

Michael J. Andrews

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Fields Research: Economic History, Innovation
Teaching: Economic History, Applied Microeconomics, Innovation

Professional Experience Postdoctoral Researcher, Northwestern University, since September 2017

Education Ph.D., Economics, University of Iowa, 2017
Dissertation: Fuel of Interest and Fire of Genius: Essays on the Economic History of Innovation
Committee: Nicolas Ziebarth (Chair), Joel Mokyr, Martin Gervais, Alice Schoonbroodt, Julia Garlick
B.A., Economics, University of Maryland, 2011
B.S., Supply Chain Management, University of Maryland, 2011

Fellowships, Grants & Awards NSF Doctoral Dissertation Improvement Grant #1661421, 2017
Kauffman Foundation Dissertation Fellowship in Entrepreneurship, 2016
University of Iowa Post-Comprehensive Research Summer Award, 2015

Teaching Experience Teaching Assistant, University of Iowa, 2012-2013, 2016
Principles of Microeconomics, Money and Banking
Head Teaching Assistant, University of Iowa, 2014-2015
Principles of Microeconomics

Conferences Illinois Economic Association, October 2017
Economic History Association Meetings, Poster, September 2017
10th Annual Searle Center/USPTO Conference on Innovation Economics, June 2017
NBER Development of the American Economy, "Egg Timer" Talk, July 2016
9th Annual Searle Center/USPTO Conference on Innovation Economics, June 2016
Kauffman Foundation Emerging Scholars Conference, February 2016
University of Iowa Alumni Conference, March 2015

Refereeing Economic Inquiry, Strategic Management Journal

Job Market Paper "The Role of Universities in Local Invention: Evidence from the Establishment of U.S. Colleges"
I exploit historical natural experiments to study how establishing a new college affects local invention. Throughout the nineteenth to the mid twentieth century, many new colleges were established in the U.S. I use data on the site selection decisions for a subset of these colleges to identify "losing finalist" locations that were strongly considered to become the site of a new college but were ultimately not

chosen for plausibly exogenous reasons. The losing finalists are very similar to the winning college counties along observable dimensions. Using the losing finalists as counterfactuals, I find that the establishment of a new college caused 33% more patents per year in college counties relative to the losing finalists. To determine the channels by which colleges increase patenting, I use a novel dataset of college yearbooks and individual-level census data to learn who the additional patents in college counties come from. A college's alumni account for about 10% of the additional patents, while faculty account for less than 1%. Knowledge spillovers to individuals unaffiliated with the college or living in the college county prior to the establishment of the new college also account for less than 1% of the additional patents. Migration is the primary channel by which colleges affect local invention, as controlling for county population accounts for 40-65% of the increase in patenting in college counties relative to the losing finalists. In spite of this, the presence of geographic spillovers suggests that colleges cause an overall net increase in patenting, although I find no evidence that colleges are better at promoting invention than other policies that lead to similar levels of urbanization.

Other papers

“Bar Talk: Informal Social Interactions, Alcohol Prohibition, and Invention”

To understand the importance of informal social interactions for invention, I exploit a historical policy that restricts one channel through which individuals interact. More specifically, I examine the effects of alcohol prohibition in the U.S. Prior to the enactment of state-wide or nationwide alcohol laws, each county determined its own alcohol policies. Thus, prohibition differentially treated counties depending on whether they were wet or dry prior to prohibition. I analyze three different prohibition episodes: the enactment of national prohibition, the imposition of prohibition at the state-level in the decades before national prohibition, and the removal of prohibition barriers in the 1930s. I consider several sample selection criteria, including utilizing data on county-level voting during prohibition referendums, to ensure that sample counties had consistent views on alcohol, in turn ensuring that changes are not driven by unobservable characteristics that also affect patenting behavior. Following national prohibition, previously wet counties had approximately 10% fewer patents per year. After prohibition at the state level, the estimated effect is even larger: previously wet counties have about 20% fewer patents per year relative to the dry counties. In both cases, the effect is largest in the first three years after the imposition of prohibition and rebounds thereafter. Consistent with the observed decrease in patenting being driven by a disruption of informal social interactions, the fraction of patents with multiple inventors falls, the diversity of patented ideas declines, and first-time inventors decrease their patenting more than serial inventors following prohibition. The patenting rate for men decreased more than that for women in previously wet counties. Removing prohibition appears to lead to a small increase in patenting, although the results are more mixed.

“Historical Changes in the Demographics of Inventors in the United States”, with Sarada and Nicolas Ziebarth

Who invents? This is a central question to understanding possible barriers to entry in the innovation process. To address it, we match the Annual Report of the Commissioner of Patents from 1870 to 1940 to the corresponding U.S. Federal Population Censuses. This matching procedure provides a rich set of demographic information on a comprehensive set of inventors. We first document that patentees over this seventy year period are more likely to be older, white, male and to be living in a state other than the one in which they were born. These patterns are very persistent over space and time. We then attempt to identify correlates of the demographics of patentees focusing on county-level economic and demographic characteristics. Beyond the most obvious, such as the fraction of a particular demographic group in that county, very little explains differences in the demographics of inventors across counties. We then examine two historical institutions that differentially affected particular demographic groups. For blacks, we consider historically black colleges and universities (HBCUs) and for women, state-level extension of the franchise. We find some evidence that HBCUs differentially increased black patenting rates while the extension of the franchise did not seem to have an effect for the representation of women amongst inventors.

“Comparing Historical Patent Datasets”

I compare the strengths and weaknesses of four historical patent datasets and compare the suitability of each for use in economic research. I show first that a number of historical sources exist that are nearly as complete as are data on contemporary patenting. Second, I describe in detail differences across the

datasets in terms of patent and inventor information included, reliability of provided information, and potential sample selection issues. Third, I show that while there are some differences across datasets, overall they paint a remarkably consistent picture of invention in the historical United States.

“Two Ways to the Top: Patent Races with Multiple Innovation Technologies”

I build a duopoly model in which firms compete on a quality ladder. The only payoff-relevant state variable is the number of steps, or gap, between firms on the ladder. At each stage, each firm decides how much R&D effort to exert as well as which of two “innovation technologies” to use. A “gap-dependent innovation technology” has a high probability of success, but the cost for the follower increases as it falls more steps behind the leader. A “gap-independent innovation technology” has a lower probability of success, but the cost does not depend on the gap between firms. Thus, when the gap becomes sufficiently large, the follower switches to use the gap-independent innovation technology. If the follower has a single success using either innovation technology, it leapfrogs the leader. When only the gap-dependent innovation technology is available, the equilibrium exhibits familiar escape competition and discouragement effects: both firms exert the highest effort when the gap is small and lower effort when the gap is large. When both innovation technologies are available, changing costs in one state trickle down and affect firms’ choices in other states in nontrivial ways. For instance, reducing the cost of the gap-independent innovation technology increases the follower’s effort when the gap is large but decreases effort when the gap is small because it is less costly for followers to fall far behind and less profitable for leaders to move far ahead. I show that this decrease in effort when the gap is small can be sufficiently large to lower the overall expected arrival rate of successes. Other comparative static results are illustrated with numerical examples.

Languages

English (fluent)

References

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