

Innovation Policy Research Grant Proposal

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In my first year as a junior faculty member (2012-13), I plan to continue the research agenda on innovation and entrepreneurship that I have already begun. Below are short descriptions of several projects that are either underway (at various stages) or planned for the future. A few of these projects revolve around the theme of regulation and small business. Because burdensome regulatory environments may discourage entry and inhibit the growth of young, innovative firms, understanding the effects of firm regulation generally – beyond targeted innovation policy specifically – is an important component of understanding our innovation economy.

Distributional Effects of University Innovation

A long-standing concern associated with economic progress is that it may not help everyone equally. As new technologies and processes change what and how we produce, some workers may lose their jobs while others become more productive; innovation may substitute for some types of labor and complement others. Local areas may experience these dynamics as much as do nations as a whole, as locally developed innovation has been shown to have disproportionately local effects on industry growth. Sorting of workers across cities according to complementarities between skills and local innovation may further raise wage variance. Local governments frequently work to attract local innovation but know little about the consequences for various types of local workers. This paper uses data from the decennial census along with metro- and metro-industry level variation in innovation shocks from universities after the Bayh-Dole Act of 1980 to identify who benefits from local innovation in terms of employment and wages, and how much: high- versus low-skilled individuals, migrants versus “natives.”

Effects of Collaboration on Academic Productivity (joint with Nate Hilger)

Understanding the productivity of academics is central to unlocking the process of early stage innovation. Academics choose whether to produce research alone, receiving full credit for the work, or jointly with other researchers who bring complementary skills and knowledge to the project but may reduce credit awarded to each individual researcher. Incentives for collaboration are thus complex but exist despite our scant understanding of how it should be rewarded to maximize (quality adjusted) research output. This paper estimates the effect of academic collaboration on productivity using a new instrumental variables strategy. Because the convention in economics is to list authors' names in alphabetical order, researchers with surnames late in the alphabet are significantly less likely to collaborate. We measure effects on research output for those who are induced by their surname to collaborate more versus less. Data on academics' publications and coauthors are culled from their CVs.

Small Business Effects of the Massachusetts Health Reform¹

The effects on business dynamics is an often overlooked component of the economic effects of state-level regulation. One important type of regulation in the current policy landscape is health reform: the state of Massachusetts enacted comprehensive health reform in 2006, and President Obama signed into law a similar reform nationwide in 2010.² Both of these reforms contain particular stipulations regarding firms' responsibilities – which differ by firm size – to provide health insurance coverage and payment assistance to their employees, and both impose penalties for non-compliance. In acknowledgement of the strain many small businesses are under, the legal requirements of both the MA and national health reforms make allowances for small firms but may still have adverse effects on their survival and growth as well as on potential firms' entry. Using data through 2009 from the Census' Longitudinal Business Database (LBD) and a triple-difference methodology (employing firm size cutoffs and a synthetic control group), this paper aims to measure the effects of the MA health reform on the entry, exit, and employment growth of firms of various sizes. Because of the

¹ I previously studied the effects of rising health costs on small businesses using geographic variation in health insurance premium growth and the Kauffman Firm Survey. This study offers a larger sample and better identification using a distinct policy change.

² Particular provisions are to be phased in over several years.

similarities between the MA health reform and ObamaCare,³ the implementation of Massachusetts' reform can serve as a useful experiment for understanding what happened on a small scale and for predicting what may happen nationwide.

Recession Employment Adjustments and the Minimum Wage (joint with Jeff Clemens)

The employment effects of minimum wage requirements remain a matter of much dispute in the academic literature, and the importance of a job is only magnified during a recessionary period with substantial job loss. Meanwhile, in the recent Great Recession, the federal minimum wage rose in excess of 40%, from \$5.15 to \$7.25, an increase that could potentially exacerbate downward employment adjustments and/or time to re-employment in affected states. Small firms, which may have lower elasticities of substitution between labor and capital, may be less able to shed workers during a recession and more affected by minimum wage hikes.⁴ This paper uses employer-employee matched data from the Census' LEHD to specifically target firms and workers that are most likely to be affected by changes in minimum wage in order to analyze the recession dynamics of employment adjustments from a minimum wage increase. The detail and comprehensiveness of the data allow for precise estimation of effect heterogeneity across establishment sizes. Because the wage increases were only fully binding in states where state-specific minimum wage requirements were less than or equal to the federal minimum wage in 2007 (21), partially binding in states with minimum wages between \$5.15 and \$7.00 (18), and essentially unbinding in the remaining states (12), we are able to employ difference-in-difference and triple-difference methodologies to provide well-controlled estimates of the minimum wage effect.

Market Assessment of Innovation and Public Firm Incentives (joint with Shai Bernstein)

Firms that have recently undergone an IPO patent lower quality innovations, as measured by patent citations, than do similar firms that remained privately held due to market shocks. One hypothesis for observed differences in patenting behavior of newly-public versus still-private firms is the different incentives they face: public firms are subject to immediate market opinion. But even sophisticated investors may not be able adequately to assess patent quality at the time of patenting, and firms may be rewarded for producing many inventions, even if they are low quality. We use event study methodology and subsequent patent citations to assess investors' ability to evaluate and appropriately value technologies of varying complexity when patents are granted to public firms. Using differences in patenting behavior between otherwise comparable public and private firms, we assess the extent to which public firms may learn from prior market reactions to patents and adjust patenting accordingly.

Complementarities between Credit Sources for Young Firms (joint with Kelly Shue)

Because of the shortage of information on a young firm's business prospects, small changes in its observable characteristics may generate large changes in a lender's assessment of its credit-worthiness and, as a result, a large change in its access to various types of credit. Thus lenders subsequent to the first may assume due-diligence performed and firm quality reasonably high. Additionally, the firm's demand for debt may rise as the attainment of traditional financing enables it to consider undertaking further projects. Some forms of credit, on the other hand, may be obviated as firms gain access to liquid debt; trade credit – well-suited to firms facing significant asymmetric information problems – and credit card use may fall into this latter category. Using the Kauffman Firm Survey, which collects financial and other information for eight consecutive years on firms that begin operations in 2004, we explore the complementarities between different sources of credit. In addition to providing new, descriptive information on heterogeneity in the credit use of new firms, we identify the effect of increased access to traditional credit by exploiting a lender-side discontinuity in loan provision around a business credit score cutoff. Though firm quality is presumably continuous across the cutoff, access to some types of credit is likely to be discretely different. Effects on research and development, hiring, and financial and survival outcomes will be assessed.

³ More formally, ObamaCare was passed as the Patient Protection and Affordable Care Act (PPACA).

⁴ Franchises in particular are small firms that are likely to employ significant numbers of low wage workers.