

Wanted: Economics. Dead or Alive?

The 2008 global financial crisis resulted in a number of casualties. In the eyes of many, one such casualty is economics itself. According to these critics, economics has failed dismally: it failed to prevent the crisis, it failed to predict the crisis, and it even contributed to causing the crisis. Glenn Boyle argues that proponents of such a view have much in common with medieval monarchs who removed the heads of those bearing unwelcome news, and that sensible commentary on economics has been the real victim of the crisis.¹

How healthy is the current state of economics? Not very – according to Paul Krugman, George Soros, and a host of lesser lights. Australian economist Steve Keen puts it thus:

Economics is extremely unhealthy at all levels, from introductory pedagogy to high research ... As the global economy enters what could well be the Second Great Depression, economic theory is as useless a guide to how the economy actually functions as it was in the late 1920s.²

Much of the criticism arising as a result of the global financial crisis has, unsurprisingly, zeroed in on financial economics. A particularly popular target for attack is the efficient markets hypothesis (EMH): the view that security prices reflect all available information. Here, the critics – such as Louis Uchitelle – are in no doubt that either the EMH is dead:

To put it bluntly, [the] efficient market hypothesis does not work. It never has. Markets are not self-correcting.³

or that it should be:

The incredibly inaccurate efficient market theory [caused] a lethally dangerous combination of asset bubbles, lax controls, pernicious incentives and wickedly complicated instruments [that] led to our current plight.⁴

Give a dog a bad name ...

But what specifically are the failings of the EMH that lead to such damning criticism?

Four appear to be central:

- Financial economists didn't *predict* the crisis, thereby 'proving' that markets can't be efficient in the way that economists believe.

¹ This article is an abridged version of the BNZ Annual Lecture, delivered in Christchurch on 1 July 2010.

² S Keen (2009) 'Why neoclassical economics is dead' (available at www.eastasiaforum.org/2009/05/30/why-neoclassical-economics-is-dead).

³ L Uchitelle (2010) 'Your money, their pockets' *New York Times* 22 April.

⁴ Jeremy Grantham quoted in J Nocera (2009) 'Poking holes in a theory on markets' *New York Times* 5 June.

- The collapse occurred too *quickly* for markets to be efficient.
- There was an obvious asset price *bubble*, which is incompatible with an efficient market.
- *Belief* in the EMH by traders and regulators created a false sense of security that allowed the crisis to occur.

Those who argue that a failure to predict the crisis disproves the EMH are simply confused, since a central insight of the EMH is that such events *should* be unpredictable. In a market where prices already reflect all existing information, only *new* information can change prices. But new information by definition is unpredictable, both in content and in timing. Ergo, price changes must also occur unpredictably – implying that no investor can consistently earn above-average returns, net of the costs of acquiring information. If financial economists as a group had announced in December 2007 that financial markets would collapse in nine months time and that they had sold all their securities and taken on as many short positions as possible and *then* the collapse had occurred just as predicted in September 2008, *that* would have constituted strong evidence against the EMH. But what actually happened was entirely consistent with the EMH.

Similarly, prices *should* respond quickly in a market that processes information efficiently: when a fire breaks out in the theatre, it's perfectly rational for everybody to head for the exits at once. A slow and gradual downturn – which is what the critics seem to think should happen in an efficient market – would in fact have been a strong indicator of market inefficiency.

The EMH does not imply that security prices are always 'right' in some fundamental sense, only that it's impossible to tell whether prices are right or wrong. If all available information is incorporated in prices, there cannot be any information left to determine whether prices are 'right' or 'wrong'. Any new information could confirm that prices are 'right' or indicate that they are 'wrong'; but because this information is unpredictable, it's impossible to tell beforehand which is the case.

Consequently, the formation of so-called asset price 'bubbles' is inconsistent with the EMH only to the extent that these are identifiable at the time they occur. While there were a number of commentators who regularly 'cried wolf' over many years prior to the 2008 crisis, few (if any) seem to have withdrawn from securities markets altogether – which, as Ray Ball points out, is the only reliable test of predictability.⁵ As Robert Lucas noted in *The Economist* on 8 August 2009, a central lesson of the crisis is the futility of attempting to find central bankers and regulators who can identify bubbles: such people are unlikely to exist in the first place, and would be unaffordable if they did.

... or barking mad?

The most serious charge against the EMH is that it helped cause the crisis. Did financial

⁵ R Ball (2009) 'The global financial crisis and the efficient market hypothesis: what have we learned?' *Journal of Applied Corporate Finance* 21 pp8-16.

market traders load up on risk and debt in the belief that an efficient market would give them early warning if they went too far? Did regulators sit on their hands secure in the knowledge that they could rely on an efficient market to do their job for them?

The answer to both questions is surely ‘no’ – if anything, the behaviour of both traders and regulators exhibited a *lack* of belief in the EMH. Traders have never subscribed to the EMH – after all, their principal *raison d’être* is to outperform the market. And in the years leading up to the 2008 crisis, some loaded up on risk and leverage in a self-defeating attempt to attain this objective. Nor did regulators behave as if they had even the remotest belief in the EMH. If they had, they would have looked very closely at the suspiciously good performance of Freddie Mac and Fannie Mae and at the leverage of Lehman and Bear Stearns. They would certainly have been crawling all over Bernie Madoff. But instead they behaved as though they believed consistently high, above-market returns were nothing at all to be sceptical about.

So the critics have got it the wrong way round. To the extent that there was indeed a link between the emergence of the crisis and belief in the EMH, the problem was *too little* belief (rather than too much). If traders had believed more in the EMH, they would have given up trying to beat the market and would have reduced their risk.⁶ If regulators had believed more in the EMH, they would have spotted, and taken action against, the high-risk and fraudulent strategies staring them in the face.

*$d\ln x^a/dx = a/x$!@#&**

The other favourite post-crisis whipping boy has focused on the supposedly excessive use of mathematics in economics in general, and in financial economics in particular. Such a view has long held sway in other business and social science disciplines – economics, they say, is fundamentally about the behaviour of people, and attempts to mathematically model human behaviour are motivated by ‘physics envy’, and so are deeply misguided.⁷

Yet these criticisms are themselves somewhat suspect. After all, the worlds of business, economics and finance are inherently numerical, whatever the advocates of stakeholder theory and triple-bottom-line accounting might try to tell us. Attempting to get by in these worlds without mathematics is like driving in the dark with the headlights off. And eschewing mathematics would seem to imply resorting to a purely literary form of exposition – perfectly adequate for writing novels and essays, but hardly up to the task of adequately capturing the details of increasingly complex financial systems.

Nevertheless, the mathematical sceptics claim to have been vindicated by the 2008 financial crisis – that this was due at least in part to an over-reliance on mathematical

⁶ During the BNZ Lecture, I was asked where ethics fitted into all of this. The obvious answer – which I was too slow-witted to think of at the time – is that belief in the EMH is about as ethical a stance as it’s possible to imagine in business, as it dissuades investment professionals from misleading clients about what the latter can reasonably expect to earn from their investments.

⁷ In my experience, the holding of such views is often associated with the lack of any expertise in even the most basic aspects of mathematics.

methods and models that over-simplified the real world and so overlooked what really mattered. Unfortunately for this view, the evidence suggests otherwise.

First, the picture that has emerged post-crisis of the internal organisation of banks and financial firms is not one of too much reliance on mathematics, but rather a mismatch between those using the mathematics and those making the asset-allocation decisions. All too often, it now transpires, the latter did not understand the models of the former – and hence were incapable of not only asking the right question, but also of recognising the right answer when it happened to be offered.⁸ In these circumstances, blaming the use of mathematics for bad decisionmaking is like blaming arithmetic for Enron, or history for World War II.

Second, the US Securities and Exchange Commission was alerted on three separate occasions to the impossibility of Bernie Madoff's claims (by an economist, no less). Unfortunately, the lawyer-dominated regulator was apparently unable to comprehend the mathematical arguments involved. As a result, Madoff was able to continue his fraudulent ways for many more years.

Third, a recent study by the Federal Atlanta Reserve finds that, among the group of subprime mortgage holders, mathematical aptitude was a very strong predictor of the likelihood of default.⁹ In particular, those in the bottom quintile of mathematical ability were three times more likely to default than those in the top quintile, even after controlling for differences in income, education, size of loan and other potentially important variables. This suggests that banks may want to supplement their usual loan screening devices with a simple maths test!

In all of these cases, the problem was not too much use of mathematics but too much ignorance of it. Rather than revealing an over-reliance on mathematics by the financial sector, the true lesson of the 2008 crisis is that many of its worst consequences could have been avoided if individuals, bankers and regulators had bothered to acquire a much greater understanding of mathematics.

Some are more equal than others

All disciplines periodically experience real (not just imaginary) crises. Some recent examples include:

Accounting: The Enron, WorldCom and Arthur Anderson collapses in the early years of the century constituted about as grave a crisis as could be imagined for accounting – the entire credibility of accounting numbers was called into question.

⁸ See, for example: F Salmon (2009) 'Recipe for disaster: the formula that killed Wall Street' *Wired* 23 February.

⁹ K Gerardi, L Goette and S Meier (2010) 'Financial literacy and subprime mortgage delinquency: evidence from a survey matched to administrative data' Atlanta Federal Reserve Working Paper 2010-10.

Volcanology: The left-hand picture in Figure 1 shows Mt St Helens (in the US) as it traditionally appeared; the right-hand picture shows what it looked like a few days before it erupted in May 1980. Despite the obvious ‘bubble’, volcanologists were unable to say exactly when, or even if, the volcano would erupt. As a result, 57 people died.

Physics: Andrew Lo and Mark Mueller (himself a physicist) point out that, in a strange irony, the week of 15 September 2008 saw not only the collapse of Lehman Brothers and AIG, but also the breakdown of the Large Hadron Collider.¹⁰ Repair required 14 months of 10,000 physicists working around the clock at huge expense.

What happened following these crises? Were there a series of government hearings, primarily dominated by the views of people with no expertise in the three disciplines? Was new legislation introduced covering the organisation and management of accounting firms, volcanology institutes and particle accelerators? Were compensation limits introduced for senior accountants/volcanologists/physicists? Did media commentators announce the death of these disciplines?

Such questions are clearly rhetorical. In each of the above three cases, the discipline’s ‘experts’ were left to get on with sorting things out themselves. An obvious explanation for the different treatment meted out to economics is that physics and volcanology are too complicated for the public to understand, while accounting is too boring. But as Lo and Mueller note, the complexity of the Hadron Collider, while immense, is nothing compared to that of a modern financial system. Another argument is that accounting, physics and volcanology can all be safely be left to their respective specialists, but economics is too important to be left to economists. If true, this places *greater* responsibility on economics commentators to know what they’re talking about – not less.

I have seen the enemy, and he is us

Ultimately, economists must take a large share of the blame for the demise of sensible commentary on economics. Too many seem all too happy to offer up regular forecasts of financial market variables such as exchange rates and short-term interest rates, despite a huge research literature indicating that changes in such variables are not predictable. Such economists need to learn some humility. Too many others seem all too happy to advocate significant government intervention in financial markets on the slightest pretence, despite a huge research literature indicating that such action inevitably has unintended consequences. Such economists need to learn some economics.

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Aleck: illustration follows (next page). We will need a different “before” pic (one taken from the same distance/perspective as the other pic) - Kathy will have a look for one but we may need you to find one if she can’t easily do so.

¹⁰ A Lo and M Mueller (2010) ‘WARNING: Physics envy may be hazardous to your wealth’, MIT working paper.



Figure 1