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## UNIVERSITY OF PENNSYLVANIA

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**Personal Information:** Male, Turkey (F-1 Visa)

**Undergraduate Studies**:
B.S. in Economics, Middle East Technical University, Turkey, 2007

**Masters Level Work**:
M.S. in Economics, Middle East Technical University, Turkey, 2009

**Graduate Studies**:
University of Pennsylvania, 2012 to present
Thesis Title: "Essays on Firm Dynamics, Innovation and Growth"
Expected Completion Date: May 2020

Thesis Committee and References:

Professor Ufuk Akcigit (Advisor)
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Professor Michael Peters
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Yale University
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**Research Fields**:
Macroeconomics, Firm Dynamics, Economic Growth, Innovation, Entrepreneurship.

**Teaching Experience:**

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| Spring 2018 | Introduction to Microeconomics, Instructor |
| Fall 2017 | Law and Economics, Teaching Assistant for Prof. Camilo Garcia-Jimeno. |
| Fall 2017 | Foundations of Market Economies, Teaching Assistant for Prof. Jesus Fernandez-Villaverde |
| Summer 2016 | Introduction to Microeconomics, Instructor |
| Spring 2014, 2015 | Econometrics II (Graduate), Recitation Instructor for Prof. F.X. Diebold. |
| Fall 2013, 2014 | Introduction to Microeconomics, Recitation Instructor for Prof. Rebecca Stein |

**Research Experience and Other Employment:**

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| 2015-2017 | Research Assistant for Professor Ufuk Akcigit |
| 2006-2012 | Researcher, Research Department, Central Bank of Turkey |

**Professional Activities:**

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| **Presentation** | 2014: University of Nottingham, Bilkent University<br>2015: University of Nottingham<br>2016: Collège de France |
| **Referee** | Journal of Political Economy, Journal of Monetary Economics, Journal of the European Economic Association, Journal of Development Economics, Economic Journal, Macroeconomic Dynamics, The Scandinavian Journal of Economics, Structural Change and Economic Dynamics, Central Bank Review. |

**Honors, Scholarships, and Fellowships:**

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| 2012-2013 | H.C. Haney Fellow, University of Pennsylvania |
| 2013 | Lawrence Robbins Prize, University of Pennsylvania |
| 2012-2017 | Graduate Fellowship, University of Pennsylvania |

**Publications:**

"**Innovation, Reallocation and Growth**", American Economic Review 2018, 108(11): 3450-91
(with Daron Acemoglu, Ufuk Akcigit, Nicholas Bloom, and William Kerr)

**Research Papers:**

**"Incorporation, Selection and Firm Dynamics: A Quantitative Exploration"** (Job Market Paper)

This paper studies how incorporation, which provides limited liability to firm owners, affects firm dynamics and macroeconomy. I document that incorporated firms perform better than unincorporated firms: they have higher employment upon entry, grow faster, and exit less often conditional on their size and age. I propose a model of firm dynamics with endogenous entry and exit, where firms spend resources to improve their productivity and choose whether to incorporate or not. Incorporation provides liability protection which ensures that firm value is bounded from below, at the expense of high set-up and maintaining cost. An important model feature is that firms have heterogenous (high and low) types which differ in their capacity to improve productivity. This heterogeneity allows for the possibility of selection as high-type firms, who have higher growth potential, benefit more from incorporation. I estimate the model by using firm-level data, specifically exploiting the heterogeneity in exit rates by age conditional on size to identify firm types in growth potential and therefore selection. The estimation results suggest that accounting for firm heterogeneity in growth potential is quantitatively important in explaining the observed better performance of incorporated firms. Upon entry, 90% (15%) of the incorporated (unincorporated) firms are high-types, which are estimated twice as efficient as low-types in improving their productivity. This underlines a significant selection effect which is more pronounced among incumbents as the exit rate of high-type firms is lower. In a counterfactual economy where the

incorporation decision is randomized within firm types, the productivity growth decreases from 3% to 2.1% and difference in the average size of incorporated and unincorporated firms decreases by 32%. I find significant welfare gains from subsidizing incorporated firms and large welfare losses from removing incorporation choice.

**"Innovation, Reallocation and Growth",** American Economic Review 2018, 108(11): 3450-91.
***(with Daron Acemoglu, Ufuk Akcigit, Nicholas Bloom, and William Kerr)***

We build a model of firm-level innovation, productivity growth and reallocation featuring endogenous entry and exit. A new and central economic force is the selection between high- and low-type firms, which differ in terms of their innovative capacity. We estimate the parameters of the model using US Census micro data on firm-level output, R&D and patenting. The model provides a good fit to the dynamics of firm entry and exit, output and R&D. Taxing the continued operation of incumbents can lead to sizable gains (of the order of 1.4% improvement in welfare) by encouraging exit of less productive firms and freeing up skilled labor to be used for R&D by high-type incumbents. Subsidies to the R&D of incumbents do not achieve this objective because they encourage the survival and expansion of low-type firms.

**"Lack of Selection and Limits to Delegation: Firm Dynamics in Developing Countries",** R&R American Economic Review. ***(with Ufuk Akcigit, and Michael Peters)***

Managerial delegation is essential for firm growth. While firms in poor countries often shun outside managers and instead recruit among family members, the pattern is quite the opposite for firms in rich countries. In this paper, we ask whether these differences in managerial delegation have important aggregate effects. We construct a model of firm growth where entrepreneurs have fixed-time endowments to run their daily operations. As firms grow larger, the need to delegate decision-making authority increases. Firms in poor countries might therefore decide to remain small if delegating managerial tasks is difficult. We calibrate the model to firm-level data from the U.S. and India. We show that the model is quantitatively consistent with the experimental micro evidence on managerial efficiency and firm growth reported in Bloom et al. (2013). Our quantitative analysis shows that the low efficiency of delegation in India can account for 5% of productivity and 15% of income differences between the U.S. and India in steady state. We also show that such inefficient delegation possibilities reduce the size of Indian firms, but would cause substantially more harm for U.S. firms. This is because there are important complementarities between the ease of delegation and other factors affecting firm growth.

**"Technology Adoption and the Latin American TFP Gap"**
***(with Ufuk Akcigit, Maya Eden, and Ha Nguyen)***

We develop a novel methodology to study the dynamics of technology adoption across countries. We identify changes in "technology" as changes in the productivity of the frontier country that have a lagged effect on the productivity of the adopting country. We illustrate our methodology by studying the adoption process between Latin America and the Caribbean (LAC) countries and the US. Our analysis suggests an 8 year adoption lag, after which technologies are fully or nearly-fully adopted; this estimate implies that technology can account for a productivity gap of 4-10% (provided that there is full adoption in the long-run), and a TFP growth differential between 0-0.5%. We illustrate that our estimates are consistent both with the timing of the IT revolution, and with cross-country patent citation data. Finally, we provide a simple theory about the potential determinants of the measured adoption lags which highlights a possible link between the static wedges and technology adoption decisions.

**Languages:** English (fluent), Turkish (native).
**Computational Skills:** Matlab, Julia, C++, R, Python, Stata.