“KEYNESIAN ECONOMICS– BACK FROM THE DEAD?” THE GODLEY-TOBIN LECTURE

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Abstract

This paper surveys some the main developments in macroeconomics since the anti-Keynesian counter-revolution forty years ago. It covers both mainstream and heterodox economics. Amongst the topics discussed are: New Keynesian economics, Modern Monetary Theory (MMT), expansionary fiscal contraction, unconventional monetary policy, the Phillips curve, and hysteresis. The conclusion is that Keynesian economics is alive and well, and that there has been a degree of convergence between heterodox and mainstream economics.

JEL Codes: E60, E10, E31, B22.

Keywords: Macroeconomics, Keynesian economics, Keynes

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1. Introduction

When Thomas Palley asked me to give this year's Godley-Tobin Lecture, he suggested that I might present my views about modern developments in macroeconomics. At first, I baulked at the idea of covering such a vast field, but then I decided it would be an interesting challenge.

To the extent that there is one, the underlying theme of my lecture is that, since the initial anti-Keynesian counter-revolution forty years ago, Keynesian economics has made something of a come-back. It would be an exaggeration to say that 'we are all Keynesians now', but surveys indicate that many leading economists in the USA and the UK have Keynesian sympathies (IGM Forum, 2014), (CFM, 2014).

2. Background

Forty years ago macroeconomics was dominated by Keynesians. Many of their views could be traced back to Keynes, although there had also been various innovations by authors such as Alvin Hansen, John Hicks, Abba Lerner and William Phillips. The defining features of Keynesian economics included a rejection of Say's law – the notion that supply creates its own demand; the paradox of thrift whereby an attempt to save more may result in less total saving because of its negative impact on aggregate income; a clear distinction between saving as abstention from consumption and investment as expenditure on productive capital; the view that saving and investment are brought into equality by variations in aggregate income.

Keynesians believed that a capitalist economy is crisis-prone and in the absence of an external stimulus may get stuck in a prolonged depression. They believed that conventional monetary policy is ineffectual in such a situation - 'like pushing on a string' – and that fiscal policy (tax cuts, more government expenditure) is a more effective way to promote recovery. This was probably their most important tenet. Some Keynesians believed that persistent unemployment is explained by the (inescapable) downward rigidity of money wages. Others disagreed. Some Keynesians believed in the existence of a stable trade-off between unemployment and inflation (the Phillips curve). Some believed in the importance of dynamic returns to scale (Verdoorn's law, learning by doing). Like Keynes himself, many stressed the importance of radical uncertainty in economic behaviour as opposed to quantifiable risk which is such a prominent feature of modern DSGE models.

By the late 1960s, and especially during the oil crisis of the 1970s, governments were finding it difficult to reconcile full employment with low inflation. This failure

led to a backlash against Keynesian economics and ensured a hearing for economists who rejected much of the Keynesian heritage. These were known as the 'new classical economists' – not to be confused with neoclassical (Hoover, 1988).

The main theoretical innovations of the new classical economics were: the Lucas critique, micro-foundations, time inconsistency and rational expectations. I should like to discuss these topics in depth, but there is no time.

3. The New Keynesians

The new classical economics gave rise to what are known as Dynamic Stochastic General Equilibrium (DSGE) models. These models were developed by Kydland and Prescott (1982) and Prescott (1986) in their work on real business cycles. So-called 'ad hoc' behavioural equations describing relations between aggregate variables were replaced by optimisation conditions for consumers and firms. The key tenets of these early DSGE models were perfect competition, market clearing, complete markets and rational expectations. Business cycles were seen as efficient responses to technology shocks.

Real business cycle theory gained a following amongst academics but had little influence on central banks and other policy makers. Some of the predictions of the theory were at odds with reality or made implausible assumptions about parameter values (Mankiw, 1989). In the light of these failings real business cycle theory was soon modified. The assumption of perfect competition was replaced by monopoly pricing and provision was made for nominal wage and price 'rigidities' (Calvo pricing). The new theory continued to assume complete markets and optimising agents with infinite time horizons and rational expectations. This new theory became known as New Keynesianism, because business cycles were no longer viewed as efficient and markets did not always clear.[1] It has become the dominant paradigm in mainstream macro-economics.

New Keynesian models have undergone many changes over the years. For example, the influential Smets and Wooters (2003, 2007) model in addition to nominal wage and price 'rigidities' also contained real 'rigidities' in the form of habit formation in consumption, costs of adjustment in capital accumulation, and variable capacity utilization. Other New Keynesian models include modifications such as the existence of a financial sector, a zero lower bound for the interest rate, and a fraction of 'hand to mouth' or credit constrained consumers. In the HANK (heterogeneous agent New Keynesian) model of Kaplan, Moll and Violante (2018), the economy is populated by a continuum of households indexed by their holdings of liquid assets,

illiquid assets, and their idiosyncratic labor productivity. In the SAM (search and matching) models, involuntary unemployment arises because of frictions in the operation of the labour market.

The effect of these numerous, sometimes 'ad hoc' changes is to make the original DSGE models more realistic and allows them to generate Keynesian results. The assumption of sticky wages and prices allows monetary policy to have real effects. The inclusion of credit constrained or hand to mouth consumers may yield Keynesian results for fiscal policy.

Stiglitz (2018) has described these various modifications as Ptolemeic epicycles and he regards their proliferation as a sign that the New Keynesian research programme is degenerate. Others see the continuing stream of modifications as evidence of the programme's vitality. Either way, the effect of these modifications is to generate certain Keynesian results. However, in terms of basic methodology, New Keynesianism remains far removed from either Keynes or traditional Keynesianism.

The difference is most striking in their treatment of expectations. Whereas Keynes stressed the importance of radical uncertainty and animal spirits, the New Keynesians assume that decision-making is based on quantifiable, known probabilities, and that agents maximise an infinite stream of expected net benefits. After a transient shock, agents re-optimise and follow a new path that, in the absence of further shocks, will take the economy back to the original equilibrium trajectory. Keynes explicitly rejected this way of thinking as the following quotation indicates:

> 'The orthodox theory assumes that we have knowledge of the future of a kind quite different from that which we actually possess. This false rationalization follows the lines of the Benthamite calculus. The hypothesis of a calculable future leads to a wrong interpretation of the principles of behavior which the need for action compels us to adopt, and to an underestimation of the concealed factors of utter doubt, precariousness, hope and fear.' (Keynes, 1937, p222)

The New Keynesians also depart from Keynes is their treatment of consumption and saving. They assume that a significant fraction of households maximize their discounted expected utility, subject to an intertemporal budget constraint. If such a household reduces its consumption in one period, it will simultaneously increase planned consumption in some future period. This relationship between present and future consumption is expressed in an Euler equation. Keynes (2017, p182) rejected this view of saving:

> 'An act of individual saving means – so to speak – a decision not to have dinner today. But it does *not* necessitate a decision to have dinner or buy a pair of boots a week hence or a year hence or to consume any specified thing at any specified date. Thus, it depresses the business of preparing today's dinner without stimulating the business of making ready for some future act of consumption. It is not a substitution of future consumption-demand for present consumption-demand – it is a net diminution of such demand.'

4. Other Models

New Keynesian models did not entirely replace other types of macro-model. A number of institutions continued to use more traditional econometric models. For example, for the past twenty-five years the Federal Reserve has maintained an econometric model of the US economy that currently contains around 370 variables (Lafort, 2018).

The Bank of England's chief economist, Andy Haldane, has been a vocal critic of the intellectual monoculture in macro-economic modelling and an active proponent of diversity. Alongside its basic New Keynesian model COMPASS, the Bank has a suite of other models. Haldane himself has used network analysis to explore how contagion can lead to systemic liquidity crises of the kind associated with the interbank market collapse of 2007–2008 (Gai, Haldane and Kapadia, 2011).

The Bank of England has also been investigating the use of 'stock-flow consistent' (SFC) models of a type pioneered by James Tobin (1982) and Wynne Godley (Godley and Lavoie, 2012). In these models, every financial or real flow comes from somewhere in the economy and goes somewhere. As Burgess et al (2016, p. 3) explain in a Bank of England working paper:

> '[The models] … can be used to analyze the evolution of gross positions of financial assets and liabilities and gross and net financial flows … they allow for feedbacks from financial asset positions to real economic decisions; variables within the models react differently to policies imposed slowly or quickly thus finding different steady states; they allow for an important, and realistic, role for money, credit and banks…'

SFC models are not a panacea, but if their use had been widespread, perhaps alongside New Keynesian models, macroeconomics might have evolved differently before the crisis. The role of the financial sector and its potential for instability might have been more widely appreciated, and more attention devoted to its workings. There might also have been more appreciation of the macroeconomic importance of the housing market.

5. The Financial Crisis: Who Saw it Coming?

Feldstein (1991) warned that economists were devoting too little attention to the analysis of crisis and were more concerned to understand the economy in normal times. This view was echoed in a trenchant critique of conventional macroeconomics by Buiter (2009) who claimed that

> 'the typical graduate macroeconomics and monetary economics training received at Anglo-American universities during the past 30 years or so, may have set back by decades serious investigations of aggregate economic behaviour and economic policy-relevant understanding.'

The Queen of England famously asked why economists had not predicted the financial crisis. The obvious answer is that they were using the wrong economic models. But this is too superficial. Their choice of model itself reflected their beliefs about the nature of the economic and financial system. They assumed that the modern market economy is intrinsically stable or that policy makers – faith in Greenspan and the like – would always succeed in avoiding a potentially catastrophic failure, forgetting the experience of the 1930s. To the extent that they thought about the matter, they shared Greenspan's optimism when he spoke about the

> 'development of financial products, such as asset-backed securities, collateral loan obligations, and credit default swaps that facilitate the dispersion of risk… These increasingly complex financial instruments have contributed to the development of a far more flexible, efficient, and

> hence resilient financial system than the one that existed just a quarter-century ago.' (cited in Bezemer, 2009)

It is not entirely true that no-one saw the crisis coming. Bezemer (2009) lists a dozen economists, including Wynne Godley, who warned that events in the housing market were creating the potential for a serious crisis. The house price bubble would soon burst, millions of families would lose their homes and household expenditure would fall, pushing the economy into recession.

Most of the authors who warned of trouble ahead did so without a deep analysis of the banking system and how it had developed. They stressed the leverage of households and sometimes of companies, but not the leverage of the banks and shadow banks. They largely ignored derivatives, collateral debt obligations, synthetic CDOs, and all the rest. The post-crash wealth effects alone cannot explain the large output fall, as Bean (2009) and Martin (2010) have pointed out.

Amongst the few economists who did analyse developments in the financial sector were Borio and White (2004) and Rajan (2005). They warned in general terms about the growing complexity and fragility of the financial sector, although they did not explicitly forecast when a crisis would occur.

Despite these exceptions, it remains true that most economists of whatever persuasion failed to see the crisis coming, and most of those who did foresee the crisis were surprised by its eventual severity. The economics profession took its eye off the ball, failing to see what was happening in the financial sector or to appreciate its significance for the wider economy.

6. Modern Money Theory (MMT)

This is a convenient point to introduce Modern Monetary Theory. MMT is a Keynesian-style theory that has gained a certain following, especially since the financial crisis. The canonical statement of this theory is Randall Wray's primer on the subject (Wray, 2015). MMT is well-known for its claim that a sovereign currency is in demand exclusively because people must pay their taxes in this currency. 'Taxes drive money'. I shall not debate the merits of this claim, since it is not of great importance in the present context. The central macro-economic propositions of MMT of interest to us here are as follows. In a country with its own sovereign fiat money, the consolidated government sector, including the central bank, has no budget constraint. Government expenditure is financed in the first instance by issuing currency ('money creation'). This is normally done by crediting

the recipient's own bank with additional reserves at the central bank. The purpose of taxation is not to raise funds, but to reduce the capacity to spend of the domestic non-government sector. The aim is to restrain aggregate demand and thereby defend the national currency. If aggregate demand is excessive, the purchasing power of the national currency will decline: each unit of it will purchase fewer domestic goods and services, fewer assets and less foreign currency. Apart from these considerations, there is no limit on the government's ability to finance expenditure through the issuance of currency (money). The government can also issue interest-bearing bonds. If investors are reluctant to hold these bonds, the government can purchase them using money created by its own central bank.

This is an interesting way of looking at taxation, but as Wray himself points out, it is not original. It goes back at least to Ruml (1946). It has the following implications. In a country with its own sovereign currency, the size of the national debt only matters to the extent that it affects domestic inflation and the exchange rate against foreign currencies. In a closed economy, provided the government can compel the use of its sovereign currency, it can never go bankrupt. It can always cover its budget deficit, however large, by issuing additional currency. This does not mean there is nothing to worry about, since the effect of such a policy may be unsustainable inflation. In an open economy, even with a sovereign currency, there is a risk that monetizing the government deficit on a large scale will lead to a collapse in the exchange rate. In this case, the government may not be technically bankrupt, but its currency may become almost worthless. Such dangers are recognized by Wray, but are not given sufficient weight.

In theory, the government can avoid these dangers by cutting expenditure or raising taxes if it looks as though inflation is getting out of hand or the exchange rate is collapsing. However, as Latin American experience shows, political pressures may inhibit such a response. The government may resort instead to ineffectual policies such as price controls, whilst continuing to run a large budget deficit and creating money on a prodigious scale (Edwards, 2019). A policy of monetizing the deficit may create popular expectations that make it difficult to abandon this policy when the need arises. The problem is one of political economy rather than technical economics. The challenge is to ensure that the power to create money is not abused.

Palley (2014) has criticized MMT for having no explanation of how full employment can be combined with price stability. Wray's answer is a job guarantee programme (JGP). Anyone out of work would be offered employment at a fixed wage. Wray rejects a universal basic income on the grounds that it pays people for doing nothing. The JGP is fleshed out and costed in a subsequent report by Wray et al (2017). Depending on the variant, the net cost of the JGP is estimated to be in the range 1-2 percent of GDP. In the report this sum is raised by issuing government bonds, but it could also be financed by 'printing money' or taxation. The JGP is now part of the Green New Deal which includes a number of other programmes, such as high quality education and health care for all, and a massive programme for renewable energy and conservation. Estimates of the cost of the Green New Deal vary, but it would clearly be very expensive. Stephanie Kelton (2019), a prominent MMT economist, concedes that the Green New Deal might be too expensive to fund by deficit financing and that higher taxes or offsetting cuts in other government programmes would be required.

I am sympathetic to the idea of a job guarantee, although its full implementation might prove more difficult and more inflationary than its advocates believe.[2] Wray et al (2017) assume that participants in the job programme are paid $15 an hour. They estimate that the effect of the JGP on prices would be a modest initial boost to inflation that within a few years would fade to almost nothing. This seems very optimistic.

One objection to the JGP is that unemployment is functional in a capitalist economy. It holds down wages and preserves labour discipline in the workplace. According to efficiency wage theory, which recognizes the impossibility of writing and enforcing a complete contract over effort, workers are motivated to work hard by the threat of unemployment (Shapiro and Stiglitz, 1984). If workers are guaranteed employment under a JGP, they will be less concerned about losing their current job, and to motivate them employers will need to pay a higher wage than is available under the JGP. A similar result can be derived from the fair wage theory of Akerlof and Yellen (1990) or from conventional bargaining theory. In the latter theory, the wage bargain is conditioned by the 'outside option' that is available to workers should negotiations break down. In the present case the outside option is employment at the JGP wage. Bargaining theory predicts that, if the parties reach an agreement, the outcome will be a wage that is higher than the JGP wage.

According to all of the above theories, the *de facto* minimum private sector wage would be higher than the $15 an hour than is offered by the JGP. For argument's sake, suppose the *de facto* minimum wage is $18 an hour. There are many areas in the USA where the average wage is currently less than $23 an hour. To raise the *de facto* minimum to $18 in such areas might be quite disruptive. Nationally, it might set off a wage-price spiral with employers raising prices and the government raising the JGP wage to keep up with rising prices. This is by no means certain but the possibility should be taken seriously.

7. Austerity

Keynes was of the opinion that there should be no fiscal austerity when the economy is in recession. The time for austerity is during a boom when the economy has recovered or is well on the way to recovery.

Immediately after the 2008 crisis most governments implemented some form of expansionary fiscal policy involving discretionary tax cuts or additional expenditure. Yet from 2010 onwards, the global balance of fiscal policy swung towards consolidation in the form of expenditure cuts or tax increases. There were various reasons for this turnaround. One was a mistaken belief in the strength of the economic recovery and another was a premature concern about the growth of government debt. In a controversial intervention, Reinhart and Rogoff (2010) claimed that a debt to GDP ratio in excess of 90 percent may substantially reduce the long-term growth rate of the economy. Their calculations were later shown to be faulty (Herndon, Ash and Pollin, 2013), but it was fear of indebtedness on this scale that led to austerity in a number of OECD countries. Another reason was conservative hostility to big government and their belief that austerity would provide a convenient excuse for cutting back public expenditure and shrinking the state.

Rogoff has since softened his stance on debt, as can be seen from the following quotation from the London *Sunday Times* (3rd February 2019):

> 'Instead of trying to reduce the UK's debt-to-GDP ratio (now 84%), the government should find ways to strengthen investment in physical and human capital, to help the poorest, who will be hit hardest [by Brexit – RER] and to incentivise international businesses not to abandon ship...To be frank, it has never been remotely obvious to me why the UK should be worrying about reducing the debt-GDP burden, given modest growth, high inequality, and the steady (and largely unexpected) decline in global real interest rates.'

Blanchard (2019) in his Presidential Address makes similar points. Although warning of potential dangers and distortions arising from large-scale borrowing, he takes a fairly relaxed view of government debt when the interest rate is less than the trend growth rate. At present this is the case in most advanced economies. Many economists regard the present situation as exceptional, but in fact it has been true for much of the past 150 years (Jorda et al 2017, Figure 1). Blanchard points out that the interest rate on US government 10-year bonds has been below the growth rate for four of the past seven decades. The picture is even more favourable if one takes into account the tax claw-back on interest payments.

In a recent paper on secular stagnation, Rachel and Summers (2019) document the long decline in the 'world' real rate of interest from over 6 percent in 1981 to less than zero today.[3] This decline has occurred despite rising levels of government debt, pay as-you-go old age pensions and the insurance value of government health care programs, all of which in their view have *ceteris paribus* operated to raise real rates of interest. These developments have been outweighed by the downward pressure on interest rates due to changing saving and investment propensities. The authors predict that real interest rates will remain low for a long time to come.

8. Fiscal Multipliers: Some Evidence

There have been numerous estimates of the impact of fiscal policy on GDP and its components. Heimberger (2017) contains a useful survey. A common finding is that fiscal multipliers are higher during recessions than during periods of expansion (Gechert and Rannenberg, 2014). This may explain why Blanchard and Leigh (2013) found that fiscal multipliers in the advanced economies were 'substantially above 1' during the crisis. Blanchard et al (2015) later considered the effect of a hypothetical fiscal expansion in the core euro area countries. They found that it would have a large and positive impact on GDP in both the core and periphery, assuming that policy interest rates remained low for a prolonged period.

Heimberger (2017) examines the effect of fiscal austerity on the euro area. He finds that multipliers range from 1.4 to 2.1. These multiplier values imply that output losses due to fiscal austerity in the Euro Area during 2011–2013 is in the range of 5.5 to 8.4 percent of GDP.

Coenen et al (2012) compare seven major policy models, six of which are DSGE. They get the normal Keynesian results. The stimulus effect of higher government expenditure or tax cuts is greatest when there is monetary accommodation (a low

interest rate) during a recession. The effect of transfers or tax cuts is largest if they are focussed on hand to mouth consumers who spend what they receive. Such findings suggest that fiscal consolidation had a damaging effect on the amount of capital stock bequeathed to future generations.

In their comprehensive examination of alternative models, using US data, Leeper, Traum and Walker (2017) find that multipliers in New Keynesian models are typically much larger when monetary policy is passive so the nominal interest rate responds weakly, if at all, to variations in output. In this case, over a ten-year horizon, private investment is likely to increase substantially following a temporary one year increase in government consumption. There is also likely to be a prolonged increase in private consumption. If an expansionary fiscal policy is offset by a tight monetary policy, increased government consumption is likely to crowd out private investment. These are all traditional Keynesian results.

9. Expansionary Fiscal Contraction

This theory was put forward by Giavazzi and Pagano (1990) and Alesina and Ardagna (1998) amongst others, and was popular for a time in the world's treasuries. It is based on the idea that in heavily indebted countries austerity reassures consumers and investors that government finances are under control and gives them the confidence to spend, thereby promoting economic recovery. Corsetti et al (2012, p. 41) argue that 'fiscal retrenchment is less detrimental to economic activity (i.e., multipliers are smaller) in the presence of significant sovereign risk [of default], as lower public deficits improve private-sector financing conditions. In relatively extreme cases where fiscal strains are severe and monetary policy is constrained for an extended period, fiscal tightening may even exert an expansionary effect'. A critique of the theory by Guajardo, Leigh and Pescatori (2011) argues that previous studies had measured fiscal consolidation incorrectly. Using their own measure, the authors estimate that a 1 percent of GDP fiscal consolidation reduces real private consumption by 0.75 percent within two years, while real GDP declines by 0.62 percent. They find that fiscal consolidations are contractionary even in economies with a high perceived sovereign default risk.

Alesina and his colleagues Favero and Giavazzi (2019) have returned to the fray in a recent book. Their book is concerned exclusively with fiscal consolidations that are designed to reduce a supposedly unsustainable fiscal deficit. It does not examine episodes in which there is a fiscal stimulus. The authors draw a sharp distinction between expenditure cuts (including entitlements) and tax increases. They conclude that higher taxes uniformly lead to a large fall in output. Expenditure cuts lead on average to a much smaller reduction in output and may occasionally be expansionary. Three questions arise: (1) Are the findings robust? (2) Is the explanation for the difference between expenditure cuts and tax hikes convincing? (3) What light, if any, do these findings thrown on the effect of a fiscal stimulus?

Robustness: The book adopts a narrative approach. After examining fiscal policy decisions in detail the authors select only those cases where there was a clear intention to reduce a supposedly unsustainable fiscal deficit. They also allow for the fact that fiscal consolidation plans may last for more than one year and that the announcements of future measures may influence behaviour in advance of implementation. This approach makes their new study more credible than their previous empirical work that was criticised on methodological grounds (see above). However, their results contradict the findings of other research, such as the OECD study of fiscal multipliers by Barrell, Holland and Hurst (2012).

Explanation: The claim that a fiscal consolidation might be expansionary during a serious debt crisis is not entirely implausible. If consumers and investors think that consolidation is inevitable sooner or later, they may respond positively if measures are taken immediately rather than put off to the future - when the debt will be larger and even harsher measures may be required. However, the authors regard this as an unusual situation. Their main concern is to show that government expenditure cuts are less harmful than tax increases. Incidentally, the authors are scathing about the treatment of Greece during the euro crisis (pp151-157). They argue that Greece was severely damaged by the fiscal retrenchment forced upon it by the Troika and that Greek debt should have been extensively restructured from the very beginning. Not much sign of expansionary fiscal contraction here!

The authors argue that the differential impact of various austerity measures is largely explained by expectations regarding their permanence. If expenditure cuts are expected to be more durable than tax increases, there will be a different response to them. Consumers and investors will expect expenditure cuts to have a larger cumulative impact than tax cuts, giving them greater confidence in the future and making them more inclined to spend. This is a coherent argument but I am sceptical that it will bear the weight put on it by the authors. The authors also claim that

expenditure cuts have less harmful supply side effects than tax rises. This presumably depends on the nature and incidence of such changes.

Stimulus: How far are the authors' conclusions symmetrical? Is a cut in taxes more effective than extra government expenditure at stimulating economic expansion? Or does the difference only apply in a downward direction? The authors do not explore this issue. Indeed, apart from a survey of the literature on multipliers in general, they provide no evidence regarding the absolute or relative effectiveness of fiscal stimuli. Alesina himself is on record expressing scepticism about the efficacy of the Obama stimulus package (IGM Forum, 2014), but his opinion is not supported by the evidence presented in this book. In contrast, his co-author, Giavazzi (2015), called for fiscal expansion (tax cuts, more expenditure) to complement QE by the European Central Bank.

10. Unconventional Monetary Policy

Keynes believed that interest rate cuts are ineffectual in an economic depression when the expected return on investment has collapsed and the risk premium on loans to the private sector has risen sharply. Under such conditions, using the interest rate to stimulate investment may be like 'pushing on a string', to use an expression attributed, perhaps wrongly, to Keynes. A fiscal stimulus in the form of loan-financed public works and the like may be required to restore confidence and break out of the depression. A second problem with conventional monetary policy is that it acts on the short-term interest rate, whereas to encourage investment requires a reduction in the long-term interest rate. Conventional policy may reduce the short-term interest rate to its lower bound of zero or just below without materially shifting the long-term rate. For this reason, Keynes favoured direct intervention to reduce the long-term interest rate through the purchase of long-term government bonds (Sutch, 2018). In the wake of the financial crisis, central banks followed the advice of Keynes, although their purchases covered a wider range of assets than he envisaged and included private sector assets with a relatively long-duration and/or a relatively high credit risk. These purchases were funded though the creation of central bank reserves (money).

This policy was known as Quantitative Easing (QE). There is some dispute about the channels through which QE operates (Den Haan, 2016). The evidence regarding its effects is summarized by Haldane et al (2016) as follows:

> 'This paper has gathered together empirical evidence on the effectiveness of these policies on financial markets and the wider economy. It finds reasonably strong evidence of QE having had a material impact on financial markets, generating a significant loosening in credit conditions. There is also evidence of QE having served to boost temporarily output and prices, in a way not associated with other central bank balance sheet expansions. The effectiveness of QE policies does vary, however, both across countries and time. For example, there is some evidence of QE interventions being more effective when financial markets are disturbed. There is also evidence of strong positive international spill-over effects of QE from one country to another.'(p. 31)

QE has been criticized because of its distributional effects. Muellbauer (2014) argues that it raises the price of bonds, thereby benefitting their relatively wealthy owners, who have a low marginal propensity to consume. The same is true if QE boosts equity prices. Muellbauer and others have proposed a more equitable and effective alternative under the heading 'QE for the people'. The central bank should 'print' large sums of money and distribute it to the populace, either on a uniform per capita basis or giving preference to people on low incomes. This would be more equitable than normal QE. It would also be more effective at boosting demand because its recipients would on average have a relatively high propensity to consume.

The above would involve the creation of 'helicopter money', for distribution by the central bank. An alternative would be for the government to sell bonds to the central bank and then distribute the proceeds to the populace. Depending on which method of distribution is chosen, helicopter money can be classified as monetary or fiscal policy. In the debate on QE, a surprising range of mainstream and heterodox economists have expressed sympathy for some variant of helicopter money. The evidence surveyed by Muellbauer indicates that it is an effective way of boosting demand. It may be an idea whose time will come.

11. The Phillips Curve

The Phillips curve is often formulated as a relationship between output and inflation. In the accelerationist version, inflation will accelerate so long as actual output exceeds 'potential' or 'natural' output. The long-run Phillips curve is vertical. However, as Carlin and Soskice (2014) point out in their textbook, the Phillips curve in New Keynesian theory is not vertical. There is a permanent trade-off between output and inflation. With an appropriate monetary policy the central bank can engineer a permanent increase in output in return for a bounded increase in the inflation rate. However, for plausible parameter values the New Keynesian long-run Phillips curve is *almost* vertical. With a discount rate of 10 percent, the long-run curve is 10 times as steep as the short-run Phillips curve. With a discount rate of 5 percent it is 20 times as steep.

The Economist (2017) magazine has claimed that the Phillips curve is broken. The evidence on this mixed. A multi-country study by the IMF (2013) concluded that the bulk of the wage slowdown can be explained by labour market slack, inflation expectations, and trend productivity growth. A follow-up study by Blanchard, Cerutti and Summers (2015) confirms the importance of labour market slack and inflation expectations.

In a paper on the United States, Blanchard (2016) concludes that:

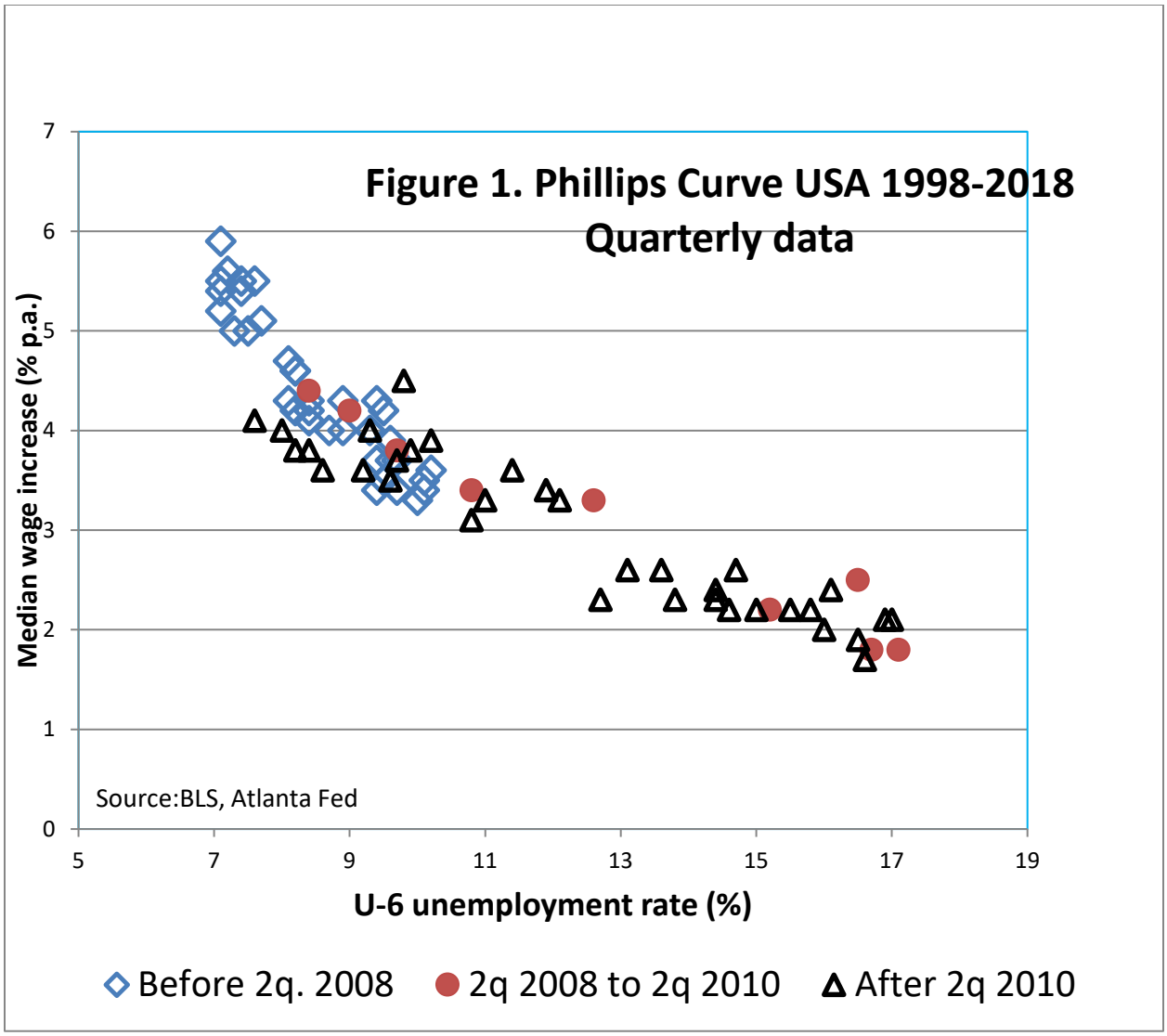
- The US Phillips curve is alive and well (or at least as well as it has been in the past).

- Inflation expectations, however, have become steadily more anchored, leading to a relation between the unemployment rate and the level of inflation rather than the change in inflation. In this sense, the relation resembles more the Phillips curve of the 1960s than the accelerationist Phillips curve of the later period.

Galí and Gambetti (2019) use a structural VAR with time varying coefficients to estimate the effect of unemployment on the growth rate of average wages in the United States. They find that the unemployment coefficient in the Phillips curve has fallen considerably since the financial crisis.

A cross-section study of wage growth in American cities by Leduc and Wilson (2017) gets a similar result. This might suggest that the Phillips curve was virtually killed off by the crisis. However, the authors resist this conclusion. They suggest that average wages may have been temporarily depressed in recent years by compositional changes, in particular the entry of low wage workers into the labour force.

Matthieu Arseneau (2017) argues that compositional changes can make average wage growth a misleading guide to underlying movements in wages. He suggests using the median wage instead. He also uses the U-6 unemployment rate that, in addition to unemployed persons who are actively seeking work, includes discouraged workers who have quit looking for work and part-time workers who would like a full-time job. I have redrawn his graph using a six month lag rather than one year for unemployment. As can be seen from Figure 1 there is a clear inverse relationship between wage growth and unemployment in the USA over the period 1998-2018. There is some indication that the relationship is non-linear.



12. Hysteresis

Blanchard and Summers (1986) put forward the idea of hysteresis in the unemployment rate. The effect of a prolonged period of high unemployment is to shift the Phillips curve so that more unemployment is required to achieve the same anti-inflationary effect. There are various explanations for this result. Insiders who retain their jobs during the slump may consolidate their position so as to raise wages and thereby deter firms from hiring more labour when the economy recovers. Productive capacity may be lost during the slump thereby reducing the future demand for labour. Workers who are laid off may lose their skills and attachment to the labour market. School and college leavers may fail to establish a firm attachment to the labour market.

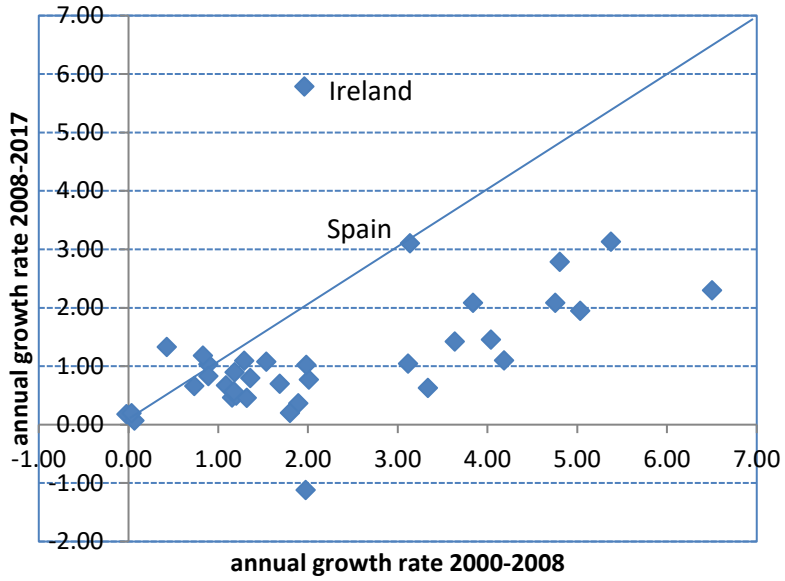
Negative hysteresis may also affect output and productivity. In their analysis of 23 advanced economies since 1960, Blanchard, Cerutti and Summers (2015) find that two-thirds of recessions are followed by lower output relative to the pre-recession trend. Almost one-half of those are also followed by lower output growth relative to the pre-recession trend. Ball (2015) estimates the long-term effects of the global recession of 2008-2009 on output in 23 countries. The average loss, weighted by economy size, is 8.4%.

Figure 2 shows what happened to GDP per hour in OECD countries before and after the financial crisis. The growth rate of this variable fell dramatically in most countries after 2008, with the exception of Ireland and Spain. Losses during the crisis have not yet been made up. One potential explanation for this is Verdoorn's law which claims that productivity growth is a function of output growth – a kind of dynamic returns to scale or learning by doing. Figure 3 provides some support for this view. Countries that exhibited the largest slow-down in GDP growth also exhibited the largest slow-down in growth of GDP per hour. The OLS regression equation connecting these variables is

$$\Delta g_{GDPperhour} = -0.08 + 0.53\Delta g_{GDP} \qquad R^2 = 0.50$$
$$(0.24) \quad (0.09)$$

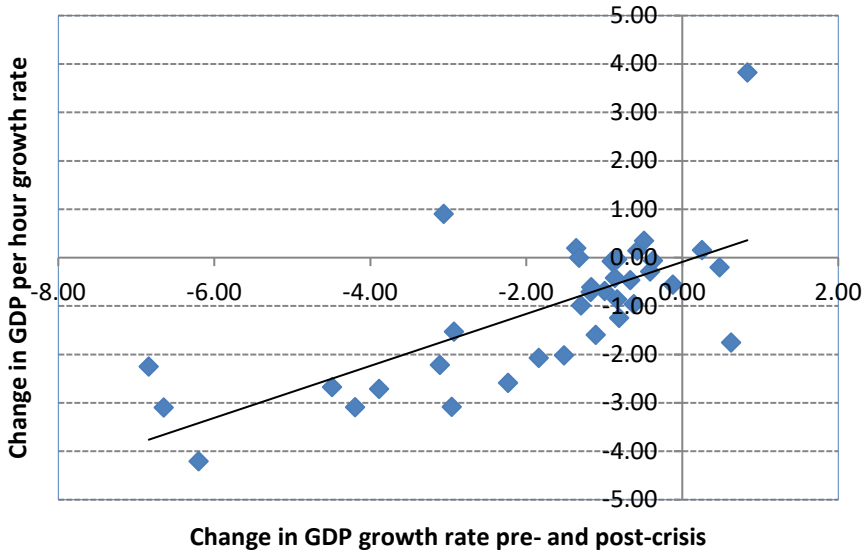
Causality could, of course, flow in either direction.

Figure 2. Growth rates of GDP per hour before and after the crisis



Source: OECD

Figure 3. Changes in growth rates of GDP and GDP per hour



Source; OECD

The effects of negative hysteresis are well-known. There has been less attention paid to positive hysteresis. Running the economy 'hot' for a certain time, although inflationary, may displace the Phillips curve, thereby allowing the economy to operate with a more favourable unemployment-inflation combination in the future. Under conditions of high demand, discouraged workers or marginalised groups are drawn into employment as employers who are short of labour hire workers whom they would previously have turned away. If the present boom in the US economy continues it may help to slow the long decline in the male participation rate, which has a demographic dimension but also reflects an historic weakness in the market demand for working class males. If there is anything in Verdoorn's law, a continuation of the boom would also raise productivity.

13. Monetary Policy when there is Hysteresis

Thomas Michl (2018) on his own and later with Kayla Oliver (2019) uses a variant of the Carlin-Soskice 3-equation model to explore the issue of optimum monetary policy when there is hysteresis. In this model the central bank has targets for output and inflation. The bank determines output through its control of the interest rate, and the dynamics of inflation are determined by a Phillips curve. The authors allow for the possibility that expectations are anchored by including the central bank inflation target as a term in the Phillips curve. When expectations are anchored and there is hysteresis, the optimal path will converge to the target combination of output and inflation. However, if there is no hysteresis or expectations are not anchored, the optimum path will converge to a steady state in which the inflation target is not achieved. The output target may also be missed.

One implication is that the central bank should encourage the anchoring of expectations by announcing its inflation target. Many central banks do this already. The central bank should also be less aggressive in combatting deviations from it inflation target. Another implication is that there is no such thing as the natural rate of output (or, by implication, the natural rate of unemployment) in the Michl model. This marks a radical departure from the original Carlin and Soskice model in which the natural rate plays a key role.

14. Hysteresis and Government Debt

A temporary fiscal stimulus may leave a beneficial legacy that continues long after the stimulus has terminated. Output and employment in the future may be greater than would have been the case without the stimulus. Such a legacy will generate a stream of extra tax revenue and thereby influence the evolution of government debt. This raises an important question. Under what conditions will the debt resulting from the stimulus be sustainable, assuming no change in the tax rate? Sustainability in this context has two meanings. It may refer to a situation in which the ratio of stimulus-related debt to GDP remains positive but becomes vanishingly small in the course of time. Alternatively, the term may refer to a situation in which this debt is repaid in full within a finite period.

In an important article, Delong and Summers (2012) explore the implications of hysteresis for sustainability in the latter sense. To this end, they derive a formula that specifies an upper limit for the after-tax real interest rate. If the interest rate is below this limit, the stimulus-related debt will be automatically repaid within a finite length of time without the need to raise taxes. DeLong and Summers calculate this upper limit for a variety of parameter values. Their results are striking. In most cases, their simulated upper limit easily exceeds any interest rate that is likely to be observed in practice. In such cases, a temporary fiscal stimulus will be self-financing over the long run.

As I show in Rowthorn (2019), there is some query about the formula that DeLong and Summers use for their simulations, but their general conclusion remains valid. If hysteresis is sufficiently powerful, a stimulus package will be self-financing. This has implications for fiscal policy. The implementation of a stimulus package during a recession is sometimes accompanied by the simultaneous announcement of a future deficit reduction programme. This announcement is designed to reassure markets that the debt resulting from the stimulus will be eventually repaid. If hysteresis is powerful and market opinion is well-informed, such reassurance should be unnecessary. Market opinion should recognise that hysteresis will spontaneously generate the required tax revenue without the need for future austerity. In practice, of course, hysteresis may not be sufficient to achieve this outcome, and even if it is, market opinion may be sceptical of its importance.

15. Conclusion

This brings me to the end of my survey. My conclusion is that Keynesian economics has made something of a comeback in the UK and the USA. Mainstream economists mostly believe that a fiscal stimulus is an effective way to promote recovery during a severe recession. But this belief is frequently allied with the view that the economy would respond to much lower interest rates if only the lower bound could be breached. In contrast, the traditional Keynesian view is that conventional interest rate policy is ineffectual in a depression because it is like 'pushing on a string'. Since the implementation of quantitative easing, there has been a groundswell of support amongst mainstream and heterodox economists alike for even more unconventional measures such as helicopter money. The latter is a Keynesian policy *par excellence*. This suggests some degree of convergence between mainstream and heterodox economics. However, important differences remain. For example, there is a strong prior in mainstream economics that Say's law holds in the long-run. The effect of demand shocks eventually wears off so the economy is driven over anything but the short period by autonomous supply forces.

The strength of Keynesian convictions will be tested when there is a major downturn in the world economy. It is common to read in the media that there are no instruments left in the toolbox for dealing with a future downturn. With interest rates close to their lower bound and governments deeply in debt, monetary and fiscal policies are now powerless. This claim may make sense in the Eurozone where individual countries do not have a sovereign currency, but it is less relevant in countries with a sovereign currency like the UK and the USA. In extremis, the latter countries can always stimulate demand through unconventional means such as helicopter money or simply monetising a significant part of the government deficit. The same would be true in the Eurozone as a whole if the European Central Bank were to pursue such policies.[4]

Notes

1 For a good exposition of New Keynesian theory, see Galí (2015), from which the description in this paragraph is drawn.

2 For a forensic critique of the JGP and other aspects of MMT, see Palley (2019).

3 The world real rate is the average of interest rates on inflation-protected government debt securities across the G7 excluding Italy.

4 See Tooze (2018) for a good account of the conflicts on banking and fiscal issues in the Eurozone.

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