The Macroeconomic Impact of Firm Performance: Evidence from Serial Entrepreneurs

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Introduction

Large differences in firm performance have macroeconomic consequences

- 3/4 of new businesses don't make it past their first year, destroying jobs in the process
- A small group of young, fast-growing "gazelles" contribute to over half of aggregate growth in output, productivity and employment (e.g., Haltiwanger et al., 2017)

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Why are some firms more successful than others and what do these imply for aggregate outcomes?

This paper: serial entrepreneur as exemplar

- **Serial entrepreneurs**: owners of multiple businesses
- Understanding the firms of SEs provides a window to understand why certain businesses succeed and how they impact the economy
- Using unique administrative data from Portugal, we provide:
  - Evidence on the macroeconomic impact of SEs
  - Reasons behind the success of SEs

Results: performance and aggregate contribution of SE firms

SE firms outperform regular businesses

- SE firms are larger, grow faster, exit less often, are more productive
- SE three times more likely to own "gazelles"

SE firms disproportionately contribute to aggregate economy

- 3.5% of owners are SE; 13.5% of firms are SE firms
- 20% of aggregate productivity growth
- 25% of job creation and employment

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Results: sources of the SE premium

Learning and selection play roles to explain SE firm performance

- Comparing "first" and "subsequent" SE firms suggests learning not the full story:
  - Subsequent SE firms are larger than first SE firms
  - First SE firms already outperform regular businesses
- Simple mediation analysis suggests selection is also important:
  - Entrepreneur characteristics account for 27-43% of the SE premia
  - "Entrepreneur ability" explain the most
  - Financial factors also important even among first SE firms but is more important to explain the success of subsequent SE firms

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Related literature

Firm heterogeneity and role of firm heterogeneity on aggregate outcomes
Haltiwanger et al. (2013); Decker et al. (2017), ...
→ We study the case of serial entrepreneurs and their role in aggregate outcomes

Serial entrepreneurship
Chen (2013); Lafontaine and Shaw (2016); Shaw and Sørensen (2019); Brandt et al. (2022)
→ We focus on contribution to aggregates and study possible sources of their success

Explanations of firm growth
Ouimet and Zarutskie (2014); Guzman and Stern (2015); Belenzon et al. (2017); Smith et al. (2019); Azoulay et al. (2020); Choi et al. (2021); Queiró (2022); Azoulay et al. (2022)
→ We explore both learning and selection to explain SE success

Outline

Outline

Portuguese data: Quadros de Pessoal

- Matched employee-employer data covering 1986-2017
- Includes info on:
  - Firms: sector of economic activity, employment, gross sales, and founding year
  - Workers: age, gender, education, occupation, wages
- Importantly, we observe "professional status" which identifies the individual as an owner of the business or salaried worker
- High coverage and reliability:
  - Reporting into QP is mandatory for all businesses with at least one paid employee
  - By law, the QP is available in a public space in the establishment

Definition: Serial entrepreneurship

- For most results, we define being a "serial entrepreneur" as a fixed characteristic
- Individuals who has (at any time in our observation period) owned at least two firms simultaneously
- Though we focus on "portfolio SE" in the main results, we have additional results on "sequential SE"
- We obtain qualitatively similar results if we consider a year-by-year definition of SE

Basic descriptives on SEs

- 3.5% of all owners are SE
- Average no. of business per SE: 1.4
- 13.5% of businesses are SE
- Sectoral composition of SE firms closely matches that of the overall economy

	All	Serial
Wholesale and retail trade	33.0	33.8
Manufacturing	16.8	15.6
Construction	13.7	11.4
Accommodation and food services	11.6	8.7
Real estate and other activities	11.3	17.6

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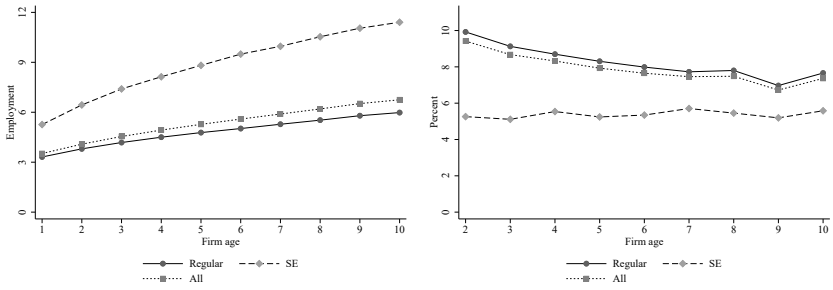
SE firm premia

	Regular	Serial	SE Premium
Size (workers)	5.4	10.9	0.48***
Exit (in %)	8.0	5.4	−1.93***
Growth (in %)	8.9	9.8	1.81***
Productivity (aggregate = 1)	0.82	1.17	0.23***

- SE firms are larger, have lower exit rates, grow faster in employment, and are more productive
- Controlling for firm age, industry FE, and year FE

Life-cycle of SE firms

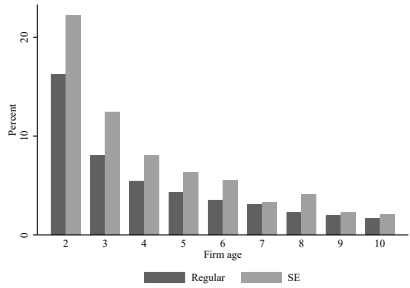


(a) Firm size

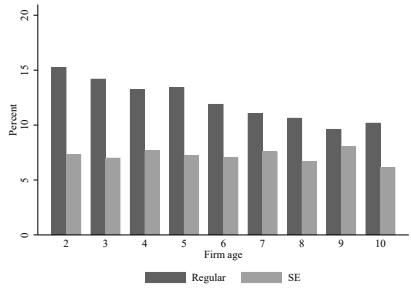
(b) Exit rates

- SE firms start up larger and grow faster than regular firms
- SE firms shut down less on average, with flat hazard rates over the life course

SE firms contribute to aggregate "up-or-out" dynamics



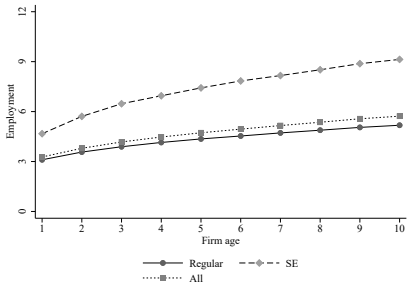
(a) Net Job Creation of Continuers



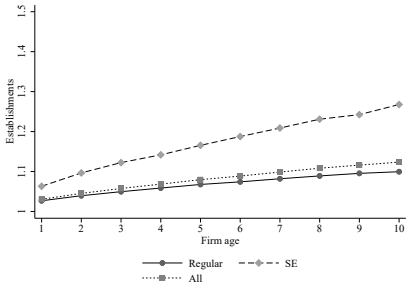
(b) Job Destruction from Exit

- "Up-or-out" dynamics: young firms face high exit rates but survivors have higher net growth rates
- Net job creation of regular firms one-fifth of SE firms
- Job destruction from exit smaller and constant among SE firms

Margins of growth



(a) Size of single-establishment firms



(b) Establishments per firm

- Intensive margin: single establishment SE firms tend to be larger and grow more over the life cycle
- Extensive margin: SE firms tend to have more establishments and also expand more

SE firms contribute disproportionately to aggregate employment

	Firms	Employment	Job creation	Job destruction
Regular	86.5	76.6	77.3	81.6
Serial entrepreneur	13.5	23.4	22.7	18.4

- Despite accounting for 14% of firms, they employ 23% of employment
- SE firms disproportionately create jobs $\rightarrow$ consistent with advantage in net job creation

SE firms contribute disproportionately to aggregate productivity

	Total	Within	Between	Cross	Entry	Exit
Aggregate	7.1	13.8	3.0	−8.5	−2.4	1.2
Serial entrepreneur firms: level	1.4	3.2	0.4	−2.0	−0.2	0.0
Serial entrepreneur firms: share of aggregate	19.7	23.2	13.3	23.5	8.3	0.0

- Consistent with literature (Dias and Robalo Marques, 2021; Reis, 2013), within-firm growth drives aggregate productivity growth
- SE firms contribute 23% of the within component of aggregate productivity growth
- Entrants tend to be less productive but SE entrants to a smaller extent
- Exiters tend to be less productive but SE exiters tend to be average

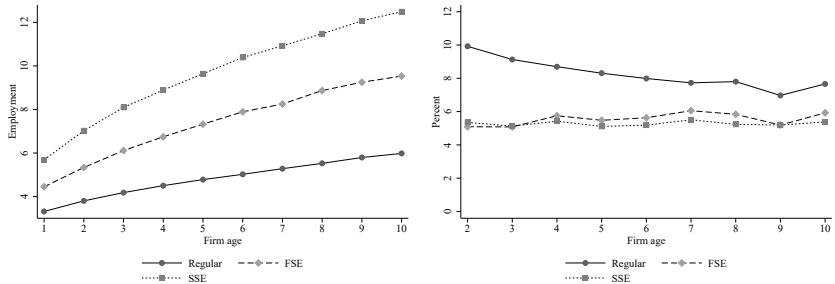
High-growth firms

	Regular	Serial	SE Premium
Size (workers)	23.3	28.4	0.15***
Exit (in %)	5.4	3.9	-1.37***
Growth (in %)	14.4	13.1	0.35
Productivity (agg.=1)	0.86	1.13	0.06

- OECD "gazelles": average annualized growth of at least 20% in the first 5 years
- Around 9% of firms but 31% of employment and 44% of job creation
- Despite SEs owning only 14% of all firms, they own 29% of gazelles
- SE gazelles are larger and exit less than regular gazelles

Outline

Comparing first and subsequent SE firms



(a) Firm size

(b) Firm exit

- Size premium already seen in first SE firms but subsequent SE firm premia larger
- First SE firms exit less
- Learning may play a role but cannot be the full story

Selection and the SE premium

- Three groups of variables that may drive selection:
  1. **Entrepreneur characteristics**: age, gender, education, owner/manager, past wages
  2. **Workforce characteristics**: age, gender, education
  3. **Financial factors**: liquidity, solvency, cash ratio
- Additional data restrictions:
  - Conditional on education, past wages proxy entrepreneur's ability $\rightarrow$ restricted sample to business owners with past employment activity
  - Financial data from Sistema de Contas Integradads das Empresas $\rightarrow$ focus on 2010-2017 for coverage and variable consistency

	Size	Exit	Growth	Prod.
Unconditional SE premium, β^u	0.46	-0.40	0.52	0.28
Conditional SE premium, β^c	0.35	-0.01	0.01	0.16
Percent explained (%)	23.9	97.5	98.1	42.9

Gelbach (2016) as simple mediation

- Two models:

$$Y = S\hat{\beta}^{\mathrm{u}} + \hat{\varepsilon}^{\mathrm{u}}$$
$$Y = S\hat{\beta}^{\mathrm{c}} + X\hat{\gamma} + \hat{\varepsilon}^{\mathrm{c}}$$

- Pre-multiply $(S'S)^{-1}S'$ to the saturated model

$$\underbrace{(S'S)^{-1}S'Y}_{\hat{\beta}^{\mathrm{u}}} = \hat{\beta}^{\mathrm{c}} + (S'S)^{-1}S'X\hat{\gamma} \;\Rightarrow\; \hat{\beta}^{\mathrm{u}} - \hat{\beta}^{\mathrm{c}} = (S'S)^{-1}S'X\hat{\gamma}$$

- Individual contribution:

$$\delta_k = \underbrace{(S'S)^{-1}S'X_k}_{\text{SE premium in } X_k} \times \underbrace{\hat{\gamma}_k}_{\text{marginal effect of } X_k}$$

- Caveats: omitted variables and not necessarily causal

Entrepreneur's characteristics

- Entrepreneur characteristics explain 20-40% of the SE firm premia
- Particularly, education and past wages are important
- SE have 1.4 years more education and have 25% pre-entrepreneurship wages

	Size	Exit	Growth	Prod.
A: Entrepreneur characteristics				
Total contribution	0.08	−0.12	0.23	0.09
Share of SE premium	18%	30%	43%	32%
Contributing factors:				
- *age*	−0.00	−0.02	−0.06	−0.00
- *gender*	−0.00	−0.03	0.04	0.01
- *education*	0.02	−0.18	0.12	0.03
- *owner/manager*	−0.00	−0.02	0.03	0.00
- *past wages*	0.06	0.14	0.09	0.05

Worker characteristics

- Workforce characteristics do not explain the SE premia in size and productivity
- Age (and to a lesser extent education) explain 14-33% of the premia in exit and employment growth

	Size	Exit	Growth	Prod.
B: Workforce characteristics				
Total contribution	0.00	−0.05	0.18	0.01
Share of SE premium	0%	14%	33%	3%
Contributing factors:				
- *age*	0.01	−0.06	0.14	0.00
- *gender*	0.00	−0.00	−0.00	0.00
- *education*	−0.01	0.03	0.03	0.01

Financial factors

- Financial factors important to explain SE premia in exit and growth
- Primary driven by solvency: SE liability-to-asset ratios are 1/4 lower
- Financial factors already explain advantage of first SE firms but initial success of first SE firms important for subsequent SE firms

	Size	Exit	Growth	Prod.
C: Financial factors				
Total contribution	0.02	−0.21	0.12	0.02
Share of SE premium	5%	53%	23%	7%
Contributing factors:				
- *liquidity*	0.00	−0.01	0.02	0.00
- *solvency*	0.01	−0.23	0.10	0.01
- *cash ratio*	0.01	0.03	−0.00	0.00

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Conclusions

Serial entrepreneur firms outperform regular firms

- SE firms are larger, exit less, grow faster, and are more productive
- SEs are 3× more likely to own high-growth firms
- SE firms disproportionately contribute to aggregate employment (job creation) and aggregate productivity growth
- Important to understand their role in the macroeconomy (top income inequality)

Learning and selection are needed to explain SE firm premia

- First SE firms outperform regular firms suggesting learning is not the full story
- Enterpreneur characteristics (education and past wages) are important
- Financial factors (solvency) help explain advantages in exit and growth for first and subsequent SE firms
- Insights guide our understanding on the reasons behind firm success and serve to discipline macroeconomic models of business dynamism

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