Gender Gaps in Time Use and Entrepreneurship

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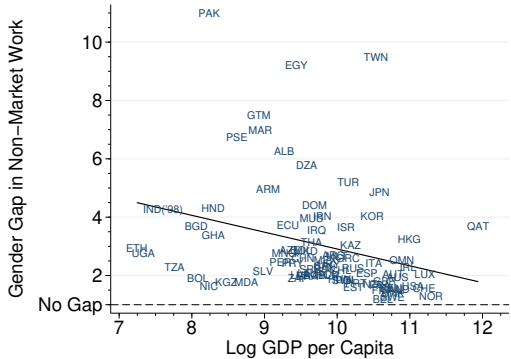
Accelerating Growth for Women-led SMEs
Inter-American Development Bank

Motivation

Gender gaps in non-market time decline with development (WDR, 2012)

$$\text{Gender Gap} = \left(\frac{\text{Time spent by Females}}{\text{Time spent by Males}} \right)$$

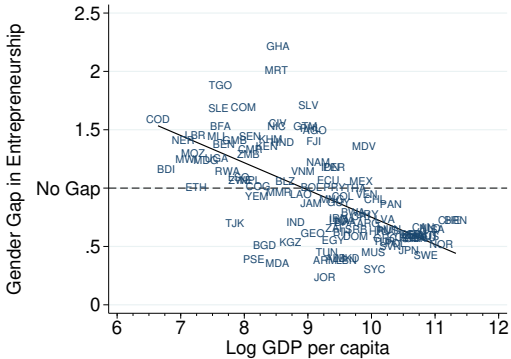


▸ Employed vs. Not Employed ▸ By Activity ▸ Rural vs. Urban

Motivation

Gender gaps in entrepreneurship decline with development

$$\text{Gender Gap} = \left(\frac{\text{Female Entrepreneurs}}{\text{Female Employment}}\right) \div \left(\frac{\text{Male Entrepreneurs}}{\text{Male Employment}}\right)$$



Research Questions

1. How do gender gaps in entrepreneurship vary with development?
2. Can accounting for gender gaps in time use explain cross-country differences in
   - gender gaps in entrepreneurship?
   - (employer) firm size, output, productivity?

Intuition:

- If entrepreneurship is "flexible", it may attract those with limits on time
- Thus, gender gaps in time use might lead to gender gaps in entrepreneurship
- Selection based on time use may have implications for aggregate outcomes

This Paper: Empirical Analysis

Using aggregate and micro-data sources across development levels,

1. Ranking hours worked by occupation (non-employers $<$ workers $\leq$ employers).
   - "flexibility" particularly important for (female) non-employers
2. Gender gaps in non-market time decline with development.
3. Gender gaps in entrepreneurship decline with development.
   - driven exclusively by non-employers
   - stronger patterns for those with children, married, low education

This Paper: Quantitative Analysis

- GE model of occupational choice between entrepreneurship and wage work.
- Key feature: selection based on productivity and time use.
  - returns to hours relatively concave for non-employers.
  - allow for gender differences in (a) social norms and (b) distortions.
- Time use (driven by social norms) crucial for cross-country patterns of gender gaps in entrepreneurship
- Significant implications for diff. between US and poorest economies
  - 3.4% of output per worker differences
  - 7% of avg. (employer) firm size differences
  - 11% of avg. entrepreneur productivity differences
- 10 to 13% gains in female welfare from eliminating gender gaps in time use

▸ Related Literature

Today

- Empirical Analysis
- Sketch of Model and Results
- Conclusion and Policy Implications

Empirical Analysis

Data Description

1. Ranking of hours across occupations
   - Micro-data across 20 countries (IPUMS-Intl + LFS)
   - Distinguish between employees and entrepreneurs (employers and non-employers)
   - Focus on non-agricultural, private employment, work $\geq$ 10 hours

2. Gender Gaps in Entrepreneurship
   - Aggregated data on non-agricultural employment from (i) ILO and (ii) WB
   - Exclude members of co-ops and contributing family workers
   - Gender Gaps in occupation = (Share of females) $\div$ (Share of males)

1. Ranking of hours across occupations

Do entrepreneurs work shorter or longer hours than workers?

Example: Using data from the CPS in the US, estimate the following,

$$\log(h_i) = \alpha + \sum_o \beta_o D_i^o + X_i + \epsilon_i$$

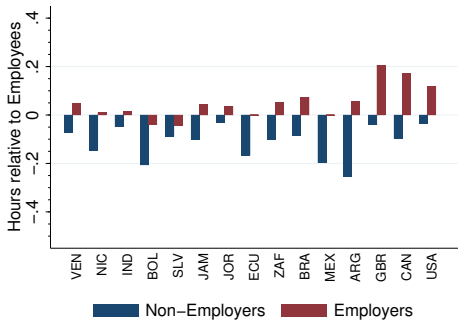
Hours Worked in Entrepreneurship relative to Employment

	Non-Employers	Employers	N	R^2
Male	-0.089***	0.099***	404,351	0.316
	(0.003)	(0.003)		
Female	-0.207***	0.078***	356,703	0.120
	(0.005)	(0.008)		

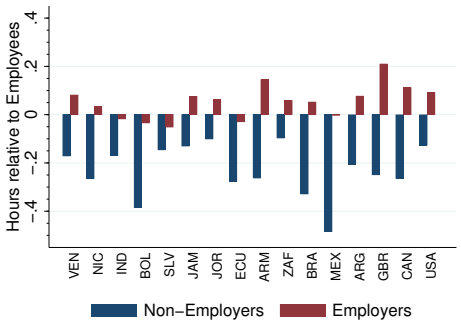
▸ Hours by Employer Size

1. Ranking of hours across occupations

Do entrepreneurs work shorter or longer hours than workers?



(a) Male Entrepreneurs

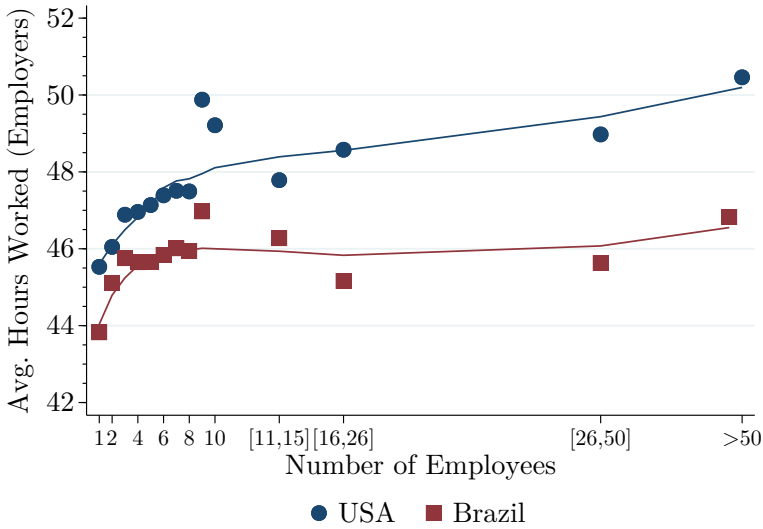


(b) Female Entrepreneurs

- Non-employers, esp. females, work fewer hours than employees and employers

▸ Males, by GDP per capita ▸ Females, by GDP per capita ▸ Motives for Entrepreneurship

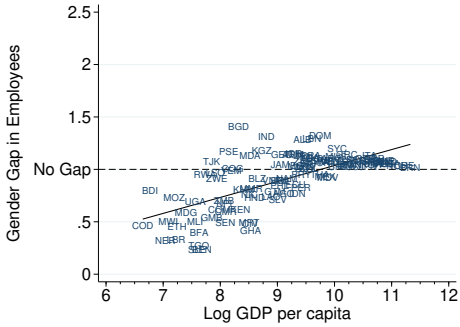
Digression: Hours worked increase with size



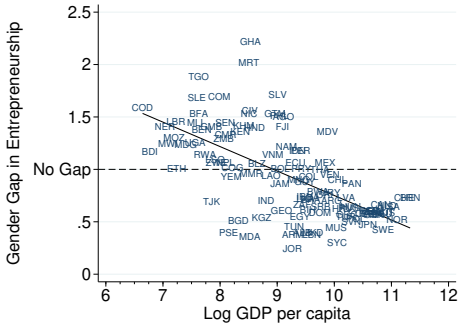
2. Gender Gaps by Occupation

Defined as,

$$\text{Gender Gap}_o = \left(\frac{\text{Female}_o}{\text{Female Employment}}\right) \div \left(\frac{\text{Male}_o}{\text{Male Employment}}\right)$$



(a) Employees

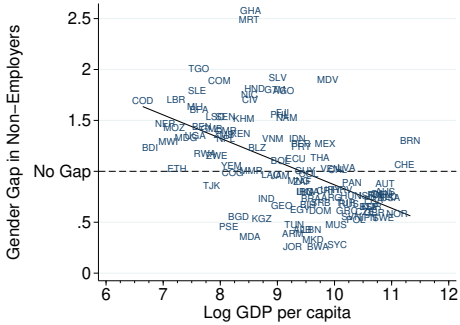


(b) Employers + Non-Employers

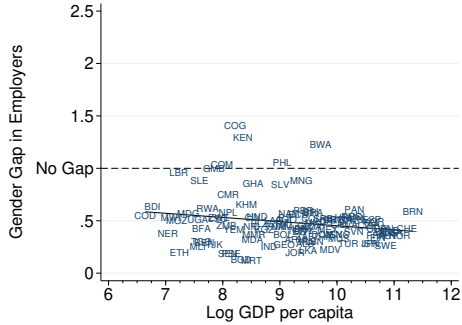
▸ Levels

2. Gender Gaps by Occupation

Non-Employers and Employers



(a) Non-Employers



(b) Employers

Gender gaps in entrepreneurship driven by gender gaps in non-employers

▸ Levels ▸ By Sector ▸ IPUMS ▸ By Characteristics ▸ incl. Agricultural Sector ▸ Female Share

Summary of Empirical Findings

- Hours Worked: Non-employers $<$ Employees $\leq$ Employers
  - Flexibility particularly important for (female) non-employers
- Gender gaps in time use and entrepreneurship narrow with development
  - driven exclusively by non-employers
  - stronger patterns for those with children, married, low education
  - similar patterns when including non-contributing family workers

Interpretation:

$\rightarrow$ Time use important margin of selection into non-employer entrepreneurship

$\rightarrow$ Asymmetries in time can generate asymmetries in entrepreneurship

(Sketch of) Model and Results

Setup

Static GE occupational choice model featuring heterogeneous agents,

- Agents differ in gender $j \in \{m, f\}$, productivity in entrepreneurship $z \sim \Phi(z)$.
- Preferences over consumption (market c and non-market goods b) and leisure
- Choose between one of three occupations $o \in \{\text{W}, \text{NE}, \text{E}\}$
- Allocate unit of time btw. market work and non-market (home) work $\mathbf{h} = (h, h_n)$
- Market consumption, c, depends on occupational choice and market hours worked
- Non-market (home) consumption, b, depends on non-market (home) hours worked

Occupational Choice

Agent of gender j and productivity z solves the following,

$$V_j(z) = \max_{o \in \{\text{W,NE,E}\}} \{U_j(z,o)\},$$

$$U_j(z,o) = \max_{h,h_n} \ln\left(\left[\phi c_j(z,o)^{\rho} + (1-\phi)b^{\rho}\right]^{1/\rho}\right) + \nu_j \frac{\left(1-\bar{\zeta}_j h - h_n\right)^{1-\gamma}}{1-\gamma},$$

where

$$c_j(z,o) = \begin{cases} \left(1-\tau_j^{\text{W}}\right) wh & \text{if } o = \text{W} \\ \left(1-\tau_j^{\text{NE}}\right) A_{\text{NE}} z h^{\lambda} & \text{if } o = \text{NE} \\ \left(1-\tau_j^{\text{E}}\right) A_E f(z;w) h & \text{if } o = \text{E} \end{cases}$$

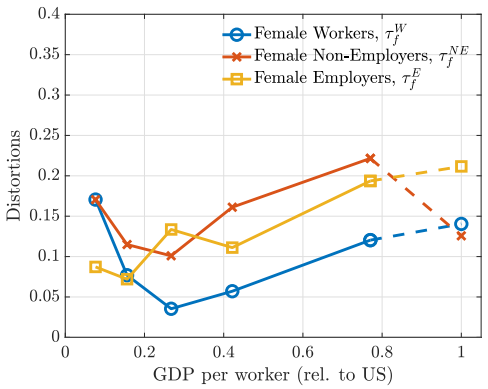
and $b = Bh_n$

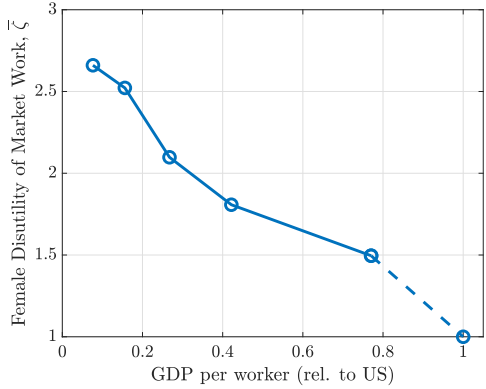
Calibration Strategy

- Fundamental parameters chosen to match moments of US economy,
  - Hours worked by gender and occupation
  - Gender-specific occupation shares
  - Firm Size Distribution
- Subset of parameters chosen to vary across quintiles of countries,
  - Aggregate Factors (productivity and production), $(A_{\mathsf{E}}, A_{\mathsf{NE}}, B, \alpha)$
  - Relative Distortions faced by females, $\left(\tau_f^{\mathsf{NE}}, \tau_f^{\mathsf{W}}, \tau_f^{\mathsf{E}}\right)$
  - Social Norms, $\overline{\zeta}$

Cross-Country Calibration

Gender-Specific Factors

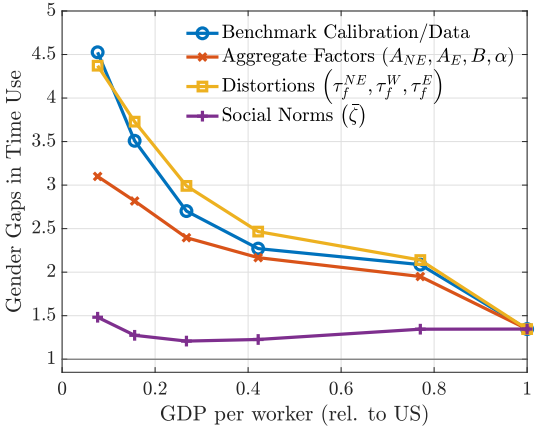




▸ Aggregate Factors ▸ Distortions - By Country ▸ Social Norms - By Country

What Generates Gender Gaps in Time Use?

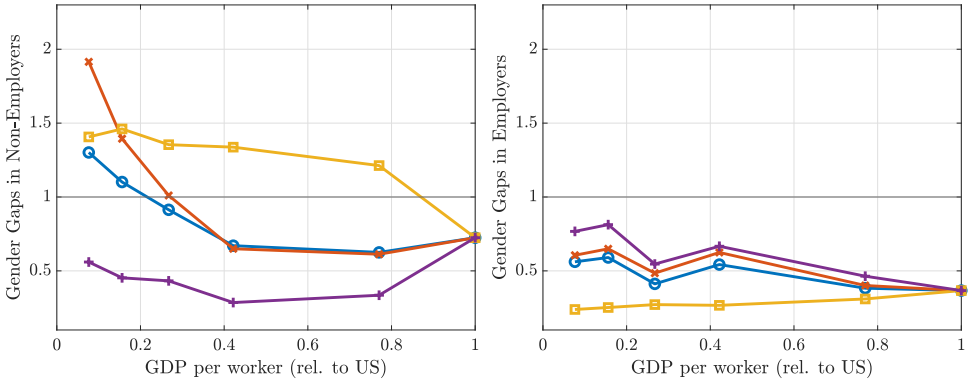
Relative disutility



- $\overline{\zeta}$ accounts for entirety of gender gaps in time use across development

▸ Alternative

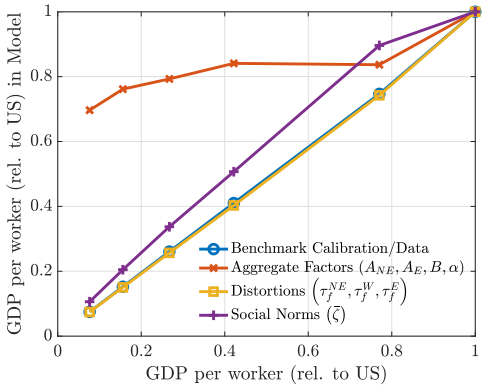
Gender Gaps in Non-Employers and Employers



- $\overline{\zeta}$ drives negative relationship with development for non-employer gender gaps
- Aggregate factors and relative distortions important to match levels of gender gaps

▸ Alternative ▸ Levels ▸ Workers ▸ Non-Employers ▸ Employers ▸ Gender Gaps among Workers

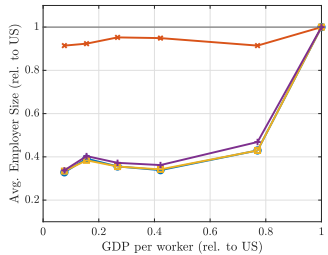
Output



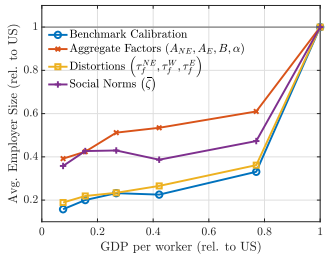
- $\bar{\zeta}$ accounts for $\sim 3.4\%$ of output diff. between Q1 and US
  - social norms more important in richer economies (e.g. 59% of output diff. with Q5)

▸ Alternative Combinations

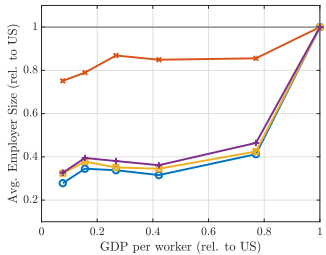
Average Employer Size



(a) Male Employers



(b) Female Employers



(c) All Employers

- $\bar{\zeta}$ accounts for $\sim 7\%$ of cross-country firm size differences
  - $\sim 24\%$ of female firm size diff.
  - $\sim 1\%$ of male firm size diff.

▸ Avg. Establishment Size: Model and Data

Conclusion

Conclusion and Policy Implications

- Time use may be an important determinant of selection into (and performance in) entrepreneurship.
- Key Takeaway: Factors determining time use also impact quantity (and quality) of businesses
    - Examples: Child-care provision/policy, (safe) access to market work, changes to societal norms around home/market work.
- May explain mixed evidence on policies promoting female entrepreneurship as these may not target the most salient binding constraint.
    - Examples: training existing and potential entrepreneurs, relaxing financial constraints