

Faith and Scepticism in Markets

Sveriges Riksbank Prize 2013

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The 2013 Sveriges Riksbank Prize in Economic Sciences, wrongly called the Nobel in Economics, has evoked much comment about the apparently contradictory perspectives of two of the winners, Eugene Fama and Robert Shiller. The third, and least known among the winners, Lars Hansen, has probably made the more lasting of contributions to science, if not economics.

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This year's Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel went, controversially, to three American economists for their empirical analysis of asset prices: Eugene Fama and Lars Peter Hansen (both University of Chicago), and Robert Shiller (Yale University).

What is controversial about the 2013 prize is probably best summarised in the tweet of Paul De Grauwe of the London School of Economics as reported in the *Financial Times*. "Nobel Prize for Fama who led millions to believe financial markets are efficient and for Shiller who showed opposite. What a contradiction" (Giugliano and Aglionby 2013).

There is, of course, a minor mistake in De Grauwe's tweet. There is no Nobel Prize for economists. Further, the Nobel family has always strongly opposed a prize in economics being named after Alfred Nobel. For example, on 11 October 2010, Peter Nobel – a descendant of Alfred Nobel – issued a statement where he criticised the prize on two grounds. "First, it is a deceptive utilisation of the institution of the Nobel Prize and what it represents. Second, the economics prize is biased, in the sense that it one-sidedly rewards Western economic research and theory" (Buzaglio 2010).

The Neo in the Classical

Peter Nobel is right on both accounts and what he refers to as "Western economic research and theory" is nothing but neo-classical economics. The American economist Thorstein Veblen coined the term neoclassical economics in a paper in 1900, although the origins of neoclassical economics go way back to the late 1800s. Neoclassical economics is based on the following three assumptions (Weintraub 2007):

(1) People have rational preferences among outcomes that can be identified and associated with a value.

(2) Individuals maximise utility and firms maximise profits.

(3) People act independently on the basis of full and relevant information.

What essentially differentiates neoclassical economics from the classical economics of the 1700s-1800s economists such as Adam Smith, David Ricardo, Karl Marx and the like is that while the former were concerned with values, the latter are concerned with prices. Indeed, in neoclassical economics, the words “value” and “price” are used to mean the same. Neoclassical economics “dominates microeconomics, and, together with Keynesian economics, forms the neoclassical synthesis which dominates mainstream economics today” (Clark 1998). Since the introduction of the prize in 1968 by the Sveriges Riksbank on its third centennial, almost all of the economics prizes have gone to neoclassical economists – mostly at the American universities – and the second winner was Paul Samuelson, one of the leaders of the postwar mathematization of economics and father of the neoclassical synthesis, which Joan Robinson of Cambridge University in 1962 famously called “bastardised Keynesianism”. The three winners of 2013 are no different.

Eugene Fama’s main contribution to neoclassical economics – consistent with the above assumptions and, hence, rationality – is the efficient market hypothesis. Although Fama formulated his version of the hypothesis in his PhD thesis at the University of Chicago in 1965 (Fama 1965a, b) and even Samuelson (1965) provided a proof for a version also about the same time, Harry Roberts (1967) coined the term in 1967 and many papers by others followed. Later, Fama (1970) published his highly influential review paper, “Efficient Capital Markets: A Review of Theory and Empirical Work”, which became a bible for many at most universities around the globe, at least, until the 1990s.

However, the origins of the hypothesis go back to 1900. In 1900, a French mathematician, Louis Bachelier (1900), published his PhD thesis – which Samuelson

came to know about in the early 1950s and started to circulate among the economists – on a theory of speculation. In this thesis, Bachelier laid down the mathematical and statistical groundwork for modern financial economics. Although Bachelier had never called them as such, two of the concepts among many that he developed – which were redeveloped by the uninformed others years later – were the concepts of “random walk” (used by Fama in his thesis) and “martingale” (used by Samuelson in his paper).

Random Walk and Martingale

Since a random walk is necessarily a martingale (but not the other way round), let me explain what a martingale is when applied to asset prices. Consider a stock traded in a market and suppose the stock pays no dividends for a while. The price of this stock is a martingale if, based on all information gathered up until the current time, the current price of the stock is equal to the expected value of its price at any time in the future. Put differently, based on all the information we have gathered up until now, we expect to make no money on this stock. If in this market all asset prices are martingales, then there is no way to beat that market because no matter what assets we buy and how much, our expectation based on the information we have is that we will make no money. If all asset prices are martingales and, therefore, we cannot predict the future, we better buy the market and see what happens.

Of course, one needs to be careful with what is meant by “information”.

The efficient market hypothesis comes in three “information” flavours: weak, semi-strong and strong. The weak form is modest. Under the weak form, current asset prices reflect the information contained in all past prices. This suggests that charts and technical analyses based on past prices alone cannot help predict future prices. The semi-strong form is a bit more ambitious. The semi-strong form states that current asset prices reflect the information contained not only in past prices but also in all publicly available information such as financial statements and news reports. This suggests that even

publicly available information cannot help predict future prices. The strong form is very aggressive. The strong form states that the current prices reflect all information, public or private (even insider information) and elevates the markets to a divine status. There is no way you can beat the markets and there cannot even be any asset price bubbles. No matter what the form, however, the conclusion is that the markets know best. They are omniscient, omnipotent and omnipresent. You should not intervene in the markets, not even regulate them.

Although the efficient market hypothesis had dominated much of academic thinking around the globe until the 1990s, it does not mean that no one questioned it. And this is where Hansen and Shiller enter the picture. Not so much Hansen, but more Shiller and, of course, there had been many others.

Shiller is best known for identifying the dot-com bubble that burst in 2000 and the housing bubble that burst in 2006. He was the godfather of the term “irrational exuberance” in 1995, although the term is incorrectly attributed to the then us Federal Reserve Bank Chairman Alan Greenspan, possibly because Greenspan popularised it. Shiller’s first bestseller book *Irrational Exuberance* on speculative bubbles was published in 2000 at the peak of the dot-com bubble. His next bestseller book with George Akerlof, *Animal Spirits: How Human Psychology Drives the Economy, and Why It Matters for Global Capitalism* was published two years after the onset of the ongoing global financial crisis in 2007 and argued, going back to Keynes’ insights about the human attitudes and ideas that guide economic action, that is, animal spirits. He is also a co-founder of the S&P/Case Shiller Index, which tracks the housing prices across the us.

In a recent interview with Shiller (*New York Times* 2013), the interviewer Jeff Sommer claimed the following.

The Nobel committee described Professor Shiller as a founder of the field of behavioural finance, an innovator in incorporating psychology into economics and a pioneering analyst of speculative bubbles in the stock and real estate markets.

Putting aside the fact that the committee that described Shiller as above could not

have been the Nobel committee – it must have been the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel Committee – it is wrong on at least one account.

If there is to be one founder of the field of behavioural finance, then it should be Keynes (1921 and 1937), although many other classical economists from Smith onwards can also be considered potential candidates. Nevertheless, Shiller's 1981 paper "Do Stock Prices Move Too Much To Be Justified by Subsequent Changes in Dividends?" was a defining moment in behavioural finance. Using annual data from 1871 to 1979 for Standard & Poor's Stock Price Index, Shiller argued, among other things, that stock prices in this period had been more volatile than would be expected if investors were strictly rational. Put differently, Shiller argued that the index price could not have been a martingale in this period, for otherwise he could not have obtained the results he did.

A Word of Caution

There goes the efficient market hypothesis out of the window, although not that quickly, despite that even Fama – together with Kenneth French – later developed a model in two papers (Fama and French 1992, 1993) where they showed that stock prices are somewhat predictable, at least, in the long run. Yet, even in 1998, after reviewing many works that had gone against market efficiency, Fama (1998) concluded the following. "Subjected to scrutiny, however, the evidence does not suggest that market efficiency should be abandoned."

One should not conclude from the above episode that Shiller is anti-market. Of course, he is not. If he were anti-market, could he be able to receive this year's Bank of Sweden Economic Sciences Prize in Memory of Alfred Nobel with the other two? As the economist Michael Roberts (2013) suggests in his blog, Shiller's solution to market problems is more markets. And Roberts is justified in making this observation. Shiller is a co-founder in 1999 of MacroMarkets LLC which designs and develops financial instruments that provide investment and risk management services. One of the offerings of MacroMarkets are instruments to bet

on the direction of home prices that started trading on the New York Stock Exchange and the "company hopes to create financial vehicles for hedging a wide variety of risks" (Benner 2009).

Abiding Contribution

Of the three winners of this year's Sveriges Riksbank Prize in Economic Sciences, Hansen is the least talked about, although amongst the three he has made the most important contribution to science (that is, to statistics/econometrics). He is the least talked about, because what he did is very difficult to communicate to non-academics. His generalised method of moments (GMM) is a simple yet very powerful tool to "estimate" non-linear models across many disciplines. True, he then employed his method to study financial asset prices and gave others the tool to conduct more studies along the same lines, but his contribution to science is permanent. He will be remembered for decades to come.

In his recent *New York Times* article, Shiller (2013) described Hansen as follows.

The conflict between the third winner, Professor Hansen, and me is less marked. In fact, he is well known for having rejected one form of the efficient markets model, in a famous paper with Kenneth Singleton, now at Stanford. Professor Hansen has developed a procedure, called the generalised method of moments, for testing rational-expectations models – models that encompass the efficient-markets model – and his method has led to the statistical rejection of many more of them. His sympathies still seem to be with rational expectations and efficient markets, though.

Shiller must be right. For otherwise, could Hansen be able to receive this year's Riksbank Prize?

My perception of the message of this year's Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel is as follows. "Don't lose faith in markets (Fama), but be a little sceptical about them (Shiller)."¹ And, I close with the following quotation from Peter Nobel's 11 October 2010 statement (Buzaglio 2010).

With no knowledge of economics, I have no opinions about the individual economics prize winners. But something must be wrong when all economics prizes except two were given to Western economists, whose research and conclusions are based on the course of

events there, and under their influence. I can imagine Alfred Nobel's sarcastic comments if he were able to hear about these prize winners. Above all else, he wanted his prizes to go to those who have been most beneficial to humankind, all of humankind!

NOTE

- 1 Steven Sherman, private communication.

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