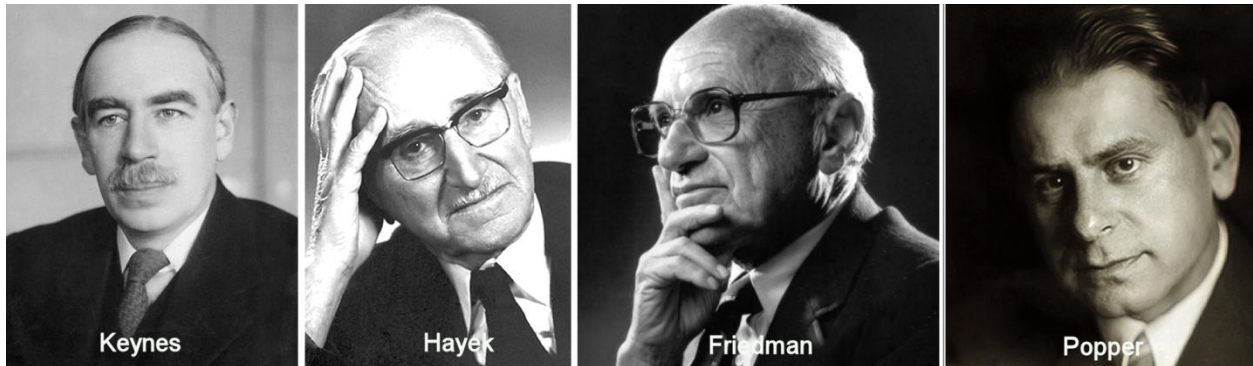


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Economics, Positive Science and the Quest for Predictive Performance

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Agenda

This paper tracks the evolution of the subject area of positive economics from the contributions of John Keynes, Friedrich Hayek, Milton Friedman, and Karl Popper. Economics is said to be a “positive science” that can be used to predict the consequences of “changes in circumstances.” Like other scientists, economists need to be self-conscious about their research methodology. Keynes, Friedman and Hayek all attacked the problem of applying scientific methodology to economics from different perspectives. Although in some aspects their results were similar, some key distinctions often contrasted their teachings. This paper addresses these distinctions and concludes that a researcher’s perspective, as they develop and test economic theories, is influenced by the view of how they expect to implement the theories. An advocate for one theory, therefore, may observe the same experiment and come to completely different conclusions than an advocate of another theory observing the same experiment.

When viewed as a body of a substantive hypothesis, a theory is found to have a predictive power. Only factual evidence can prove the theory right or wrong. The only relevant test of validity of a hypothesis is to compare its predictions with experience. Scientific theories must be prohibitive in that they forbid by implication particular findings. As such, a theory can be tested and falsified, but never logically verified. The distinction Popper made is it’s not appropriate to infer that a theory can be verified through testing. But rather, test results merely indicate that a theory wasn’t proven wrong and, as such, should be provisionally retained as the best available theory until it is finally discredited, or is superseded by a better theory. Since economics is said to be a science that is denied dramatic and direct evidence from conclusive experiments, the fact that theories can never be verified is particularly troublesome. It makes it hard to achieve a consensus for economic theories which tend to require economic metrics collected over time to support them. This renders the weeding-out of unsuccessful hypotheses slow and difficult. While economics may be a positive science, this paper contends it has inherent barriers caused by a scientific methodology that anticipates development of hypotheses that can predict future states, and be verified by controlled observations. The economy is a complex mechanism not suited to abstracting out aspects of the problem to support a focused investigation of potential remedies.

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Introduction

This paper analyzes the concept of “*positive economics*,” as it was described by Milton Friedman¹ in *The Methodology of Positive Economics*.² Friedman tailored a theory referred to as “positive science” by John Keynes³ in *The Scope and Method of Political Economy*,⁴ and makes the argument that economics can be a positive science. Keynes had synthesized two lines of economic thinking by incorporating both

¹ Milton Friedman (1912 – 2006) was an American economist and statistician at the University of Chicago and recipient of the Nobel Memorial Prize in Economic Sciences. One of the most influential economist of the 20th century, he is remembered for his consumption analysis and monetary theory where he advocated a free market economic system with very little Government intervention. Originally a Keynesian and supporter of the new deal that advocated Government intervention, his 1950’s reinterpretation of the Keynesian consumption function challenged the model and he became an advocate opposing Keynesian Government politics. In the 1960’s he promoted an alternate macroeconomic policy known as “monetarism,” which asserted “a natural state of unemployment” exists that cannot be changed by the Government. Impressively, he predicted that Keynesian economic policies in place at the time would cause high inflation and minimal growth, a condition later referred to as “stagflation.” Friedman claimed that monetary policy could have prevented the Great Depression and contended it was caused by monetary contraction attributed to poor policymaking at the Federal Reserve and the continuous crises of the banking system. In 1942 he supported a Keynesian taxation policy and helped to invent the current payroll withholding tax system in the United States. Although he opposed the existence of a Federal Reserve, Friedman argued that, given one exists; a steady small expansion of the money supply was the only wise policy and warned against large scale deficit spending in an attempt to control unemployment. Many of his economic theories on monetary policy, taxation, privatization, and deregulation were implemented by Governments in the 1960’s. In the end, Friedman was best known for reviving interest in the money supply as an indicator of the nominal value of economic output. In the 1980’s President Regan’s supply-side economic policies, referred to as “Reaganomics,” were based on Friedman’s libertarian ideas. The resulting tax cuts and reduction in the size of Government are said to have spurred savings and investments and improved the economy during Regan’s two administrations.

² Friedman, Milton (1966), *The Methodology of Positive Economics*, in *Essays in Positive Economics* (Chicago, IL.: Univ. of Chicago Press, 1966), pp. 3-16, 30-43.

³ John Maynard Keynes (1883 – 1946) was a British economist whose ideas have profoundly affected the theory and practice of modern macro economics. He was the most influential economist of the 20th century. In 1999 Time magazine included Keynes in their 100 most important influential people of the 20th century and noted “his radical ideas that governments should spend money they don’t have may have saved capitalism.” He advocated the use of fiscal and monetary measures to correct the negative effects of economic downturns and his economic analyses became known as the field of “Keynesian economics.” In the 1930’s, Keynes created a revolution in economic thinking by overturning neoclassical economic theories that held free markets would automatically provide full employment, as long as workers were flexible in their wage demands. Keynes contended that aggregate demand determined the overall level of economic activity, and that inadequate aggregate demand could lead to prolonged periods of high unemployment. Leading western economies adopted Keynesian economics following the outbreak of World War II and, by the 1960s, almost all capitalistic economies adopted its policy recommendations. Keynesian economics fell out of favor from 1979 until 2007, but have been contested by prominent philosophers like Friedrich von Hayek and Milton Friedman since the mid 1940s. Friedman emerged as a formidable critic of Keynesian economics from the mid-1950s and argued against large scale deficit spending. Attacks against Keynesian economics began to gain significant acceptance in the early 1970s as a world experienced a deep recession characterized by “stagflation,” which Friedman had previously predicted would be the result of Keynesian economics. As opponents were able to make a credible case that Keynesian models no longer reflected economic reality in the 1970’s, support waned and Governments began to develop policy around “monetarism” as espoused by Friedman. The Keynesian economic model was officially discarded by the British Government in 1979. Recently, however, the occurrence of the global financial crisis in 2007 caused resurgence in Keynesian principles that advocated Governments should use fiscal and monetary measures to correct the negative effects of economic recessions and depressions. Keynesian economics provided the underlying theoretical basis for economic policies undertaken in response to the crisis by Presidents George W. Bush and Barack Obama of the United States, and Prime Minister Gordon Brown of the United Kingdom, and other global leaders. Thus, it appears the pendulum is swinging away from Friedman back toward Keynes.

⁴ Keynes, John Neville (1897). *The Scope and Method of Political Economy*. (London: Macmillan, 1897).

inductive and deductive reasoning into his methodology. He distinguished between a positive science (referred to as a body of systematized knowledge concerning “*what is*”), a normative or regulative science (a body of systematized knowledge describing “*what ought to be*”), and art. In constructing the “distinct positive science” Keynes addressed how to decide whether a suggested hypothesis should be tentatively accepted.

Confusion between positive and normative economics is said to be inevitable as economics is the source of continuous controversy and frequent legislation. Positive economics, which deals with “*what is*,” not with “*what ought to be*,” is an objective science similar to the physical sciences. It provides a framework of research conclusions and theorems that enable us to predict the consequences of observed changes in economic conditions. The normative science of economics and the art of economics, which deal with “*what ought to be*,” are more subjective and fall within a theoretical construct that facilitate the creation of hypotheses on how to impact the economy. It gives the flexibility to analyze economic theories independent of policy⁵ so the factors that have the most impact (highest sensitivity) can be legislated into rules that will benefit the economy. Normative economics cannot be independent of positive economics since the implementation of any policy necessarily rests on the ability to predict the outcome of taking actions to control the economy.

Economics is an area where it is difficult to get it, but a consensus view of the correct economic policy is needed before it can be effectively implemented through legislation. Friedman points out that a consensus view on the correct policy depends less on the ability to describe a solution in a theoretical way (e.g., via normative economics), but more on “the progress of a positive economics yielding conclusions that are....widely accepted.”⁶ The reason for distinguishing positive from normative economics is precisely because it fosters agreement about economic policy.

Background

A summary of the recent history of macroeconomic theory⁷ had the majority of economists in the 1950's and 1960's converging on a consensus view of macroeconomic fluctuations that downplayed the role of monetary factors.⁸ Much of this consensus reflected Keynes' seminal *The General Theory of Employment, Interest, and Prices*,⁹ which in the aftermath of the Great Depression, emphasized shortfalls in aggregate demand as the source of the Great Depression and the role of fiscal factors as possible remedies.¹⁰ In contrast, Friedman advocated a monetarist theory that attributed the Depression to poor monetary policy decisions and more generally contended the growth in the money supply was a key determinant of aggregate economic activity and, particularly, inflation.¹¹ Over time,

⁵ Id., Friedman (1966), p. 5, para. 3.

⁶ Id., Friedman (1966), p. 6, para. 3.

⁷ Mishkin, Frederic S. (2010). *Monetary Policy Strategy: Lessons from the Crisis*, prepared for the Graduate School of Business, Columbia University, and the National Bureau of Economic Research, December 2010, p. 6, para. 2.

⁸ Id., Mishkin (2010), p. 3, para. 3.

⁹ Keynes, J. M. (1936). *The General Theory of Employment, Interest and Money*. (London: Macmillan, reprinted 2007).

¹⁰ Id., Mishkin (2010), p. 3, para. 3.

¹¹ Id., Mishkin (2010), p. 3, para. 3.

Friedman's predictions that expansionary monetary policy in the 1960s would lead to high inflation and high interest rates,¹² would be proven true and he would become a major influence on the economics profession, with almost all economists eventually coming to agree with the Friedman's famous adage, "[i]nflation is always and everywhere a monetary phenomenon."¹³ In 2007, with the onset of the global financial crisis, there was a resurgence of Keynesian principles as Governments implemented fiscal and monetary measures to correct the negative effects of the repressed economy in an attempt to avoid a depression. Friedman published *The Methodology of Positive Economics* in 1966 just before the "stagflation" of the early 1970's, and the success of the resulting correction which was facilitated by increasing the money supply, would make his economic theories universally accepted. In spite of the return to Keynesian principles that occurred after the 2007 – 2009 recession, Friedman's influence is still significant. Mishkin (2009) identified nine basic scientific principles in place before the severe 2007 – 2009 recession.¹⁴ They were derived from theory and empirical evidence and guided thinking at most of the central banks.¹⁵ The first principle was Friedman's contention that inflation is always and everywhere a monetary phenomenon.¹⁶ Friedman also contended there is no long-term tradeoff between unemployment and the inflation rate, but rather, the economy would gravitate to a natural rate of unemployment in the long run no matter what the rate of inflation was.¹⁷

Positive Economics

With Friedman's background now established we can look into his concept of "positive economics." The ultimate goal of a positive science is to develop a theory that yields meaningful predictions about things not yet observed.¹⁸ Such theories are said to be a combination of two elements; a "language" element and a "body" element. The language element promotes systematic and organized methods of reasoning. The body of a substantive hypothesis permits abstracting out essential aspects of a complex problem for focused investigation.

When viewed within the language construct, a theory has no substantive content,¹⁹ but functions as a filing system for organizing research findings in such a way that it fosters an understanding of the material. Ray (2011) defined a similar "filing system" referred to as a Research Breakdown Structure (RBS) that provides a structural framework for managing research points that support hypotheses.²⁰ In an RBS diagram top-level research areas are defined by the boxes in the top layer of the diagram. As each area is researched more specific topics of interest are identified. Each box is decomposed by a

¹² Friedman, Milton (1968). The Role of Monetary Policy. *American Economic Review*, vol. 58, March 1968, pps 1-17.

¹³ Friedman, Milton (1963). *Inflation: Causes and Consequences*. (New York, NY: Asia Publishing House), p.17.

¹⁴ Mishkin, Frederic S. (2009). *Will Monetary Policy Become More of a Science?* in Deutsche Bundesbank conference proceedings, ed., *Monetary Policy Over Fifty Years: Experiences and Lessons* (London: Routledge), pp. 81-107.

¹⁵ Id., Mishkin (2010), p. 6, para. 2.

¹⁶ Id., Mishkin (2009), p. 2, para. 2.

¹⁷ Friedman, Milton (1968). The Role of Monetary Policy. *American Economic Review*, vol. 58 (March), pp. 1-17.

¹⁸ Id., Friedman (1966), p. 7, para. 2.

¹⁹ Id., Friedman (1966), p. 7, para. 3.

²⁰ Ray, J.S. (2011). *Planning the Research Dissertation Project*. Unpublished paper prepared for SMC University, Research Methods course, Zurich, Switzerland, March 27, 2011.

number of boxes below it until either each lower-level box is specific enough to be a standalone dissertation topic, or the researcher gets into topic items that are not interesting to them. After the topic level is attained, further decomposition will help define the structure of the research points that will support the logical development of the supporting arguments for the selected topic.²¹ When a research topic is finally selected, the boxes above it frame the topic and, as such, may have research points defined and mapped to them, via a Research Point Traceability Matrix (RPTM), that can be used to support arguments relative to the topic. Similarly, boxes below the selected topic can be thought of as research packages that will collect a number of research points that are drafted to support topic-related arguments that are allocated to the box.²² Clearly then, no matter what organizational method is utilized, the language aspect of a theory is beneficial and helps with "organizing empirical material and facilitating our understanding of it."²³

When viewed as a body of a substantive hypothesis, a theory is found to have a predictive power. Only factual evidence can prove the theory right or wrong.²⁴ The only relevant test of validity of a hypothesis is to compare its predictions with experience.²⁵ Friedman's conclusions coincide with those of Karl Popper who asserted scientific theories must be prohibitive in that they forbid by implication particular findings.²⁶ As such, a theory "can be tested and falsified, but never logically verified."²⁷ The distinction Popper²⁸ made is it's not appropriate to infer that a theory can be verified through testing.²⁹ But rather, test results merely indicate that a theory wasn't proven wrong and, as such, should be "provisionally retained as the best available theory until it is finally falsified....and/or is superseded by a better theory."³⁰ Friedman adopted Popper's interpretation when he said, "[f]actual evidence can never prove a hypothesis, it can only fail to disprove it."³¹

Since economics is said to be a science that is denied dramatic and direct evidence from conclusive experiments, the fact that theories can never be verified is particularly troublesome. It makes it hard to achieve a consensus for economic theories which tend to require economic metrics collected over time to support them. This renders the weeding-out of unsuccessful hypotheses slow and difficult.³² In addition, for an economic theory to be useful, it must be able to predict and not merely describe the

²¹ Id., Ray, J.S. (2011), p. 8, para. 1.

²² Id., Ray, J.S. (2011), p. 8, para. 1.

²³ Id., Friedman (1966), p. 7, para. 3.

²⁴ Id., Friedman (1966), p. 8, para. 2.

²⁵ Id., Friedman (1966), p. 9, para. 1.

²⁶ Thornton, S. (2009). Karl Popper, *The Stanford Encyclopedia of Philosophy (Summer 2009 Edition)*, Edward N. Zalta (ed.), viewed at: <http://plato.stanford.edu/archives/sum2009/entries/popper/>.

²⁷ Id., Thornton (2009), Chapter 3, para. 3.

²⁸ Sir Karl Raimund Popper (1902-1994), was an Austrian-born, British philosopher generally regarded as one of the greatest 20th century philosophers of science and especially noted for the scope of his intellectual influence. Popper viewed science as a struggle between competing theories. Every imperfect theory was thought to be a representation of reality that became preeminent by surviving the experimental scrutiny of scientists.

²⁹ Ray, J.S. (2011b). *Karl Popper and the Call for Academic Discipline*. Unpublished paper prepared for SMC University, Research Methods course, Zurich, Switzerland, April 4, 2011, p. 7, para. 4.

³⁰ Id., Thornton (2009), chapter 3, para. 3.

³¹ Id., Friedman (1966), p. 9, para. 1.

³² Id., Friedman (1966), p. 11, para. 1.

consequences of action.³³ If a particular control measure is implemented, such as increasing the money supply, then the economy must show improvement in ways anticipated by the theory. It is the predictive nature of economic theories that Friedman finds uniquely constraining. He was not alone in this respect. Frederick Hayek³⁴ created the model of an “economic man” to show how unlikely it was that economic decision makers could accurately predict future economic conditions,³⁵ which was the basis of the “equilibrium theory” he was discrediting.³⁶ When constructing and testing stages of economic hypotheses, the particular facts that enter each stage as input is said to be arbitrary in that it depends on the particular data that happened to be collected,³⁷ and the knowledge of the particular investigator; e.g., did the investigator’s background allow them to understand the significance of the observation? While economics may be a science, or even a positive science for that matter, it has inherent barriers to a scientific methodology that anticipates development of hypotheses that can predict future states and be verified by controlled observations. It is a complex mechanism not suited to abstracting out aspects of a problem to support a focused investigation of potential remedies.

Implications and Economic Issues

Confusion between descriptive accuracy and analytical relevance underlies criticisms of economic theory on the grounds that its assumptions are unrealistic.³⁸ But how do you obtain descriptive accuracy on a complex mechanism like the economy? Alexander (1951) noted that “economic phenomena are varied and complex, so any comprehensive theory of the business cycle that can apply closely to reality must be very complicated.”³⁹ Since we are dealing with a complex economy, modeling it with complete accuracy will never be achievable, and we’ll always be vulnerable to claims our theories have unrealistic assumptions. Ideally, we would hope to abstract out the essential aspects of a problem and merely model a subset of the whole economy based on relevance to a particular problem. But when we do this we immediately subject ourselves to claims our assumptions are unrealistic.

Marshall⁴⁰ tried to address the problem by varying assumptions from one end of the realism spectrum to another.⁴¹ At one end he assumed perfect competition, on the other secluded markets where direct competition “from afar” is shut out. Marshall contended the great majority of markets that economists

³³ Id., Friedman (1966), p. 12, para. 1.

³⁴ Friedrich August von Hayek (1899–1992) was an Austrian-born economist considered to be one of the most important economists and political philosophers of the twentieth century. Best known for his defense of free-market capitalism, Hayek’s work on how changing prices communicate signals that allow investors to coordinate their plans is widely regarded as an important achievement in economics. In 1974 Hayek shared the Nobel Memorial Prize in Economics for his pioneering work in the theory of money and economic fluctuations.

³⁵ Ray, J.S. (2010). *The Economic Man*. Unpublished paper prepared for SMC University, Management course, Zurich, Switzerland, April 15, 2010, p. 4, para. 2.

³⁶ Hayek, Friedrich August (1937). Economics and Knowledge. *Economica Journal*, New Series, vol. 4, no. 13, February 1937, pgs. 33-54.

³⁷ Id., Friedman (1966), p. 13, para. 2.

³⁸ Id., Friedman (1966), p. 33, para. 2.

³⁹ Alexander, S.S (1951). Issues of Business cycle Theory Raised by Mr. Hicks. *American Economic Review*, XLI (December, 1951), p. 872.

⁴⁰ As describe by Mill, J.S. (1929), in *Principles of Political Economy* (Ashley ed.; Longmans, Green & Co., 1929), p. 436.

⁴¹ Id., Friedman (1966), p. 34, para. 2.

have to study lie midway between these two boundaries. He was said to have taken the world as it is, constructed an engine (e.g., a model) to analyze it, but “not a photographic reproduction of it.”⁴² Friedman ultimately concluded that Marshall’s approach to modeling the economy lacked consistency and was influenced heavily by the particular problem being discussed.⁴³ He also thought it would be highly desirable to have a more general theory than Marshall’s to “facilitate determination of the range of circumstances under which the simpler theory can be regarded as a good enough approximation.”⁴⁴ Once again the complexity of the economy is limiting the usefulness of the theories attempting to model it. In the end, Friedman found Marshall’s model to be “incompetent to contribute to the analysis of a host of important problems: the one extreme is too narrow to be of great interest; the other, too broad to permit meaningful generalizations.”⁴⁵

Summary Conclusions and Recommendations

Economics is said to be a “positive science” that can be used to predict the consequences of “changes in circumstances.” Like other scientists, economists need to be self-conscious about their research methodology. The primary purpose of research is to improve the environment we live in. Economic research focuses on the problem of how to stand up an economy that can provide all workers a wage they can live on. The economy, however, is a complex mechanism that is difficult to analyze successfully which, according to Friedman, means being able to develop theories, take action to implement the underlying hypotheses, and anticipate the reaction of the economy through an accurate predictive model. There is certainly a need to determine “the limits of the various hypotheses that together constitute the existing economic theory.”⁴⁶ These abstract models and supporting descriptive materials must also be analyzed so criteria can be established for determining which model to use for particular types of problems.

Keynes, Friedman and Hayek all attacked the problem of applying scientific methodology to economics from different perspectives. Although in some aspects their results were similar, some key distinctions often contrasted their teachings. Hayek was opposed to any economic theory that required central planning, period. In *The Use of Knowledge in Society*,⁴⁷ Hayek questioned how knowledge is used to support economic decisions and pointed out that scientific knowledge collected by centralized planners is wholly inadequate since it does not have the capacity to consider local opportunity knowledge.⁴⁸ Keynes and Friedman, on the other hand, advocated use of centralized planning boards. Keynes considered centralized planning by the Government to be appropriate, while Friedman felt the economy should be controlled by an association of centralized bankers. So interestingly enough, as hypotheses are developed regarding control measures that can be taken on the economy, consideration must be

⁴² Id., Friedman (1966), p. 35, para. 1.

⁴³ Id., Friedman (1966), p. 36, para. 2.

⁴⁴ Id., Friedman (1966), p. 38, para. 1.

⁴⁵ Id., Friedman (1966), p. 39, para. 3.

⁴⁶ Id., Friedman (1966), p. 42, para. 2.

⁴⁷ Hayek, Friedrich A. (1945), *The Use of Knowledge in Society*, *The American Economic Review*, vol. 35, no. 4, September 1945, pps. 519-530.

⁴⁸ Id. Ray (2010), p. 3, para. 3.

given to how they will be implemented; e.g., by local planners, a centralized Government organization, or a centralized banking association. What Friedman may have been saying is your perspective (as you develop and test economic theories) is influenced by your view of how you expect to implement the theories. So if you advocate a centralized banking scheme, you may draw entirely different conclusions based on the same set of trends as someone would that believes in localized planning. Similarly, as you test these already differing theories, your perspective would likely influence how you interpret observations during testing. Ultimately, researchers all strive to be totally objective in development and test of theories. The way we attempt to obtain objectivity is to scrutinize the work of those that have put forth sound arguments, but may not have been completely objective. That seems to be what Friedman was doing in *The Methodology of Positive Economics*.