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Fields of Concentration:
>Primary: Macro-Finance
>Secondary: Computational Economics, Behavioral Finance

Desired Teaching:
>Macroeconomics
>Financial Crises
>Financial Economics
>Computational Economics

Comprehensive Examinations Completed:
>Oral: Macroeconomics (*with distinction),* Political Economy
>Written: Macroeconomics, Microeconomics

Dissertation Title: *Macro-Fragility and Banking Crises as Leverage Cycles*

Committee:
>Professor John Geanakoplos (chair)
>Professor Nick Barberis
>Professor Anthony A. Smith, Jr.

Expected Completion Date: May 2017

Degrees:
Ph.D., Economics, Yale University, 2017 (expected)
M.Phil., Economics, Yale University, 2014
M.A., Economics, Yale University, 2013
M.A., Economics (*summa cum laude)*, Tel-Aviv University, 2009
B.A., Computer Science and Biology (*magna cum laude)*, Tel-Aviv University, 2003

Fellowships, Honors and Awards:
Carl Avid Anderson Prize Fellowship in Economics, Yale University, 2015-2016
University Dissertation Fellowship, Yale University, 2016-2017
Lester Page Hoole Scholarship Fund Fellowship, Yale University, 2014-2015
Cowles Foundation Fellowship, Yale University, 2011-2015
Yale University Doctoral Fellowship, 2011-2016
Berglas School of Economics Prize for best master's thesis, 2010
Award for Excellence in M.A. studies, Tel-Aviv University, 2008-2009
Alfred Akirov Honor Fellowship, Tel-Aviv University, 2006-2008

Teaching Experience:
Teaching Fellow, Yale University:
Introductory Macroeconomics (instructor: Aleh Tsyvinski), 2016
Honors Macroeconomic Theory (instructor: Anthony A. Smith, Jr.), 2015
Financial Theory (instructor: John Geanakoplos), 2014
Intermediate Macro (instructor: Giuseppe Moscarini), 2014
Ph.D Macroeconomics I (instructor: Eduardo M.R.A. Engel), 2013

Instructor, NYU in Tel-Aviv:
Intermediate Macro, 2011

Teaching Assistant, Tel-Aviv University:
Graduate Macro Theory (instructor: Zvi Hercowitz), 2011
Intermediate Macro (instructor: Leonardo Leiderman), 2007, 2011
Graduate Financial Crisis (instructor: Daniel Tsiddon,), 2009, 2010
Introduction to Economics (instructor: adjacent faculty), 2010
Graduate Topics in Macroeconomics (instructor: Zvi Hercowitz), 2007, 2008, 2009
Graduate Macro Theory (instructor: Daniel Tsiddon), 2008

Research and Work Experience:
Research Assistant for Professor Ariel Rubinstein, Berglas School of Economics, Tel Aviv University, 2007-2010
Research Assistant for Professor Zvi Hercowitz, Berglas School of Economics, Tel Aviv University, 2006-2010
Research Assistant for Professor Nir Ben-Tal, Biochemistry Department, Tel-Aviv University, 2002-2005

Publications:
"Tracking Decision Makers under Uncertainty" (2011) with Ariel Rubinstein and Amos Arieli, *American Economic Journal: Microeconomics,* 3(4): 68–76.

Working Papers:
"Banking Crises as Self-Defeating Prophecies", (2016), *Job Market Paper*

"Walrasian Economies with Debt: Leverage Causes Multiplicity" with John Geanakoplos, (2016)

"Doom Triangles: Sovereign-Banking-Corporate Crises as Endogenous Leverage Disasters" with John Geanakoplos, (2016)

Referee Service:
Economic Journal, Agricultural Economics

Languages:
English (fluent), Hebrew (native)

References:

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Dissertation Abstract

My dissertation examines the role of leverage in generating macro-fragility.

"Banking Crises as Self-Defeating Prophecies", *Job Market Paper*

I present a calibrated asset pricing model of banking that accounts for cyclical variation in the risk-reward tradeoff and reconciles a high risk premium with high banking leverage. I then use the model to study how underestimates of downside risk increase leverage and contribute to fire-sale dynamics. In my model of banking, the collateral asset is real estate, which is a risky asset because in equilibrium rent closely tracks the exogenous and stochastically growing labor endowment. There are three types of agents, differentiated only by their risk aversion. I refer to the least risk-averse type as real estate speculators, to the most risk-averse type as depositors, and

to the in-between type as bankers (because in equilibrium the in-between type lends to the least risk-averse type and borrows from the most risk-averse type).

Risk aversion heterogeneity generates cyclical variation in the risk-reward tradeoff that resembles the post-WWII movement of US shares: expansions produce a calibrated Sharpe ratio of 0.38, while recessions produce a Sharpe ratio of 1.027. Thus, in expansions high leverage allows speculators to strongly influence asset pricing and maintain a low expected return, but in recessions they are forced to get rid of their holdings in a fire sale to agents who have higher risk aversion, thus driving expected returns higher.

Reconciling high leverage with the high risk premium observed in expansions is not trivial because while a high risk premium suggests that agents are afraid to hold risky assets, high leverage indicates that they do not foresee large price drops. Nakamura, Steinsson, Barro, and Ursúa (2013) use rare disasters which, once they hit, are immediately recognizable to agents, causing asset prices to collapse on impact. However, anticipated price crashes cannot be squared with a simultaneous availability of high leverage. To account for high leverage, I use calibrated disasters that unfold as a sequence of independent negative endowment shocks. Each shock permanently reduces the labor endowment and increases the probability of a full disaster, so that they are associated with declines in expected utility that justify strong discounting. Yet, because news of the disaster arrives piecemeal, price drops are gradual and banks choose, and are able, to lever 22-to-1.

Contrary to the mainstream perception of banking crises as the result of self-fulfilling prophecies, I argue that crises typically involve some measure of self-defeating prophecies. I define a self-defeating prophecy as a condition in which a mistake in expectations shifts the realized future market-clearing outcome in a direction that is opposite to that of the mistake. I explore real-estate price dynamics following an initial underestimate—shared by all agents—of the potential for a labor endowment decline. I show that two-thirds of the collapse in real-estate prices is driven by the endogenous increase in ex-ante speculator leverage, which causes larger losses ex-post and triggers even more desperate fire sales. Moreover, the dynamic generates default on mortgages that agents perceived as safe.

"Walrasian Economies with Debt: Leverage Causes Multiplicity", co-authored with John Geanakoplos

Since the seminal paper of Diamond and Dybvig (1983), bank runs as multiple Nash equilibria have been associated with a joint ownership problem. We study the conditions required for bank-run-like multiple equilibria in Walrasian economies with debt, in the absence of a joint ownership problem. We show that for multiple goods and multiple agents, enough leverage creates multiplicity.

For an intuitive understanding, consider an Edgeworth box with any original equilibrium. To make it relevant to banking, label the goods as money and risky assets, and label the agent with higher marginal propensity to acquire risky assets as a bank, and the other as a depositor.

Increasing bank leverage along the budget line does not change the original equilibrium, but it does change the derivative of excess demand for risky assets with respect to their price.

If leverage is increased sufficiently, the wealth effect overcomes the substitution effect, and the derivative of excess demand at equilibrium becomes positive. A positive derivative of excess demand at equilibrium is the hallmark of multiplicity. It implies that at some lower price there is another equilibrium, where banks suffer losses on risky assets due only to coordination. Moreover, if depositors sufficiently dislike holding risky assets, an otherwise solvent banking system could be totally wiped out.

"Doom Triangles: Sovereign-Banking-Corporate Crises as Endogenous Leverage Disasters", co-authored with John Geanakoplos

It is frequently observed that banking crises often go hand-in-hand with sovereign debt crises in a feedback process known as the Doom Loop. Our model adds production to the feedback loop and explains these disasters as driven by endogenous deleveraging. Deleveraging is triggered by news that with 2.5% probability there will be a 25% drop in total factor productivity. Because of endogenous amplification, our quantitative example yields a response in expected output that is 40 times that of the change in expected productivity.

In the model, banks and workers hold a sovereign bond that could partially default if tax revenues fall below obligations, and revenues depend on output. Workers are more risk averse than bankers, so they are willing to buy risky bonds only at deep discounts. Capital investment depends on bank loans while infrastructure investment depends on the government's ability to raise funds in the debt market.

Following the news of a possible productivity drop, the risk of default diminishes the usefulness of bonds as collateral and workers ask to withdraw some of their deposits, collapsing bank leverage, and forcing banks to sell bonds to workers in a fire sale. As expected returns climb, banks increase the interest they charge producers, causing producers to reduce capital investment. In addition, the drop in the price of sovereign debt drives the government to reduce infrastructure investment. Reduced infrastructure and capital investments imply that even if the drop in total factor productivity does not materialize, a collapse of output is baked in.