

Keynes, Piketty, and Basic Income

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Abstract

Economic theory is traced through neo-classicism, Keynes, monetarism, and Thomas Piketty. I argue that Keynes achieved an established radical intellectual breakthrough, a consistent verifiable model, and successful policy implementation, whereas neo-classical economics and later monetarism offered only partial analyses. Thomas Piketty's *Capital in the Twenty First Century* fails to match Keynes's achievement on any of these criteria. Piketty's thesis on inequality lacks an explanatory theory, a consistent model, and an implementable policy. The basic income proposal derives from and relies on the proven Keynesian diagnostic which retains relevance. Basic income is a form of Keynesian demand management, necessary in advanced technology high productivity economies in which the wage component of output declines. I supplement this with a virtual theory of money which renders deficit both inevitable and manageable.

Keynes and the 1930s Great Depression

In 1936, John Maynard Keynes published his *General Theory of Employment, Interest and Money*. Keynes addressed the economic event of global depression with its social and political consequences. He responded with a consistent body of theory, which led to practical implementation in economic policy. His innovations were numerous, challenging the then dominant paradigm of neo-classical economics. In the neo-classical view, a market economy is a finely tuned mechanism, clearing markets to equilibrium by responding sensitively, exactly and fully to price signals. Keynes saw the market economy as more of a plumbing system, than a finely tuned mechanism. There could be blockages in this system. Information could fail to flow, and unfulfilled demand or supply could block the system (see Leijonhufvud (1969), Leijonhufvud (1969) and Palley (2013)).

The political and philosophical implications of neo-classical theory were huge. Social outcomes were determined by, and subservient to, the artefact of the market economy, a philosophy which traced its roots back to Adam Smith. It has frequently been expressed in the claim that 'you can't buck the market'. Curiously, humanity is apparently controlled by the market artefact it itself has developed. For the neo-classicists, the answer to the unemployment of the Great Depression was for workers to 'price themselves into work' by lowering the wage level which would increase demand for labour and hence clear the labour market. Keynes provided an alternative theory of the wage. He pointed out the seemingly obvious that the wage is not only a cost of production, but also funds effective demand. Lower wages might reduce the cost of production, but they would also reduce demand and therefore employment, which relies on demand. Neo-classical economics only saw a part of the total economy system flow.

Other powerful Keynesian analytic concepts included the multiplier, by which an initial demand stimulus to the economy would have a multiplied effect, as wage earners then spent their earned income. Keynes's multiplier was shown to equal the inverse of the marginal propensity to save. He also challenged the neo-classical savings led theory of investment. Keynes showed that, rather than

savings funding investment to generate economic growth, in fact savings reduced demand, hence reducing investment, which responds to demand. Similarly, in his theory of liquidity preference, Keynes argued that the interest rate does not act uniformly or uniquely as a price signal determining investment. Low interest rates can persuade people to hold cash balances rather than invest in assets, since they expect higher future interest rates. In this scenario, increasing the money supply is also ineffective as a policy to stimulate the economy via investment.

The system can then get blocked in a position of involuntary unemployment, being unable to reduce wages to raise employment, or to indicate the latent demand potential of an increase in employment, thus also deterring investment. Low interest rates and increased money supply aimed at stimulating investment may also be ineffective. Markets do not always clear by responding to price signals as the neo-classicists claimed. Furthermore, government budgets do not always have to be balanced, as deficit funded spending can raise employment and output to generate an expanded tax base and future government revenue surplus. Keynes did not however take the further radical step of suggesting that government deficit is inevitable, permanent, and unproblematic, a claim which will be advanced later in this paper.

Demand management was therefore the great urgency of Keynesian economic policy. It was implemented in Roosevelt's 'New Deal'. Despite the contemporary trend of financial orthodoxy to dismiss Keynes for advocating unfunded government expenditure, Keynesian demand management has become an established part of all governments' macroeconomic policy ever since. In Keynes's diagnostic, economic phenomena, economic theory, and economic policy were addressed in a consistent package. His model was capable of being expressed in consistent verifiable equations, which were tested and verified empirically. The successful implementation of the policy demonstrated the correctness of the theory, and changed the phenomenon as the theory predicted. The world economy grew out of the depression of the 1930s as a result of Keynesian deficit financed government spending, even though this was initially due to rearmament for war.

Keynes delivered

- a revolution in economic theory, which was
- mathematically consistent
- empirically verifiable, and
- capable of successful practical policy implementation.

The 2008 Great Recession

80 years later, in 2008, the world economy suffered a further recession. Over a period of 18 months, US GDP fell by 4.1%, compared to a cumulative drop of 26.7% over 4 years of the 1930's depression. Over the same 2008-2009 period UK GDP fell by 6.3%, whilst US investment fell by 23.4% (Labonte, 2010). This decline in the US and Eurozone economies was offset by continued growth in developing economies, so that in 2009, total world product declined by only 0.5% (Wikipedia, 2015).

Analysing the Great Recession : Monetarism, neo-Marxism, and neo-Keynesianism

In the late twentieth century, monetarism had largely displaced Keynesian economics. Monetarism sees the money supply as the determinant of economic activity, rather than Keynesian

macroeconomic effective demand. Its popularity derived from its simplicity, and a claimed failure of Keynesian economics to prevent excess inflation in the 1970s, despite this inflation being due to exogenous oil price shocks, and not any inadequacy in Keynesian demand theory. Monetarist attempts to manage the real economy by controlling the money supply encountered the problem of managing the increasingly virtual nature of money issued on plastic cards, and so monetarism resorted to seeking to control the money supply through its perceived price, the interest rate. This meant dismissing Keynes's theory of liquidity preference as well as his policy of demand management.

Monetarism therefore analysed the Great Recession with money supply as the explanatory variable. Too much credit had been advanced. Banks and governments were the culprits responsible for this mismanagement. This monetarist explanation became the populist political view. It failed to place this explanation in any wider consistent theoretical framework, failed to explain how all banks and all governments in all developed economies had suddenly succumbed to the same madness at the same time, and failed to show how the 2008 crisis could have been avoided. Its only remedy was to tighten the regulation of financial markets, increase banks' reserve ratios against their lending, and insist on balancing government budgets through the spending cuts of widespread austerity policy. It failed to explain the 2008 credit crisis in terms of underlying economic variables, crucially ignoring the decline in real wages which precipitated the credit crisis, first by requiring credit to supplement disposable consumer income, and then by being unable to repay the increased credit from further falling real wages.

The alternative Keynesian explanation for the crisis was that aggregate demand had fallen short of output, requiring credit to bridge the output/demand gap. Within this diagnostic, there are alternative neo-Marxist and neo-Keynesian sub plots. These diverge radically. In the neo-Marxist interpretation, whilst Marx's theory of history demanding the ultimate collapse of capitalism is largely unmentioned, the view remains that the decline in the share of wages in the national product is a political result of unequal market power, which can only be resolved by stronger trade unions with greater negotiating power. In the neo-Keynesian sub plot, it is technology that has reduced the wage share of output, and will inevitably do so, so that other demand stimuli are needed.

In a 2013 paper for the UK Trades Union Congress, 'How to Boost the Wage Share', Stuart Lansley and Howard Reed document a fall in the UK wage share of output over the 30 year period 1980-2011 from 59.2% to 53.7%. This is their measure of growing inequality. They then finger the declining wage share as a 'significant contributory factor in the 2008 Crash and the subsequently prolonged and increasingly intractable crisis', pointing out that this inequality is not mentioned at all in the 662 page 2011 US Financial Enquiry Commission report. The phenomenon of real wage decline is widespread. Between 1990 and 2009, the median wage share across the OECD countries declined from 66.1% to 61.7%. There are exceptions and anomalies. The wage share remains high in Denmark (65%), but curiously low in Japan (49%), despite Japan's profile as a less unequal society.

The reduction in the wage share reduces macroeconomic demand, since the marginal propensity to consume out of capital is lower than out of wages. The distribution of wages between workers has also become less equal, with a further impact on aggregate demand, since people on higher incomes have a lower marginal propensity to consume. In fact, Lansley and Reed estimate that two thirds of the fall in the wage share of output is due to this 'pay gap', leaving only one third due to the aggregate wage share itself.

Lansley and Reed dispute IMF and OECD findings that technology has driven the decline in the wage share of output, preferring explanations of 'financialisation' and reduced trade union power. They therefore argue for an increase in the minimum wage to the level of a 'living wage', the capping of high pay, and the extension of collective bargaining, which together they estimate would eliminate 25% of the 'wage gap'.

In their 2012 paper for the International Labour Organization, 'Is aggregate demand wage-led or profit-led?', Özlem Onaran and Giorgos Galanis estimate the effects of changes in the wage share on growth in the G20 countries. They find that demand is wage led in the US, Eurozone, Japan and Korea economies, but profit led in the export dominated and developing economies of China, India, South Africa, Australia, Canada, Argentina and Mexico. This depends on how far a reduction in the wage share feeds through to reduce domestic demand, compared to its effect in making exports more competitive and therefore increasing demand. Onaran and Galanis are however able to show that the aggregate world economy is wage led such that a 1% decline in the wage rate effects a 0.36% decline in global GDP.

Together, the above two papers demonstrate that there has been a substantial reduction in the wage share of output, and that this has reduced aggregate demand in the US and Eurozone economies. Lansley and Reed advance the neo-Marxist argument that the wage fall has been caused by reduced trade union power, and will be reversed by extended collective bargaining and legislative moves to raise wages. Their argument is based on the observation that unionised work enjoys a wage premium of 5-10% in the UK economy and 13.6% in the US economy. This does not unambiguously demonstrate that the wage premium is due to power dynamics, rather than being due to unionisation correlating with technology investment and higher skill wage rates.

There is a strong *a priori* case to expect technology to reduce the wage element of output. Lansley and Reed's objection is therefore questionable. If, as this paper goes on to claim, technology does have significant impact on employment and the wage share of output, and if this, via its effect in reducing macroeconomic demand, is a major cause of the 2008 recession, then the policy remedy will be different to a call for wider unionisation, however desirable that may be in its own right.

Responding to the Great Recession: Austerity

Neither Lansley and Reed, nor Onaran and Galanis deal adequately with the monetarist claim that government budgets should balance, and that the only possible policy instrument is austerity.

As a counter argument, Mark Blyth in his 2013 *Austerity : The History of a Dangerous Idea*, delivers a compelling critique of austerity. He analyses economies applying austerity, including the US, UK, Sweden, Germany, Japan and France in the 1920s and 1930s, Denmark and Ireland in the 1980s, and the Baltic states in 2008, demonstrating in each case that austerity is ineffective. It does not generate growth or reduce debt. The current hot spot crises in Greece, Spain, Ireland, Portugal and Italy are not due to profligate government expenditure, but to more differentiated specific factors. Blyth makes the point that other economies cannot follow the German example of high savings and high exports, as the UK and EU seem to expect, since the whole world cannot be a net exporter.

The intellectual claim for austerity was argued by the Bocconi University of Milan economists Alberto Alesina and Francesco Ardagna. Their core argument is that 'when spending cuts are perceived as permanent, consumers anticipate a reduction in the tax burden and a permanent

increase in their lifetime disposable income'. Alesina delivered this diagnostic to the ECOFIN meeting in Madrid in 2010, labelled by Bloomberg as 'Alesina's Hour'. The claim is very weak theoretically, and Blyth shows that the country economy data Alesina and Ardanga quote rejects rather than confirms their austerity hypothesis. Blyth, however, is also weak in proposing any adequate alternative economic policy.

Thomas Piketty 'Capital in the Twenty-First Century'

In 2014 Thomas Piketty published his *Capital in the Twenty-First Century*. The book was widely acclaimed and became a best seller. Piketty lectured in academia and advised several governments. The style of the book invited comparison to Marx's *Capital*, and the suggestion of a breakthrough in economics seemed to some to parallel Keynes.

The critique presented here of Piketty's book addresses questions of

- 1 the issue Piketty addresses
- 2 the model of economics he proposes, and
- 3 the potential for practical policy implementation of his recommendations.

As we have seen, Keynes's triumph was his achievement in exact problem relevance, his mathematically consistent explanatory model of the economy, its empirical verifiability, and the success of the implementation of his policy proposals. Against these criteria, Piketty's contribution is weak.

Piketty's issue - inequality

Piketty addresses inequality. This is without doubt a relevant, even a pressing, issue. However, whilst Piketty is able to assemble a huge database to demonstrate the undoubted dramatic increase in inequality in both income and wealth, and is able to set out some simple ratios for its measurement, he does not deliver a reliable explanatory model of inequality. He rejects Gini coefficients, preferring his proposed measure of inequality of a capital/income ratio, expressing wealth as the number of years of output. He does not, however, show how this measure expresses inequality meaningfully. The real causes of inequality are not identified, so that any policy proposal to re-engineer the economy to greater equality of outcome stands on a weak foundation.

Piketty's model

Piketty offers the disclaimer that his book is 'as much a work of history as of economics' (p. 33), suggesting that he makes no great claim for presenting a radical economic theory in the way Keynes did. He sets out three equations, which he claims as his laws of economics. However, these three equations are presented singly and not in a consistent overall model. They are core to Piketty's argument, but he does not derive them, prove them, or empirically test them. He merely states them. In this form, they cannot bear the weight Piketty then places on them. His database on the rise in inequality is valuable, but his explanatory theory is weak.

His 'first fundamental law of capitalism' (p. 52) is that $\alpha = r \times \beta$ where α is the share of capital in national income, r is the rate of return on capital, and β is Piketty's capital/income ratio. This is a simple identity, is no more than telling us that, for any a and b , $a/b \times b = a$. Piketty admits this

identity and tautology but nevertheless insists that this is the ‘first fundamental law of capitalism’, a claim I challenge, since tautologies contain no explanatory power, and cannot contribute to laws or theories.

His ‘second fundamental law of capitalism’ (p. 166) is that $\beta=s/g$ where s is the savings rate and g the growth rate. His example claims that a savings rate of 12% and a growth rate of 2% give a capital/income ratio of 600%. This is simply untrue. A simple spreadsheet shown below taking 100 units of GDP growing in row 1 at 2%/year, showing 12% saving of that GDP in row 2, cumulating that in row 3 and dividing the result by row 1 to give Piketty’s capital/income ratio in row 4, shows that it becomes 600% only in year 199.

Year	1	2	3	4	5	6
Income	100	102	104.04	106.1208	108.2432	110.4081
Savings	12	12.24	12.4848	12.7345	12.98919	13.24897
Capital	12	24.24	36.7248	49.4593	62.44848	75.69745
capital/income	0.12	0.237647	0.352987	0.466066	0.576927	0.685615

	195	196	197	198	199	200	201	202
Income	4660.509	4753.719	4848.793	4945.769	5044.684	5145.578	5248.49	5353.46
Savings	559.261	570.4463	581.8552	593.4923	605.3621	617.4694	629.8188	642.4151
Capital	27922.31	28492.76	29074.61	29668.11	30273.47	30890.94	31520.76	32163.17
capital/income	5.991259	5.993783	5.996258	5.998684	6.001063	6.003395	6.005681	6.007923

Not only does this ‘fundamental law’ take so long to be true, as Piketty admits, but it is only true in that year and thereafter continues to grow, contrary to his claim that it reaches a long term equilibrium. There is a fundamental arithmetic inconsistency in Piketty’s claim. For β to asymptote to a value of s/g , β would have to be constant and repeatedly multiplied by s/g . Yet β cannot be constant.

The implication of Piketty’s two ‘laws’ that $\alpha=r\beta$ and $\beta=s/g$ is that $\alpha/r=s/g$ or that $\alpha g=sr$, i.e., that the share of capital in national income multiplied by the growth rate equals the rate of return on capital multiplied by the savings rate. It’s not at all self-evident why this should be the case. Neither does Piketty show why it should be the case, starting from either clear assumptions or self-evident truths to derive this claimed equation. Moreover, this fails to be true in reality for any representative typical co-existing set of these parameters. Typically for the UK economy, the savings rate is 5.4%, the growth rate is 3.2% so that their ratio = $5.4/3.2 = 1.6875$, whereas the typical share of wages in GDP is 60% so that the share of profit is 40% and the rate of return on capital is about 5% so that their ratio is $40/5 = 8$, i.e., α/r does not at all equal s/g .

Piketty’s third equation claims that $r>g$ drives capital accumulation. r and g are however measures in different entities. r is a ratio of proportion, whereas g is a first differential over time. Equations and inequalities require variables on each side to be in the same equivalently defined entity. My challenge is that Piketty’s comparison of the return to capital to the growth rate appears to be comparing apples to oranges. His entities do need more specific definition. We can’t compare apples and oranges, but we can compare fruits, or the weight of apples and oranges. More exact definition

of each entity and a demonstration of how the relationship between them is derived, may well annul this challenge to his third equation. In summary, Piketty needs to derive his claimed laws from first principles, and show their meaning in an overall model.

Piketty then conflates capital and wealth ('I use the words 'capital' and 'wealth' interchangeably' (p. 47)). This obscures more than it elucidates. Capital traditionally defined in economics is the means of production. It is an input to the economic process. Wealth by contrast is an output. We might very well care differently about how much capital and wealth we have, and who owns them. More effective capital may drive up output, whilst more wealth has no creative function and attracts a moral question. Piketty is wrong, analytically and morally, to confuse the two in one measure. He is also unnecessarily and unjustifiably disparaging in very short measure of Marx (pp. 227-230), Keynes (p. 220), mathematical economics (p. 32), and economists generally (pp. 296, 437, 514, 573, 574).

Piketty's policy proposal

Piketty's main observation is well taken. Ownership of wealth has become increasingly unequal. His remedy is a global progressive tax on capital. By this he means all capital. But he doesn't say what effect a progressive tax on each form of capital would have, how it would be paid, and what should be done with the payment. Would companies owning productive assets have to hand factories to the state? Or to the poor? Would house owners have to sell their houses, or shareholders their shares, in which case would their price be sustained? Or is he assuming asset owners also have income to pay the capital tax, in which case it becomes an income tax? And what's the point? The purpose Piketty tells us on page 518 is 'to regulate capitalism' and thereby to 'avoid crises'. But he doesn't tell us how capitalism would be thereby made more acceptable or how crises would be avoided. He also admits it will never happen, thereby admitting failure against the criterion of implementable and successful policy prescription, which was Keynes's measure of success.

Piketty observes inequality, but fails to explain it. He should do more to investigate and attack the processes which generate inequality, such as lack of market regulation. For example, more effective regulation would have avoided Bill Gates becoming obscenely wealthy based on Microsoft's extreme and unjustified monopoly rate of profit in the software market, and also avoided billionaire build up in natural resource markets.

Towards an Alternative Paradigm : Technology, Productivity and Real Wages

Erik Brynjolfsson and Andrew McAfee in their 2012 *Race Against the Machine*, updated in their 2014 *The Second Machine Age* argue that technology is continuing to radically increase productivity and to reduce real wages. They show convincingly that ICT (information and communication technology) is a general purpose technology, and that its combination with other technologies will overcome any apparent 'productivity paradox' whereby ICT productivity growth slows. Productivity will continue to soar, driven by artificial intelligence and global interpersonal networking. They give lots of interesting examples. They correctly point out that GDP in any case understates economic growth by ignoring the increased consumer surplus of technology driven price reductions, and the abundance of new digital service consumer value. They present the social cost of reduced wages and vastly increased inequality. Their policy recommendations are education, entrepreneurship, and a negative income tax.

There are gaps in their analysis. They admit that computers perform less well at tasks like pattern recognition, but dubiously they expect ever more from digitisation which is essentially 'bottom up', compared to 'top down' analogue human perceptions. Classic cases of this distinction are the human ability to distinguish one person's face whether they are smiling or scowling, and computer difficulty to translate newspaper headline phrases like 'Foot heads arms body' or 'Canadian left waffles on Falklands'. They don't address Hubert Dreyfus's critique of the scope and capability of artificial intelligence. They close their book with a statement that they are not persuaded that technology is deterministic – 'Technology is not destiny. We shape our destiny' (p. 257) without mentioning the extensive discussion of these issues in the literature on the philosophy of technology. They could have included some discussion of how technology gets or fails to get to market by analysis of its downstream business case, competitive price/performance positioning, and viable value chain. These gaps weaken their discussion.

The economic analysis is also weak. In a thought experiment of a totally automated economy with a machine plugged into the earth to produce the total GDP, there would be no wages. This is an extreme of the present position they present of declining real wages. There would be no demand in the economy, rather than the deficient demand we have now. It's a Keynesian problem. The only solution to this would be the distribution of government vouchers, or a basic, or citizen's income. Brynjolfsson and McAfee reject basic income proposals on the grounds that this would disincentivise work, but Malcolm Torry in his 2013 book on citizen income *Money for Everyone* convincingly shows this argument to be wrong. Basic income is in fact the only solution to ultimate pervasive automation.

Keynes is noted for his comment on the phenomenon of technology creating output with vastly reduced labour input, leading to a greater problem of demand deficiency. In his 1930 paper 'Economic Possibilities for our Grandchildren', Keynes had predicted that in the 100 years from 1930 to 2030, 'the standard of life in progressive countries will be between four and eight times as high as it is today'. He assumes 'no important wars and no important increase in population'. He suggests this will lead to a 15 hour working week, and a life of leisure. This paper is reviewed in Lorenzo Pecchi and Gustavo Piga's 2010 *Revisiting Keynes - Economic Possibilities for our Grandchildren*. Their collection of essays is inspiring and hugely relevant. The general agreement of the authors is that Keynes was correct about GDP per capita growth through technology and capital accumulation, but wrong about decreased working hours and increased leisure.

Zilibotti (2010) confirms that Keynes's growth prediction was overachieved. For a range of countries between 1950 and 2000, GDP per capita increased by 4 times in 50 years, rather than Keynes' 100 years, and in 100 years would have increased 17 times (p. 28). Conversely, we all know that working hours have not dropped so dramatically. Freeman shows that whilst US GDP per capita is 30-40% above that of France, US workers work 40% more than French workers (p. 136). Europeans may have taken productivity gains in leisure, but Americans have not. Reasons for Keynes proving so wrong about working hours reduction include unanticipated demand for new products and services such as enhanced medical care, huge product quality increases, 'necessary' personal consumption being relative across time and between people, new economic participation structures which increase the apparent necessity of cars, telephones, computers, and work valued as creative endeavour and social engagement. Keynes clearly did miss distributive effects, both between countries and within countries between people, although he did explicitly limit his thesis to what he called 'progressive countries'.

An important issue is opened up in Robert Solow's paper in the collection (2010). Solow, a distinguished emeritus professor at MIT and Nobel Laureate, points out that with burgeoning production from advanced technologies 'the wage will absorb only a small fraction of all that output. The rest will be imputed to capital...the extreme case of this is the common scare about universal robots : labour is no longer needed at all. How will we then live?The ownership of capital will have to be democratised...(needing) some form of universal dividend...Not much thought has been given to this problem' (p. 92).

Solow, as so often in his long career, has identified the key issue to emerge from re-consideration of the idea in Keynes' paper. Wages are decreasing as a proportion of GDP. Stiglitz (2010) points out that US wages 'are lower in 2004 than in 1974...for most workers, real wages were not increasing' (p. 47). Frank shows that the US savings rate reduced from the mid 1980s and 'became negative in 2005' (p. 147).

So the key issue to emerge from reconsidering Keynes's theme is the technology led de-linkage of productivity and real wages, which is responsible for the current crisis. This has led to deficient effective consumer demand for the increased output, a gap initially funded by unsustainable credit. It is an urgent necessity to face the dilemma Solow identifies, and give it the thought he points out has been lacking. Only a universal credit or basic income can overcome the de-linkage between productivity enhanced output and falling real wages. This is why the analysis urgently needs to be taken further by professional economists. Otherwise ill-considered current government deficit reduction programmes will continue to chase their tail in a downward spiral.

Basic Income as evolved Keynesian policy

The de-linkage of productivity and real wages is the underlying cause of the 2007 economic crisis. As a result of this delinking, consumer income lagged output GDP, and the gap was funded by consumer credit and increased deficit-financed welfare payments. This proved unsustainable, and so led to current austerity policy and spending cuts. An alternative paradigm is needed in which the financial sector is re-engineered and financial instruments redefined to serve the real economy. Deficient demand and financial deficit are inevitable in advanced technology economies. The only ultimate solution is a basic income funded by quantitative easing in proportion to output GDP and not counted as deficit.

There is a relevant issue. The debt crisis persists. In the US, the Eurozone, and the UK, politicians are implementing dire austerity packages. UK debt will not now be written off in the life of this Parliament. Greece, Spain and Italy may be in the worst position, but the phenomenon deeply affects the majority of developed economies. The apparent easing of economic conditions in 2014 does not alter this fundamental underlying crisis.

The inheritance of monetarism

How has this come about? The popular answer trotted out as the daily news mantra that governments have been reckless, bankers have been greedy, and consumers have been overspending, is too simplistic. The problem has deeper roots and causes, and will continue unabated unless these are better understood and addressed by policy.

Current talk is entirely monetarist. Economics itself is in crisis. It is reduced to some sort of meta-accountancy. Keynes is derided by people who have never read him. Leading economics media commentators often have no formal economics training or degree. Economics degrees themselves have often been restyled as 'economics, finance and business' degrees, (e.g., Harvard Business School Doctoral Programme, 2015).

The British Chancellor of the Exchequer thus tells the nation that it 'cannot afford' economic activity, which has to be cut because we simply 'don't have the money'. A typical example can be found in the UK Telegraph newspaper report 'Autumn statement: George Osborne must demonstrate his prudence' (The Telegraph, 2014).

But the real economy is about real resources of people, skills, infrastructure, technology, land. They are all available.

It's curious that human societies allow the money they themselves create as artefact to serve the real economy, to then dictate their real economic behaviour. The tail really is wagging the dog. In the present structure, governments must raise money from the bond markets, who insist on repayment at interest rates which these markets determine according to their own level of confidence. Thus society and its governments are entirely subject to the prescriptions of bond dealers and credit rating agency speculators, who have no remit or capability in social governance. Curious again, that UK political comment on Britain's EU membership is so troubled about 'handing sovereignty to Brussels', and to non-elected technocrats, but is entirely supine in handing far greater sovereignty to bond dealers and credit rating agencies. Standard and Poor's, Moody's, and Fitch are entirely unelected and lack any democratic accountability, and yet are allowed to sit in easy judgment on our total economies, and to determine their prospects and scope for action. We can thank Michel Barnier, the 2010-2014 EC Internal Market Commissioner, for seeking to constrain them. He deserves our support (see Barnier, 2013).

A virtual theory of money

We need a new paradigm in which we understand money and financial agencies as servants rather than as masters of the real economy. Money is virtual, not real. It does not obey the laws of thermodynamics. It can be created or destroyed. Commercial banks do this regularly. They operate lending ratios whereby they lend a multiple of the deposits lodged with them. Market economies 'print money' all the time in this way as a regular practice. A sustained total run on the banks would always cause them to collapse. The system is supported only by confidence.

Society has always felt uneasy with this virtual nature of money. There has been a strong feeling that money should be 'backed up' in some way. Hence the introduction of the Gold Standard by which money in circulation was in proportion to a country's gold reserves. This severely limited demand in times of depression. There is no logic in linking the economy's currency to the amount of a precious mineral dug out of the ground. No country now operates a gold standard for its currency management.

However this has been replaced by a new limit of government bonds. Instead of needing to hold gold reserves, governments are now thought to need to sell bonds to private investors in order to obtain money for additional currency circulation. This is as false, unnecessary, and illogical a constraint as the gold standard. What ultimately and uniquely 'backs up' money is real output. The

only rule is that the amount of money in circulation has to be matched by real output, if its value is to be maintained, and hyper-inflation avoided. Money does not have to be supported by gold, or by bond purchases, or by balanced budgets, but only by output GDP. To allow monetary factors to determine policy for the real economy is like trying to accelerate a car by bending its speedometer needle.

An alternative neo-Keynesian diagnostic

So what alternative diagnostic of the ongoing debt crisis is available? The thought experiment mentioned above might help. In an imaginary totally automated economy with no workers, there would be no wages, and therefore no effective monetised demand. Goods and services would therefore have to be allocated by government to consumers by some voucher or shareholder mechanism. As the late Bob Crow, the UK RMT union leader put it in his 'Lunch with the Financial Times' interview in March 2011, paraphrasing the 1950s US trade union leader Walter Reuther, 'if you have robots build cars, how are robots going to buy them?'. A more erudite version of the same concept is that of Professor Robert Solow, a distinguished emeritus professor at MIT and Nobel Economics Laureate cited above.

In this scenario, the total voucher expenditure by the government would represent an unavoidable deficit, which would never be paid off. We are not there, but we have strong elements of this scenario in our modern technological economies. The delinking of productivity and real wages makes deficit inevitable.

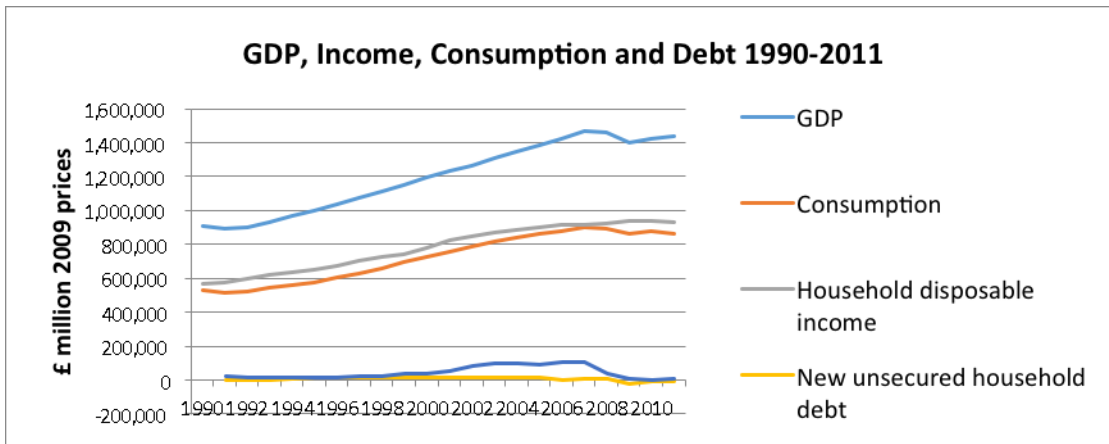
A general diagnostic for technologically advanced economies then emerges that whenever productivity exceeds real wages, and if the difference is not fed through to consumer demand via increased shareholder dividends or social transfer payments, then consumer demand will be insufficient to purchase output GDP. In this situation, which can and does occur, the shortfall in consumer demand can be made up by extended consumer credit and welfare payments, or output GDP can be cut in a recession. The diagnostic resonates with Marx's and Keynes's thinking on the implications for technology, automation and productivity on the economy, but should not be dismissed for this honourable association.

A recent history of the problem

2007 was the root of the present crisis. If we go back to UK economic data then, we find that between 2001 and 2007

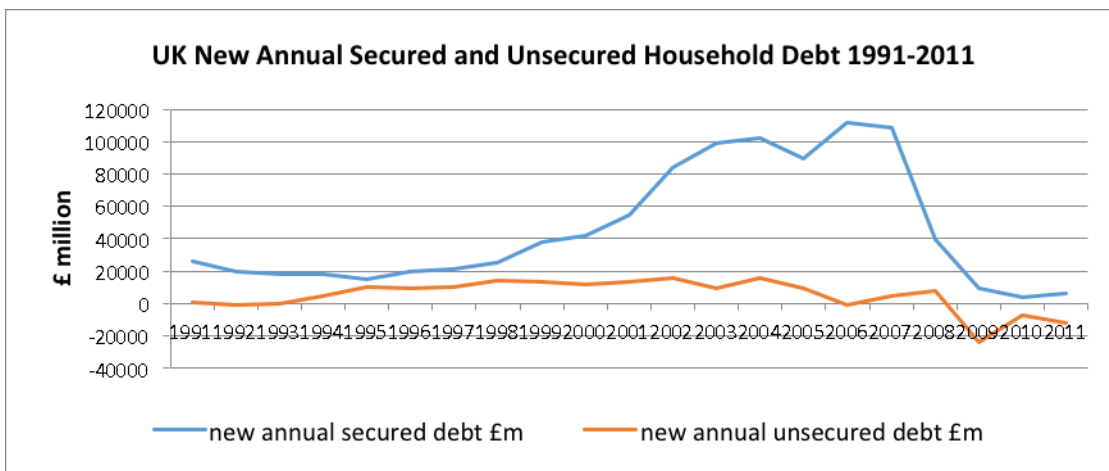
- GDP and consumption grew by 19.5%
- real household disposable income grew by only 11.5%
- the gap was met by increased household credit

This is shown in the following graph



Source: ONS data

The dramatic increase in household credit is less apparent in the scale of the above GDP diagram but is evident when graphed alone in the following diagram



Source: ONS data

New consumer debt became essential to fund the purchase of output GDP. Without it GDP would have fallen due to decreased effective demand, and employment, wages and income would then have fallen as a consequence.

Vicious circles

The current system faces two alternative vicious circles, either that

1 increased productivity reduces the aggregate wage and household income element of GDP and this demand drop leads to a GDP recession

or

2 the demand gap is filled by increased consumer credit and government debt to fund welfare payments, which becomes un-repayable in the next period.

Neither is sustainable and leads to banks reducing consumer credit, and government cutting the real economy in the mistaken belief that this will eliminate its deficit. This is where we are now, and

without a radical rethink, we will be chasing our tails forever in the doomed attempt to write off deficits from an ever shrinking GDP. Those who call for increased UK government expenditure under a Plan B to raise GDP, which would then raise the tax take and reduce welfare payments and hence reduce the deficit, are derided by their critics who ask how it can be possible to incur debt to reduce debt. But the government's Plan A insistence on cutting the economy to reduce the deficit has to explain how GDP can be increased by cutting GDP.

The new paradigm

An alternative paradigm is needed to frame an alternative policy. There is nothing wrong with the real economy. Its factories, transport and communications infrastructure, skilled labour, restaurants etc. are all fully operational and highly efficient. There is also plenty of real demand for goods and services, especially globally from developing country consumers. It is purely the financial system that is disabling the real economy, and it is the financial sector which therefore urgently needs re-engineering.

It is commonly said that banks lent too much credit in 2007, firstly in the US sub-prime mortgage market, and then widely in the UK economy. But the above analysis shows that bank lending was needed to purchase GDP output, a claim that is substantiated by the lack of inflation in goods and services markets both then and throughout the 'NICE' decade. It is true that asset prices inflated, but this resulted from any credit beyond the GDP/disposable income gap.

Distributive considerations

Productivity growth in excess of real wage growth, and the gap between consumer income and GDP output this produces, has distributive consequences. Between social groups, it tends to disfavour the poor, who rely on the wage element of income, who suffer the loss of low skilled employment when automation displaces labour, and whose access to credit as a replacement to wages is weak. Welfare payments are their only recourse. Surprisingly, the Institute of Fiscal Studies report 'Poverty and Inequality in the UK: 2011' shows that increased welfare payments did overcome income disadvantage. According to the IFS study, child poverty at 20% was by then the lowest since 1985, and pensioner poverty was lower than at any point in the previous 50 years.

The sectoral distribution of GDP is also affected by automation. Manufacturing employment and real wages per unit of output will fall, and much of this employment is transferred to low wage service sectors of the economy, only some of which like banking are subject to automation and productivity improvement. From anecdotal evidence, increased low productivity low wage service sector employment has absorbed employment reduction in more automated manufacturing sectors, and masked the effect of productivity in reducing aggregate real wages. Population growth is another factor masking the demand deficiency resulting from the delinkage of productivity and real wages.

We could of course take the view that reduced consumption is exactly what we want as part of a new ascetic paradigm to conserve world resources. Competition for these natural resources from China and India may well force this choice on us anyway. But if we do pursue this option, income redistribution to those newly unemployed through productivity gains unmatched by new demand, will be an essential part of the paradigm. Some form of welfare payment which does not add to government debt would have to be found.

Basic income – effective Keynesian policy to manage inevitable deficit as productivity grows

What is needed in the new paradigm, where it is accepted that the delinkage of productivity and real wages will make an element of deficit financing inevitable, is a non-repayable financial instrument, a universal credit, non-repayable at both consumer and government level.

Proposals for a basic income are longstanding. Clifford Douglas was an early pioneer in his 1920 *Economic Democracy* and 1924 *Social Credit*. His basic income proposal was developed from the same Keynesian observation that the value of goods and services produced by industry exceeded the wages available to purchase them. Samuel Brittan, then assistant editor of the *Financial Times* and Steve Webb, currently UK Minister of State for Pensions, developed a detailed proposal in their 1990 *Beyond the Welfare State – An Examination of Basic Incomes in a Market Economy*. Samuel Brittan wrote as a neo-classical economist according to whom workers need to price themselves into work by accepting a low market-clearing wage. This surprisingly ignores the superior Keynesian diagnosis of the wage as effective macroeconomic demand set out above, but Brittan did recognise the moral failure of the low market-clearing wage and called for a basic income supplement. Steve Webb appeared to accept Brittan's neo-classical analytic, and advocated a basic income to alleviate poverty, modelling several schemes in detail.

The Keynesian economic argument for basic income is one of the three main arguments advanced, viz.:

1 Social justice

Guy Standing, Professor of Development Studies at the School of Oriental and African Studies, University of London in his 2010 'The Precariat' and 2014 'A Precariat Charter' argues that all citizens have a right to socially inherited wealth.

2 Welfare system effectiveness

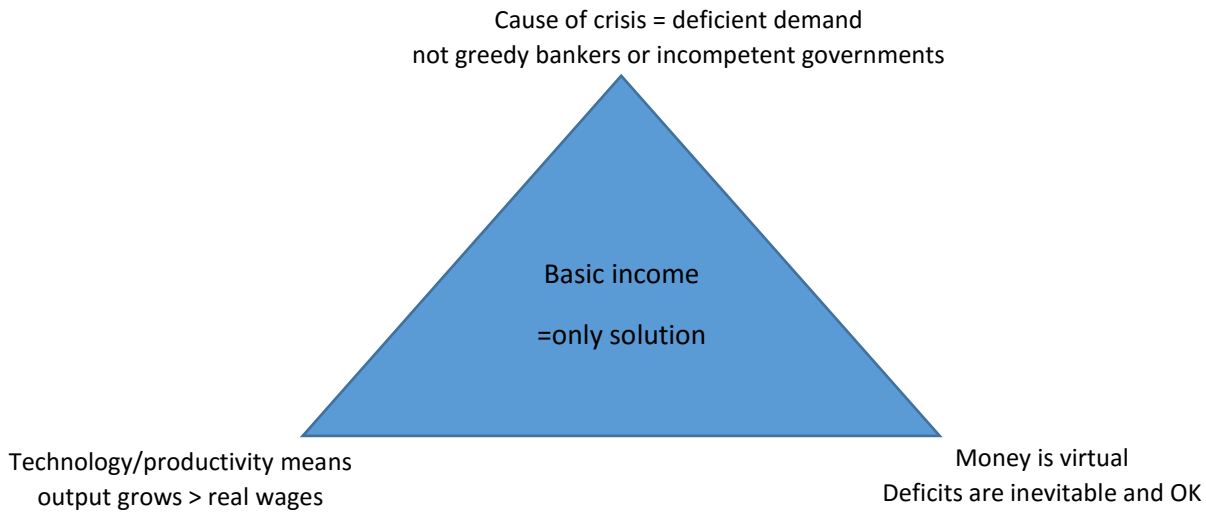
Malcolm Torry, Director of the Citizen's Income Trust, in his 2013 *Money for Everyone: Why We Need a Citizen's Income*, argues that a basic income is the most effective means of welfare, avoiding the high marginal deduction rates of current benefits which create the familiar unemployment and poverty traps.

3 Economic necessity

This is the argument of the current paper. It relies on a 'radical triangle' of three propositions shown in the following diagram that

- technology-led growth in productivity exceeds real wage growth, leading to deficient macroeconomic demand
- the 2007 economic crisis was due to this deficient macroeconomic demand and not to greedy bankers or incompetent governments
- money is virtual, needing to be supported only by output GDP: deficits are inevitable and manageable in advanced technology economies

The Radical Triangle



Basic income would not be means tested, would not be repayable by the consumer, and would be financed without incurring government deficit. This can be readily done by creating a public sector bank with a government deposit, and a lending ratio set to exactly meet the shortfall between output GDP made possible by increased productivity, and flat or declining real wages. It would be necessary to ensure that the basic income is spent and not saved, so that it had the intended effect on demand in the economy. One way to do this might be to issue credit cards with stored values which were erased at the end of the year.

If the increased consumer credit of 2007 had instead been funded in this way, the economy would not face the crisis it faces today. We have to think outside the box. Calls for a plan B in the UK are stuck within the present paradigm. This new paradigm would re-engineer the financial sector and the management of inevitable debt. It would release the real economy from artificial financial constraint, and deliver sound finances built on the same productivity advances. It would also greatly enhance social cohesion.

Basic Income and Economic Theory

We have shown that the economic necessity of basic income derives from a Keynesian analysis of demand deficiency. We have identified technology and productivity as the causal factors behind real wage decline compared to output. The basic income proposal derives from Keynesian theory. It gains nothing from Piketty, whose alternative policy proposal for a global tax on capital is an unworkable distraction.

The argument of the paper is summarised in the following diagram. For ease of presentation, the timeline runs down the diagram, showing historic economic event and the theorising each event generated. The claim is that theory is event dependent and event relevant. The evolution of economic theory is then set out against the timeline, in each case highlighting key components of the theory and their implications for economic policy. Keynesian economic theory and policy is shown to survive, and to generate basic income as its current policy proposal.

Timeline of Economic Event, Economic Theory and Policy				
Economic Event/Era	Economic Theory			
	Economic Policy			
19th century Mercantilism	neo-classical			
	determinant = price lower wages in depression			
1930s Great Depression		Keynes		
		wage=demand multiplier liquidity preference demand led investment demand deficiency demand management government spend		
1970s Inflation = OPEC oil price shock			Friedman monetarism	
			excess money supply money supply control interest rate management	
2008 Great Recession		neo-Keynesian	neo-Monetarism	
		basic Keynesian theory + productivity>wages + virtual theory of money basic income funded by QE deficits inevitable and OK	excess consumer credit balanced budgets austerity	
2014 Inequality				Piketty
				no theory global wealth tax
2014 Technology and Productivity led Output Growth		neo-Keynesian		
		basic Keynesian theory + productivity>wages + virtual theory of money basic income funded by QE deficits inevitable and OK		

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