

# What Caused the 2008 Crisis & Will There be Another One?

8 March 2017

## **Introductory Remarks**

**Lord Sharkey**

**Director, New City Agenda**

Good morning, ladies and gentlemen, and welcome to this New City Agenda event with Professor Steve Keen, entitled 'What Caused the 2008 Crisis and Will there be Another One?' This is the third event in our series on economics and central banks. We are now 10 years on from the start of the financial crisis. Indeed, 10 years ago this week, the head of Goldman Sachs mortgage department made a presentation to the firm's risk committee stating that it was game over for the sub-prime lenders and Wall Street was highly vulnerable. However, outside of a few hedge funds and investment banks, most economists were oblivious.

In August 2007, as many of you may remember, the Bank of England said that the UK's banking system was much more resilient than in the past and that securitisation had reduced the risks to GDP growth. Andy Haldane has described the 2008 crisis as the economics profession's Michael Fish moment, in that it failed to forecast the hurricane which would engulf the world economy, damage growth, cause millions of job losses and lead to the taxpayer bailout of many large financial institutions.

But was the 2008 crisis really so unpredictable and could it happen again? To discuss these issues we are delighted to welcome Professor Steve Keen. Professor Keen has been described as an economist who swims against the tide of conventional wisdom; I am not clear how difficult that is with economics. He is the Head of the Economics, History and Politics at Kingston University; prior to this he was Professor of Economics and Finance at the University of Sydney, Western Australia. He was one of the handful of economists to realise that a serious economic crisis was imminent and he publically warned about it from as early as December 2005 and perhaps that helps to explain why he holds a UK exceptional talent visa for his residence here. So to discuss what caused the 2008 crisis and will there be another one, please welcome Professor Steve Keen.

# **What Caused the 2008 Crisis & Will There be Another One?**

**Professor Steve Keen**

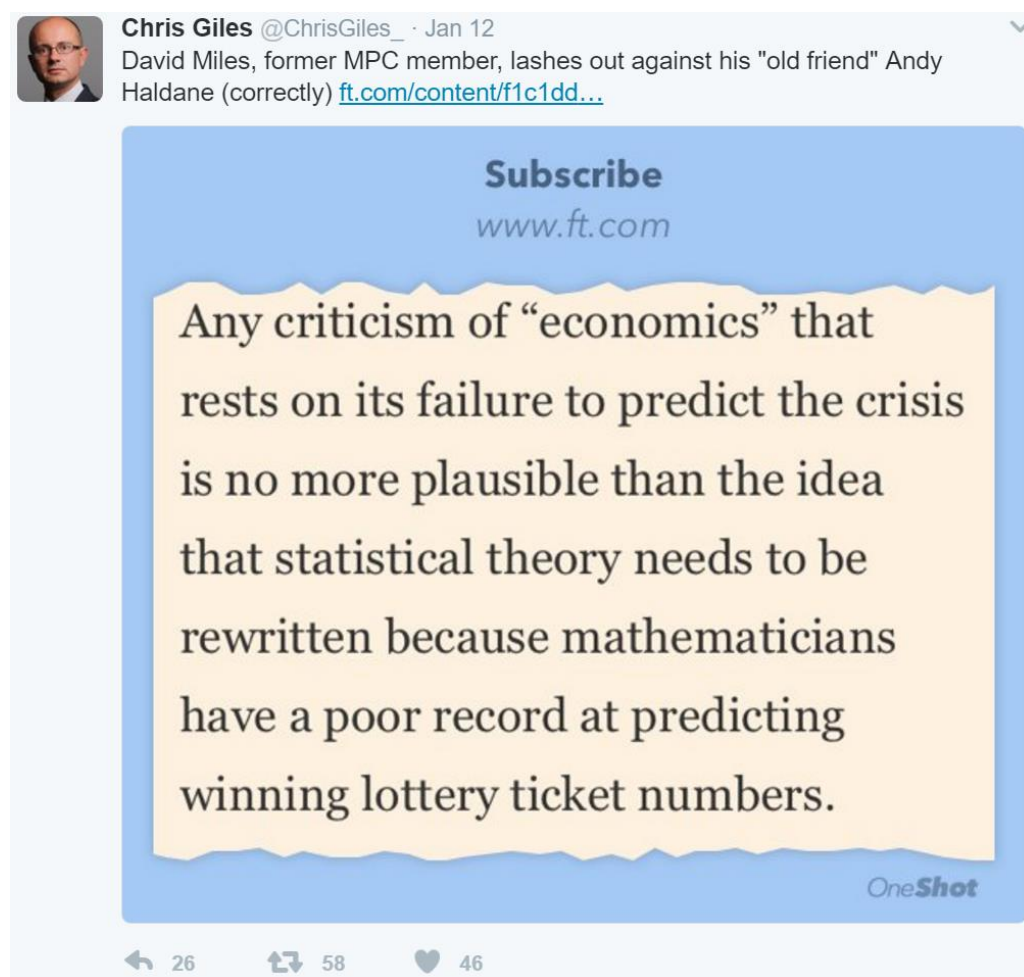
**Head of the School of Economics, History and Politics, Kingston University**

## **I. Introduction**

I am delighted to be here. One of the things I have come to appreciate about British culture since I moved here is the extent to which the British are willing to entertain ideas they do not necessarily agree with; so they can have a conversation like this at a venue like the House of Commons where people have come to hear ideas which are contrary to received wisdom. You might not agree with me but you will listen and encourage debate and that is as one remarkable mark in favour of British culture.

## **II. There is no Crisis in Economics?**

My main academic contribution, as some of you know, has been to find a way to explain how the financial crisis occurred. If you look at the conventional reaction to the crisis and the failure to anticipate it, this is a typical statement from David Miles, who was a member of the Monetary Policy Committee across the post-crisis period: that the crisis couldn't have been predicted. Andy Haldane says there is a crisis in economics and David Miles says there is not. His logic for saying so is that "any criticism of economics for failing to predict the crisis is like criticising mathematicians for not predicting the successful outcomes in lotto". The attitude that it was unpredictable was echoed just recently by a correspondent of an online newspaper and the same sort of argument is extremely common across economics.

**Figure 1: Chris Giles' tweet defending economics over not anticipating the 2008 crisis**

### III. Our Ptolemaic Economists

There is one sense in which this is true: it is in the same sense indeed that comets were once unpredictable. If you subscribed to the Ptolemaic theory of astronomy, then you assumed that the heavens were perfect and unchanging, and the earth was where change and decay occurred. That of course raises a little issue: if that is the case, what are comets? What would you call comets in that situation?

The answer was, they are a meteorological phenomenon; they had to be in the atmosphere because they were not perfect, they moved across the sky; they did not come back. That was the vision you would have got if you were being taught astronomy back then. Of course, if somebody criticised you because you did not predict the return of Halley's Comet, you would respond that they cannot be predicted because they are atmospheric phenomena.

**Figure 2: Comet as unpredictable meteorological phenomena, according to Ptolmaic Astronomers**



That is the why neoclassicals, who are the mainstream in economics, can't predict financial crises. They have models which exclude many things, but most importantly, they exclude credit; if you leave credit out, then of course you cannot predict financial crises.

Whereas there were non-mainstream economists using credit, who did predict it: Ann Pettifor, a local and a good friend, Wynne Godley who was probably the leading technical developer of arguments on this front, Nouriel Roubini who really used his feeling of history to talk about it. Dirk Bezemer provided a very good profile of many of the people who did in fact see the crisis coming (and that of course, includes me) in "No One Saw This Coming: Understanding Financial Crisis Through Accounting Models"<sup>1</sup>.

#### **IV. Crisis Inevitable Given Debt Trends**

The point being made by all these people was that a crisis was inevitable given the trends in credit. Writing in 1999 (and published in 2000), Wynne Godley said that 'If you look from the end of 1991, private expenditure has exceeded income throughout that whole period'. If you then take the projections that the Congressional Budget Office was making about GDP growth rate, the surpluses they expected at that stage and talk about what is going to happen to the trade account and see what that means in terms of the private sector, the only way you are going to get continued expansion in light of those expected trends, was if the private sector continued spending more than its income. Here is the punchline:

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<sup>1</sup> <http://mpira.ub.uni-muenchen.de/15892/>

“we do not believe this projection, the economy will not continue to grow, the projected surpluses will not be achieved, private sector spending will not continue to outstrip income and the growth of the private sector index will not accelerate. When these trends stop, GDP will fall.” (Godley and Wray 2000)

Now, where would you have read that? Obviously the leading journal on the topic, *Journal of Economic Issues*—which is a non-mainstream journal. Godley also published a crucial paper entitled “The Developing Recession in the United States” in the *Banca Nazionale del Lavoro Quarterly Review* (Godley 2001) you cannot get this stuff published in mainstream journals, which is why they can claim that they did not see this stuff in literature.

When I realised the crisis was coming, I thought that it was too close to it happening to allow for the lags in academic publishing, so I went into the blog world. I wrote a post entitled “Booming on Borrowed Money”<sup>2</sup> in May 2007, explaining why I was not cheering along everybody else with the Australian data and saying, ‘It is based on an unsustainable trend in debt which has to break at some point. You cannot predict precisely when, because so much depends upon the timing of individual decisions to borrow or individual realities of going bankrupt but if the debt ratio even stabilises, that will be enough to cause a crisis’.

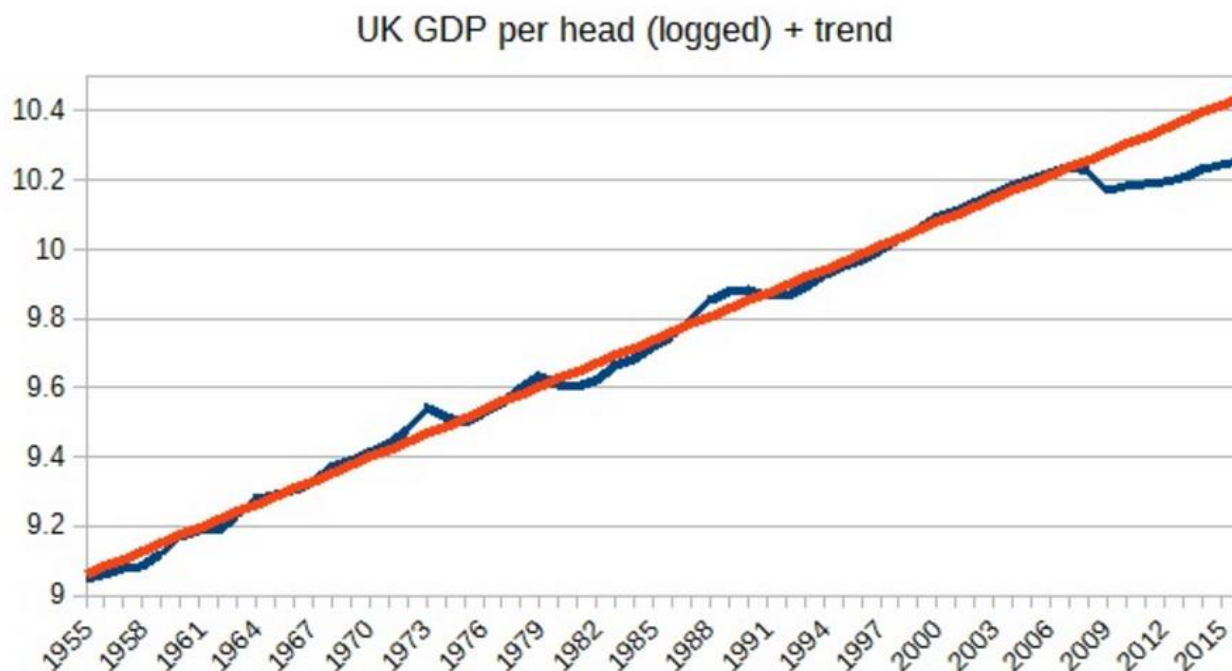
## **V. A Self-Fulfilling, Expectations-led Recession?**

Throughout this whole period, the mainstream ignored credit; not only before the crisis but even after it. People including David Miles, Nobel Laureate Paul Krugman, Simon Wren Lewis – and I quite like Simon, he is a good person. These people are sincere: they genuinely care about the economy and there is no way in which they are biased towards the financial sector in their decisions, it is just the way they think about the economy.

Simon is trying to understand and explain to his students why the economy has not really recovered, and he said, ‘We got stuck to ignoring finance but after the crisis, we have vindicated mainstream macro’. This is a claim that Krugman also makes, but he then shows this chart and that chart is a log chart, so a straight line as exponential growth of GDP per head, with a break that occurred in 2009 when, inexplicably, it had not returned back to trend again.

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<sup>2</sup> <http://www.debtdeflation.com/blogs/2007/04/30/debtwatch-may-2005-booming-on-borrowed-money/>

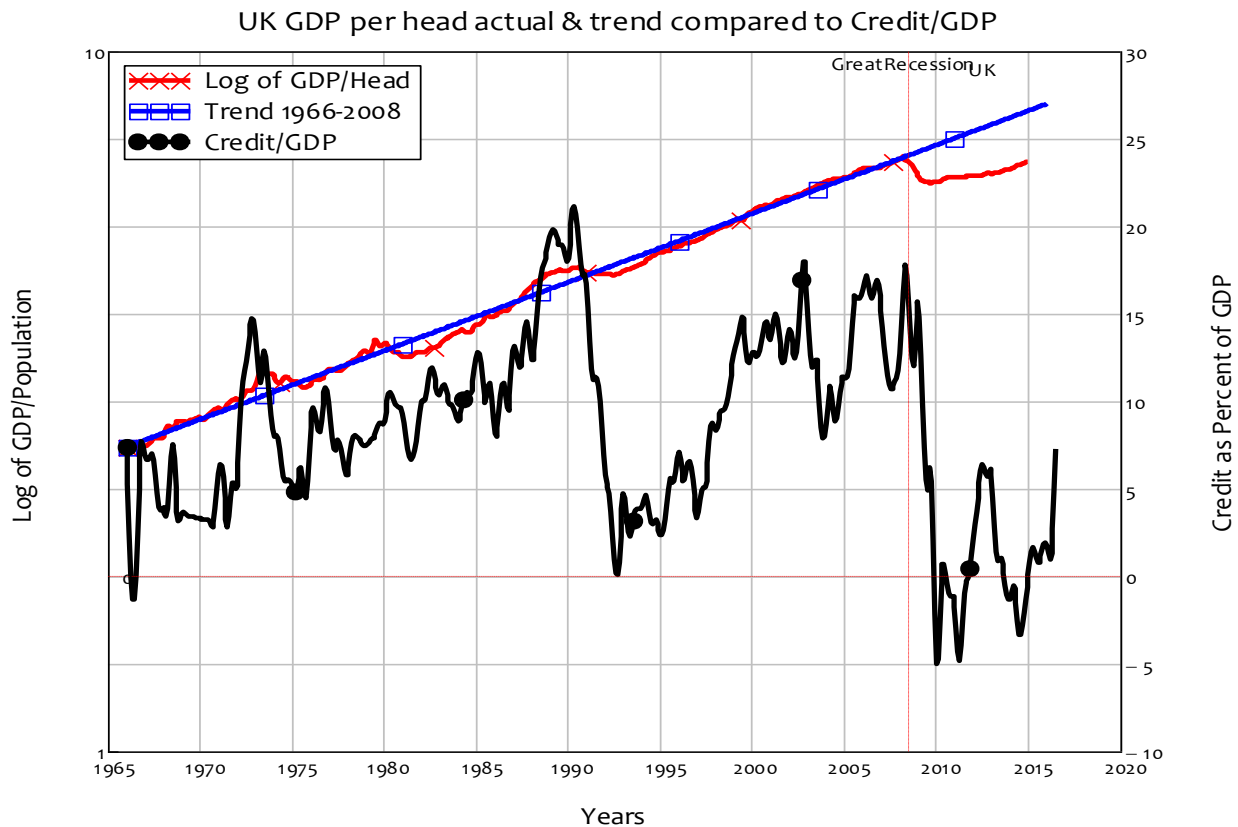
**Figure 3: The chart of trend and actual GDP per head from Simon Wren-Lewis' blog**

He goes through a whole set of supposes about what could have happened: *suppose* that firms and consumers believe the output gap is currently zero and it is not and they *erroneously* think that there is a change in potential and GDP growth, and *suppose* that employees price themselves into jobs and cut their wages and *suppose*...

Let's stop supposing and start taking credit seriously.

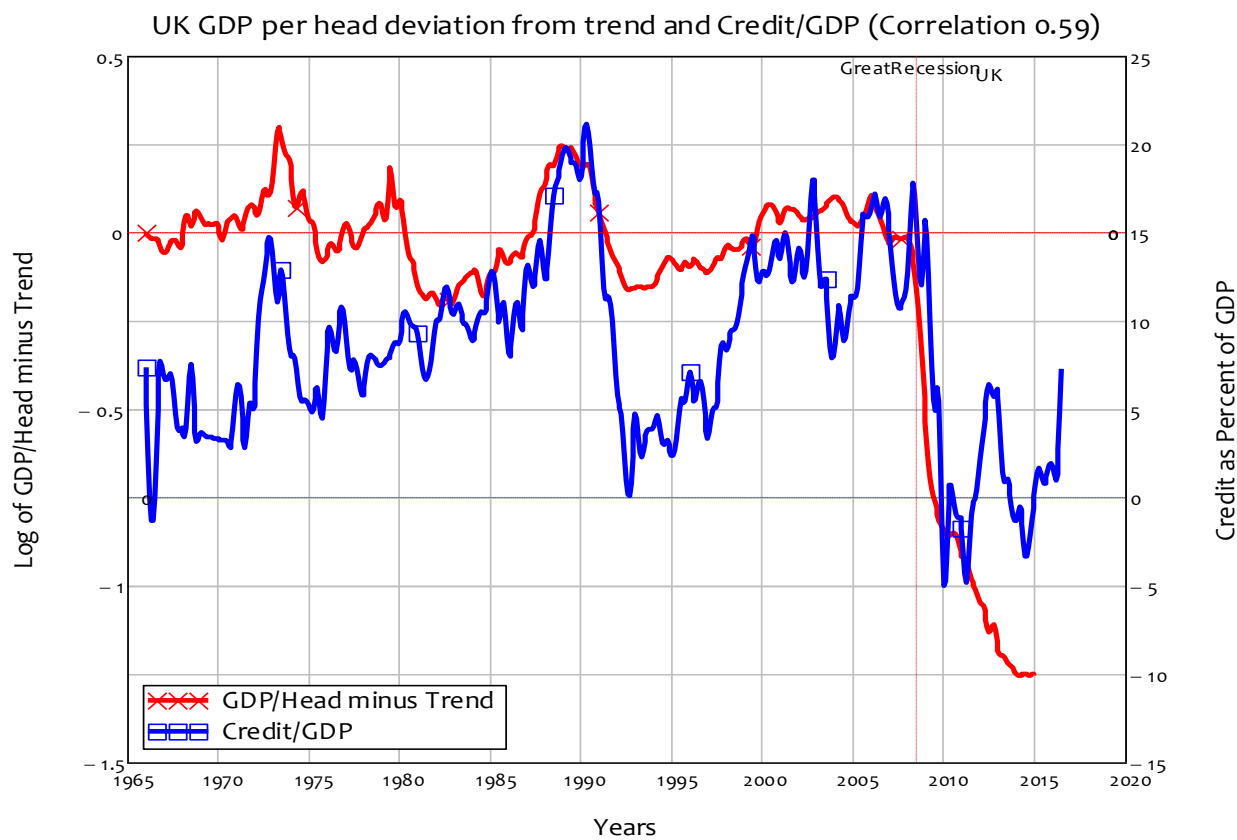
## VI. A Credit-led Recession & Subsequent Slump

What I want to show, using that same chart by Simon –is credit as a percentage of GDP.

**Figure 4: Credit as a percentage of GDP graphed against per capita GDP actual and trend**

If you eyeball that chart, you can see that the break in the trend that Simon is seeing, occurred with a break in trend with the level of credit as a percentage of GDP (credit I define as the change in private debt on an annual basis). You might also notice that the ups and downs of the red line compared to the blue, sort of correlate to the ups and downs of credit. So let's just do that as well (and, by the way, the overall point about the slump in credit is that from 1965 until the crisis in England, credit averaged 9.5% of GDP per year. Since the crisis, it has been 2.3% that is the level of fall on the demand coming out of credit).

When you take a look at that same chart, and I now go forward to looking at those deviations, the deviations are in the same direction as the change in credit. Let's now analyse that and then on the next chart, what I graph is the deviation between the trend and the actual level of per capita GDP and credit and that correlation goes back to 1965.

**Figure 5: Credit graphed against deviations of per capita GDP from trend**

The breakdown is probably because of the impact of QE on asset prices, meaning more credit is going into asset markets now than the goods market, but that is the trend that is being ignored by people like Simon, who are very sincere, well-meaning, mainstream economists but they are failing to see it because they turn a blind eye to credit.

## VII. Turning a Blind Eye to Credit

If you look at their arguments for ignoring credit, this is pretty much a summary; “assets and liabilities so blah, blah, blah“. Frankly, that is all you get. Paul Krugman and others say, ‘Debt is money we owe to ourselves’<sup>3</sup> (somebody’s asset, another person’s liability, blah, blah, blah, we ignore credit’ and he goes on saying that rising debt could be a good sign.

He has a two-class model, patient versus impatient people, and says that maybe the impatient people have better ideas, so maybe more debt will mean more growth, because you transfer money from patient people who do not have good ideas to impatient people who do, and therefore you can ignore credit overall. He says debtors get there by spending more than they take in but creditors get there by spending less, so it is like a seesaw, one person goes up, the other goes down, the average height does not change, that is the vision they have

<sup>3</sup> <http://krugman.blogs.nytimes.com/2015/02/06/debt-is-money-we-owe-to-ourselves/>



Of course it is true that one person's asset is another person's liability, but it is not true that therefore credit does not matter; you have to think a bit more deeply than a simple dismissal of what you do not want to consider which, frankly, is all Krugman ever does.

## **VIII. What the Mainstream Cannot See**

### **1. The Bank of England**

The idea that you can ignore credit is only true if banks intermediate between savers and borrowers, it is not true if banks originate loans and again. One institution that I have a lot of time for, being in England, is the Bank of England. They may have missed the crisis back when it hit, but they have acknowledged that, and today there is a lot of really good research being done inside the Bank. They came out very bravely in 2014, with the article, 'Money Creation in the Modern Economy'<sup>4</sup> ().

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<sup>4</sup> <http://www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2014/qb14q1prereleasemoneycreation.pdf>

**Figure 6: The front page of the Bank of England paper on money creation**

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Quarterly Bulletin 2014 Q1

# Money creation in the modern economy

By Michael McLeay, Amar Radia and Ryland Thomas of the Bank's Monetary Analysis Directorate.<sup>(1)</sup>

- This article explains how the majority of money in the modern economy is created by commercial banks making loans.
- Money creation in practice differs from some popular misconceptions — banks do not act simply as intermediaries, lending out deposits that savers place with them, and nor do they 'multiply up' central bank money to create new loans and deposits.
- The amount of money created in the economy ultimately depends on the monetary policy of the central bank. In normal times, this is carried out by setting interest rates. The central bank can also affect the amount of money directly through purchasing assets or 'quantitative easing'.

Overview	
<p>In the modern economy, most money takes the form of bank deposits. But how those bank deposits are created is often misunderstood: the principal way is through commercial banks making loans. <b>Whenever a bank makes a loan, it simultaneously creates a matching deposit in the borrower's bank account, thereby creating new money.</b></p> <p>The reality of how money is created today differs from the description found in some economics textbooks:</p> <ul style="list-style-type: none"> <li>• Rather than banks receiving deposits when households save and then lending them out, bank lending creates deposits.</li> <li>• In normal times, the central bank does not fix the amount of money in circulation, nor is central bank money 'multiplied up' into more loans and deposits.</li> </ul>	<p>low and stable inflation. In normal times, the Bank of England implements monetary policy by setting the interest rate on central bank reserves. This then influences a range of interest rates in the economy, including those on bank loans.</p> <p>In exceptional circumstances, when interest rates are at their effective lower bound, money creation and spending in the economy may still be too low to be consistent with the central bank's monetary policy objectives. One possible response is to undertake a series of asset purchases, or 'quantitative easing' (QE). QE is intended to boost the amount of money in the economy directly by purchasing assets, mainly from non-bank financial companies.</p> <p>QE initially increases the amount of bank deposits those companies hold (in place of the assets they sell). Those</p>

I had no idea this article was about to be published, although I knew some of the authors, and this article might as well have been an open letter to the economics profession. They could have started it saying, 'Dear Paul'. It says that the reality of how money is created is different from the description in some economic textbooks ("some" is a code word meaning "almost every last one of them"). Rather than banks receiving deposits, bank-lending creates deposits and the Central Bank does not fix the amount of money in circulation, nor is Central Bank money multiplied up into more loans than deposits. So the money multiplier model is false and banks are not intermediators; they are originators of loans.

## 2. Macroeconomics

What does that mean for macro? I am going to give you a little thought experiment, which is going to make you work a bit hard before your morning coffee. Imagine we divide the economy into three sectors; you can imagine consumption, investment, speculation – that would be fine – or three individual people also works. Consider three scenarios; one where you cannot borrow or lend money at all, one where banks intermediate between savers and borrowers, and one where banks originate loans. I am going to look at the mathematics of that and use a table where each row shows the spending and the recipients of the spending, when people are buying goods and services. The diagonal therefore shows aggregate spending, the off-diagonal shows aggregate income.

So if we take a look at this table, what you get when you have no borrowing or lending, each flow of dollars per year from sector to another is shown by lowercase letters, sector one spending *a* dollars per year in sector two and *b* dollars per year in sector three and the same for sector two and sector three.

*Figure 7: A table of intersectoral financial flows with no lending*

	Assets	Liabilities			Equity
	Loans	$S_1$	$S_2$	$S_3$	$B_E$
	Level (\$)	Flows (\$/Year)			
$S_1$		$-(a+b)$	<i>a</i>	<i>b</i>	
$S_2$		<i>c</i>	$-(c+d)$	<i>d</i>	
$S_3$		<i>e</i>	<i>f</i>	$-(e+f)$	
$B_E$					

So if you add up all those amounts of money and take the negative – that is the negative showing money going out of their bank accounts; that is aggregate expenditure,  $a+b+c+d+e+f$  – and if you add up the off-diagonal elements – that is aggregate income – they are necessarily the same. That is the idea about the identity of aggregate expenditure and aggregate income and that is consistent with Milton Friedman's monetarism. If you regard the turnover of that money as being the velocity of money times the stock of money, then that is aggregate expenditure equals aggregate income which is the velocity of money, times its circulation.

## 3. Loanable Funds

But if you look at loanable funds which is where one sector can borrow from another and the bank simply mediates and we are ignoring whatever the bank might make here, then you are going to have borrowing of *l* dollars per year from sector one to sector two, which sector one then spends on sector three; I bring in the rate of interest you have to pay, because if there is a flow of loans, there is already a stock of loans which you have to pay interest on, which is why sector two is lending to sector one in the first place.

**Figure 8: A table of intersectoral financial flows with “peer to peer” inter-sectoral lending**

	Assets	Liabilities			Equity
	Loans	$S_1$	$S_2$	$S_3$	$B_E$
	Level (\$)	Flows (\$/Year)			
$S_1$		$-(a+b+l+p.L)$	$a+p.L$	$b+l$	
$S_2$		$c$	$-(c+(d-l))$	$d-l$	
$S_3$		$e$	$f$	$-(e+f)$	
$B_E$					

So what you now have is this amount  $l$  being taken out of sector two's expenditure and transferred to sector one, meaning sector two is spending  $l$  dollars per year less on sector three ( $d$  might change as a result but it does not really matter). But what you get when you add up those columns, on the diagonal, you find the  $l$ s cancel but you are still left with the interest payments, so gross financial transactions are part of aggregate expenditure and you work out the off-diagonal and find they are also part of aggregate income. So even at that level, there is a small role turning up for the finance sector in aggregate expenditure, but credit cancels out because of loanable funds.

What about when you borrow from the banks, which is what I want to look at now. What we get is when sector one borrows  $l$  per year from the banking sector and therefore pays interest to the banking sector, so now I have assets and liabilities being shown in the banking sector, with  $l$  being the assets and  $L$  being the actual stock of debt owed and  $l$  dollars per year, the flow of new loans.

**Figure 9: A table of intersectoral financial flows with bank lending**

	Assets		Liabilities			Equity
	Loans		$S_1$	$S_2$	$S_3$	$B_E$
	Level (\$)		Flows (\$/Year)			
$S_1$	$L$	$l$	$-(a+b+l+p.L)$	$a$	$b+l$	$p.L$
$S_2$			$c$	$-(c+d)$	$d$	
$S_3$			$e$	$f$	$-(e+f)$	
$B_E$			$g$	$h$	$i$	$-(g+h+i)$

When you add up the diagonal, there is no cancellation any more for the little  $l$ , nor is there any cancellation on the off-diagonal. So what you find is that credit becomes part of aggregate expenditure and aggregate income and that can be over capital gains as well.

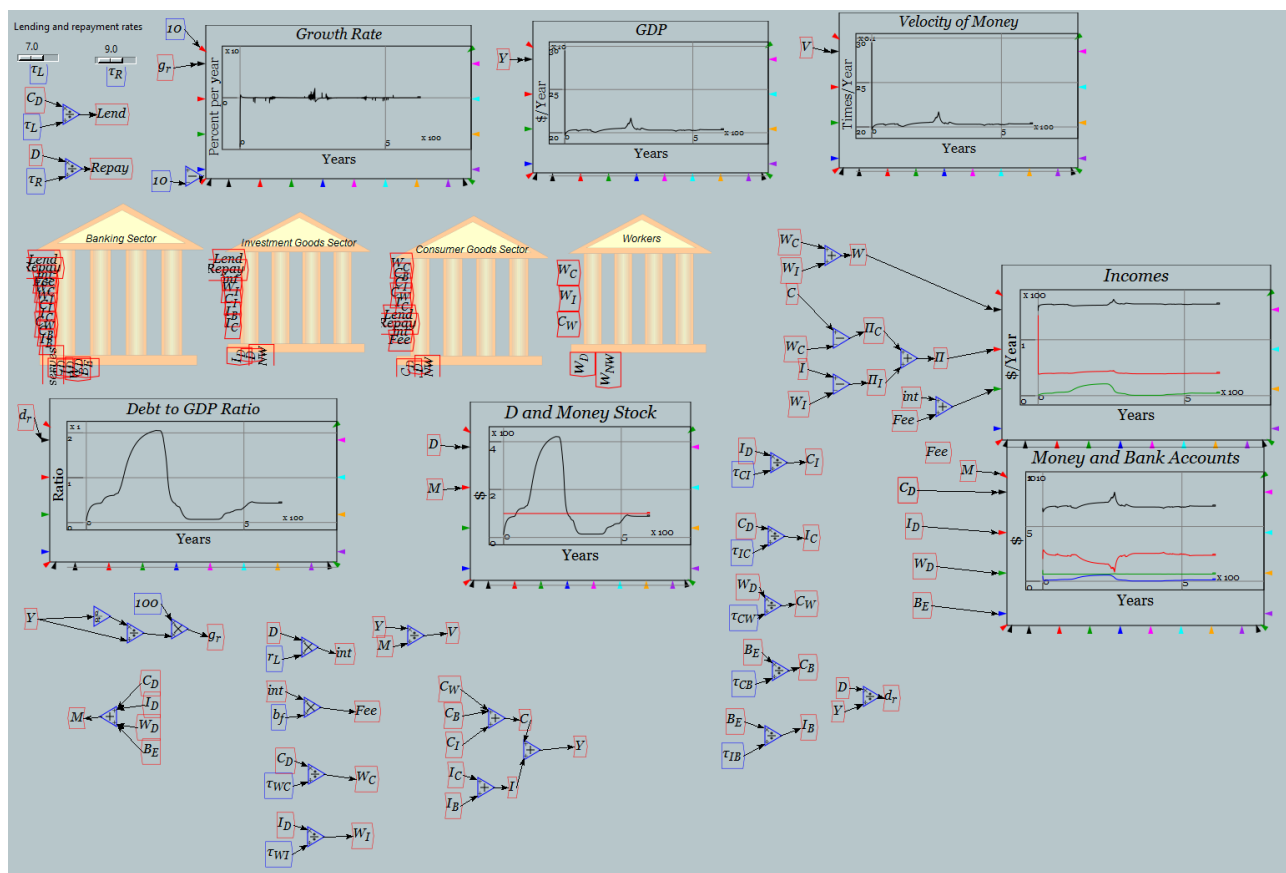
So that is the essential difference between loanable funds and endogenous money, and it is a gigantic difference. If you're modelling a world where loanable funds applies, and you are actually in one where banks originate loans, you are ignoring anywhere between +20% and -10% of demand. Of course you are going to be wrong about the state of the macro economy, you cannot help but not see a crisis coming because you are ignoring that large component of demand. What it

means in terms of Milton Friedman's old equation, is that aggregate expenditure and income are not just velocity of money times money stock, they are plus gross financial transactions, and plus the change in debt which is credit. The last element is by far the most volatile part, which is why changes in credit are so important to macroeconomics.

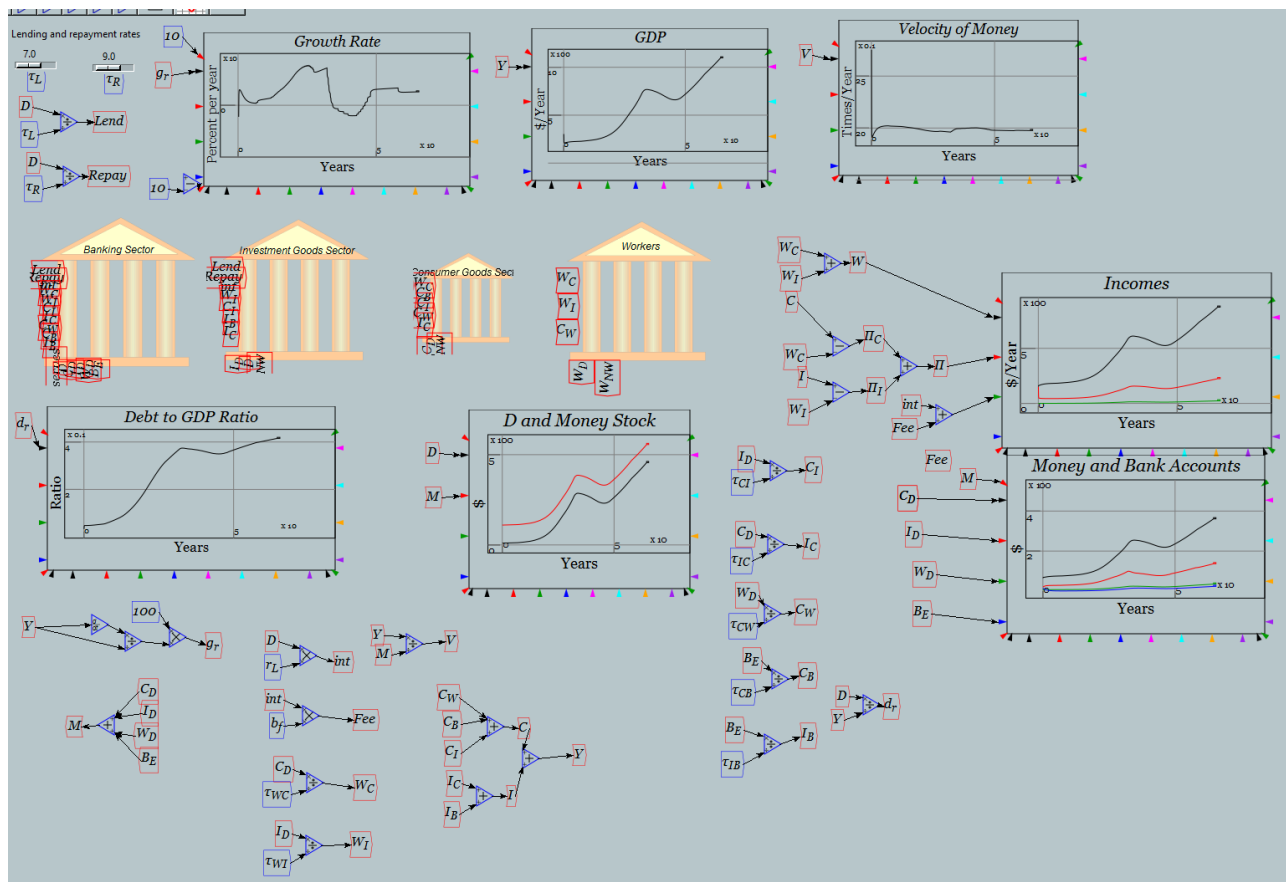
## IX. Mainstream ‘Toy’ Model versus Reality

What I have done to try to illustrate this to people who believe this static equilibrium vision of the world is to design a simulation program that I call 'Minsky' (after, of course, Hyman Minsky), and using it I have done a simulation of loanable funds, as described by Krugman in one of his academic papers, and made huge changes over time to the level of lending and the rate of repayments. You can see that the debt-to-GDP ratio goes extremely high and extremely low, there are huge changes there, but growth barely moves and GDP remains constant, except for a tiny variation in the aggregate velocity of money.

*Figure 10: Loanable Funds. Huge changes in lending have very little impact on GDP*



All I do to move to the real world of banks originating loans is say that debt is not an asset of the consumer sector; it is an asset of the banking sector. When I run that model and make those same changes to the level of lending and the level of repayment, variations in the rate of lending and repayment cause variations in the level of money, cause variations in GDP and booms and slumps can occur because of that. All it takes is simply to structurally acknowledge that banks originate loans.

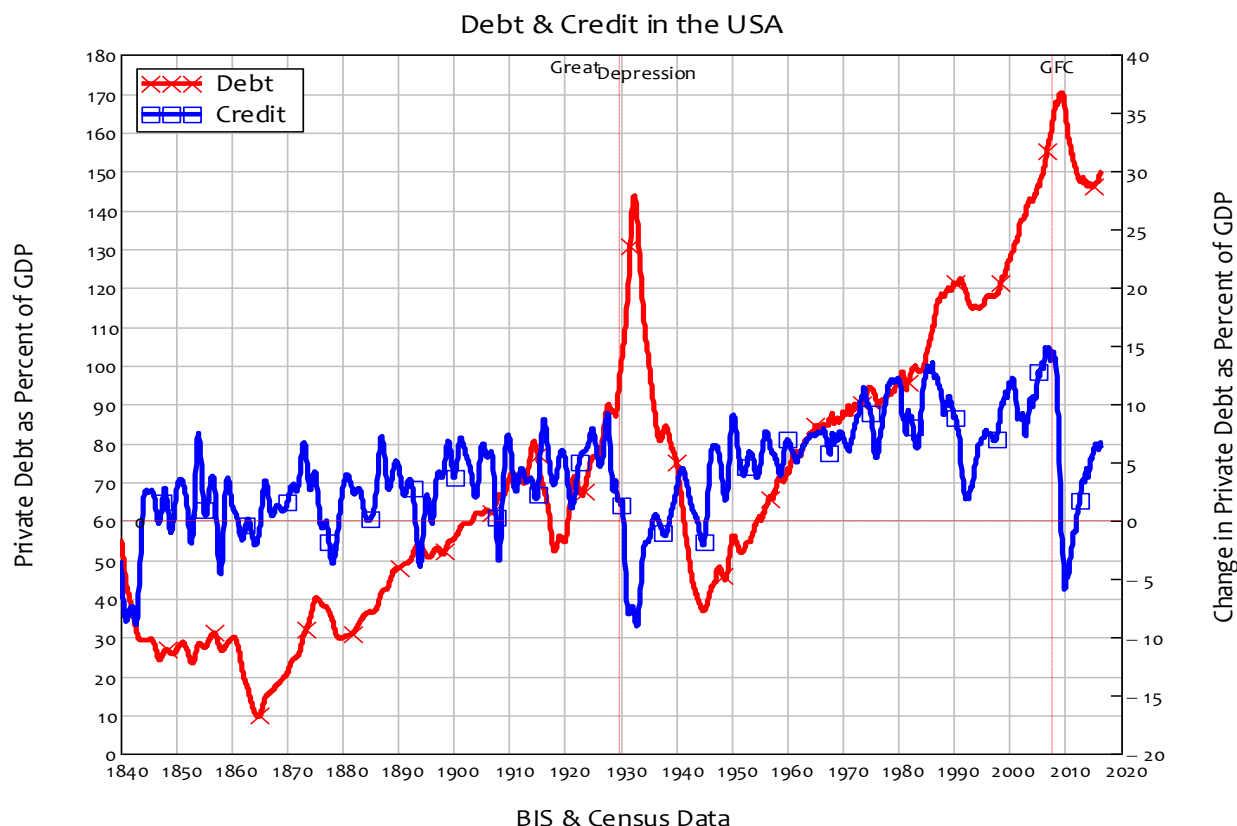
**Figure 11: Banks originate loans. Changes to lending have huge effects on GDP and growth**

That is why we had a crisis and that is why the mainstream did not see it coming, not because it could not be seen, but because they were wearing Nelsonian glasses over the wrong eye. They were ignoring the key issue in the battle, which is banks' capacity to create money, and by doing that, create additional demand.

The economics profession has been doing this for a century; if you go back, you do find economists before the Great Depression, like Irving Fisher and even Pigou who was seen as Keynes's great conservative rival, acknowledging the role of credit in economy and producing graphs much like the ones I produce these days. This got killed after the Second World War by American mainstream economists, and as a consequence they have enabled the highest level of private debt in the history of capitalism to accumulate.

## X. Why is the Crisis Continuing?

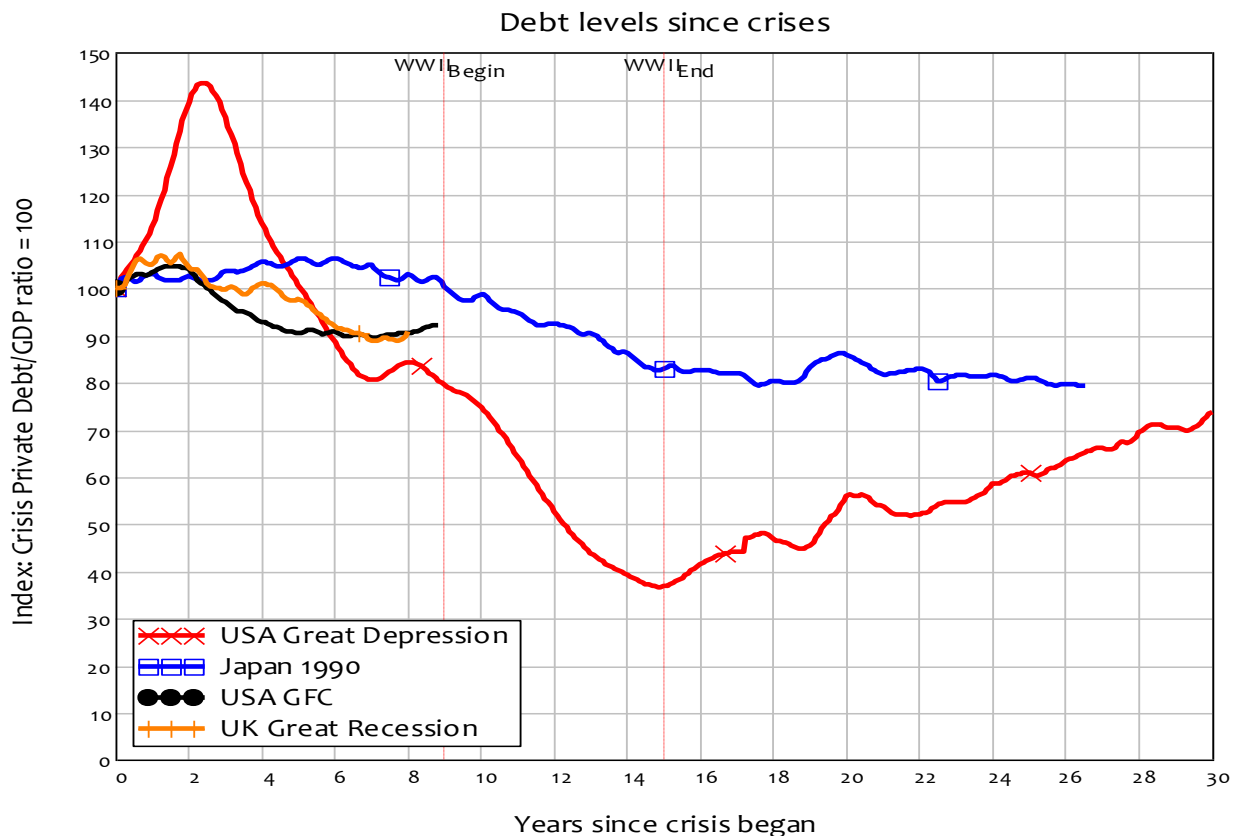
**Figure 12: Private debt to GDP and credit in the USA since 1840**



This is normalised data from America; I paste together two census data series with Federal Reserve series and then make them time consistent by making the same level at the overlap point (the correlations imply that it is quite valid to do this) and what you can see is both the level of debt and the scale of credit as a percentage of GDP every year. From the 1800s to Great Depression, there were regular periods where there was negative credit, but since 1945 there was no negative credit until 2008, so the buffers we have built in have enabled this level of debt to be accumulated. As much as stabilising the economy, you will also see this long-term trend which is now becoming quite dangerous.

That is the American data; in this next chart I take the data for Japan, the United States and the Great Depression, and the Great Recession UK after the Great Recession, and said, 'Let's take the level of debt at the beginning of the crisis as 100, what happens to it over time?'



**Figure 13: Deleveraging during the Great Depression was far greater than today**

You can see for the Great Depression it rose because of deflation; there was a period where prices were falling by 10% per year, as well as GDP in its additional 10% per year, so the debt ratio rose even though people were paying their debt down; the change in debt is negative and the ratio rose across that period. But then, courtesy partly of the Great Depression and Roosevelt's bank holiday and a whole lot of other operations, the debt level fell but the main reason it fell was the Second World War and we do not want to use that same cure again.

As a result of that, by 15 years after the crisis, which was the end of the Second World War, private debt in America had fallen to one third of the level that it was when the crisis hit. Consequently there was plenty of room for credit demand and no debt chain pulling the economy back—but, we have since built that chain. You see where we are now in terms of England and America after their crises? We are still at 90% of the level of private debt that applied when the crisis hit, and the debt ratio is rising at the moment. We have not got rid of the dead weight of debt we accumulated during the previous boom and crash. You get a crash both because of the level of debt compared to GDP and how fast it is growing. This is complicated for people to get their heads around, so I have created a numerical example here showing how aggregate demand and aggregate income plus capital gains in the economy are equivalent to the turnover of existing money, plus credit.

## **XI. Understanding Crises with Credit**

### **1. Can we see the Financial Crisis Coming?**

If we say GDP is initially \$1 trillion a year and it is growing at 10% per annum (these are quite realistic figures in nominal terms), and private debt is 50% of GDP, therefore \$500 billion and growing at 20% per year (again, quite realistic ranges for the early 1950s), that means credit that



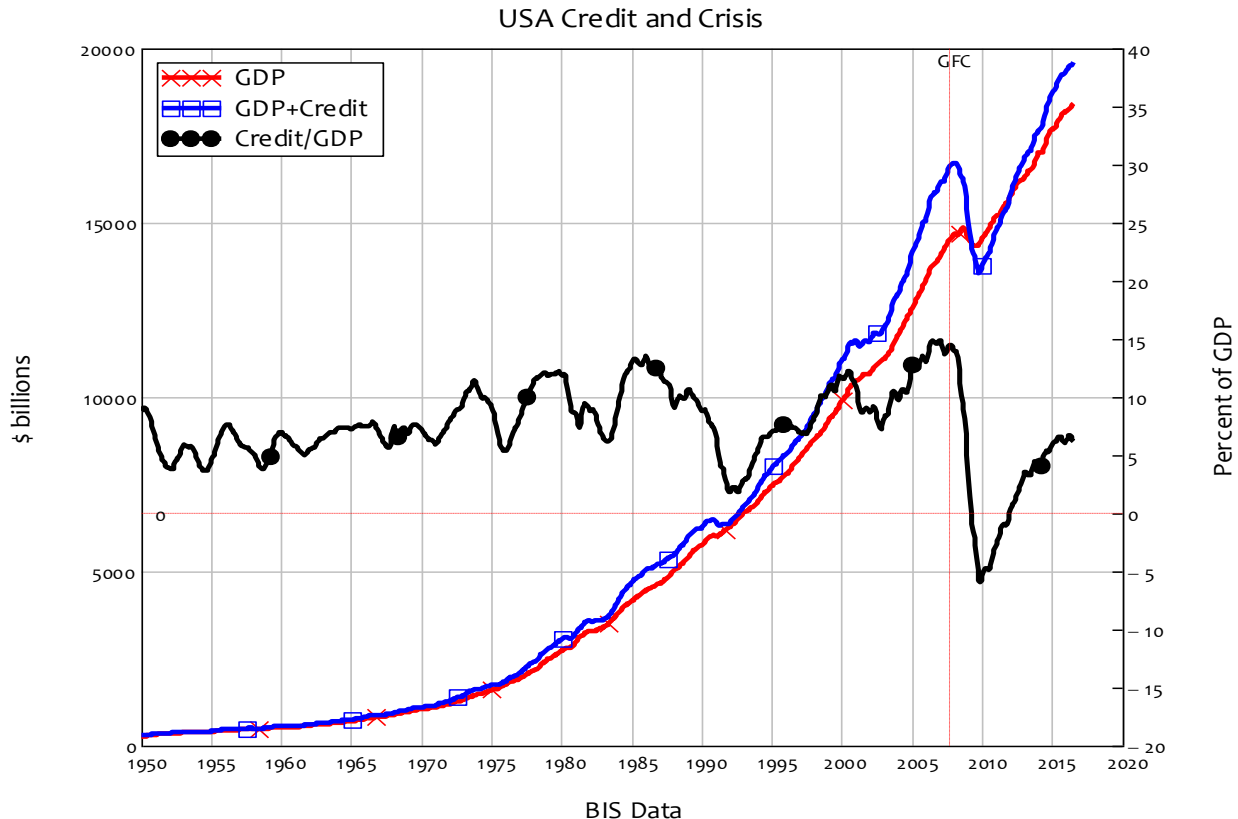
year is \$100 billion. The total amount is therefore \$1.1 trillion. The next year, imagine the growth of GDP continues at the same rate, so that is \$1.1 trillion of its own, but the growth of debt slows down to same rate growth economy so you get a stabilisation in the ratio. That means that credit that year is \$60 billion (which is 10% of \$600 billion) and total demand is \$1.16 trillion. That is \$60 billion higher than the year before, so you have a slowdown in the rate of growth of demand but no total slowdown in demand itself.

On the other hand, if you look at where we are now where you have the same level of GDP, the same rate of growth but a debt ratio of 200% (which is the range that most developed countries are in these days), then your credit that year is 20% of \$2000 billion, which is \$400 billion, and total demand is \$1.4 trillion. Next year, the GDP grows again to \$1.1 trillion, but if the growth of debt slows to 10% per annum, that is 10% of \$2.4 trillion, which is \$240 billion, you add them together and you get \$1.34 trillion as the total. That is \$60 billion *lower* than the year before. That is why it is both the level of debt and the rate of change that matter, the two together define why you get a crisis to begin with and why you have a slump afterwards.

## 2. America

I am going to use now the change in debt plus GDP as a rough guide to level of demand and then say, 'Can we see financial crises coming?' If you take a look at that combination of turnover of existing money which is relatively stable and certainly cannot go negative, to credit which is highly volatile and can go negative and is mainly used to buy assets, then you can proxy that with GDP plus credit and you get this sort of relationship.

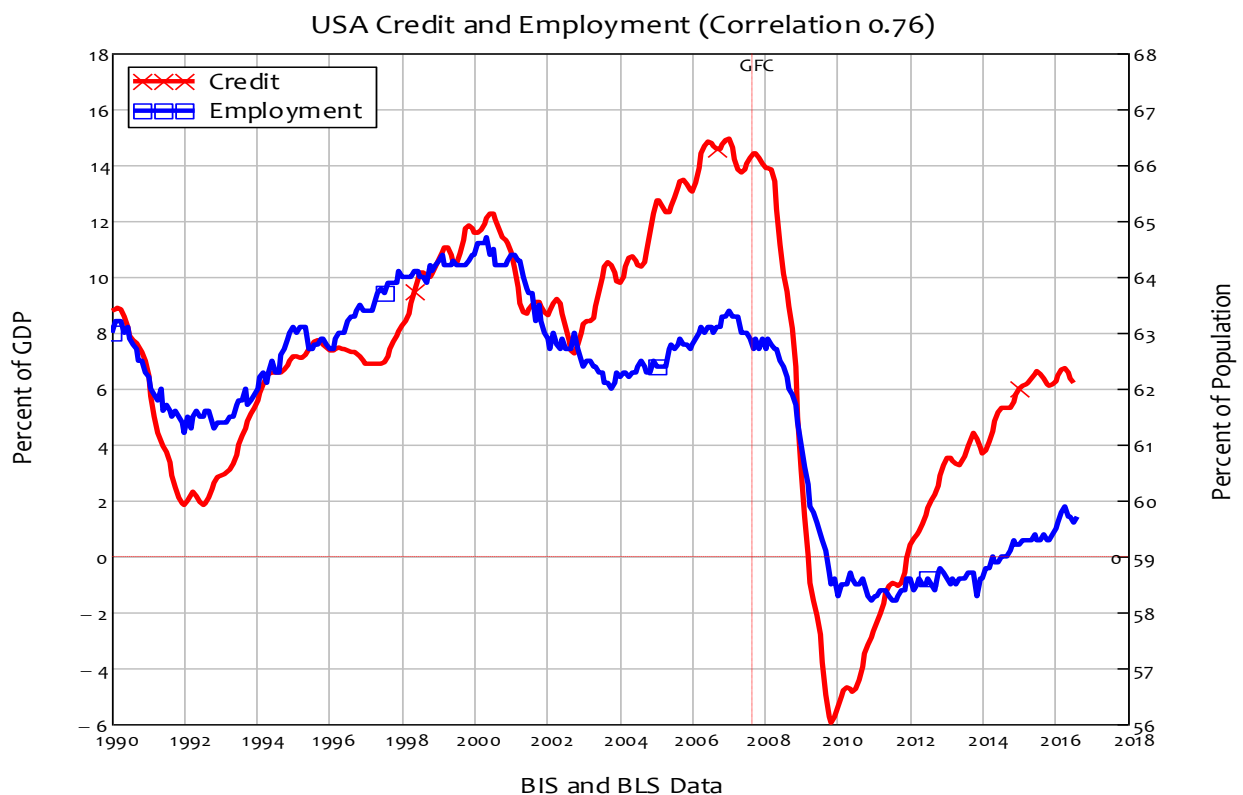
**Figure 14: GDP plus credit in the USA**



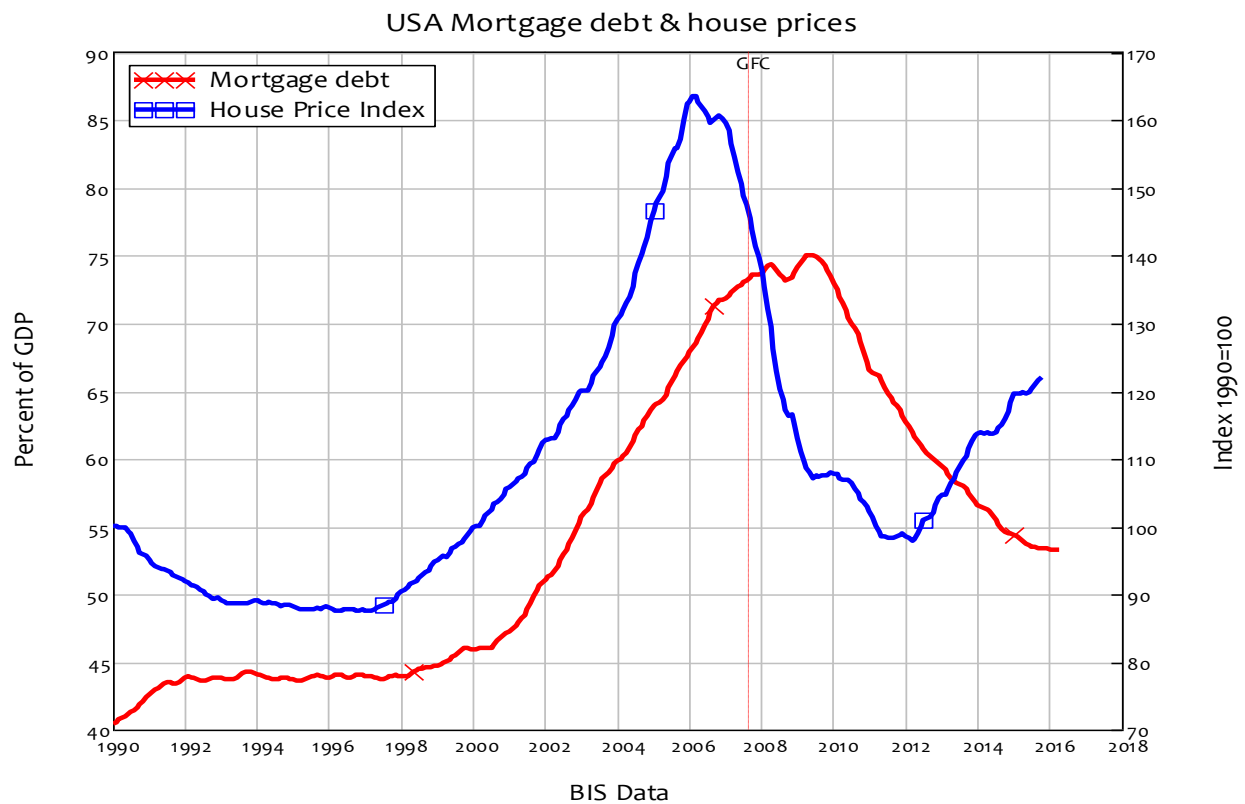
If you look at the United States, you see that from 1950 through to 2008, there was no period of negative credit and then the crisis began, when that rate of debt started to slow down. I am using the NBER definition of the crisis which has nothing to do with credit, but the point at which the NBER decides the crisis began is when the rate of growth of credit began to slow down.

The same thing applies when you look at credit and say, 'How does it correlate with economic variables?' This is the correlation of credit with employment in American, a .76 correlation, even higher when I look the unemployment data, but I do not trust America's unemployment data anymore.

**Figure 15: The correlation coefficient of credit and the employment rate in the USA is 0.76**

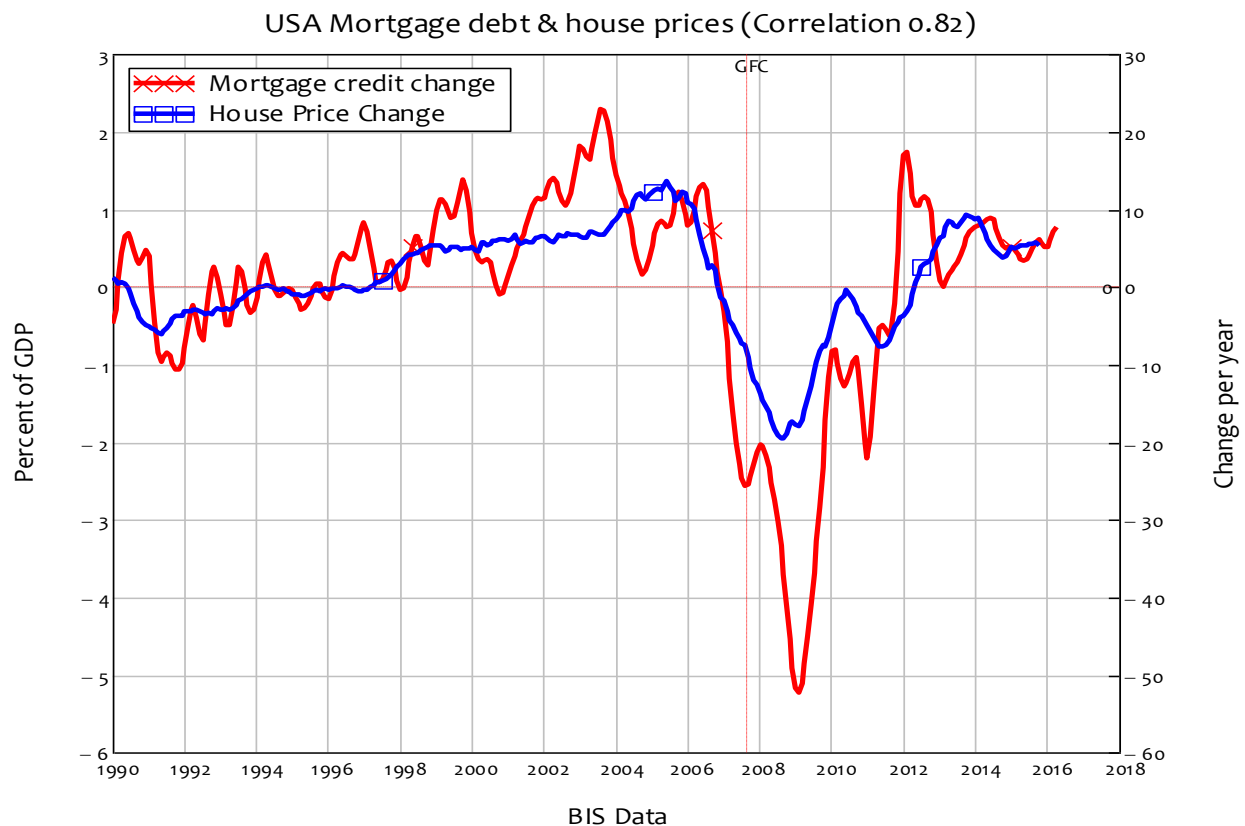


Again, if you look at things like the housing crisis, it is often hard to make any sense out of that chart, if you just look at that chart of the house price index versus mortgage debt as a percentage of GDP, it appears that there are sometimes correlations and sometimes there are not, you have to look a bit deeper than that.

**Figure 16: No obvious correlation between mortgage debt and house prices in the USA**

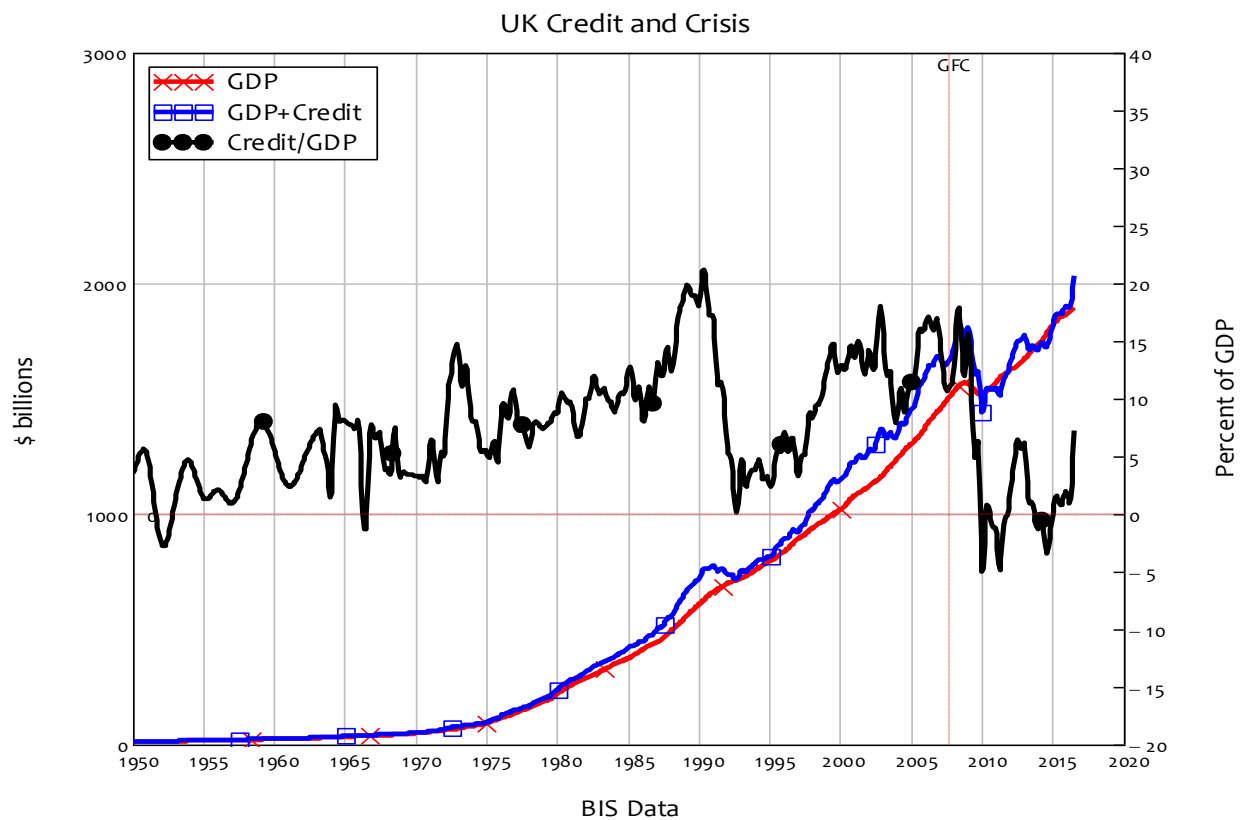
When you look at the change in mortgage credit which is – new mortgages are what buy houses, so there is a change in mortgage debt. Therefore, a change in new mortgages is by the far the dominant determinant in the change in house prices and the correlation here for America, between change in mortgage credit and house prices is .82, you do not get a much better correlation than that in economic data.

**Figure 17: The causal relationship between change in mortgage credit and change in house prices**



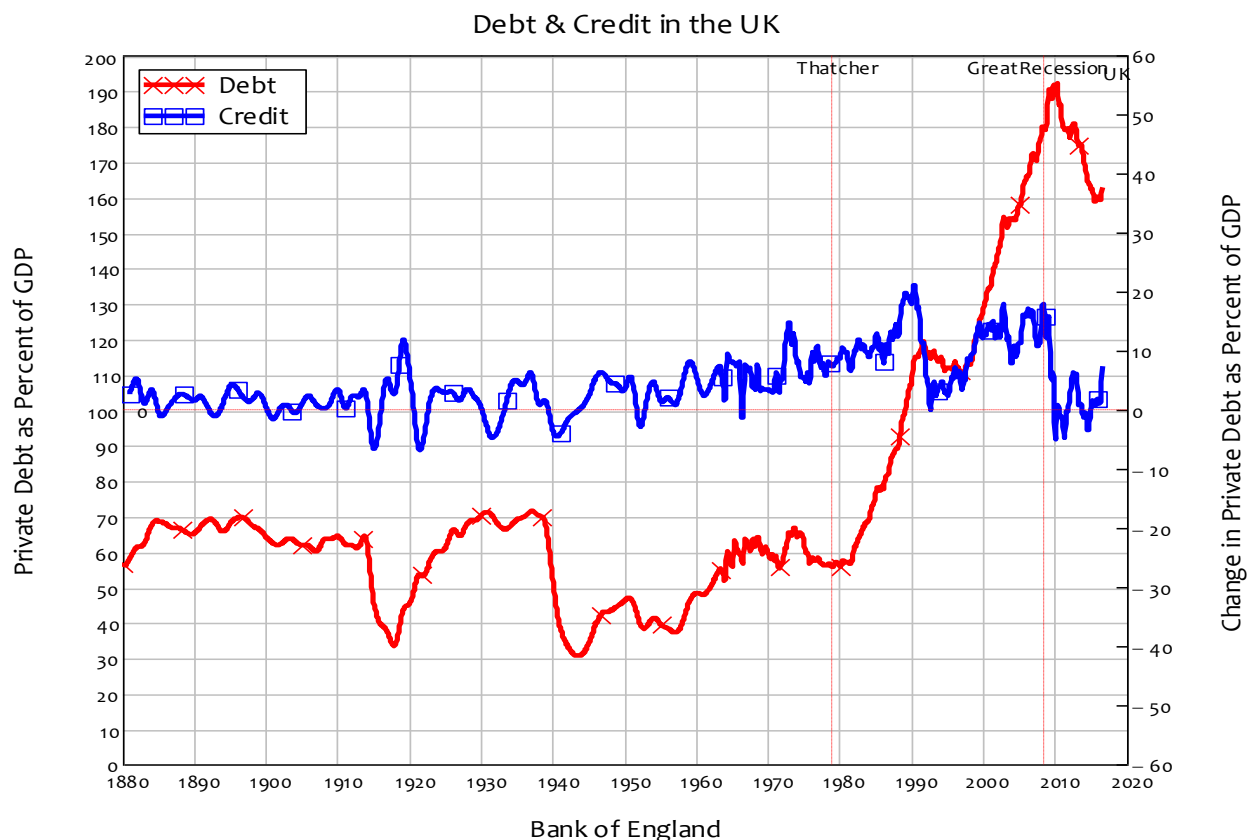
## XII. What about the UK?

The pattern here is more volatile. There were a few periods of negative credit, only very short periods, you can see your big downturn that occurred in 1990s with a big slump in credit growth but again, the crisis began for England when the rate of growth of credit slowed down dramatically.

**Figure 18: GDP plus credit in the UK**

If you look at the correlations for employment again, they were also quite strong, but the most remarkable thing about the English data is this chart.

**Figure 19: Private debt to GDP was constant for a century till 1981. Then it more than trebled in 25 years**



This is using Bank of England data so I have not done any scaling here and they did this research to backdate private debt levels after the crisis in a wonderful paper, ‘What we learn from 300 years of financial data’, and I really did not expect to see a chart like this, I expected to see a chart like American pattern where there is always a trend for credit to rise. But no, from 1880 until 1980 there was no trend in British private debt; it never exceeded 75% of GDP. Then, shortly after Margaret Thatcher was elected, when you went for the big bang, it went from 60% of GDP to virtually 200% in a 30 year period. That is where the apparent prosperity of England has come from as your manufacturing sector has declined but it cannot continue now you are in period of falling debt.

If you look at the period from 1880 to 1945, credit was actually quite low, only 1.3% of GDP every year. From 1945 to 1980 it was 5.1% so it was starting to rise before Thatcher came to power and before deregulation took over the British mind set.

**Table 1: Credit averages in the UK since 1880**

Period	Credit/GDP
1880—1945	1.3%
1945—1980	5.1%

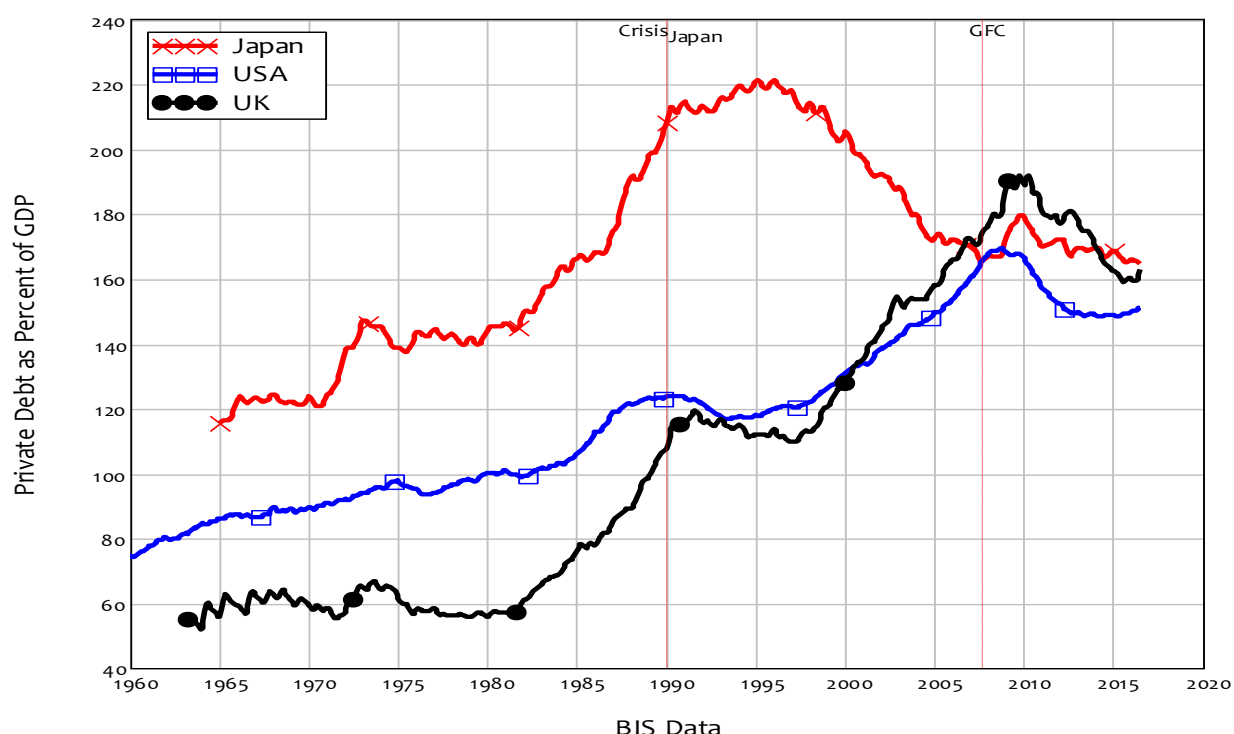
1980—Great Recession	11%
Great Recession—Now	2.3%

From 1980 to the Great Recession it was 11%. Since then it has been 2.3%. That is where the crisis has come from, that is why you continue to be a period of low growth. This is the employment versus credit correlation for England, again, not as strong as America but still quite strong. If you take a look at the housing crisis, you find data like this, it looks a bit like the American aggregate data, when you dive in and look at the change of credit and the change in house prices, the same basic correlation turns up again. There is still room for rising house prices in England because you now have accelerating mortgages once more and you have de-levered a bit so I cannot say the bubble is over here, it is certainly going to end in Canada and Australia sometime soon.

### XIII. Will there be another Financial Crisis in the UK?

I do not think you are going to have a crisis in England, because to have a crisis you have to have a high level of private debt and a high level of credit. With the level of private debt that the UK has, you are not going to get much credit demand, so you do not have a high cliff from which to fall.

**Figure 20: Private debt is stagnant at high levels for Japan, the USA & UK**



What I see for England and America and Japan is permanent stagnation because, with excessive private debt which they all have –and they are all stabilising now between 150-180% of GDP – you are never going to get a particularly high level of credit demand afterwards. In Japan's case there has been 15 years of stagnant credit; the Japanese data should have warned us about this. If economists were looking at this, they would have seen this back in 1990. You can see that Japan's level of credit demand when their crisis began in 1990 was almost 28% of GDP, it fell to as low

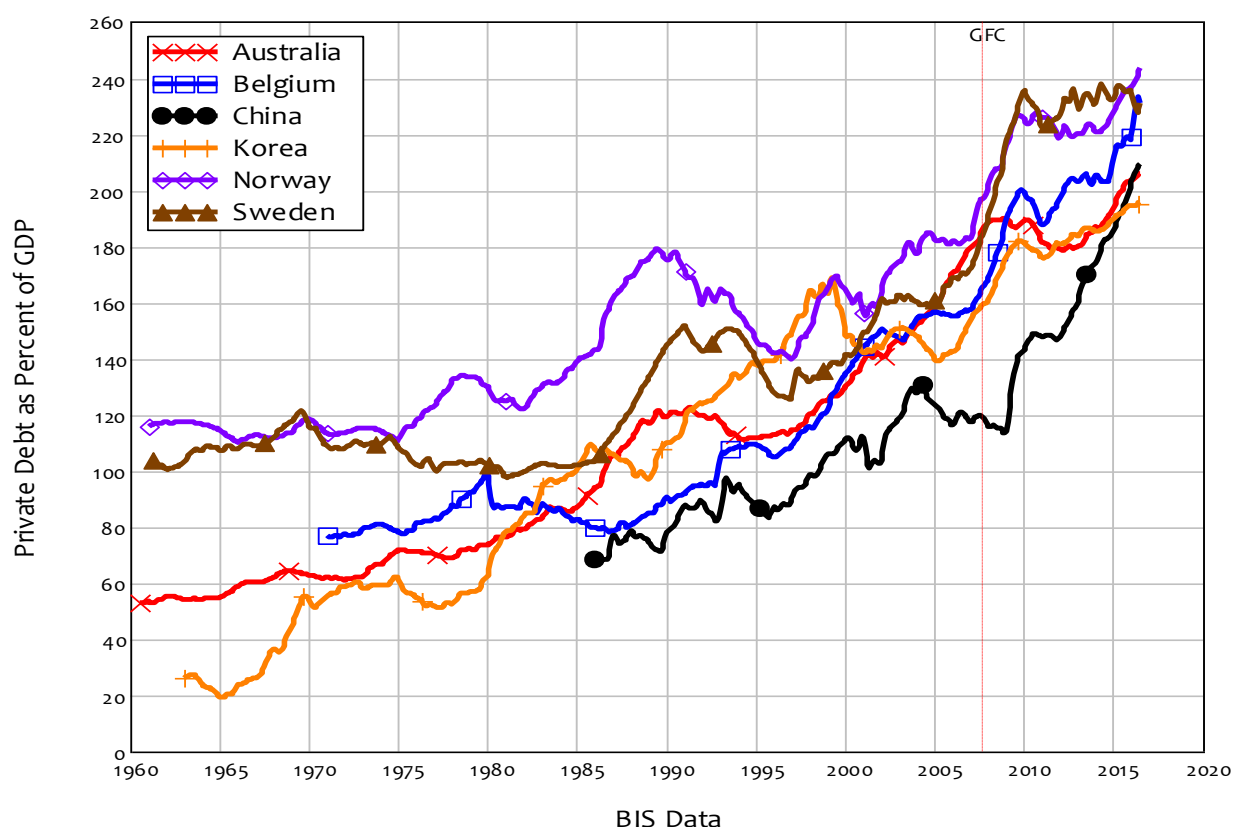
14% and it has been effectively negative for the whole post-crisis period. That is why Japanese firms have stopped innovating; they are not getting the finance to do the innovation anymore.

#### XIV. What about Elsewhere?

So that is boring. No crisis here. Why did you bother coming?

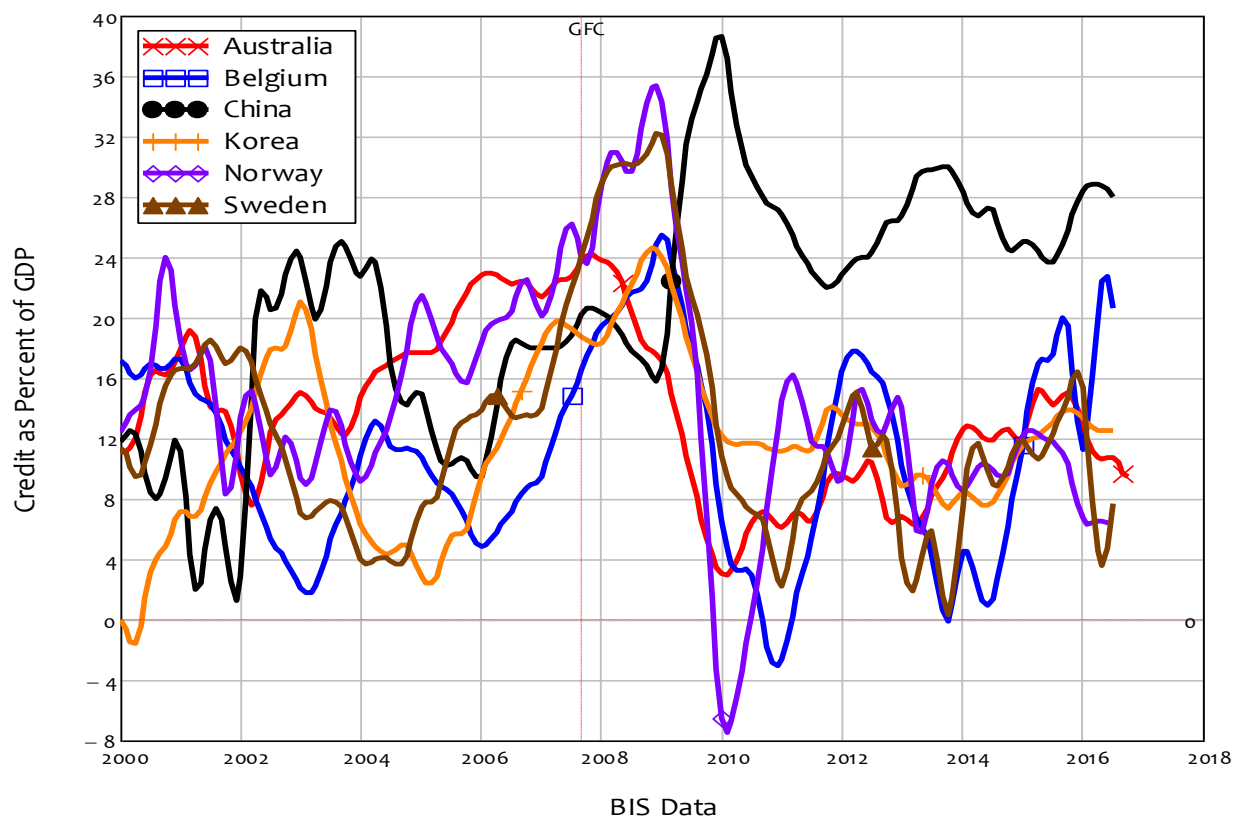
Well, you can enjoy seeing crises elsewhere. The countries that are going to have a crisis are the ones that borrowed themselves out of trouble during the last one. This includes my home country of Australia, also Belgium which I was quite surprised by, China obviously – you could not *not* see that bubble – South Korea has one going, Norway, Sweden and there are a number of other countries that I mention in my next book where I give some detail.

**Figure 21: High and still rising private debt in many countries**

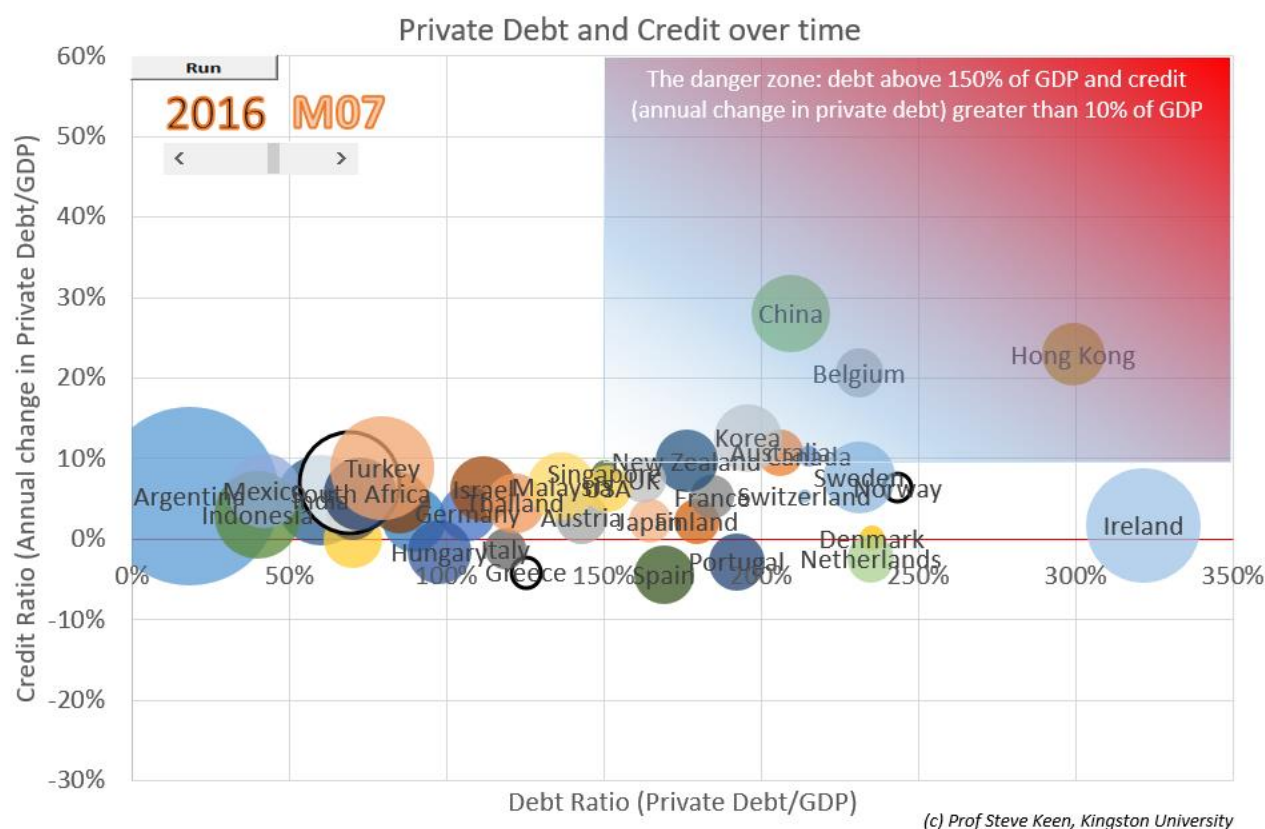


They are going to have a crisis because this is now their rates of growth of credit and rather than being low – you can see China's level of credit is running at 28% of GDP right now, the same level that Japan had before it started to fall over. They can keep on going for some time, particularly China, because China has such a mix of estate and private system, they can flip from one to the other easily, but they have to fall into a slump, for the same reason that it happened to Britain, to the United States and Japan beforehand, so it is coming their way.



**Figure 22: Credit-based demand is enormous in these countries**

I divide the world into what I call 'The walking dead of debt' and the 'Zombies to be' and you can see that all of the countries began in the zero credit and 0-50% of GDP debt levels back in the 1960s. We have all bubbled our way to the left-hand side of that rectangle which is when danger strikes, when you have more than 150% of GDP as your private debt ratio, they have risen up and the collapsed. The countries that avoided the crisis last time are getting themselves ready for it again.

**Figure 23: Debt, credit & GDP growth across the globe**

## XV. Could Economic Theory Have Warned Us?

Frankly, it could, if it had abandoned the fetish it has, and it truly is a fetish, for building everything out of micro foundations, for doing everything in an equilibrium. If it took credit seriously then we could get somewhere. But unfortunately even after the crisis, Neoclassical economists are falling back into believing that all they have to do is to adjust the spheres, adjust the epicycles, to get the model to fit the data.

Olivier Blanchard, who again is very decent person, has been corresponding with me on Twitter occasionally. I used to criticise him for being the part of the IMF and encouraging the austerity programmes in Greece, but just a few weeks ago, a memo he wrote internally in the IMF saying, ‘This is bound to fail, it is going to cause enormous privation in Greece, it should not be gone ahead with’, was leaked. I have much more respect for Olivier after that. I had it for his integrity, but he had the guts to challenge the IMF and try to stop it happening. Anyway, Olivier still cannot think of any way to go apart from wielding DSGE models with micro-foundations.

## XVI. Driving Macro from Macro

### 1. Micro from Macro

The reality is, and science learnt this a long time ago, is that you model totally differently at the aggregate level than you do at the individual; you cannot drive micro from macro. If you could, you could also derive biology from chemistry, in which case a typical biology exam would be, ‘Please take these chemicals and create life’.

## 2. Three Truisms

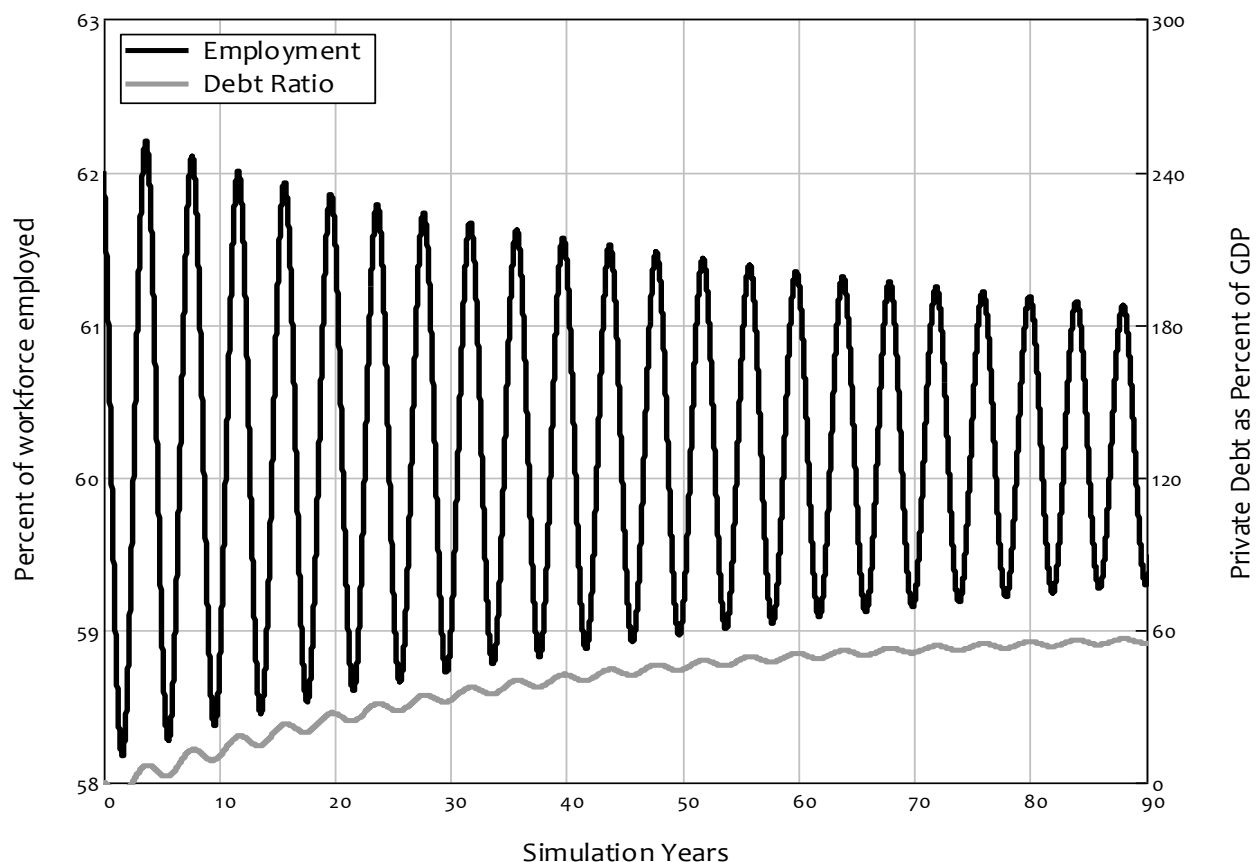
I am going to take three macroeconomic definitions, the employment rate, the wages share of GDP and the private debt to GDP ratio and simply differentiate them in respect of time, it is simple mathematics. I get three truisms out of that;

- the employment rate will rise if economic growth exceeds the sum of population and labour productivity growth;
- the wages share of output will rise if wage rises exceed rate of growth in labour productivity and
- the debt ratio will rise if rate of growth of debt exceeds rate of growth of GDP.

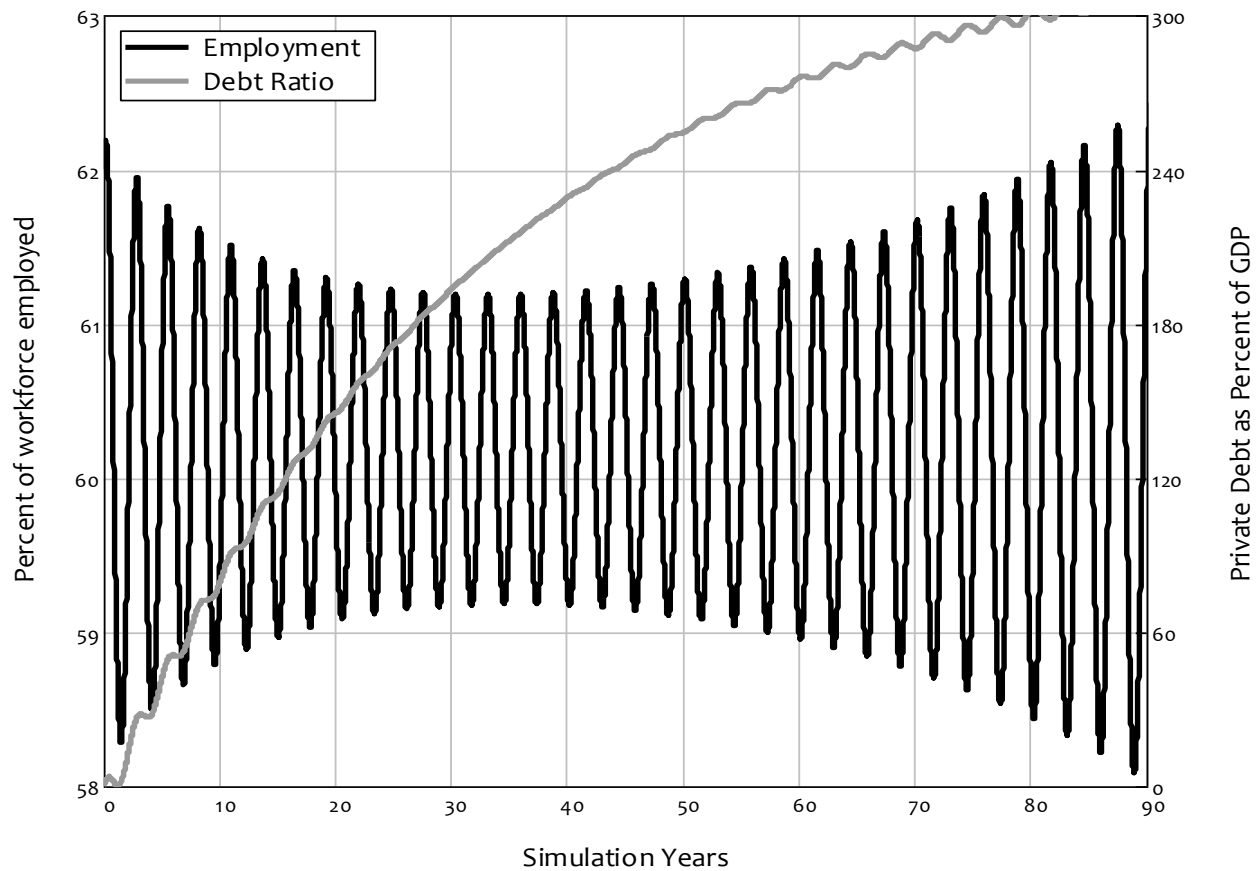
Those are absolute truisms, so I turn them into a model by taking incredibly simple definitions of relationships—because the structure of the model tells you more in many ways than having a precise definition of how the individual entities behave. When I put that together, I get model that behaves like this:

If I set the parameters up so there is a low level of desire to invest by capitalists, then you get a nice stable conversions to equilibrium. That is what neoclassical economists effectively saw in the data and then projected forward as their expectations of the future.

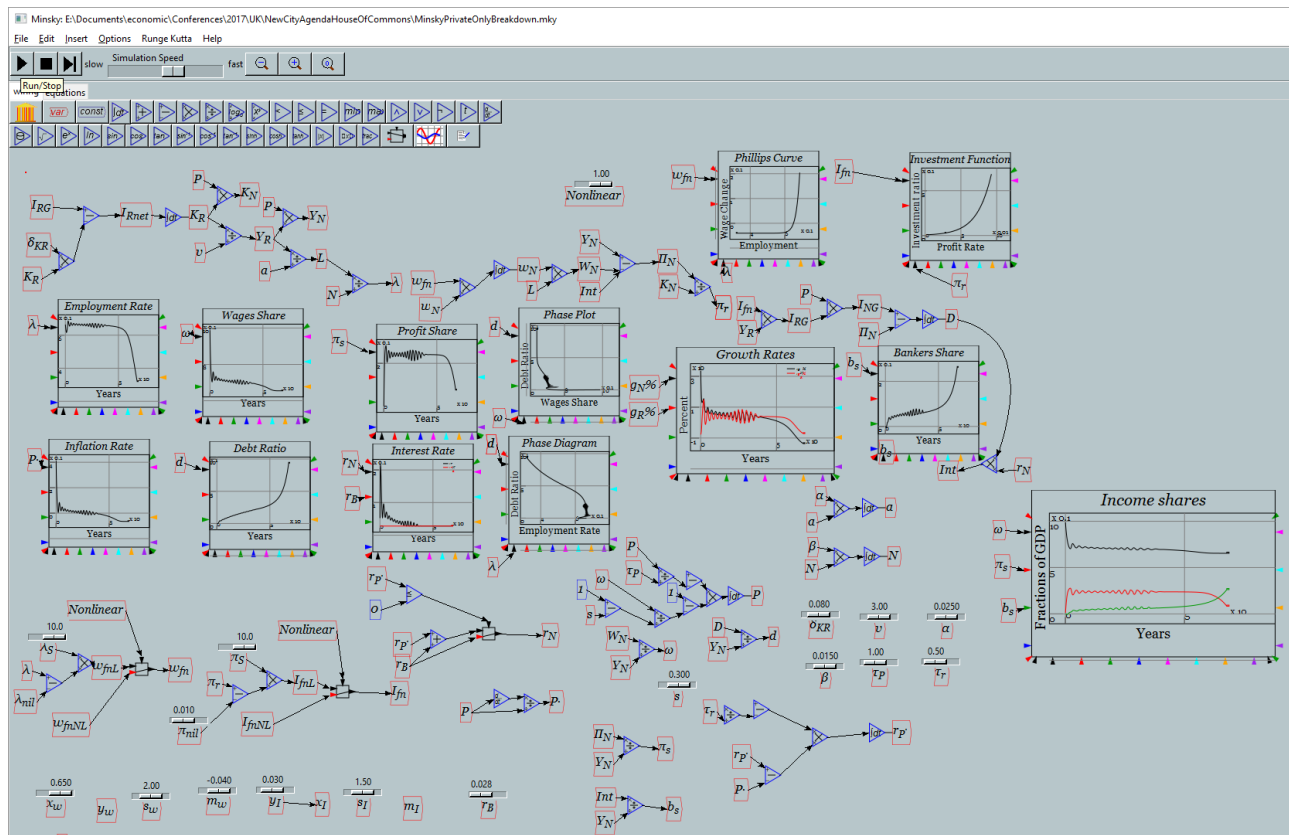
**Figure 24: A macro model with credit heading towards a stable equilibrium**



But if you have more aggressive capitalists having a hire desire to invest, which you would want, you get apparently diminishing cycles, followed by an explosion in them again. You get a great moderation, followed by a crisis, which is what we got in the data.

**Figure 25: The same model with a higher desire to invest**

I first graphed this in 1992 which is why I was not exactly happy about the great moderation coming along, but when I modelled at a more complicated model with prices, I get very much like the dynamics we actually saw.

**Figure 26: An extended model with prices & variable interest rates**

I do not have the government sector or bankruptcy which can stop the accumulation of debt, but the basic dynamic you see is there. What looks like a moderated system suddenly collapses, and that is a typical in a complex system. When we live think we live in a simple system, we discount the possibility of these types of breakdowns that can actually occur in a complex system. The funny thing is, in this model, that the last people to know capitalism is coming to an end in this debt crisis, are capitalists! The declining amount of money they are paying to the workers, is neatly offset by rising amount they are paying to bankers and their income stabilises before finally the exponential accumulation of debt overwhelms workers accepting lower wages and the system collapses, bankers take over everything and the system falls apart.

We have stopped that decline, with government spending (rather than it being caused by government spending), but that is the inherent tendency that a free market, capitalist system has, if it does not control its finances properly, and we certainly have not done that.

## XVII. The Smoking Gun of Credit and Walking Dead of Debt

We will now look at where the world stands, using Figure 23 and you can see the countries which are, in my opinion, susceptible to a crisis because of the level of debt they have: Hong Kong, China, Canada, Australia, Korea, Sweden, Norway, Belgium and maybe Malaysia, Singapore and Thailand (although Singapore seems to be moving in an opposite direction right now). The United States and UK, however, have turned Japanese and they are going to stay in permanent stagnation.

This is the world we are in. We need to change how we think about economics before ever knowing how to manage the economy and I want students to learn system dynamics, non-equilibrium methods, and the classical economists who had a better handle on capitalism than the neoclassicals have ever had.

Unfortunately, that is being challenged by changes to the education system. I was very proud of the House of Lords a couple of days ago for turning down the Teaching and Evaluation Framework, but it tends to marketise first-year education, destroying the universities that enable non-orthodox people like me to teach and research. I am delighted to see the Lords have slowed that down, but I am afraid the marketisation has taken away the foundation that lets me do the sort of work I want to do.

## **XVIII. Concluding Comment**

I have a new book coming out, *Can we Avoid Another Financial Crisis?* It is not one word long; it has 25,000 words explaining why the crisis occurred and why another round is coming and so on and that is now available for pre-sales with Amazon I am pleased to say. Due to the changes to the education system, my university is losing its student intake; they are all being stolen by the main universities so I have opened an appeal on Patreon to see if I can get crowd-funding, because what I have really become is a public intellectual (see <https://www.patreon.com/ProfSteveKeen>). Unfortunately, the universities are no longer the place that enables people to build innovative research in economics and we desperately need it, so I would appreciate some backing here as well. Thank you very much.

## **Questions and Answers**

### **Question**

Can you tell us what the influence of central banks printing money is this process? The ECB is still heavily addicted to it and the Governor of the Bank of England persuaded himself that Brexit was a reason to go to printing even more money than he had done already. Should this be stopped? Is it achieving anything and what influence does it have?

### **Professor Keen**

QE is not printing money. QE is putting reserves in the hands of banks and the analogy I make is that reserves are like the lubricating oil in a car and money is like the petrol so what they have been doing is putting lots of lubricating oil into the engine. However, that does get through to the system when you are buying bonds of the pension funds, superannuation firms and insurance companies. That turns up as turns up as money that circulates in the financial sector and a small amount of that dribbles into the real economy. My calculation implies you are getting about 20p for the £1 you are putting in that way. If you instead do what is called QE for the people, you would get £2 for the £1, so it should be doing what we call printing money, but it is not; it is putting it into reserves. This again is one of the areas in which the research staff at the Bank are ahead of the policy staff and it is also the fact that it is for the Bank to operate with other financial institutions as it has always done. It would be a huge step for the Bank to make a direct deposit into individual's bank accounts.

To give you an idea of the scale, I have done a submission to the parliamentary inquiry, and again I am delighted to see that the inquiry is occurring, and I have worked out that the impact of QE, which cost about £200 billion in the first year, could have been met by £25 billion of money done by people's QE and the amount would have been to the order of £850 per taxpayer. .

**Question**

I have worked with debt counselling amongst the people who have not got the money the economy needs them to spend. Having looked at the macro analysis that you have done, is there any way in which the impact of inequality can be assessed?

**Professor Keen**

When you build a complex systems model, it has what is called “emergent properties”: things come out that you did not programme into it. When I did that model, I had three classes of bankers, capitalists and workers and I had only firms borrowing the money. It was only for productive investment; no speculation has been modelled in that and the people doing the borrowing were the firms. However the income distribution dynamics were that the people who paid for the extra debt in terms of their losing a share of GDP were the workers! If the system stabilised, then the level of inequality stabilised as well. If you had a low level of desire to invest by capitalists, you had a low level of private debt to GDP and the economy stabilised, but if you had more aggressive capitalists, which you would want, the finance sector caused the trouble, since firms borrowed more money during booms than they could repay during slumps. What happened over time was a rising level of private debt and that was paid for by lower amounts going to workers, the inequality is actually driven by the level of debt.

The ironic thing is thing is the government’s attempt to rescue the economy by trying to encourage more borrowing is adding to the inequality which caused the problem in the first place. Of course, this is also true of QE which has inflated asset prices which has been massively beneficial to the wealthy and of course ignored the poor. Consequently, we have made the situation worse by attempts to rescue the economy from it.

**Question**

We had Professor Anat Admati and as you will know, Anat has been a real motor of more industrial-type capitalisation on banks to equity ratios at 30% as opposed to the 2-4% that we see in banks today. Given your economic model, how would you advise the banks to capitalise themselves and how they structure their balance sheets?

**Question**

I think you are the economist that understands the financial system best. Do you have any thoughts on what is inside debt? If you look inside the debt, you find that some of it is productive investment which generates wealth and is used to repay the debt and the interest on it. Other parts of the debt are fuelling excessive consumption and financial engineering taking licensed stock market prices above their true value. Do you have any thoughts on what policies might steer future borrowing towards productive investment and away from the bad side?

**Professor Keen**

Taking Andy’s question first of all about bank capitalisation, the real control on banks’ lending is not reserves which are basically irrelevant to the level of lending, but it is the ratio of loans to equity and how much gearing they are willing to go for. If we go back to the pre-crisis levels, the banks were offering up 10:1 leverage, but of course, we saw during the crisis they were 30:1 so a 3% fall in asset prices, if most of the assets were in assets rather than reserves, would wipe out that bank; that is why you need that buffer there. The trouble is, when you have a boom going on, banks will find any way to increase that leverage and that is the real problem, you want to find a mechanism that is going to stop them doing that in the first place. I do not think equity rules

themselves will do it enough; if you have them strictly enforced, the banks will create off-balance sheet entities and provide the loans that way. Credit organisations will spring up and they will find ways around it, loans will be securitised, taken off the asset books and so on.

There are all sorts of ways banks can manoeuvre past this; I have had plenty employees tell me that they go to meetings with the Bank of England and as they are hearing what the new policies are going to be and getting their feedback, their minds are ticking over saying, 'How can we evade this regulation?', that is what they are actually paid to do.

It comes down to the other question about the productive uses of those assets and we need rules that link the level of lending to the level of income that is expected from the assets which are being purchased. I have a simple rule I call 'the PILL' – students used to get the joke; they do not get it anymore – "Property Income Limited Leverage". The idea is that rather than limiting a loan on the supposed income of the borrowers, limit the loan as well on the income earning potential of the asset being purchased and put a maximum on it, my usual number for illustration is 10. Therefore, the maximum amount of money you get to buy a property would be 10 times what it can be rented for on an annual basis. Taking where I live, that would mean the maximum people can borrow to buy my little rented flat in Waterloo, would be £180,000 because it earns £18,000 a year. If you had that control, you would not get the level of leverage and it would also mean that the public would not have an interest in competing with each other to get a higher level of leverage to win battles over buying particular properties.

We need limits that we can enforce and which can be handed over to judges rather than regulators to say whether the banks have obeyed them. We also need the sort of stuff that Andy is working on which is the idea of creating money by having other forms of asset apart from debt, having equity as the basis for lending and benching venture capital with lending because we need banks to innovate; we need them to do productive lending. In fact, they do not do that anymore, they go for speculation, so if you look at the breakdown, about 85% of the money is used to buy pre-existing assets and only 15% goes to either consumption or investment. We need it to be 70% investment and 30% consumption, because there is a role for consumption borrowing, but fundamentally we need investment, entrepreneurial activity and to redirect the financial sector so it cannot make the money out of causing asset bubbles any more.

### **Question**

I and many others are very concerned that the current GDP levels are being sustained by consumer spending, fuelled by borrowing amounts of money that they are going to struggle to repay, very much along the pattern that you describe. You were looking ahead for the UK and basically saying that the prognosis is stagnation but given that structure, does any external shock make us vulnerable to be knocked into recession? I say this partly with Brexit in mind, and are there any steps we could take give us resilience if that shock is anticipated?

### **Question**

You said that China was one of the countries that was going to face a crash, I cannot see how that can happen without it having any effect on us, can you say how you would deal with that and how it may affect us?

### **Professor Keen**

The interesting thing about unsecured debt is that at the aggregate level, people tend to control it, it does not have the same threat as secured debt. If you break household debt into consumer debt versus mortgages, mortgages are the ones that accelerate during booms and then crash afterwards.



Consumer credit tends to be fairly constant so I am not as worried about the aggregate level as I am about secured debt and mortgages. But the rates of interest that are charged are usurious: 28% on a credit card and things of that nature. They are enormous profit centres for the banks and the old system of credit unions and other elements like that should be reintroduced to drastically reduce that rate of return. It is mainly the poor who end up paying those outrageous rates, so we have to do something about that as a social policy, more so than macroeconomic.

We are vulnerable because, again, what happened with Japan is that every time it appeared to get out of the crisis, it would slump back in once more and a large part of this was the government thinking that the crisis was over and stopping their stimulus; as soon as they did, the economy would go back into deleveraging again. They have been doing that for a quarter of a century now and of course they have a far more socially cohesive system than we have, so the same sort of behaviour here is going to lead to social breakdown; it is not going to lead to boring Japanese stability, it will be dramatic English instability. We have to do something about that or we will have social breakdown. What we are seeing in America and the election of Trump and what we are seeing on the Continent – it is all reflecting this same trend, we have to realise that is what is causing it.

Of course, China is going to affect us; because demand at the global level is the turnover of existing money plus credit, if a major source of credit demand stops being that, then the aggregate level of demand for the entire economy falls as well. Of course China is running at about 25% of GDP as its credit contribution right now, if that disappeared, that is one quarter of the world's second largest economy which should of course have ramifications for trade with the rest of the world, and it will.

### Question

I am not trained in economics but I have been watching and taking part in all these movements for about 25 years. This is probably a very ordinary question but the graph that went up during the Thatcher times, mortgages seemed to be a big factor and that was driven by the right-to-buy and also, student grants stopped and instead it was student loans which are still continuing. It seems to me that all these are ways of contriving, getting more and more people into debt and there is not anything else so is that why we have come to a halt?

### Question

You promoted the idea of people's quantitative easing which said would be the rational response to the situation and of course that is the stance of the Labour Shadow Chancellor and Leader. The fact that the last seven years have been a complete wipe-out and have exacerbated the problem, do you put that down to ideological obstinacy or cognitive dissonance on the part of the governing party?

### Professor Keen

I think it is cognitive dissonance because there is a tendency, particularly when you get to a responsible chamber like this, to think in terms of fiscal responsibility, sound finance etc. and we transport what we think about a household to the level of the government. I certainly do not like government waste and I have invented two new words, one of which is 'bureaucrazy',<sup>5</sup> so I am not great fan of that element of the public service. But the government is effectively another form of bank: banks create money by lending out more than they get back in repayments, governments

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<sup>5</sup> The other is "mythematics", to properly characterise the way that mainstream economics abuses mathematics rather than using it

create money by spending more than they get back in taxation. If you have the government obsessed with trying to take back more in taxation than it spends, it is actually destroying money and then at the same time, telling the economy to grow and wondering why it is not happening.

It is cognitive dissonance, once you realise that as badly as governments might do it, governments should be creating part of the money supplied by running the budget deficit most of the time, even during booms, it is not the rule that the average should be zero, because to have a growing economy, it needs a growing amount of money. Once you get that in your head then your perspective shifts as to what responsible finance actually is; it comes down to how much money you are creating, where are you creating it? What sort of things are you spending it on? Are you wasting it on bureaucrats double checking whether I have enrolled students properly or are you doing it getting a new high-speed rail system between here and Manchester? There are still the qualitative decisions but the key role of the government is to create part of the money supply, and austerity destroys it.

I pretty much agreed with your statement, what we have had is the legitimisation of increasing debt as if that is always going to be a good thing and so student loans and right-to-buy and so on have actually been inflating asset bubbles which have got us in our current economic predicament. Some things like education are a public right, they are part of a functional society and they should be spent at the aggregate level, rather than putting that burden on individuals. We have gone far too far in regarding it as a private benefit rather than a public good and what we have now is a whole generation that has so much debt that they cannot afford to get onto the other debt accelerator which is the mortgage market so we are going to shoot ourselves in the feet anyway.

### **Question**

The Nordics are talking about something called the 'National Wage' where everybody will get something like €800 a month and it does not matter who you are within that society; is that something that could be the equivalent of people's QE?

### **Question**

I have thought a lot about ideas like people's QE and the national wage or universal basic income. Do you worry that there might be a second order effect there and I am thinking specifically of incentives throughout society; if people are getting something for nothing, is that potentially going to have a knock-on effect?

### **Professor Keen**

The basic wage concepts is something you inevitably have to have, for reasons that I do not cover here. My views are influenced by my analysis of the role of energy in production and where technology is taking us. We are headed in the direction where there will be no unskilled labour necessary. During the period from the beginning of capitalism up until now, the way the workers got their share was through wages and being necessary for production. They are going to be eliminated over the next 40 to 50 years; I know that puts me on an outlier but I think that is what is going to happen. If we do not have basic income, we are going to have the Hunger Games instead so we have to go in that direction.

Yes, basic income is another form of QE so it can stabilise things. What that will do to people's behaviour does matter; one thing it does do is it means people are willing to take a risk. It would not necessarily mean less innovation; it might mean more innovation. I have seen colleagues of mine facing redundancy because of the cut backs in government funding for universities, courtesy of the removal of caps affecting low-ranking universities like my own, and they are petrified

because what do they do? If they had a basic income, that terror might make them say, 'Oh well maybe I will try something else, maybe I will run tutorials for school students on mathematics' or something of that nature. The level of terror that exists about having nothing whatsoever can be more debilitating than having the money and thinking you can lie back on your couch and do nothing.

### Question

I am very interested in the difference between building a model from a micro level up to the macro level. Could you comment on the availability of data and the sheer amount of data that is now out there in terms of personal data and company data? How might you harness that data to use some microeconomic tools to build up to macroeconomic models rather than using some of the more blunt measures that are used in macroeconomics, e.g. GDP but using more granular data to macro model but using real world empirical data?

### Question

My question was related to the previous one about universal income; what does that do to inflation if everyone gets £800 a month? What would be the impact on inflation?

### Professor Keen

I like the direction your question started in, but you ended up really saying, 'Can we use the data to build macro from micro again?', through micro foundations, and that is still locking us in a fallacy that the sciences saw through a long-time ago, that you cannot derive a complex system from the entities of which it is made up.

My favourite example is water. We drink it every day. If you had to build the macro properties of a glass of water from the micro properties of a single molecule of H<sub>2</sub>O; you would need to explain how you went from having a water molecule to an ice molecule; and, my total favourite, the snowflake molecule.

There is no such thing. The reality is that the properties of water come out of the emergent properties of the interactions of these *identical* molecules. To even describe water, you have got to be working at a complex system level. You cannot derive water's properties from the properties of the entities that make up water; that is a common insight. Macro can be derived from a macro level; we can get much better data, we could have real-time GDP data now using EFTPOS machines and so which would be much better than doing it in stats, and build a much more sound structural model of the economy in doing it that way.

In terms of inflation, that is the issue you have to think about. If the government runs a deficit, what is the impact on inflation? What is the impact on the trade balance? Those are the issues that matter, not the government has not got the money.

### Question

A lot of this has this has been above my pay grade and I want to really take it back to the history of where we got where are and ask you a question. I remember some years ago, probably before the general election, you would google, 'What caused the crisis?' and you got a range of different articles and the one that always struck me was then made into a book by one of our former colleagues from the House of Commons. Your point about only lending to someone that can pay back seemed a good idea, but America, the Clinton-led Democrats refused and stopped the reform of Freddie Mac and Fannie Mae when it was known there that they were lending to people without even checking and that was the root cause of it. That interferes with your long-term graphs, but do

you ever comment on what happened there because there must have been some significance in the States where people spotted what was happening but the Clinton-led Democrats refused to allow a reform in the system.

### **Professor Keen**

This is one of the dangers because the politicians themselves get caught up in the bubble. When there is a bubble going on, a huge amount of money is being created by the private sector, private banking, meaning there is plenty of demand, people's assets are rising and everybody has a job and it is actually reinforcing, the politician can take the credit. Of course then when they get the other side of it, once they have retired and the whole thing crashes over, the person who is in office takes the blame. It is a really pernicious effect of credit that it can take that long to happen that the person who is responsible for the bubble is possibly retired or even dead by the time the bubble comes to an end. With the Clinton administration, the whole idea of letting Fannie Mae continue on was clearly allowing a fraud to continue, which was a fraud backed by the government. There truly are ways in which fraud was a major element of what occurred there but the fraud was supported by the impact that had on the politicians in terms of their re-election, so it is a real danger. Eisenhower coined the term of the Military-industrial complex, the real one we have now is the Financial-political complex.

### **Question**

Is it possible for these countries that you have identified as having a potential debt crisis in the next few years to avoid that debt crisis given that you have identified it, and if so, what would they need to do?

### **Professor Keen**

They can because what you have is a credit crisis which is going to be manifested in a collapse of credit demand. You can balance that in two ways; the government can spend up which is one reason why the crisis this time around is far smaller than the Great depression: because even though we talk about the New Deal and things like that, back in the States when the New Deal occurred, the government was about one fifth of the size it is today as a percentage of GDP in America. Even with the New Deal as big as it was, it was one third of the size of the Obama stimulus, that is why we had a much smaller slump this time versus the last time but that has its own problems.

What we could also do is use the government's money creation capacity in what I call the 'Modern-debt jubilee' to give money on a per capita basis across the economy but require anybody who has got debt to pay their debt down. That would mean is that people in debt would have less debt, you would also deflate asset prices which is vital in the aftermath, but people with no debt would get a bonus that they could spend. You would have to calibrate how big that was, you would have to trial it and I would not do it in one big lump sum but that is a way of using the government's money creation capacity to cancel credit money and replace it with fiat money and maintain the demand across that period. You are still going to have, as you saw in Ireland, far too many houses being built, mal-investment and things like that, but you are not going to have a credit crunch.

You could have prevented it, but of course that goes against the cognitive dissonance that we spoke about earlier. It will not get done and they will fall into a credit crunch and then they will do government response in the aftermath and then it will all be a debate over whether the government is hocking our future and end up being in paralysis once more.

**Question**

One of the key parameters in your model is private debt, I was wondering if you could integrate the difference between debt into the asset-based economy and the wealth-creating economy into your model?

**Professor Keen**

Again, the banking sector should be the way we give we create new money to give to entrepreneurs, and give working capital existing corporation, that should be the main functions of the financial system. It is not that way these days; it gives money to inflate asset bubbles. It is very easy to get collateral-based lending; it is extremely hard to get ideas-based lending. We need to get money for people that have ideas but do not have the money to put them into operation, which was Schumpeter's original and still the best defence of private banking. I would like to find a way to blend venture capital now, which is normally done with borrowed money or equity forms plus borrowed money, blend that with lending so some banks could lend to entrepreneurs and not get a loan position against them but get an equity position against the firm. If they then lend to six entrepreneurs and five fail, they make money out of the one that rises from appreciating capital value.

At the moment, there is a really good reason for banks not to lend to entrepreneurs, because they lose five-sixths of the capital they have put forward and only get interest on one-sixth. If there was another way we could blend venture capital, then they could then potentially take an equity position and gain out of that equity position. That would be a creative way to create money for the economy, rather than the current speculative Ponzi way we have created at the moment.

**Question**

I made a suggestion on exactly that point a couple of years ago in my blog, taking your point about expanding the government's capital to produce enterprise finance guarantee, secured on intellectual property owned by entrepreneurs such as trademarks, copyrights, and registered designs, thereby guaranteeing any loss to the bank using the government's funding. In order to make it not just an infinite demand, I would require £50,000 invested by the entrepreneur to be matched by £50,000 of the government EFG money.

**Professor Keen**

That is a bit small in my opinion but nonetheless the idea is good. We have some very good research done by two very different personalities focusing on the same issue; Mariana Mazzucato, looking at the role of government in funding innovation and Bill Janeway, who is a successful American venture capitalist but also did his PhD at Cambridge, under some unorthodox economists who used to get jobs at Cambridge, like Nicholas Kaldor and Joan Robinson.

They both said that people who can afford to innovate are the ones who can afford to lose money. Who can afford to waste money in our societies? It is either the very wealthy or the government. Consequently, the government should be putting money forward, as well as venture capitalists. We get innovations coming out of government investment in research; it can afford to throw money at ideas, and five out of six can fail, but if one works then we get an innovation that affects the whole of society; and the same thing applies for large venture capitalists. If you get a sensible, non-ideological perspective on where you actually have innovation from, that is the conclusion we would reach so something like that scheme is a good idea, it is a start anyway.

## **Closing Remarks**

### **Lord Sharkey**

Thank you very much, Steve, for an absolutely fascinating discussion and for the clarity and brevity of your answers. Our next event will be with Professor David Miles, who featured once or twice in Steve's talk, and he will be speaking to us on housing and the financial sector in the short and long term and invitations to that will go out over the next few weeks.

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**Godley, W. (2001). "The Developing Recession in the United States." Banca Nazionale del Lavoro Quarterly Review 54(219): 417-425.**

**Godley, W. and L. R. Wray (2000). "Is Goldilocks Doomed?" Journal of Economic Issues 34(1): 201-206.**