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Personal Information: August 20, 1985, Male, Turkish, F-1 Visa.

Undergraduate Studies:

Bachelor of Science, Economics, Bogazici University, Turkey, Summa Cum Laude, 2009

Graduate Studies:

University of Pennsylvania, 2009 to present <u>Thesis Title</u>: "Essays on Finance of Innovation, Firm Dynamics and Economic Growth" <u>Expected Completion Date</u>: May 2015

Thesis Committee and References:

Professor Jesus Fernandez-Villaverde (Advisor) Department of Economics 3718 Locust Walk, 160 McNeil Building Philadelphia, PA, 19104 +1 (215) 898-1504 jesusfv@econ.upenn.edu

Professor Harold L. Cole Department of Economics 3718 Locust Walk, 160 McNeil Building Philadelphia, PA, 19104 +1 (215) 898-7788 colehl@econ.upenn.edu Professor Ufuk Akcigit Department of Economics 3718 Locust Walk, 160 McNeil Building Philadelphia, PA, 19104 +1 (215) 898-7711 uakcigit@econ.upenn.edu

Teaching and Research Fields:

Primary: Macroeconomics, Economic Growth, Economics of Innovation Secondary: Corporate Finance

Teaching Experience:

Spring 2011, 2014Intermediate Macroeconomics, Recitation Instructor for Professor Ufuk AkcigitFall2013Econometric Forecasting, Teaching Assistant for Professor Francesco BianchiFall2013Monetary and Fiscal Policy, Teaching Assistant for Professor Francesco BianchiSpring 2012, 2013Topics in Economic Growth, Recitation Instructor for Professor Ufuk Akcigit

Fall	2012	Introductory Macroeconomics, Recitation Instructor for Professor Luca Bossi
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- Fall2011Monetary and Fiscal Policy, Teaching Assistant for Professor Harold Cole
- Fall 2010 Intermediate Macroeconomics, Teaching Assistant for Professor Ufuk Akcigit

Research Experience and Other Employment:

- 2014 Summer Dissertation Intern, Federal Reserve Board, DC
- 2011 Research Assistant for Professor Iourii Manovskii
- 2011 Research Assistant for Professor Bilge Yilmaz
- 2009 Central Bank of Turkey
- 2007 Yapi Kredi Bank, Turkey

Professional Activities:

Presentations:	Federal Reserve Board, IF Division Lunch (2014)
	Bilkent University Economics Work (2014)
	Koc University Economics Workshop (2013)
	World Finance Conference (2013)
	Eurasia Business and Economics Society (2013)
	International Atlantic Economic Society (2012)
	University of Pennsylvania Macro Lunch (2012, 2013, 2014)
Discussant:	World Finance Conference (2013)
Referee Service:	International Economic Review

Honors, Scholarships, and Fellowships:

2009-2014	Graduate Fellowship, University of Pennsylvania
2004-2009	Fellowship of Turkish Government
2009	Alper Orhon Award
Fall 2004	Bogazici University Fellowship

Research Papers:

"Beyond Cash: Venture Capital, Firm Dynamics and Economic Growth" (Job Market Paper)

This paper presents a new dynamic general equilibrium model of innovation with heterogeneous firms that incorporates an explicit venture capital (VC) market. The data show that VC financing accounts for a disproportionate share of sales and employment in the US compared with its limited share of total investment. VC firms invest heavily in young and innovative firms, bringing operational knowledge, together with financing, to their portfolio companies. The goal of this paper is twofold. First, I measure the particular channels through which VC firms influence their undertakings, using a structural model. Second, I explore the implications of VC investments for aggregate productivity and innovation policy. To address these goals, I combine and structurally estimate an endogenous technical change model with a VC setting that includes (i) the new feature of expertise, and (ii) the endogenous matching market where firms and VCs meet. In this model, firms improve the quality of their innovative product through risky R&D. VC expertise raises the efficiency of product development, and firms obtain VC financing at the cost of selling an endogenously determined share of the company. The entry cost that VC companies face also introduces a selection margin: VCs invest in firms that present a high potential for growth. The estimated model captures certain features of the VC matches and innovation observed in the US data. Counterfactual experiments imply that operational knowledge accounts for about 1/3 of VCs' impact on aggregate growth. Policy experiments suggest that changes affecting the VC market could result in a 7 basis point gain in the long-run growth rate of the economy.

"Fewer but Better: Sudden Stop, Firm Entry, and Financial Selection" (with Felipe E. Saffie)

In this paper, we build an endogenous technical change model into a stochastic small open economy framework to study the aggregated productivity cost of a sudden stop. In this economy, productivity growth is determined by successful implementation of business ideas, yet the quality of ideas is heterogeneous and good ideas are scarce. A representative financial intermediary screens and selects the most promising ideas, which gives rise to a trade-off between mass (quantity) and composition (quality) in the entrant cohort. Chilean firm-level data from the sudden stop triggered by the Russian sovereign default in 1998 confirms the main mechanism of the model, as firms born during the credit shortage are fewer, but better. A calibrated version of the economy shows the importance of accounting for heterogeneity and selection to quantify correctly the permanent loss of output generated by the forgone entry.

"Project Heterogeneity and Growth: The Impact of Financial Selection on Firm Entry" (with Felipe E. Saffie)

In the classical literature of innovation-based endogenous growth, the main engine of long run economic growth is firm entry. Nevertheless, when projects are heterogeneous, and good ideas are scarce, a mass-composition trade off is introduced into this link: larger cohorts are characterized by a lower average quality. As one of the roles of the financial system is to screen the quality of projects, the ability of financial intermediaries to detect promising projects shapes the strength of this trade-off. In order to study this relationship, we build a general equilibrium endogenous growth model with project heterogeneity and financial screening. To illustrate the relevance of the mass and composition margins we apply this framework to two important debates in the growth literature. First, we show that corporate taxation has only a weak effect on growth, but a strong effect on firm entry, both well-known empirical regularities. A second illustration studies the effects of financial development in growth. A word of caution arises: for economies that are characterized by high rates of firm creation, domestic credit should not be used as a proxy of financial development, in contrast to most of the empirical literature.

"Technology Dynamics, Innovation Policy and the Gains from Globalization" (with Ufuk Akcigit and Giammario Impullitti)

This paper is motivated by two strong observations on global innovative activity: First, there is a clear convergence in the number of patents (and also citations) issued by US and non-US based firms over the course of the 1970s until the mid- 1980s. Second, in the first half of the 1980s, R&D subsidies and tax credits were introduced both at the federal and state level in the US and a halt of the technological convergence followed. Motivated by these facts we build a trade model with endogenous technical change to analyze the effects of openness, foreign technological competition, and the welfare consequences of innovation policies in this contest. We devise a two-country growth model with step-by-step innovation where firms invest in innovation to gain global leadership. The existence of an initial technology gap implies that firms from the lagging country must first catch-up before leapfrogging and becoming global leaders. International knowledge spillovers facilitate technology diffusion and promote cross-country income convergence. Trade frictions hinder convergence. Calibrated to match key innovation, growth, and trade statistics for the major innovating countries in the 1970s, the model is able to replicate the convergence observed in the data. We evaluate the welfare effects of foreign catching-up on the leading economy, the US, finding sizable short run and long-run losses. Moreover, feeding the model the increase in US R&D subsidies in the 1980s reproduces about 1/4th of the recovery of US leadership shown in the patent data since the mid-1980s.

Computational Skills:

Matlab, Fortran, Stata, EViews

Languages:

English (fluent), German (advanced), Turkish (native)