Lerner, J and S Stern (Eds) (2012) The Rate and Direction of Inventive Activity Revisited. Chicago and London: University of Chicago Press. 703 pages. ISBN 978-0226473031. £73.63 / $120.00 on Amazon.

The significance of The Rate and Direction of Inventive Activity Revisited, which is primarily a collection of papers presented at a recent NBER conference, is that it commemorates an earlier 1962 volume of conference papers on the same topic with nearly the same title, and therefore marks a 50 year milestone in scholarship in the economics of innovation and technological change.

In addition to the 13 scholarly papers that form the backbone of this book the reader will find ten shorter, more reflective pieces written by individuals who have helped shape the field since 1962. One question these reflective pieces try to answer is what exactly has been learned about the economics of innovation and technological change in the period 1962 and 2012. The views of Richard Nelson, who attended the original conference and contributed to the original volume, can be summarised as follows.

According to Nelson we are much surer today than we were in 1962 that technological advance is a fundamental source of long run productivity growth, and that the causes that give rise to technological advance are not purely serendipitous or random. Whereas scholarly work in the 1960s tended to focus on the individual firm as the prime mover in the account of how new inventions come into existence, there is now greater recognition of the importance of economic and social context in this process and particularly the role of context-shaping factors like the presence of university research activity and knowledge spillovers between firms. While patenting was once understood as the most important way that that firms go about appropriating returns to new knowledge, there is now a recognition that some industries make very light use of patenting and rely significantly on the appropriation strategies of secrecy and being first to market.

Neither the conference papers nor the reflective pieces in the 2012 book explicitly discuss how the approach itself to doing research in this field has changed. The economics of innovation and technological change was a broad church in terms of research method in 1962 as represented by the original Rate and Direction. This plurality has carried through to the 2012 book. A cursory comparison of the conference papers in the old and new volumes suggests that statistical analysis and formal theoretical modelling are in wider use today (see Table 1).

Table 1: Proportion of papers in new and old volumes of Rate and Direction making use of different research approaches at least once.

	1962	2012
Detailed case study	.35	.38
Inferential statistics	.04	.23
Descriptive statistics	.52	.62

Formal theoretical modelling	.13	.31
Analytical, argumentative or other	.52	.31

Some of the 13 papers in the volume are more original in the application of method than others. Josh Lerner and Peter Tufano use what they call 'counterfactual histories' to understand the benefits and consequences of specific financial services innovations. The problem that they try to remedy with counterfactual histories is that the effect of an innovation like the mutual fund is so diffuse and systemic that its economic impact is difficult to identify with econometrics. They therefore compare the actual course of events that followed the creation innovations like venture capital, mutual funds and securitization, with imagined, hypothetical courses of events that *might have taken place* in a world in which these innovations had not come into existence. This comparison allows the authors to conclude for example that the mutual fund created an investment opportunity with a risk profile that was attractive to small household investors especially, and that the welfare benefits that flowed from the uptake of the mutual fund would probably not have been realised under the three counterfactual histories they propose.

There are also examples of papers in the book that use more established statistical methods to answer policy-relevant questions using original data. Shulamit Kahn and Megan MacGarvie investigate whether the US Fulbright Foreign Student Program has been effective at promoting knowledge transfer between Fulbright scholars' home countries and the United States. The authors state that their study is one of the first formal evaluations of the impact of the Fulbright program since the Program began in 1946. The authors use data on 488 individuals who graduated from science and engineering PhD programs at US universities between 1993 and 2005. Half were Fulbright fellows and the other half were individuals selected to match the characteristics of the Fulbrights (country of origin, gender, university, research field) as closely as possible. Measuring knowledge transfer as the number of publications the PhD graduates wrote with home country authors, the authors find that Fulbrights produce 120 percent more publications with home country authors than their non-Fulbright counterparts.

There are also examples of detailed historical case study research in this volume. Petra Moser and Paul W. Rhode use this approach to address the question of whether intellectual property rights lead to more inventive activity or just more patenting of ideas that already exist, a kind of rent-seeking. They consider the case of American rose breeding in the early 1900s. According to the authors, the 1930 Plant Protection Act made it possible for companies and individuals to patent living organisms for the first time. Predictably, patenting activity in rose varieties shot up after the Act. But by comparing patent counts with the number of new rose varieties that hobbyist breeders registered with the American Rose Society, the authors are able to conclude that rose breeding activity did not increase. They find that the share of new rose varieties registered by US breeders actually declined after the Act.

Many of the papers in this volume read like works in progress. They can be repetitive, over-length, and place too great a burden on the reader to extract the main argument or finding. More broadly, this particular collection of papers does not deal

as squarely as it could with the issues that a comprehensive theory of inventive activity might one day be useful for addressing, issues like energy security, human health and climate change. This narrows the audience that would be interested in the book. On the other hand, the rich cross section of research method that the book brings to bear on enduring questions in the economics of innovation and technological change may make it appealing to a broad audience of researchers, particularly those willing to consider it in contrast to the original 1962 book.

References

Groves, HM (Ed) (1962) The Rate and Direction of Inventive Activity: Economic and Social Factors. A Report of the National Bureau for Economic Research. Princeton: Princeton University Press. Available to download at: http://www.nber.org/books/univ62-1.