

KEVIN A. BRYAN

<http://www.kellogg.northwestern.edu/faculty/bryan/>

900 N Lake Shore Dr, Apt 1905
Chicago, IL 60611
541 206 0417
k-bryan@kellogg.northwestern.edu

FIELDS OF INTEREST

Primary: Innovation, Applied Microeconomic Theory. Secondary: Economic History

EDUCATION

	Northwestern - Kellogg School of Management	Evanston, IL
09-14	PhD, Managerial Economics and Competitive Strategy MS, Managerial Economics and Competitive Strategy	
	Virginia Commonwealth University	Richmond, VA
06-08	MS, Mathematics	
	Boston University	Boston, MA
05-06	MA, Economics	
02-05	BA, International Relations, Economics (<i>summa cum laude</i>)	

APPOINTMENTS

	Federal Reserve Bank of Richmond	Richmond, VA
07-08	Assistant Economist	
06-07	Research Associate	
	Dept of Commerce Foreign Commercial Service	Beijing, China
05	Research Intern	

PUBLICATIONS

	The Evolution of City Population Density in the United States (w/ P.-D. Sarte & B. Minton)
07	<i>FRB Richmond Economic Quarterly</i> , 93 (4)
	On the Evolution of Income Inequality in the United States (w/ L. Martinez)
08	<i>FRB Richmond Economic Quarterly</i> , 94 (2)
	Semiparametric Estimation of Land Price Gradients Using Large Data Sets (w/ P.-D. Sarte)
09	<i>FRB Richmond Economic Quarterly</i> , 95 (1)

WORKING PAPERS

R&D Policy and the Direction of Innovation [Job Market Paper]
The Direction of Innovation (w/ J. Lemus)
The Meaning of Invention in the Early Airplane Industry
Open Access Increases Commercialization of Medical Research (w/ Y. Ozcan)

WORK IN PROGRESS

How Does Open Access Increase Follow-up Invention? (w/ Y. Ozcan)
Multigraph Diffusion, with an Application to the One Child Policy

POPULAR WRITING

The Economic Ideas of Ronald Coase
VoxEU.org. 10 September 2013.
Residential Externalities (w/ P.-D. Sarte)
Richmond Fed Economic Brief. February 2009.
Jargon Alert: Arbitrage
Richmond Fed Region Focus. September 2007.
Personal research weblog A Fine Theorem (<http://afinetheorem.wordpress.com>)
250,000+ hits; discussed by *The Economist*, *Slate*, *Reuters*, *Forbes*, *The Browser*, etc.

	TEACHING
10	Competitive Strategy (MBA, Kellogg, teaching assistant for M. Mazzeo)
11	Game Theory (PhD, Kellogg, teaching assistant for F. Herold)
11-12	Corporate Turnarounds (MBA, Kellogg, teaching assistant for J. Shein)
11-13	Microeconomics (MBA, Kellogg, teaching assistant for M. Satterthwaite, W. Kets)
12-13	Analytical Approach to Uncertainty (EMBA, Kellogg, teaching assistant for N. al-Najjar)

CONSULTING

	Committee for Economic Development
12	Economic Adviser for "The Future of Taxpayer-Funded Research" (research presented before Congress on March 19, 2012)

Languages: English (native), Spanish (working), Mandarin Chinese (working)
Citizenship: USA

REFERENCES

Benjamin Jones

Dept. of Management & Strategy
Kellogg School of Management
Northwestern University
847-491-3177
(Main Advisor)

Joel Mokyr

Dept. of Economics
Dept. of History
Weinberg College of Arts and Sciences
Northwestern University
847-491-5693

Mark Satterthwaite

Dept. of Management & Strategy
Kellogg School of Management
Northwestern University
847-491-5482

David Besanko

Dept. of Management & Strategy
Kellogg School of Management
Northwestern University
847-467-6505

WORKING PAPER ABSTRACTS

R&D Policy and the Direction of Innovation

[Job Market Paper]

Is the private sector allocation of researchers across projects socially optimal? This question is particularly relevant when inventions today affect the nature of R&D opportunities in the future. I develop a theory of the direction of innovation which incorporates many forms of R&D sponsorship, including direct subsidies, patents, and tax credits. Unlike in classic patent race and sequential innovation models, firms sometimes deviate to projects which have a lower payoff than the social optimum. When this happens, policies that increase the payoff to R&D by a similar amount across projects can exacerbate inefficiency. In addition, this directional inefficiency generates a wedge between the conditions for path dependence in the firm equilibrium and planner optimum, leaving open a role for policy in responding to "lock-in". I apply these theoretical results to the United States nuclear power reactor research program, showing how mistakes in government policy reinforced private sector incentives to develop reactor types that scientists and historians have argued were suboptimal research targets.

The Direction of Innovation (w/ J. Lemus)

The efficient rate of inventive activity is well-studied in models where inventions follow each other in a sequence; less understood is efficiency when there is a network of inventions. We present a general and tractable model of the direction of innovation, and fully characterize social optima and firm equilibria. Even when firms exert the proper amount of total effort on R&D, competition can distort direction. This inefficiency can be explained by three interacting effects: firms can free ride on future research lines made possible by other firms, so they only maximize payoffs in excess of that free riding; firms do not fully account for the value of future research lines they make possible; and firms do not fully account for the time at which they make available future research lines. As an application, we show that strong patents for pioneer inventors cannot fully fix these inefficiencies. When multiple projects are available, broad pioneer patents instead can encourage firms to make technological achievements as fast as possible, rather than in the manner most conducive to future development.

The Meaning of Invention in the Early Airplane Industry

Though the airplane was invented in the United States in 1903, there was essentially no domestic industry by the time it became a commercially viable product in the mid-1910s. This "industrial reversal of fortune" is generally credited to policy mistakes such as lawsuits resulting from the wide breadth of the Wright Brothers' patent or a lack of government support for the infant American industry. An alternative explanation is proposed using a novel database of airplane-related microinventions: even though the Wright Brothers were first to accomplish the technological achievement of flight, America even in 1903 lagged Europe in many complementary technologies which would become critical to the commercial airplane. By limiting technology transfer from Europe to the United States, the Wrights' lawsuits exacerbated this difference.

Open Access Increases Commercialization of Medical Research (w/ Y. Ozcan)

We investigate whether open access affects the propensity of medical research to be used in a patent, a proxy for general commercialization, by matching all articles published in a set of 44 top medical journals since 2005 to all public U.S. patent applications since that year. Free online availability increases the expected number of patent citations by 35 to 46 percent, an estimate robust to potential sources of endogeneity. The effect is stronger still in more applied journals such as those focused on biotechnology. Conservative back-of-the-envelope calculations suggest that the social benefit of open access solely from its effect on novel applied products exceeds the cost of paying open access fees.