Research Proposal for NBER PIE Program Research Grant (Entrepreneurship)

``Credit Supply Shocks and Startup Firm Dynamics"

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Models of entry into entrepreneurship such as Evans and Jovanovic (1989), Jeong and Townsend (2007), Buera (2009), Moll (2014) emphasize the importance of credit constraints for understanding startup dynamics and the misallocation of resources especially for young firms. See also the survey by Buera, Kaboski and Shin (2015). Despite high interest in the effects of credit shocks on firm dynamics, comprehensive evidence is scarce. The reason is that there are at least two important empirical challenges.

First, comprehensive data separating self-employed or very small businesses from merely young but high-growth firms is scare. Empirical studies such as Hotz-Eakin, Joulfaian, Rosen (1994) analyze individual tax return data and use large windfall gains from inheritances to compare self-employment rates of financially unconstrained individuals with self-employment rates of all individuals. However, as pointed out by Hurst and Pugsley (2012), self-employers and even small employers are likely to largely consist of business owners who run a business more out of consumption value motives than to maximize growth and profit. Furthermore, as emphasized by Haltiwanger, Jarmin and Miranda (2014), it is not small businesses in general, but young, high-growth businesses that are critical for growth in job creation. In other words, since high-growth startups are at the heart of business dynamism, it is critical to understand whether financing is a constraint for them. Therefore studies focusing on small low-growth or self-employer businesses seem unsatisfactory.

Second, it is important to separate demand from supply effects. The reason is that low credit volumes might reflect the absence of good investment opportunities, so that any positive correlation between credit volumes and firm growth might be driven by loan demand rather than supply. Studies such as Amiti and Weinstein (2013) and Chodorow-Reich (2014) construct matched bank-firm level data to separate firm-specific variation in investment opportunities from bank-specific variation in credit supply. However, these data matches are usually only successful for relative large and old firms and relatively large banks. Since we are primarily interested in the effect of credit shocks on job creation at potentially high-growth startup firms, there is a clear need to supplement the evidence from these studies with a more comprehensive empirical approach.

We offer such a comprehensive approach by combining an instrumental variables strategy first developed in Wieland and Yang (2016) with data on firm dynamics from the confidential version of the Quarterly Census of Employment and Wages (QCEW) at the Bureau of Labor Statistics (BLS). Specifically, we plan to use data on loans at banks and their connected bank holding companies (BHCs) to measure changes in local loan supply that are driven by deleveraging at spatially-separate banks that are part of the same BHC. Our instrument allows us to construct county-level measures of credit supply rather than credit demand shocks. There are at least three unique features of using the combination of this data on local credit supply shocks with the

confidential QCEW data. First, the use of QCEW data with our instrument allows us to document the dynamic responses to credit supply shocks for the entire population of young firms, whether they are high-growth or not. This is particularly valuable as we are not aware of comparably comprehensive and credibly identified evidence. Second, our credit supply shock measures are constructed at a quarterly frequency and go back in time until the early 1980s. QCEW data is also available at the quarterly frequency and starts in 1990, giving us roughly 26 years at quarterly frequency. In other words, we will be able to fully document the dynamic responses of startup firm dynamics to credit shocks, both in the short and in the long run. In this context, we will also be able to analyze changes in the responsiveness of young startup firms to credit shocks over time. We are unaware of any study that can similarly combine quarterly data for such a long time horizon and is able to even look at time trends in responsiveness of young startups to credit supply shocks. Third, we will be able to quantify the influence of credit supply shocks to net job creation at startups and reallocation from entrant to incumbent firms and trace out through which mechanisms credit shocks influence local firm age and size distributions. In other words, our analysis will allow a fully integrated view from the "micro-level" startup dynamics to the "macro-level" net job creation at startups and young entrepreneurial firms.

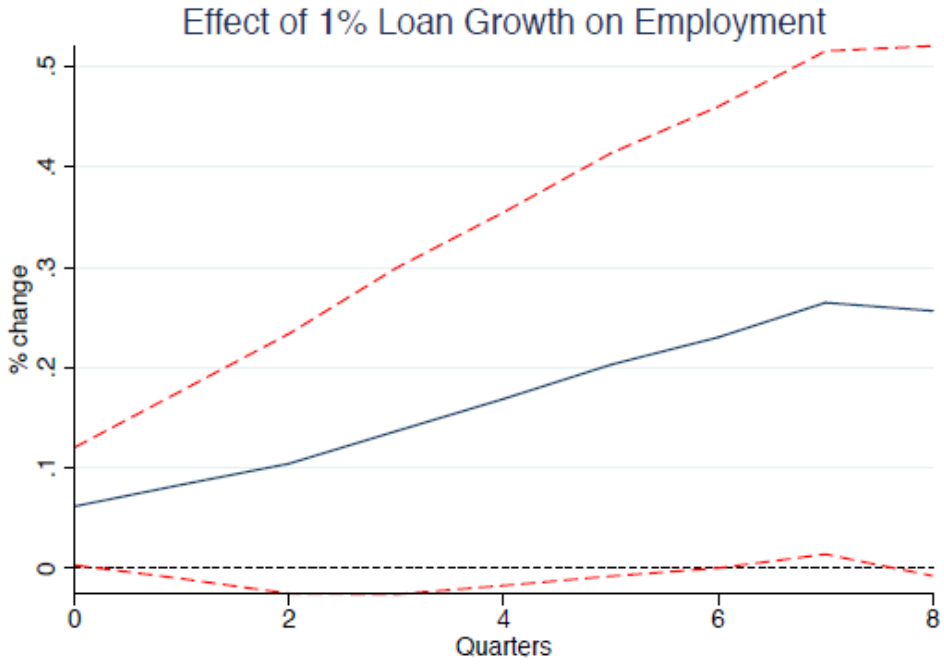


Figure 1 – Impulse response function of employment to an 1% increase in county loan growth instrumented by average deleveraging at BHC-member banks located elsewhere. Estimates are calculated from the local projection (7) and 95% confidence intervals are based on standard errors clustered at the county level.

Figure 1 documents preliminary evidence we obtained from analyzing the impact of our credit supply shocks on net employment creation, using the public-use version of the QCEW. As can be seen from the figure, the dynamic responses of county-level net employment creation are quantitatively large. This makes us confident that our shock measure contains sufficient information to be informative on the effects of credit shocks on startup firm dynamics.

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Current Affiliations

Assistant Professor, Department of Economics, University of California, San Diego	2013 to present
NBER Faculty Research Fellow (ME)	2014 to present

Education

University of California, Berkeley	Ph.D. Economics	May 2013
University of Oxford, U.K.	MPhil Economics (Distinction)	June 2008
University of Cambridge, U.K.	BA (Honors) Economics	June 2006

Publications

"The Optimal Inflation Rate in New Keynesian Models: Should Central Banks Raise Their Inflation Targets in Light of the ZLB?"
(with Olivier Coibion and Yuriy Gorodnichenko), *Review of Economic Studies*, 2012, 79(4), 1371-1406

"Abenomics: Preliminary Analysis and Outlook"
(with Joshua Hausman), *Brookings Papers on Economic Activity*, 2014, Spring, 1-63

"Overcoming the lost decades? Abenomics after three years"
(with Joshua Hausman), *Brookings Papers on Economic Activity*, forthcoming

Working Papers

"Are Negative Supply Shocks Expansionary at the Zero Lower Bound?"
revise and resubmit at *Journal of Political Economy*

"Fiscal Multipliers at the Zero Lower Bound: International Theory and Evidence."

"Financial Dampening" *(with Mu-Jeung Yang)*

"Supply-side policies in the Depression: Evidence from France" *(with Jeremie Cohen-Setton and Joshua Hausman)*

"Reallocation and Business Cycles" *(with Gabriel Chodorow-Reich)*

Available upon request

"Growth After a Financial Crisis: The U.S. in Spring 1933" *(with Joshua Hausman)*

Teaching

Econ 281	Financial Frictions (Topics)	2015
Econ 210C	Graduate Macroeconomics (Core)	2014, 2015
Econ 110B	Intermediate Macroeconomics	2015
Econ 110A	Intermediate Macroeconomics	2014

University Service

Junior Recruiting	2014, 2015
Senior Recruiting	2015

Refereeing

American Economic Journal: Macroeconomics, American Economic Journal: Policy, American Economic Review, Econometrica, Economica, European Economic Review, International Journal of Central Banking, Journal of Development Economics, Journal of Economic Theory, Journal of the European Economics Association, Journal of International Economics, Journal of Macroeconomics, Journal of Monetary Economics, Journal of Political Economy, National Science Foundation, Review of Economics and Statistics, Review of Economic Studies, The Economic Journal.

Invited Presentations and Workshops (includes scheduled)

2016 AeA
2015 UC Irvine, Cleveland Fed, Barcelona Summer Forum, SED, Bank of England, Bank of Japan, Brookings, Northwestern
2014 USC, UC San Diego, Brookings, NBER SI (ME), Stanford Summer Juku, Texas Monetary Conference
2013 IJCB conference, European Central Bank, Federal Reserve Bank of Boston, Chicago Booth (Macro), Harvard Business School,UC San Diego, UBC, LSE, LBS, CREI, Federal Reserve Board, Michigan, UCSC ECB
2012 Society for Economic Dynamics, NBER Summer Institute (EFCE), UC Berkeley (Finance, Macro, International), Midwest Macro (Fall), University of Washington (Seattle)
2010 Society for Economic Dynamics, NBER Summer Institute (ME, EFG)

Awards

2015	Undergraduate Teaching Award	UC San Diego, Economics Department
2012-2013	AFR PhD Grant	Luxembourg Research Foundation
2012	Graduate Division Summer Grant	UC Berkeley
2011-2012	Dean's Normative Time Fellowship	UC Berkeley
2010-2011	DAAD Doktorandenstipendium	German Academic Exchange Service
2010-2011	IIS Dissertation Fellowship (declined)	UC Berkeley
2009	IBER Dissertation Research Award	UC Berkeley
2009	Elliot J. Swan Prize	Economics Department, UC Berkeley
2008-2010	Department Fellowship	UC Berkeley
2008	Distinction	Economics Department, University of Oxford
2006-2008	ESRC Fellowship	University of Oxford
2006	Adam Smith Prize	Economics Department, University of Cambridge
2006	Senior Keller Prize	Jesus College, University of Cambridge
2005	Price Waterhouse Cooper Prize	Economics Department, University of Cambridge

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January 2015

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Employment

University of Washington, Seattle	Assistant Professor of Economics	September 2012 – present

Education

University of California, Berkeley	Ph.D.	May 2012	Economics
University of Chicago	Visiting Scholar to Prof. Chang-Tai Hsieh	2008-2010	Economics
University of Bonn	Diplom (Master equivalent)	2006	Economics
University of California, Berkeley	Visiting student	2004-05	Economics

Working Papers

- "Micro-Level Misallocation and Selection: Estimation and Aggregate Implications"
  (reject and resubmit, American Economic Journal: Macroeconomics)
- "Financial Dampening"
  with Johannes Wieland (UC San Diego) *(resubmitted, American Economic Review)*
- "Accounting for the New Gains from Trade Liberalization", with Chang-Tai Hsieh (Booth School of Business), Nick Li (University of Toronto) and Ralph Ossa (Booth School of Business) *(submitted, Quarterly Journal of Economics)*
- "Estimating Management Practice Complementarity between Decentralization and Performance Pay"
  with Bryan Hong (Ivey Business School) and Lorenz Kueng (Kellogg School of Management)
  (submitted, Management Science)
- "Firm Heterogeneity and Trade in a Distorted Gravity World"
- "Sources of Life-Cycle Firm Dynamics" (with Bryan Hong, Ivey Business School and Lorenz Kueng, Kellogg School of Management)
- "Business Strategy and the Management of Firms", (with Bryan Hong, Ivey Business School and Lorenz Kueng, Kellogg School of Management)
- "The Impact of Emerging Market Competition on Innovation and Business Strategy", with Lorenz Kueng (Kellogg School of Management) and Nick Li (University of Toronto)

Work in Progress

- "World Strategy Survey", with Nick Bloom (Stanford), Jan Rivkin (Harvard Business School), Raffaella Sadun (Harvard Business School)
- "How Important is Extensive Margin Misallocation to Understand Japan's Lost Decades?"
  with Kaoru Hosono (Gakushuin University), Miho Takizawa (Toyo University) and Johannes Wieland (UC San Diego)
- "News in Firm Dynamics", with Lorenz Kueng (Kellogg School of Management)
- "Quantifying the Gains from Job Reallocation in Market Economies", with Evgeny Yakovlev (New Economic School)
- "Reallocation in the Shadow of China's Rise", with Yong Lee (Stanford University)

Refereeing Activities

American Economic Review, American Economic Journal: Macroeconomics, Journal of International Economics, International Economic Review, Journal of Public Economic Theory

Experience

Teaching

2012	Fall	Econ 422	Finance, Capital and Investment	undergraduate
2013	Winter	Econ 422	Finance, Capital and Investment	undergraduate
2013	Winter	Econ 512	Topics in Advanced Macroeconomics	graduate
2014	Winter	Econ 422	Finance, Capital and Investment	undergraduate
2015	Winter	Econ 422	Finance, Capital and Investment	undergraduate
2015	Winter	Econ 426	Advanced Finance	undergraduate
2015	Spring	Econ 422	Finance, Capital and Investment	undergraduate
2016	Winter	Econ 422	Finance, Capital and Investment	undergraduate
2016	Spring	Econ 426	Advanced Finance	undergraduate
2016	Spring	Econ 528	Micro Heterogeneity in Macro	graduate

Other Experience

Summer 2008	International Monetary Fund, Washington, D.C.
Summer 2003	Handelsblatt News & Editing, Düsseldorf, Germany

References

Chang-Tai Hsieh
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Samuel S. Kortum
Department of Economics, Yale University
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Grants, Scholarships, and Fellowships

2014	Royalty Research Fund $ 38,000 for "News in Firm Dynamics"	University of Washington
2006-2010	Graduate Fellowship, Department of Economics	UC Berkeley
2006/2007	Shapiro Fellowship, IBER,	UC Berkeley
2006-2008	"European Recovery Program" – Graduate Fellowship	German Ministry of Economy & Technology and German National Academic Foundation
2006	Foreign Fellowship Korea	German National Academic Foundation
2004-2005	Foreign Fellowship USA	DAAD (German Academic Exchange Service)
2003-2006	Scholarship	efellows
2002-2008	Full Scholarship	Studienstiftung des dt. Volkes (German National Academic Foundation)

Other Information

Languages:	German (native), English (fluent), Korean (intermediate)
Software:	LaTeX, Matlab (including Dynare, KNITRO, Tomlab), Stata, AMPL
Citizenship:	German

Workshop Participations

2009	Institute for Computational Economics (ICE), University of Chicago
2008	Price Theory Summer Camp, University of Chicago
2006	2nd Lindau Meeting in Economic Sciences. Meeting and workshops with Nobel laureates in Economics.
2004	Student Conference on Law & Economics, German National Academic Foundation, Munich