# Distortions and the Life Cycle of Immigrant-Owned Firms

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# Introduction

- Immigrants make up a large share of the population in many developed countries
  - play a key role in the labour market as workers
  - and as entrepreneurs who create jobs (our focus)

- yet, we know little about the immigrant entrepreneur experience
  - much of the evidence is based on smaller surveys
  - how do they perform relative to native-owned firms (size, profit)?
  - what industries do they select into? role of skill differences?

- do immigrant entrepreneurs face discrimination?
  - from the supply side (e.g. access to capital)?
  - from the demand side?
  - are these persistent over the life-cycle?

# This paper

- We document differences between immigrant and native-owned firms in Canada
  - related to firm performance and discrimination ('frictions' in production)
  - at entry, and over the life-cycle
  - and its quantitative implications on immigrant entrepreneurship and on aggregate

# This paper

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  - at entry, and over the life-cycle
  - and its quantitative implications on immigrant entrepreneurship and on aggregate

- Data: Canadian Employer-Employee Dynamics Database (CEED)
  - covers the universe of firms, including immigrant/native distinction
  - rich detail on owner characteristics
  - can track firms over time (panel)

- Findings:
  - immigrant firms are 30% smaller (and have lower sales, capital and profit)
    - ⋆ gaps narrow with time (size gap is 10% after 20 years)
  - we find 'evidence' that immigrants face higher capital and consumer distortions
    - ⋆ capital distortions dissipate after 10+ years, consumer distortions are persistent
  - quantitatively, matters for TFP, entrepreneurship and inequality

# Related Literature

- **Immigrants**
  - Workers: Borjas (1987), Borjas (1995); Abramitzky, Boustan, Jacome and Perez (2021)
  - Entrepreneurs: Fairlie, Krashinsky, Zissimopoulos and Kumar (2013); Fairlie and Lofstrom (2015)

- **Misallocation:**
  - General: Restuccia and Rogerson (2008); Hsieh and Klenow (2009); Bartelsman et al. (2013)
  - Gender: Cuberes and Teignier (2017); Chiplunkar and Goldberg (2022); Ranasinghe (2024)
  - Race/caste: Tan and Zeida (2023); Bento and Hwang (2023); Goraya (2023)

- **Financial Frictions:**
  - General: Buera, Kaboski and Shin (2011); Moll (2014)
  - Gender: Morazzoni and Sy (2022)

# Descriptive statistics – CEEDD

- Immigrant: born outside of Canada (and becomes a permanent resident)
  - first generation Canadian
- any native/immigrant differences are due to integrating and adopting social norms
  - not necessarily based on race

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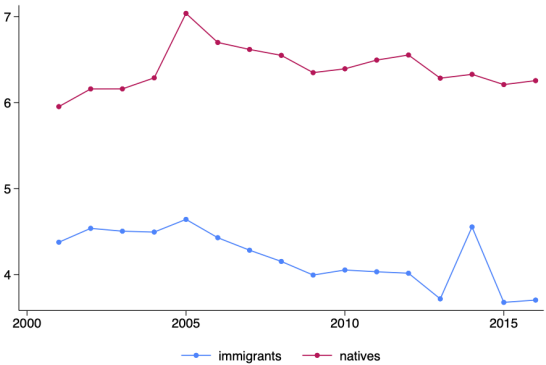
| | 2001 | 2006 | 2011 | 2016 |
|---|---|---|---|---|
| Immigrant share in population: | 0.20 | 0.21 | 0.22 | 0.23 |
| Immigrant firm market shares: | | | | |
| share of firms | 0.10 | 0.14 | 0.19 | 0.25 |
| share of sales | 0.08 | 0.09 | 0.12 | 0.16 |
| share of capital | 0.06 | 0.07 | 0.10 | 0.13 |
| share of workers | 0.08 | 0.09 | 0.12 | 0.17 |

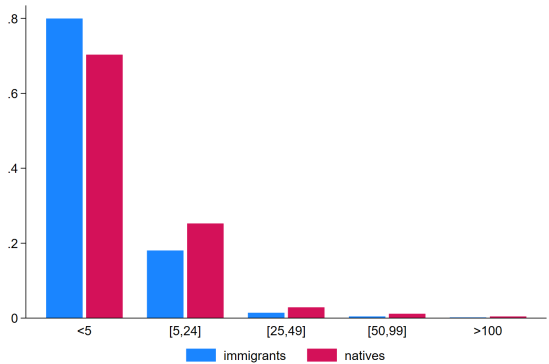
Notes: Covers all industries except agriculture, mining and utilities from 2001–2016 (5 million firm-year obs.). Restricted to corporations. Firm ownership based on primary owner.

- immigrants account for a sizeable share of the economy (and growing)

# Firm size




(a) Avg. Size




(b) Distribution

# Immigrant and native firm differences: pooled regression estimates

$$\log(x_i) = \beta \times \text{immigrant}_i + \Lambda_i + \varepsilon_i$$

- $\Lambda$: gender, age (owner and firm), province, year and industry fixed-effects (4 digit)
  - we know immigrant education and experience (but not for natives)

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| | (1) Capital | (2) Labour | (3) Sales | (4) Profit |
|---|---|---|---|---|
| Immigrant-owned firms | -0.225*** | -0.255*** | -0.291*** | -0.239*** |
| | (0.011) | (0.008) | (0.009) | (0.009) |
| $N$ | 5,235,980 | 5,272,890 | 5,141,110 | 4,826,600 |
| $R^2$ | 0.234 | 0.256 | 0.162 | 0.152 |

- results hold when excluding micro-scale and large firms, and restricting to 'educated' immigrants

# Immigrant and native firm differences: life-cycle

$$\log(x_i) = \sum_a \beta_a \times \text{immigrant}_i \times \text{age}_a + \sum_a \gamma_a \times \text{age}_a + \Lambda_i + \varepsilon_i$$

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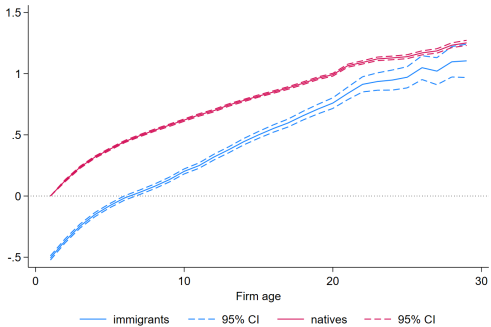
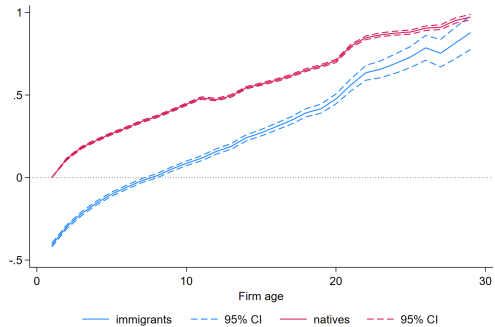



(a) Capital




(b) Firm Size

- note: convergence among surviving firms
- similar patterns for sales and profit ▸ figures

# Immigrant and native firm differences: Distortions over the life-cycle

- Do immigrant firms face higher distortions/frictions to operating?
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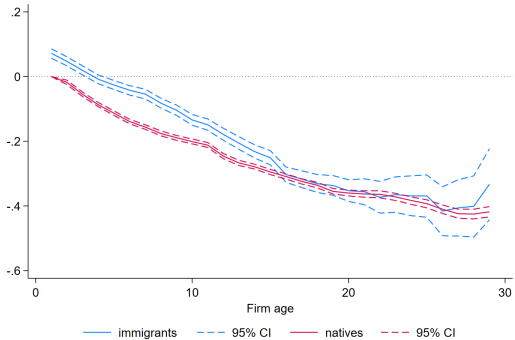
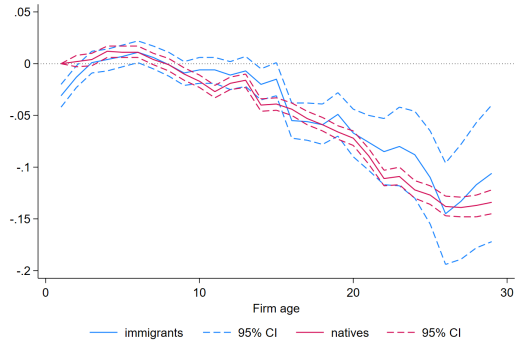



(a) ARPK




(b) ARPL

- plots for $KL$ ratios and markup differences ▸ figures

# Immigrant and native firm differences: wages

- Do immigrant firms face pay lower wages on average?
  - wages paid per worker over the life-cycle with a similar set of controls

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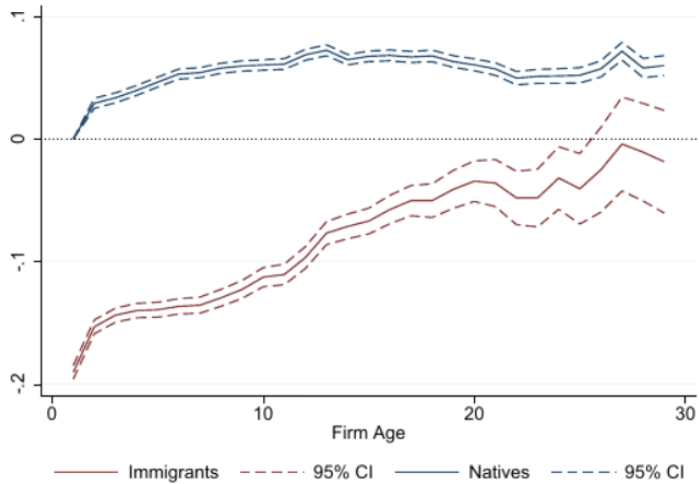


# Model

# Model Description

- Heterogeneous producers that face financial frictions (Buera, Kaboski and Shin, 2011)
  - people differ in ability and assets ($z_i$, $a_i$)
  - choose occupation (worker/entrepreneur)
    - workers earn $w$, entrepreneur profit rises with ability $z_i$
    - entrepreneur profit constrained by access to finance

- we assume three differences across immigrants ($N_m$) and natives ($N_n$)

  1. access to capital $\Rightarrow$ modelled as a collateral constraint $\lambda_j \in [1, \infty)$
  2. consumer taste/discrimination on immigrant produced goods, $0 < \tau_j^y < 1$
  3. an 'implicit' tax on wage income, $0 < \tau_j^w < 1$

- all other features are assumed to be the same across immigrants and natives
  - common distribution of talent/productivity and its evolution
  - and common preferences and production technology

# Model Details

- Entrepreneur problem

$$\pi(a_{ij}, z_{ij}) = \max_{k_{ij}, \ell_{ij}} (1 - \tau_j^y) y_{ij} - w\ell - (r + \delta) k_{ij}, \quad s.t. \quad k_{ij} \leq \lambda_j a_{ij}$$

- occupation choice

$$E(a_{ij}, z_{ij}) = \max \{\pi(a_{ij}, z_{ij}), (1 - \tau_j^w) w)\}$$

- plus the standard inter-temporal consumption-savings decisions and market clearing details

# Quantitative Analysis (Preliminary)

# Calibration

We have 14 parameters to calibrate

- three parameters we normalize to 1
  - native population, and native output and wage distortion
- four parameters we set exogenously (CRRA, capital share, depreciation, imm. pop.)
- seven parameters are jointly calibrated to match data moments

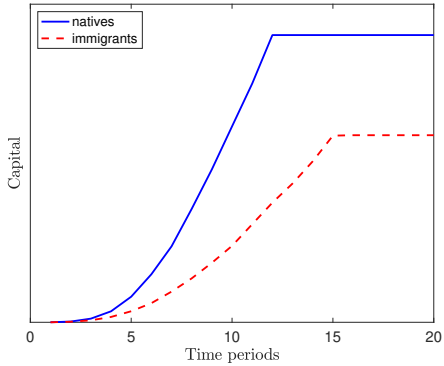
we identify the frictions in our model as follows:

- native collateral constraint $\lambda_n \Rightarrow$ ext. finance to GDP ratio
- immigrant collateral constraint $\lambda_m \Rightarrow$ immigrant share of capital
- taste/discrimination of immigrant goods $\tau_m^y \Rightarrow$ immigrant share of output
  - alternatively from our estimates on $ARPL$
- distortion on immigrant wage income $\tau_m^w \Rightarrow$ native wage premium

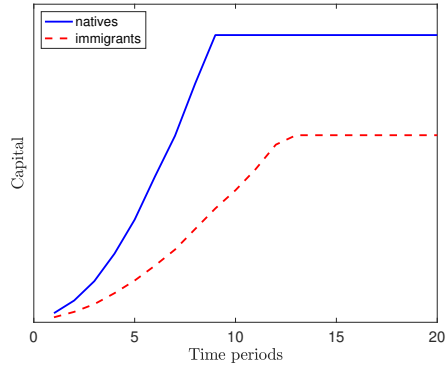
# Model fit

| (some) Targeted Moments | Data | Model | Parameter |
|---|---|---|---|
| Entrepreneurship Rate | 0.23 | 0.14 | $DRS = 0.8$ |
| Auto-correlation of output (1 yr.) | 0.92 | 0.90 | AR1 |
| Auto-correlation of output (3 yr.) | 0.79 | 0.84* | AR1 |
| External Finance/GDP | 1.54 | 1.55 | $\lambda_n = 2.4$ |
| Imm. share of $K$ | 0.09 | 0.09 | $\lambda_m = 1.7$ |
| Imm. share of $Y$ | 0.11 | 0.10 | $\tau_m^y = 0.026$ |
| Native wage premium | 1.32 | 1.32 | $\tau_m^w = 0.24$ |
| Non-targeted moments | | | |
| Entrepreneurship rates: | | | |
| natives | 0.14 | 0.14 | |
| immigrants | 0.09 | 0.14 | |
| Avg. firm size (native/imm.) | 1.50 | 1.53 | |
| Immigrant share of: | | | |
| labour | 0.10 | 0.11 | |
| firms | 0.15 | 0.17 | |

# Life-cycle implications: most productive




(a) 20th wealth percentile




(b) 80th wealth percentile

- time to overcome collateral constraint (natives and immigrants)
  - (a) 11 and 15 periods
  - (b) 8 and 12 periods

# Steady-state implications

Table: Hypothetical policies that equalize

| | Benchmark | (1) Finance $\lambda_m = \lambda_n$ | (2) Demand $\tau_m^y = 0$ | (3) Both (1) & (2) | (4) Wages $\tau_m^w = 0$ |
|---|---|---|---|---|---|
| Output | – | 2.0 | 0.7 | 2.2 | 0.6 |
| TFP | – | 1.7 | 0.7 | 1.9 | 0.5 |
| natives | – | -5.9 | -2.4 | -9.6 | 2.3 |
| immigrants | – | 55.7 | 23.2 | 81.6 | -12.6 |
| Immigrant share of: | | | | | |
| output | 0.11 | 0.19 | 0.14 | 0.24 | 0.09 |
| capital | 0.09 | 0.20 | 0.13 | 0.25 | 0.07 |
| firms | 0.15 | 0.22 | 0.18 | 0.25 | 0.12 |

Notes: Output and TFP changes are in percentages.

- proportionally large agg. impacts (immigrants account for 21% of pop.)
- despite self-financing, access to finance is more pressing
  - hits along extensive and intensive margins

# Conclusion

- We evaluate the differences between native and immigrant owned businesses
  - immigrants operate smaller firms and earn less profit (but gaps narrow with time)
  - and fairly robust: education, firm size, exits, and specific regions
  - patterns are consistent with immigrants facing restricted access to finance
- TFP losses are proportionally large
  - while data shows convergence it does not account for 'exits'
- next steps:
  - more carefully identify consumer discrimination $\tau_m^y$
  - differing productivity process? preferences?
  - evaluate/model specific policies related to immigration

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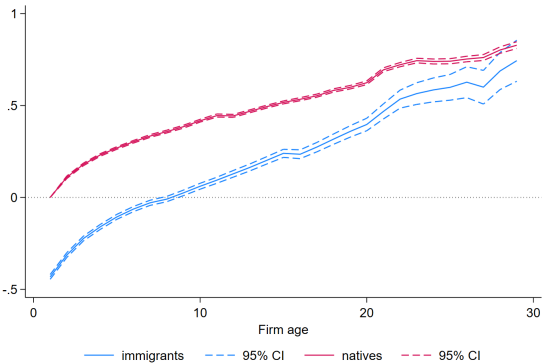
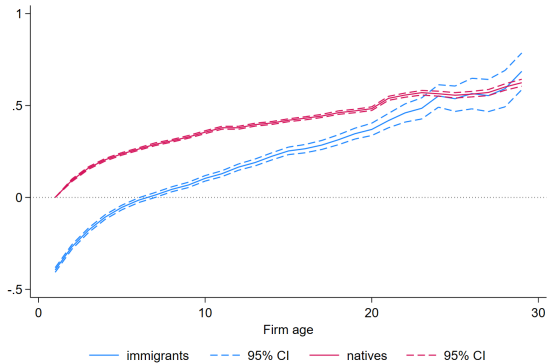



(a) Sales




(b) Profit

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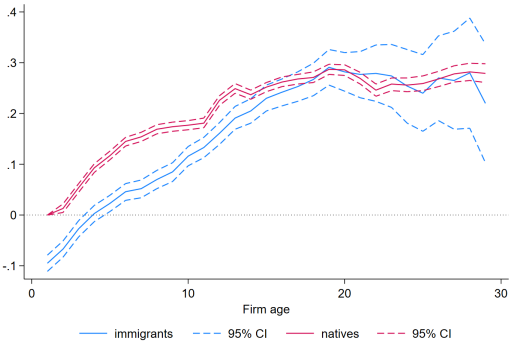
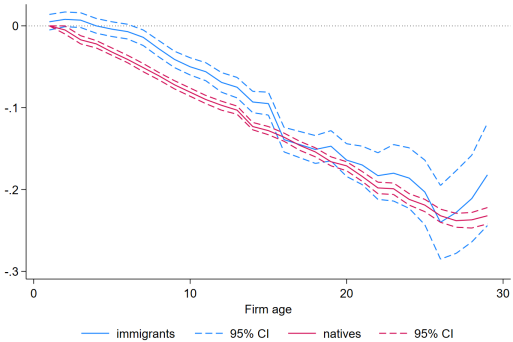



(a) Capital–Labour




(b) Markup

back

# Inter-temporal problem and stationary equilibrium

- Consumption-savings decisions to maximize life-time utility

$$v_j(a,z) = \max_{c,a'} \left( u(c) + \beta \int_{z'} v_j(a',z') M_g(z',z), \right)$$

$$\text{s.t.} \quad c + a' = E_j(a,z) + (1+r)a; \quad a' > 0$$

- market clearing
  - a. entrepreneurs optimize choosing inputs and production to maximize profit
  - b. people choose occupation to maximize current income
  - c. people choose consumption and savings to maximize life-time utility
  - d. prices are such that labour (native & immigrant) and capital markets clear
  - e. savings policies and stochastic productivity process generate a stationary distribution $\varphi_j(a,z)$

back

# Stationary Equilibrium

- capital market clearing is based on

$$\sum_j N_j \int_{e_j(a,z)=1} k_j(a,z)\varphi_j(da,dz) = \sum_j N_j \int a\varphi(da,dz) \equiv K;$$

- labor market for natives and immigrants are based on

$$\sum_j N_j \int_{e_j(a,z)=1} \ell_j(a,z)\varphi_j(da,dz) = \sum_j N_j \int_{e_j(a,z)=0} \varphi_j(da,dz)$$

- goods market clearing is

$$\sum_j N_j \int c_j(a,z)\varphi_j(da,dz) + \delta K = \sum_j \int_{e_j(a,z)=1} y_j(a,z)\varphi_j(da,dz);$$

- and a stationary joint distribution $\varphi_j(a,z)$ induced by the savings policies and the stochastic process for idiosyncratic productivity shocks that satisfies;

$$\varphi_j(a,z) = \int \int_{a'(\hat{a},\hat{z})\leq a} \int_{z'\leq z} M(\hat{z},dz')\varphi_j(d\hat{a},d\hat{z}).$$

back