

Housing Bubbles... and the Laboratory

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The anecdote is well known. Queen Elizabeth II was visiting the London School of Economics in November 2008 for the first time in her long reign. Professor Luis Garicano (a Spaniard who has just entered the political fray in Spain under a quasi-Friedmanite banner of 'there is no such thing as a free lunch') was charged with the task of explaining to Her Majesty the sudden severity of the credit crunch. The Queen then asked him, "Why did nobody see it coming?" and proceeded to remark that the effect had been "awful". It is not often that a British monarch voices an opinion on a substantive problem of the country but she was only echoing the feelings of most of her subjects: this time it was the economists, not the sovereign, who were parading with no clothes on.

The 2007-2010 crisis has thrown the economics profession into confusion. During the twenty years of the "Great Moderation" that preceded the crisis, high rates of growth coincided with consistently low inflation, so that central bankers, led by Alan Greenspan, were confident that they could keep recessions at bay by managing the interest rate and hence, the quantity of money. They sometimes had doubts: in 1996 Greenspan himself had sounded a warning about the "irrational exuberance in stock markets"—an unexpected remark from the lips of an Ayn Rand disciple; but he soon repented and went on to become an enthusiastic champion of the "Goldilocks Economy". Well-respected Nobel laureates held the same view. For example, [Robert Lucas](#) said in 2003 that macroeconomists "had solved the problem of depression prevention". Indeed Lucas, even as late as 2008, a few days after the collapse of Lehman Brothers, expressed scepticism about the likelihood of the American economy falling into recession.²

Greenspan, Lucas, and the other orthodox economists of the Chicago School based their confidence on the "efficient markets hypothesis" proposed by Eugene Fama, another Nobel Laureate. Fama's research of the late sixties and early seventies did not lead him to conclude that free markets were always efficient, but rather that they were *informationally* efficient, in that the current prices of stocks and property gathered all

the information there was to be had, and that it was a mistake for anyone to believe they knew better.³

This confidence in the information communicated by markets had four implications for central bankers: (1) that it is very hard to tell in advance what the price of assets should be or when such prices are running above their fundamental value; (2) that bubbles, if they exist, cannot be predicted; (3) that central bankers should not worry about bubbles nor try to prick them but should reduce themselves to controlling inflation and keeping the payments system in working order; and (4) that the only thing a central banker could do after the bubble burst was, in Greenspan's words, "mopping up", i.e., maintaining liquidity by acting as lenders of last resort, if necessary on the scale of Bernanke's and Paulson's money creation in the last months of the Bush presidency.⁴

That central banks should behave asymmetrically when confronted with large increases in the prices of classes of assets—do nothing before and mop up afterwards—has been hotly debated. On the one hand, there are those who insist that nobody can tell whether there is a bubble in the making since asset price increases might only reflect expectations of greater productivity. On the other hand, there are those who insist that the low interest rates favoured by central bankers to avoid recessions cause asset prices to rise artificially, since bonds and property vary inversely with the cost of money. Let us stop by both.

The *New Yorker* interview with Eugene Fama

I well remember meeting Eugene Fama at one of Karl Brunner's "Economic Analysis and Political Ideology Seminars" at Interlaken in Switzerland in the late 1970s. He was then and still is a supreme student of finance. He was also a vigorous man who climbed mountains at unbeatable speed, and he was renowned for his wicked humour that kept us on the ball during discussions. He still is just as sporting and says with a twinkle in his eye that he has chosen to live in California because he can go surfing all year round. In 2010, he gave an interview to John Cassidy of *The New Yorker* in which he showed himself to be the same independent-minded economist as in Switzerland all those years back.⁵ When asked the question that everyone was asking, whether the rational expectations theory had worked well in 2007-8, he answered:

I think it did quite well in this episode. Stock prices typically decline prior to, and in a state of recession. This was a particularly severe recession. Prices started to decline in advance of when people recognized that it was a recession and then continued to decline. There was nothing unusual about that. That was exactly what you would expect if markets were efficient.

This surprised John Cassidy, since most people lay the blame for the Great Recession on the malfunction of the financial system. On the contrary, the essence of Fama's thought on the late financial crisis and recession is that banks and shadow banks were not the cause but the victims of what happened in the economy. Asset prices started to fall because a recession had begun in the real economy. As to what caused the recession, he said that economists simply do not know what brings recessions:

We don't know what causes recessions. Now, I'm not a macroeconomist so I don't feel bad about that. (Laughs.) We've never known. Debates go on to this day about what

caused the Great Depression. Economics is not very good at explaining swings in economic activity.

Cassidy insisted. How could one say that the market functioned well when there was such a great amount of ill-judged investment? Fama replied: ill-judged...

... [a]fter the fact... There was enormous investment across the board: it wasn't just housing. Corporate investment was very high. All forms of investment were very high. What you are really saying is that somewhere in the world people were saving a lot—the Chinese, for example. They were providing capital to the rest of the world. The U.S. was consuming capital like it was going out of sight.

However, the sceptical interviewer went on, banks meted out subprime mortgages imprudently to unworthy clients. Fama replied:

You can blame subprime mortgages, but if you want to explain the decline in real estate prices you have to explain why they declined in places that didn't have subprime mortgages. It was a global phenomenon. Now, it took subprime down with it, but it took a lot of stuff down with it.

Cassidy was trying to make a larger point. The general opinion was that the new-fangled financial instruments invented in the last thirty or forty years (subprime mortgages, collateralized debt obligations, structured investment vehicles, credit default swaps and others), must have played a role in the disaster. Fama would have none of this. He went on to defend the financial innovations that public opinion has blamed for the Great Recession!

I wonder how many economists would argue that the world wasn't made a much better place by the financial development that occurred from 1980 onwards. The expansion of worldwide wealth—in developed countries, in emerging countries—all of that was facilitated, in my view, to a large extent, by the development of international markets and the way they allow saving to flow to investments, in its most productive uses. Even if you blame this episode on financial innovation, or whatever you want to blame, would that wipe out the previous thirty years of development?

See the EconTalk podcast episodes [Fama on Finance](#) and [Justin Fox on the Rationality of Markets](#) for more on these topics.

Fama was saying that even after the crash, one had to recognize that the innovative financial industry of the West had made huge contributions to the greater wealth and higher standard of living of the world; and he added that the financial failure brought about by the crisis originated in, or was magnified by, widespread and misguided government intervention. He certainly had a point there. Other authors, such as John A. Allison, have convincingly argued the same point.⁶ There seemed to be no rhyme or reason to the interventions by the U.S. government. Some banks were rescued at huge cost, others were allowed to fail. He mentioned the harm done by the "too big to fail" mantra and added that, "if it becomes the accepted norm that the government steps in every time things go bad, we've got a terrible adverse selection problem".

In sum, Fama concluded that he could imagine a bubble affecting a stock or even a local real estate market, but not the world as a whole. If the bubble could have been predicted "somebody should have made a lot of money betting on that, if you could identify it".

Economists who think there are bubbles

I have paid so much attention to Fama because his position on the power of the free market is so unyielding that it presents a useful contrast with what I shall say on a new approach to economic rationality: that associated with the experimental economics of yet another Nobel laureate, [Vernon L. Smith](#).

However, I must briefly mention two schools who admit the possibility of mistaken optimism in free markets. They both have a long pedigree and many followers. First is the Austrian school. All the luminaries of that school, [Ludwig von Mises](#), [F.A. Hayek](#), and their disciples, extending even to [Lionel Robbins](#) in his 1934 book on *The Great Depression*, analyzed booms and busts within the framework of [Knut Wicksell's](#) distinction between the nominal and the real interest rate. Artificial booms happened when the central bank created money at will to lower nominal interest rates and foster growth. The lower interest rates led to imprudent investments, which failed when the expected returns did not materialize. My point here is that for the Austrians, bubbles and artificial booms very much exist on the strength of a (much debated) theory to explain the economic cycle. For the Austrians it is central banks which are to blame for the ups and downs of the economic cycle. They fundamentally disagree with the view of Fama and the defenders of the efficient market hypothesis that economics does not have an explanation of the cycle. Curiously, their policy proposals as to what to do when a recession or even a depression finally strikes are the same as Fama's: to stand aside and let the economy be purged of the loss-making investments made in the cheap money period. As Fama told his interviewer:

The experiment we never ran is, suppose the government stepped aside and let these institutions fail. [...] *So you would have just let them...Let them all fail.* (Laughs)

Wow!

See the EconTalk podcast episodes [Shiller on Housing and Bubbles](#) and [Kling on Freddie and Fannie and the Recent History of the U.S. Housing Market](#) for more contrasting views on these topics.

The other school is the Keynesians. Their point of view is that the market is much too important to be left in the hands of economists—just like war in the hands of generals. Their latest recruit is Judge Richard Posner (*pace* [Gary Becker](#), his late co-blogger). In September, 2009 he wrote a shattering essay in *The New Republic* titled "How I Became a Keynesian"[7](#). Reading that piece gave me a feeling of *deja vu*. Posner was marshalling all the arguments of the Keynesian school that always left me dissatisfied when recounting them in class over the years. This piece and Posner's later book *A Failure of Capitalism: The Crisis of '08 and the Descent into Depression*[8](#) both deserve a future column when the economies of the world will have returned to normal. I will only make a few remarks now. The first thing to be realized is that [John Maynard Keynes'](#) book *The General Theory of Employment, Interest, and Money* was not at all about the

economic cycle as today's Keynesians seem to think, but about an economy falling into a situation of perpetual unemployment. Keynes was not addressing the question of booms and slumps but the strange fact that the British economy persistently and lamentably suffered a ten per cent rate of unemployment throughout the 1920s, even while the American economy was booming. He would not accept the explanation given him by Jacques Rueff that unemployment especially was due to real wages being kept too high by trade union action and high unemployment benefits, which to me is much more convincing.⁹ He preferred the explanation that it was the capricious "animal spirits" of private investors that caused the short booms and slumps along the equilibrium line of gloom and despondency. The solution for Keynes lay in large public investment, because at bottom he thought capitalists were irrational, politicians dumb, and only enlightened civil servants (like himself) were far-seeing enough to be trusted with saved funds.

While Keynes was writing the *General Theory* the Great Depression struck. When the book came out in 1936 he added a "Short note on the trade cycle" at the end and as an afterthought. When one reads that note, it becomes clear that Keynes was only groping for an explanation with the help of the analytical tools in the body of his tome and not quite getting it, even in his own terms. Again he blamed the instability of the expectations of private investors as to the future yield of capital goods. His prescription for slumps was even patchier than his diagnosis: they should be corrected by a mixture of work-sharing, increased public investment and raising the price level. Well, well! He concluded that,

... the right remedy for the trade cycle is not to be found for abolishing booms and thus keeping us permanently in a semi-slump; but in abolishing slumps and thus keeping us permanently in a quasi-boom.

With his discerning legal mind, Judge Posner should know better than to fall for this kind of mishmash.

Bubbles in experimental economics... and the real world

How do we decide who is right? Can there be bubbles in finance and housing, as so many economists and commentators have said, *contra* Fama? Must markets be shepherded by the state if disasters such as the one we have just gone through are to be avoided? The answers must be precise and well-researched.

The methods to evaluate the models we economists use are various and none fool-proof. First, we may use internal consistency, as I have just done when speaking of Posner and Keynes. Secondly, we may use historical evidence, as when we say that the 2008 crisis has refuted the belief that macroeconomists have solved the problem of depression prevention. Thirdly, we can use econometric models to test time correlations and possible causality, as when Fama says that the fact that stock and house prices typically decline prior to and during a state of recession is well corroborated. However, there is a fourth method that mainstream economists have tended to overlook, me included: the use of economics laboratories to design virtual markets where human reactions can be examined in defined environments.

It is shocking that the profession should have given so little attention to the experimental method of study and testing markets, when this branch of economics has been cultivated at least since the 1960s. It is for this form of enquiry that the Nobel Committee awarded Vernon Smith the 2002 Nobel Prize in economics "for having established laboratory experiments as a tool in empirical economic analysis, especially in the study of alternative market mechanisms".

To answer questions about the possibility of bubbles appearing and in what markets I claim that it would be inexcusable to pass over the new book by Steven D. Gjerstad and Vernon L. Smith, *Rethinking Housing Bubbles: The Role of Household and Bank Balance Sheets in Modeling Economic Cycles*¹⁰. They use the results of experiments in laboratories to check the rationality of the economic behaviour of individuals posited by economists. Let us see what laboratory experiments tell us.

The essence of the book is summed up in the second chapter, "Goods and Services Markets versus Assets Markets". At its head we find a quotation from a Bernanke interview on July 1st, 2005 (with real estate prices diving), on being asked whether a market-wide cave-in of house prices was possible.

It's a pretty unlikely possibility. We've never had a decline in house prices on a nationwide basis. So, what I think is more likely is that house prices will slow, maybe stabilize, might slow consumption spending a bit. I don't think it's gonna drive the economy too far from its full employment path, though...

In the *New Yorker* interview Fama denied that such price gyrations constituted an (irrational) bubble. Can it be the case that some markets do not function efficiently from an informational point of view as Fama believes?

Gjerstad and Smith propose that we make an exception for asset markets when positing the full rationality of dealers in all exchange activities. On the one hand, laboratory experiments show that, when dealing with nondurable consumption goods, markets clear even more easily than microeconomics textbooks say. On the other hand, however, it appears that asset markets do not function so efficiently as markets for non-durables, especially when the assets are long lived and their market value "may be influenced by the future price expectations of the participants". Under laboratory conditions one can observe bubbles forming when long lived assets are traded. This may explain why bubbles appear in stock exchanges and property markets in the real world. Experiments have modified our understanding of both kinds of markets—consumer nondurables and long lived assets.

Experimental markets for non-durable goods

As far back as in 1962, before computers were in use for these studies, paper, pencil and white-board games were set up to explore "open-outcry continuous double auctions" for consumer non-durables.¹¹ The book describes the result of an experiment run by Smith in that year, with twelve traders using the dollars they had been given to play or keep. Players cried out their bid and ask prices and trades were closed. A number of conclusions emerged for non-durable goods markets: (1) it was not necessary to have many buyers and sellers to reach a competitive equilibrium outcome; (2) traders might not be able to name, or be conscious of their reserve price but they revealed it by

dropping out of the auction; (3) traders did not need to have full and perfect information of market conditions for a stable equilibrium to be reached. Microeconomics textbooks turned out to be unnecessarily strict when they posed the condition of large (or infinite) numbers of traders and of perfect information for market-clearing equilibrium to be reached in non-durable goods. This lab experiment, and many others performed along the years, fundamentally changed our understanding of the competitive conditions necessary for stable equilibrium prices to appear. In fact, there was no need any longer to distinguish perfectly competitive from merely contestable markets.

Experimental markets for durable assets

Markets for long-lived assets turned out to perform quite differently from consumer goods markets. In these markets, items exchanged are not consumed by their first buyer and can be re-traded. They have long lives and their market values are influenced by future price expectations. Markets for long-lived assets turned out to perform quite differently from consumer goods markets. They have long lives and their market values are influenced by future price expectations. This is what makes them behave differently from markets for goods that are consumed once acquired.

As Gjerstad and Smith say, mainstream financial economists assume that markets function efficiently according to the rational expectations assumption, i.e., that current prices fully incorporate past and present information. To verify this assumption, simple experiments were carried out in the 1980s, which instead turned out to falsify it. In these experiments subjects were given the same total amount of cash and assets in varying proportions. The assets were not consumed on purchase but could be sold and resold during its lifetime. 'Fundamental values' were supplied by the experimenter on the basis of pre-defined dividends. It was observed in hundreds of replications by many scholars that public information about fundamental values¹² did not make prices converge on those values for quite long periods.

These experiments were used to see what institutional changes could be introduced to prevent bubbles. The introduction of short selling did not help, and margin selling made things worse. On the other hand, the introduction of futures markets, and of 'circuit breakers' in the form of maximum falls or rises per day, did help to bring prices back to fundamentals.

Gjerstad and Smith summarise shared characteristics of asset markets in the laboratory and the economy: (1) bubbles commonly turn up in experiments; (2) liquidity exacerbates price bubbles; and (3) trading volumes decline before asset bubbles burst.¹³ The authors conclude that:

Twenty-five years of experimental research on asset market bubbles show that under a wide variety of treatments, asset prices deviate substantially from those predicted by the rational expectations market model.

For more on black swans and fat-tailed distributions see the EconTalk podcast episodes [Taleb on Black Swans, Fragility, and Mistakes](#) and [Campbell Harvey on Randomness, Skill, and Investment Strategies](#).

To call these bubbles and their collapse "black swan" or "fat tail" accidents is to present them as low probability events, which is a mistake. The fact that they cannot be dated precisely does not make the probability of their occurring over a given period equal to zero. They are "positive feedback loops" which can be predicted to occur with a positive probability under definable institutional arrangements.

"Modifying the institutional arrangements of asset markets after careful experimental study to make them function better is a challenge economists should face without fail."

Gjerstad and Smith make many more contributions in their book than their analysis of bubbles in markets for long-lived assets. Their interpretation of the Great Depression, their reasons for holding that "housing market crashes bring recession but stock market crashes do not", the lessons they draw from economic crises outside the United States, their critique of the behavior of authorities during the Great Recession, their observation that deficit spending is a bad way out of a solvency crisis, and much more make fascinating reading. Modifying the institutional arrangements of asset markets after careful experimental study to make them function better is a challenge economists should face without fail.

Now, laboratory experiments do not necessarily translate into societal phenomena without fail. I am sure much work is needed to unravel real world instances with the help of the conclusions of laboratory experiments. But we must realize that

[a]lthough economists have now largely come to recognize these results, their implications for the aggregate economy have not been examined.

A careful study of this book and the more than fifty years of experiments recounted in it should be a required assignment for all macro and monetary economists.

Footnotes

[1.](#)

William Shakespeare's [Macbeth](#).

[2.](#)

Richard A. Posner, "Economists on the Defensive: Robert Lucas," *Atlantic*, August 8, 2009.

[3.](#)

This also meant that money managers and ordinary stock pickers could never know more than the market and could never beat it: unless they had inside information; or acted as long term investors like Warren Buffet does, based on an intimate knowledge of the companies concerned and becoming members of their boards.

[4.](#)

Ben Bernanke was the outstanding specialist of the Great Depression in the tradition of [Milton Friedman](#). He remembered that Friedman and Schwartz had underlined the mistake of the Fed in the early thirties in starving the banking system of funds. At a celebration in 2002 to mark Friedman's 90th birthday, Bernanke apologised on behalf of America's central bankers for deepening the Depression by not doing enough to save sound commercial banks, saying, "You're right, we did it. We're very sorry, but thanks to you, we won't do it again." Later, Anna Schwartz wrote that Bernanke was wrong in likening the 2008 Great Recession to the 1931-32 Great Depression; the 21st century crisis was a balance-sheet crisis, not a liquidity crisis. It now looks like Anna Schwartz was right.

[5.](#)

John Cassidy, "[Interview with Eugene Fama](#)". *New Yorker*, January 13, 2010. This was the second in a series of interviews with Chicago School economists after the financial crisis, titled "After the Blowup".

[6.](#)

John A. Allison, *The Financial Market and the Free Market Cure. How Destructive Banking Reform Is Killing the Economy*. McGraw Hill, New York, 2013.

[7.](#)

Richard A. Posner, "[How I Became a Keynesian](#)." *The New Republic*, September 23, 2009.

[8.](#)

Richard A. Posner, *A Failure of Capitalism: The Crisis of '08 and the Descent into Depression*. Harvard University Press, 2011.

[9.](#)

Jacques Rueff (1896-1978) published two articles on the causes of unemployment in 1925 and 1921, of which Keynes was well aware. Rueff there showed that unemployment was not due to insufficient aggregate demand but to high unemployment benefits and powerful trade unions not allowing the labor market to clear. "Les variations du chômage en Angleterre", *Revue Politique et Parlementaire*, 1925, volume 32, pages 425-437. "L'Assurance-chômage: cause du chômage permanent", *Revue d'Économie Politique*, 1931, volume 45, pages 211-251.

[10.](#)

Steven D. Gjerstad and Vernon L. Smith, *Rethinking Housing Bubbles: The Role of Household and Bank Balance Sheets in Modeling Economic Cycles*. Cambridge University Press, 2014.

[11.](#)

These 'laboratory' experiments are games where participants are allotted real dollars to spend or virtual assets to sell at auction. The experimenter defines the 'values' of the good for the different buyers and the 'costs' of the good for the sellers. The participants are paid the difference between these values and these costs respectively, and the price obtained in the trades agreed by open outcry. This process can now be automatized with the help of computers.

[12.](#)

Thus, the fundamental value of a declining asset with a life of, say, fifteen periods amounted to the discounted value of future dividends expected from that asset at each period.

[13.](#)

A characteristic of real housing markets appeared in these laboratory experiments: when the market was nearing its peak offer prices were not lowered but assets stayed unsold for longer experiments.