informal, producing the same differentiated good,  $q$ 
  - in Dixit-Stiglitz monopolistic competition

## The differentiated Formal Sector

- Fixed costs:
  - cost of entering domestic mkt
    - $f_D$  per unit of domestic labor if male-owner
    - $f_F = f_D \times \lambda$  per unit of domestic labor if female-owner
  - cost of entering export mkt ( $f_X$  per unit of domestic labor)
- Variable costs
  - function of labor ( $a$ , drawn from a Pareto Distribution)
  - trade costs  $\tau$
  - taxes on sales  $t$

## The differentiated Informal Sector

- Fixed costs:
  - cost of entering domestic mkt
    - $f_I = \delta \times f_D$  per unit of domestic labor, with  $\delta < 1$
- Variable costs
  - function of labor ( $a$ , drawn from a Pareto Distribution)
  - monitoring cost,  $e$

# Sorting and Regularity Condition

- Let's start analyzing the **autarky situation**
- Firms in formal and informal sector will decide to produce in relation to their productivity level
- In autarky, the regularity condition that ensures the sorting is:

$$\delta f_D e^{\sigma-1} < f_D t^{\sigma-1} < f_F t^{\sigma-1} \quad (3)$$

- which can be rewritten as

$$\delta \left( \frac{e}{t} \right)^{\sigma-1} < 1 < \lambda \quad (4)$$

# Equilibrium Profits in Closed Economy

- Using equilibrium prices and quantities, the equilibrium profits are:
  - **Formal** sector:

$$\pi_D^M = Ba^{1-\sigma}t^{1-\sigma} - f_D \quad (5)$$

$$\pi_D^F = Ba^{1-\sigma}t^{1-\sigma} - f_F \quad (6)$$

- **Informal** sector:

$$\pi_D = Ba^{1-\sigma}e^{1-\sigma} - \delta f_D \quad (7)$$

## Analysis of the Closed Economy Equilibrium

- ...to be continued

## Open Economy Model

Trade with a perfectly symmetric country



# Equilibrium Profits in Open Economy

- Using equilibrium prices and quantities, the equilibrium profits are:

- formal** sector:

$$\pi_D^M = B(at)^{1-\sigma} - f_D \quad (8)$$

$$\pi_D^F = B(at)^{1-\sigma} - f_F \quad (9)$$

$$\pi^X = B^*(\tau ta)^{1-\sigma} - f_X \quad (10)$$

where  $B^* = B$

- informal** sector:

$$\pi_D = B(ae)^{1-\sigma} - f_I \quad (11)$$

# Sorting and Regularity Condition with Trade

- Firms in formal and informal sector can decide to sell domestically
- Firms in formal sector can also decide to reach the foreign market
- The Regularity condition that ensures the sorting is:

$$\delta f_D e^{\sigma-1} < f_D t^{\sigma-1} < f_F t^{\sigma-1} < f_X (\tau t)^{\sigma-1} \quad (12)$$

## General equilibrium results in this symmetric set-up

- Number of active firms in the home economy

$$n = \frac{\beta - 1}{\beta} \frac{E}{\sigma f_l} \frac{1}{2 + A + B + C} \quad (13)$$

- with A, B and C represent a combination of fixed and variable cost

## General equilibrium results in this symmetric set-up

- $n$  represents the number of firms active in the home economy, i.e. formal and informal
  - Active in this setup implies two types of firms mutually exclusive: domestic formal and domestic informal
- ...then Cutt-off

# Conclusion

- ...to be continued

**Thank you**