

Entrepreneurial Human Capital and Firm Dynamics

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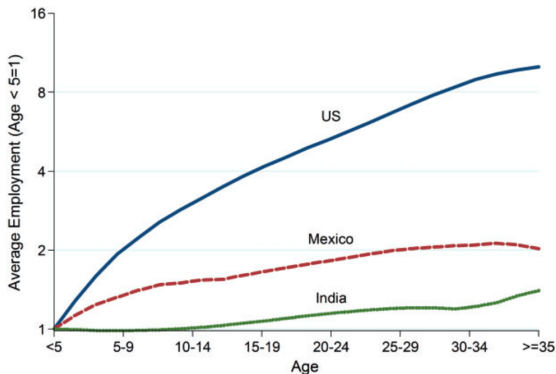
Desenvolvimento Económico Português no Espaço Europeu

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Firm life cycle growth and aggregate productivity

- Cross-country differences in output per capita are primarily driven by productivity (e.g. Jones, 2016)
- Emerging literature suggests differences in firm growth can play important role in explaining variation in productivity (Hsieh and Klenow, 2014)



What explains differences in firm growth?

- ① External barriers, e.g. taxes and regulation (Parente and Prescott, 1994), financial development (King and Levine, 1993), contract enforcement (Acemoglu, Antràs and Helpman, 2007)
- ② Firm's own human capital, namely that of entrepreneurs/managers (Nelson and Phelps, 1966)
 - ▶ *"Production management is a function requiring adaptation to change and [...] the more educated a manager is, the quicker will he be to introduce new techniques of production"*
 - ▶ Idea can be extended to management practices, organizational design, product quality and demand, etc
- Little is known empirically

This paper

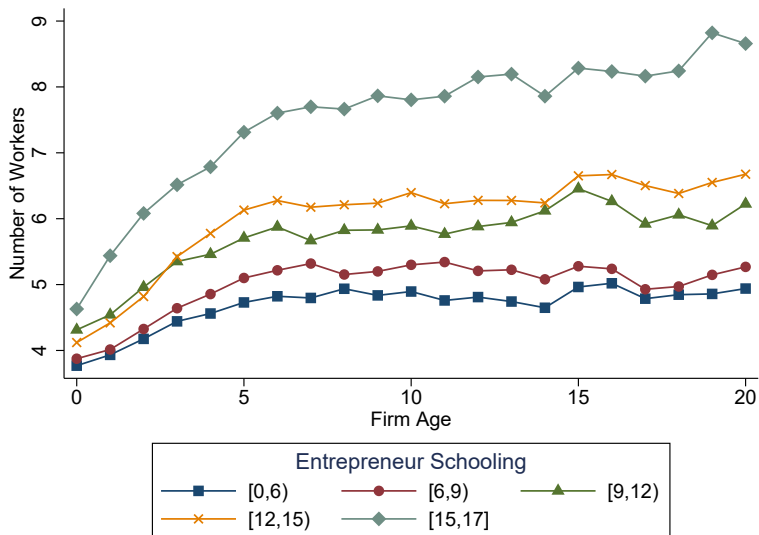
- Use administrative data on the universe of firms and workers in Portugal to study role of entrepreneurial human capital as a driver of firm life cycle dynamics
- Examine implications of findings for understanding cross-country differences in productivity and output
- Portuguese data are particularly well-suited for this study
 - ▶ Link employer-employee matched data with financial statements data
 - ▶ Track firms for up to twenty years (1995-2015)
 - ▶ Entrepreneurs of all levels of schooling well represented in the data

Overview of findings

- Both size at entry and life cycle growth increase with entrepreneur schooling
 - ▶ Same pattern for employment and output
 - ▶ Driven by survivor growth, not selection from higher exit among small firms
 - ▶ Holds for entrepreneurs specifically, not more educated workers in general
- Differences are driven by productivity, not misallocation
- The relationship between productivity and entrepreneur schooling
 - ▶ Is significantly stronger in the upper tail of the productivity distribution
 - ▶ Does not seem to be driven by omitted ability or selection into entrepreneurship
- Findings suggest entrepreneur schooling can account for substantial variation in cross-country TFP

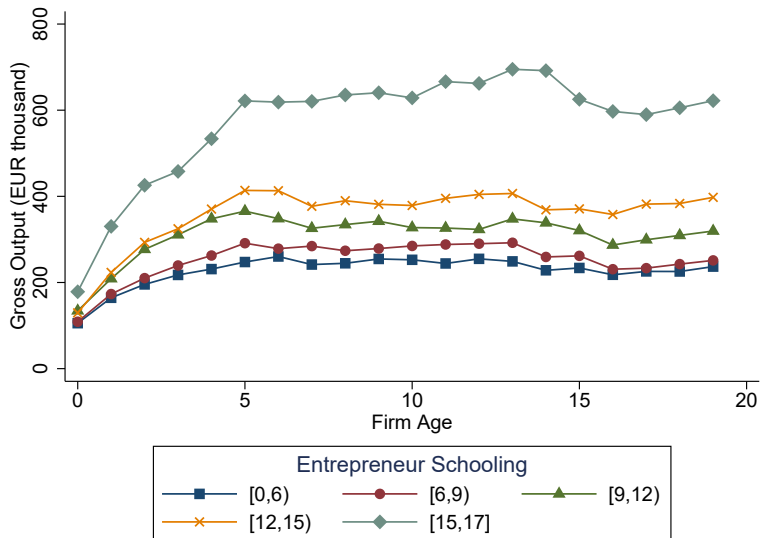
Employment by entrepreneur schooling

1995 Cohort



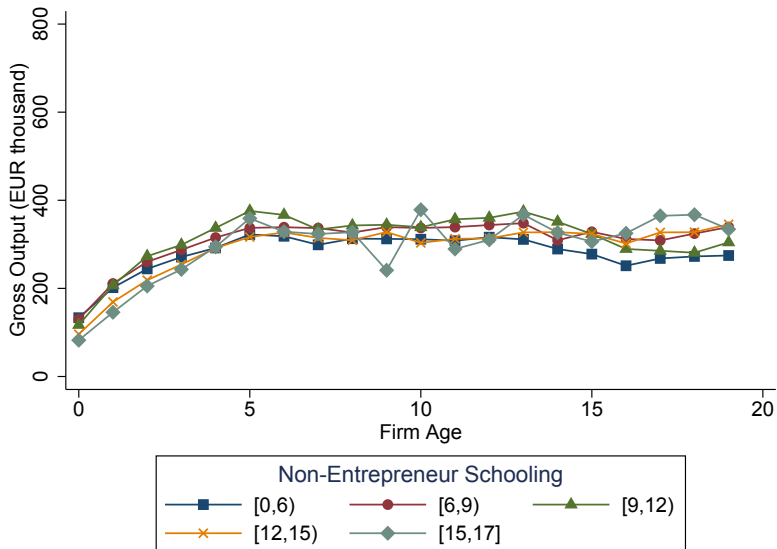
Gross output by entrepreneur schooling

1995 Cohort



Gross Output by non-entrepreneur schooling

1995 Cohort

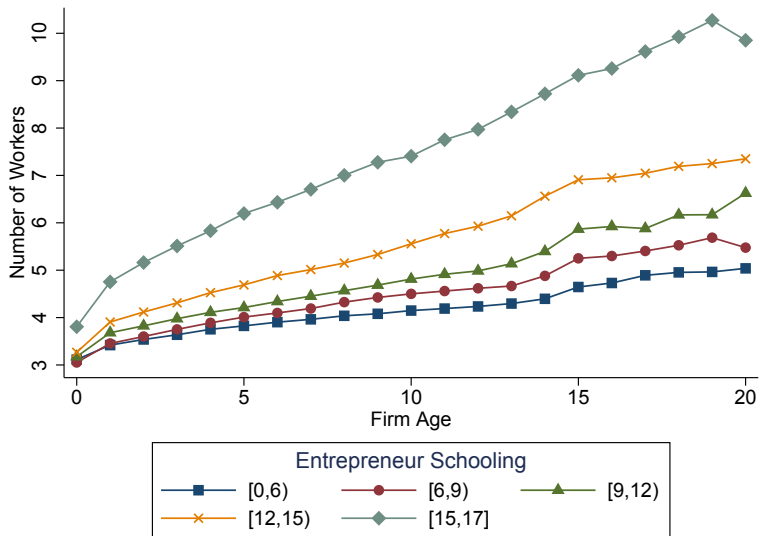


Are these differences driven by productivity or misallocation?

- Infer misallocation using method developed by Hsieh and Klenow (2009)
 - ▶ Firms with high average revenue products of inputs are inefficiently small, and vice-versa
- Unfortunately, data for productivity and misallocation only available from 2004 onward
- To get around that and also to provide more representative evidence, pool all cohorts observed from entry

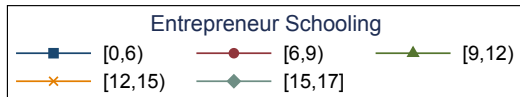
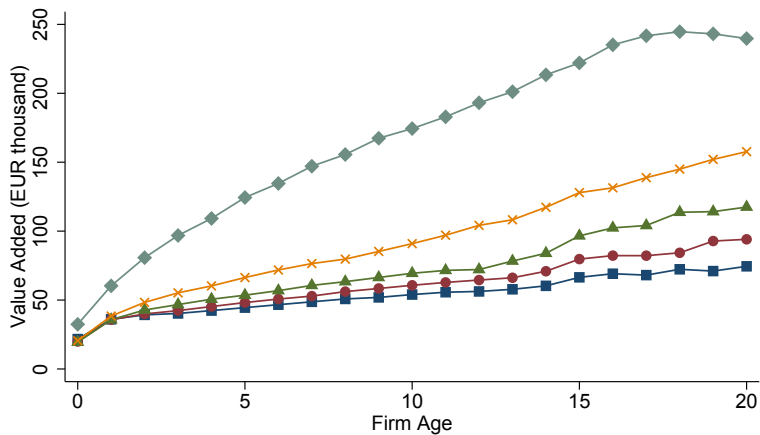
Employment by entrepreneur schooling

Cohorts observed from entry



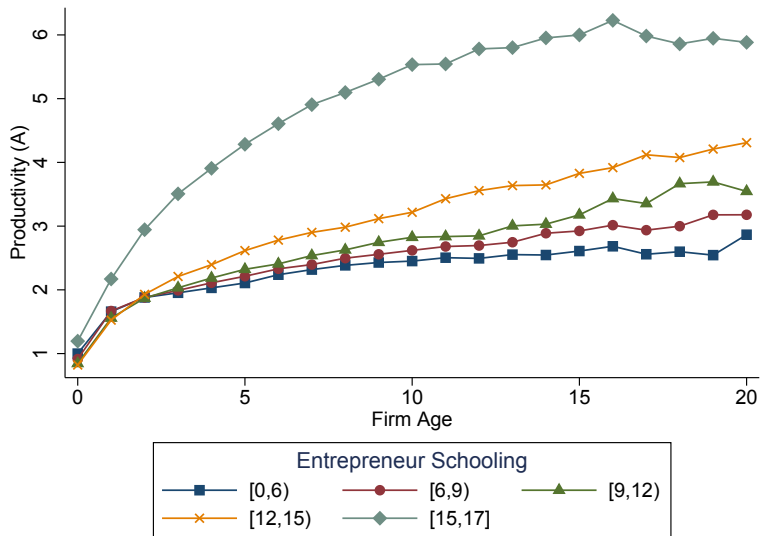
Value added by entrepreneur schooling

Cohorts observed from entry



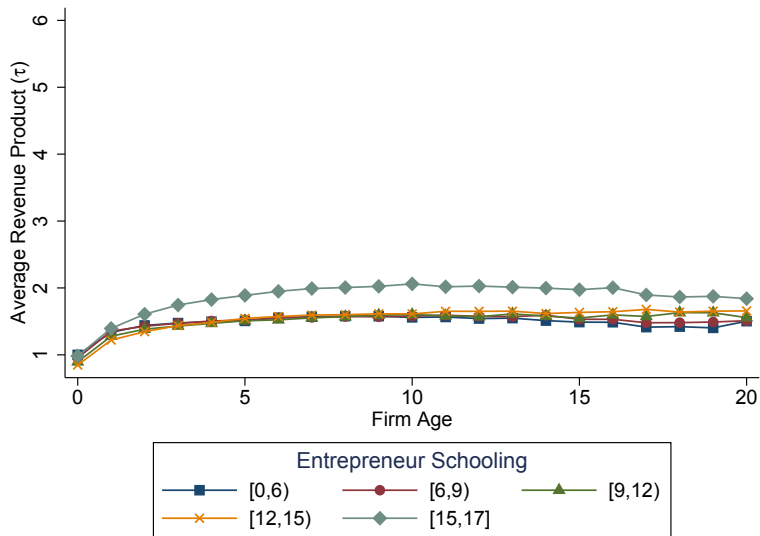
Productivity by entrepreneur schooling

Cohorts observed from entry

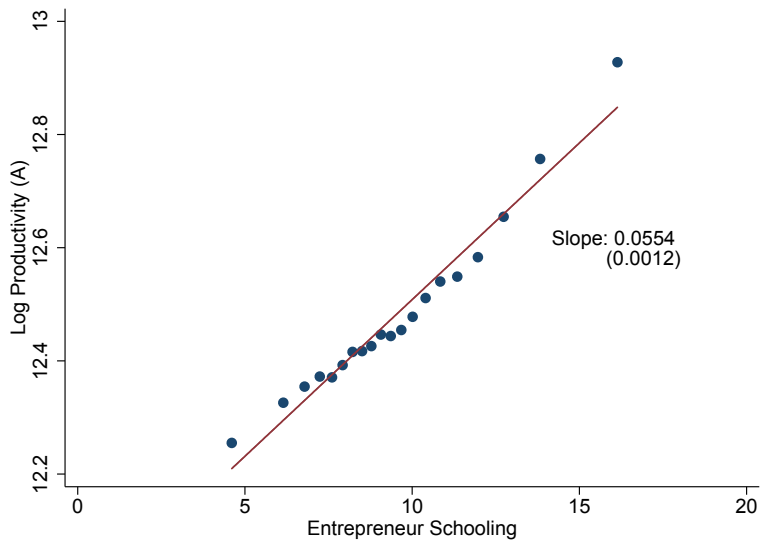


Average revenue product by entrepreneur schooling

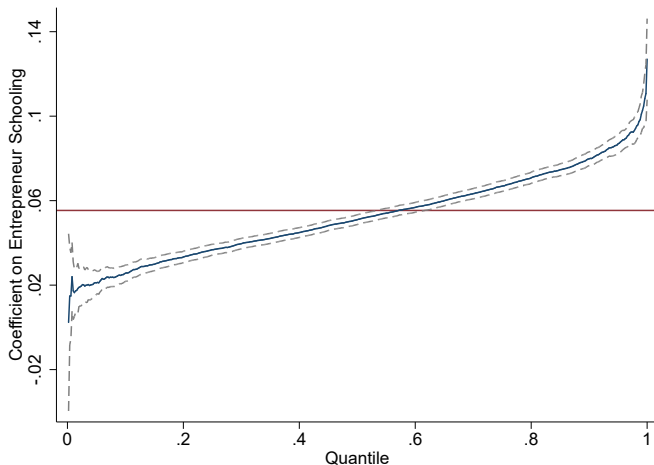
Cohorts observed from entry



Log productivity and entrepreneur schooling



Entrepreneur schooling coefficient by quantile



- Relative to an entrepreneur with no schooling, a college-educated entrepreneur is
 - ▶ 2.6x more productive on average
 - ▶ 5.6x more productive at the 99.1th percentile
 - ▶ 8.7x more productive at the 99.9th percentile

Implications for aggregate productivity and development

- Cross-country regressions: large role for human capital, but vulnerable to bias from omitted institutions, culture, etc (Mankiw, Romer and Weil, 1992)
- Development accounting: smaller role using within-country returns to education, but exclude any effect of human capital on productivity
(Klenow and Rodriguez-Clare, 1997; Hall and Jones, 1999; Caselli, 2005)
- Overcome tradeoff by adding within-country findings on entrepreneur schooling and firm productivity to development accounting framework
- Fraction of cross-country income differences explained by human and physical capital increases from $\approx 40\%$ to 65-76%