The Godley–Tobin lecture*

Keynesian economics – back from the dead?

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This paper surveys some of the main developments in macroeconomics since the anti-Keynesian counter-revolution 40 years ago. It covers both mainstream and heterodox economics. Amongst the topics discussed are: New Keynesian economics, Modern Monetary Theory, expansionary fiscal contraction, unconventional monetary policy, the Phillips curve, hysteresis, and heterodox theories of growth and distribution. The conclusion is that Keynesian economics is alive and well, and that there has been a degree of convergence between heterodox and mainstream economics.

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 40 years ago, Keynesian economics has made something of a comeback. 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 (CFM 2014; IGM Forum 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 dynamic stochastic general equilibrium (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, microfoundations, 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 optimization 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 optimizing 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 macroeconomics.

New Keynesian models have undergone many changes over the years. For example, the influential Smets and Wouters (2003; 2007) model, in addition to nominal wage

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

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 et al. (2018), the economy is populated by a continuum of households indexed by their holdings of liquid assets, illiquid assets, and their idiosyncratic labour productivity. In the search and matching (SAM) models, involuntary unemployment arises because of frictions in the operation of the labour market.

The effect of these numerous, often *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 Keynesian results.

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 25 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 macroeconomic 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 et al. 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 with understanding 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, collateralized debt obligations (CDOs), synthetic collateralized debt obligations 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   WYNNE GODLEY

Since this lecture is in honour of Wynne Godley and James Tobin, I shall outline a simple stock–flow argument that illustrates Godley's approach to government debt. It is based on chapter 4 of his book with Marc Lavoie (2012).

Consider a closed economy in which, over the relevant range, the level of output is determined exclusively by aggregate demand and is not subject to any supply constraint. Suppose the government has a budget deficit that is financed by issuing bonds to the private sector. These bonds are perceived as net wealth by their owners and the associated interest receipts as net income. For as long as the deficit persists, more bonds will be issued, causing the perceived wealth and income of the private sector to increase. As the private sector perceives itself getting richer and its income grows, consumption will increase and the extra demand will cause the economy to expand. As a result, there will be more tax revenue for the government and the budget deficit will converge to a level consistent with a stable debt-to-GDP ratio. This happens automatically without any change in tax rates.

The above argument is used by Randall Wray (2015) in his primer on Modern Monetary Theory (MMT) as a justification for not worrying about the fiscal deficit. It illustrates how, under certain conditions, a government deficit may be self-correcting through private-sector wealth and income effects. A crucial step in the argument is the assumption that output is always demand-determined. If there is a future supply constraint on output, a demand-induced expansion may be brought to a premature end, and higher tax rates may be required to prevent unsustainable inflation. This possibility is recognized by Godley and Lavoie.

In his celebrated article on Ricardian equivalence, Robert Barrow (1974) assumed that output is always supply-constrained and that government borrowing invariably leads to higher tax rates in the future. Far-sighted agents will take this connection into account and set aside funds to meet their future tax liabilities. They will not perceive government debt as net wealth. This theorem does not apply in a situation where output is always demand-determined, since no future increase in tax rates will be required to offset current borrowing. Far-sighted agents will understand this and will rationally perceive government debt as net wealth.

7   MODERN MONETARY THEORY (MMT)

This is a convenient point to discuss Modern Monetary Theory. MMT is a Keynesian-style theory that has gained a certain following, especially since the financial crisis. MMT has its roots in Abba Lerner's theory of functional finance. The canonical statement of MMT is 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 macroeconomic propositions of MMT that are of interest 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).

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, 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, and the challenge is to ensure that the power to create money is not abused. Fear that it will be abused is one of the arguments for central-bank independence.

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. (2018). Depending on the variant, the net cost of the JGP is estimated to be in the range 1–2 per cent 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 might 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. (2018) 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.

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.

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

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.

The above theories all predict that the *de facto* minimum private-sector wage would be higher than the $15 an hour offered by the JGP. For argument's sake, suppose the *de facto* minimum wage is $18 an hour. There are large areas of the USA where the median wage is less than this amount. To raise the *de facto* minimum to $18 in such areas might be quite disruptive and could price workers out of a private-sector job, leaving the JGP to pick up the slack. Alternatively, the injection of JGP purchasing power into the local economy might have a positive multiplier effect on private-sector employment. The net outcome would depend on which of these effects was predominant. Nationally, the JGP could be inflationary if it contributed to a wage–price spiral with the government periodically raising the JGP wage so as to keep pace with rising prices.

8   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 turn-around. 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 per cent may substantially reduce the long-term growth rate of the economy. Their calculations were later shown to be faulty (Herndon et al. 2014), 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. Writing in the London *Sunday Times* (3 February 2019), he argues that the UK government should not worry about the present ratio of government debt to GDP (84 per cent). It should instead seek to promote investment, reassure international investors and protect the poorest members of society from any harm arising from Brexit.

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 (Jordà et al. 2017, fig. 1). Blanchard points out that the interest rate on US government ten-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 clawback 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 per cent 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. An indication of how low interest rates may fall comes from Denmark, where the Jyske Bank is ten-year mortgages at a nominal rate of –0.5 per cent per annum. Another Danish bank, Nordea, says it will begin offering 20-year fixed-rate deals at 0 per cent nominal (*The Guardian*, 13 August 2019).

A striking development in the United States has been the turnaround in the Republican stance on budget deficits and the national debt. Having spent years criticizing the alleged fiscal irresponsibility of the previous Obama administration, the Republicans have now embraced deficit financing. The budget deficit is projected to average 4.4 per cent of GDP over the period 2020–2029, and the federal debt held by the public is projected to reach 93 per cent of GDP by 2029, its highest level since World War II.[4] Fiscal conservatism is now out of fashion in the USA. How long it will remain so remains to be seen. There is nothing specifically Keynesian about large budget deficits when the economy is at or close to full employment. On the contrary, following Keynes (1940) in *How to Pay for the War*, the traditional Keynesian view has been that this is just the time for fiscal restraint. There is an exception when government borrowing is used to finance revenue-generating investment. There is also an exception when the interest rate is less than the growth rate, as it is now. The federal deficit is not at present a cause for great concern, but if inflation picks up, some remedial action may be required. The question will then be: what form should this action take, and on whose shoulders should the burden fall?

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 et al. (2011) argues that previous studies had measured fiscal consolidation incorrectly. Using their own measure, the authors estimate that 1 per cent of GDP fiscal consolidation reduces real private consumption by

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3.   The world real rate is the average of interest rates on inflation-protected government debt securities across the G7, excluding Italy.
4.   These projections are taken from CBO (2019).

0.75 per cent 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 an 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: (i) Are the findings robust? (ii) Is the explanation for the difference between expenditure cuts and tax hikes convincing? (iii) What light, if any, do these findings throw 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 the 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, which was criticized on methodological grounds (see above). However, their results contradict the findings of other research, such as the OECD study of fiscal multipliers by Barrell et al. (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 (Alesina et al., pp. 151–157). 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 on the deficit 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 increases. 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 and his colleague Tabellini (2014), called for a large fiscal expansion (tax cuts, more expenditure) to complement quantitative easing 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, p. 31) 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.

QE has been criticized because of its distributional effects. Muellbauer (2014) argues that it raises the price of bonds, thereby benefiting 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.[5]

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

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5.   For an extended discussion of this issue, see Coppola (2019).

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.

An alternative to helicopter money is for the government to sell bonds to the central bank and use the proceeds to finance tax cuts or additional expenditure, as suggested for the eurozone by Giavazzi and Tabellini (2014).

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 per cent, the long-run curve is ten times as steep as the short-run Phillips curve. With a discount rate of 5 per cent it is 20 times as steep.

It has become a commonplace across the political spectrum that the Phillips curve is dead. Unemployment in the USA, and also in the UK, has fallen dramatically since the crisis and yet inflation remains subdued. Any trade-off there might have been between inflation and unemployment has allegedly disappeared. The evidence does not really support this claim. Although weaker than before the crisis, the trade-off between unemployment and inflation has not entirely disappeared.

A multi-country study by the IMF (2013) concluded that the bulk of the wage slow-down can be explained by labour market slack, inflation expectations, and trend productivity growth. A follow-up study by Blanchard et al. (2015) confirmed the importance of labour market slack and inflation expectations. Blanchard (2016) found that inflation expectations 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 vector autoregression (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 with the result that this curve is now almost flat.

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 which, 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.
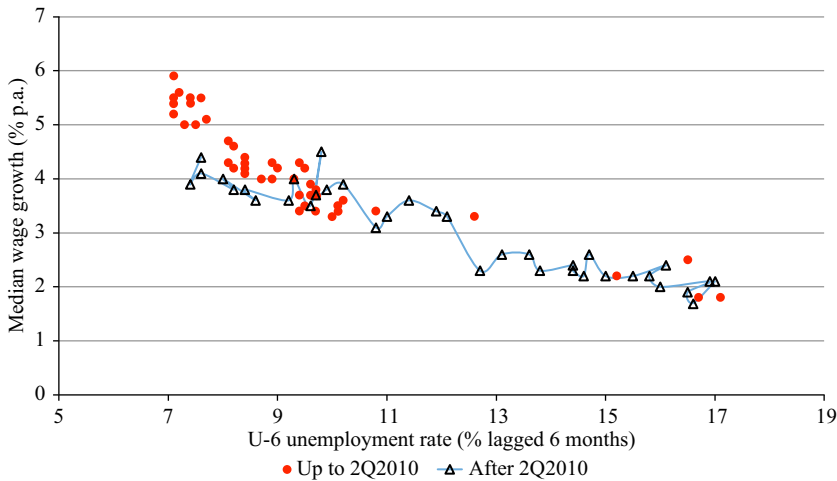
Source: FRB Atlanta, FRB St. Louis.

Figure 1   Phillips curve USA 1998–2018, quarterly data

I have redrawn his graph using a six-month lag rather than one year for unemployment. As can be seen from Figure 1, the slope of the Phillips curve was much steeper before the crisis than it has been in recent years. This is consistent with the findings of Galí and Gambetti mentioned above.

The evidence suggests that the trade-off between unemployment and wage or price inflation has not entirely disappeared, but is much weaker than it used to be. However, if unemployment continues to fall, it is likely that inflation will re-emerge as a serious policy concern.

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 et al. (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 (2014) estimates the long-term effects of the Great Recession of 2008–2009 on output in 23 countries. The average loss, weighted by economy size, is 8.4 per cent.

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
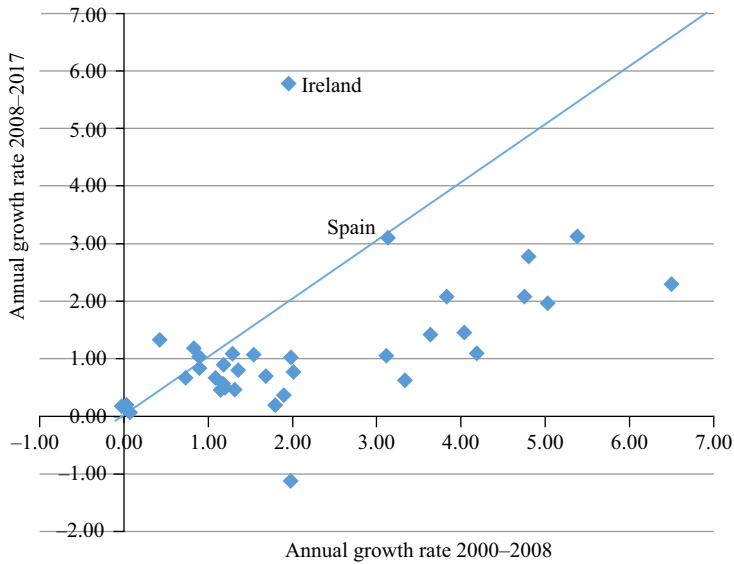
Source: OECD.

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

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.[6] Figure 3 provides some support for this view. Countries that exhibited the largest slowdown in GDP growth also exhibited the largest slowdown in growth of GDP per hour. The ordinary least squares (OLS) regression equation connecting these variables is:

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

Causality could, of course, flow in either direction.

The effects of negative hysteresis are well known. Positive hysteresis has received less attention. Running the economy at high pressure for a certain time, although potentially inflationary, may displace or flatten the Phillips curve, thereby allowing the economy to operate with a more favourable unemployment–inflation combination in the future. Under conditions of high labour demand, discouraged workers or marginalized groups are drawn into employment as employers who are short of labour hire workers whom they would previously have turned away. If the post-crisis expansion of 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.

6.   Strictly speaking, Verdoorn's law applies to the manufacturing sector, but given the diminished importance of this sector it is useful to regard Verdoorn's law as referring to dynamic returns to scale in the economy as a whole.
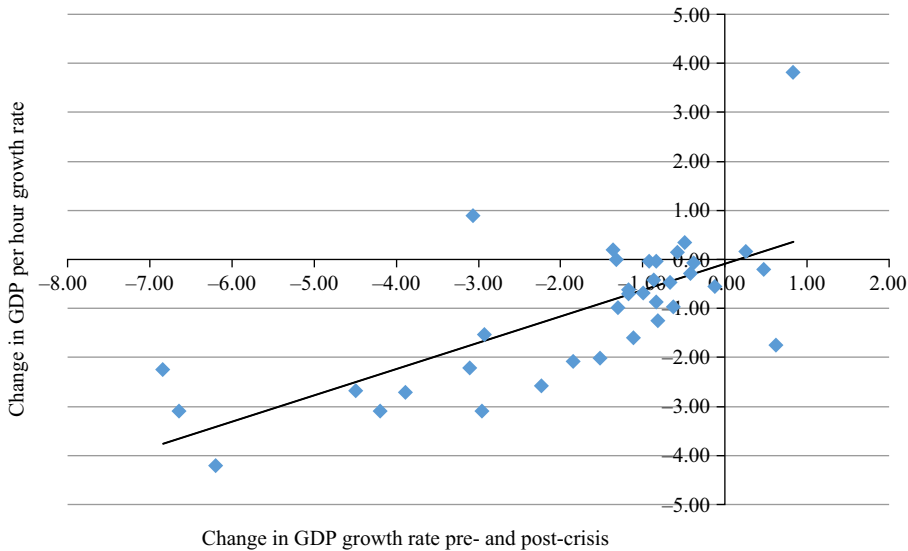
Source: OECD.

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

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 three-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. 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–Oliver model. This marks a radical departure from the original Carlin–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 implemented during a recession will be self-financing. This has implications for fiscal policy. The implementation of a stimulus package is sometimes accompanied by the simultaneous announcement of a future deficit-reduction programme. Such an announcement is designed to reassure markets that the debt resulting from the stimulus will be eventually repaid. If hysteresis is sufficiently powerful and market opinion is well-informed, such reassurance should be unnecessary. Market opinion should recognize 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   WAGES, DEMAND AND GROWTH

Of particular interest to me is the literature on Kaleckian growth models, to which I was an early contributor (Rowthorn 1981). Amitava Dutt (1984) independently put forward a similar analysis.

My article was concerned with an economy operating under conditions of excess capacity. I argued as follows. Because the propensity to save out of profits is higher than out of wages, an increase in real wages will stimulate demand and thereby lead to higher output, more investment and faster economic growth. This claim was challenged by Bhaduri and Marglin (1990), who showed how a simple modification of my investment function could lead to a very different result. Depending on the nature of the investment function, an increase in the real wage could either stimulate or discourage investment.[7] The effect on output could also be positive or negative. The term 'wage-led' regime has been

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7.   Bhaduri and Marglin and most other writers use a different terminology. Instead of the wage rate, they refer to the 'profit share'. By this they mean the share of profits in marginal output. This is connected to the real wage rate as follows:

$$\text{real wage} = (1 - \text{profit share}) \times \text{marginal product of labour}.$$

If the marginal product is constant, the real wage and the profit share are inversely related.

coined for the case where an increase in the real wage leads to more output and more investment. The term 'profit-led' regime applies to the case where an increase in the real wage leads to a reduction in both output and investment.

In recent years, there has been an explosion of literature on income distribution and economic growth. The *Review of Keynesian Economics* recently had four consecutive special issues on the subject. A recurring concern has been the conditions under which an economy is wage-led or profit-led. Econometric studies yield mixed results. A plausible finding is that open economies are more likely to be profit-led because low wages give them a competitive advantage and lead to higher net exports.

At this point an important issue arises. I saw my original Kaleckian model as a contribution to the theory of economic growth. I thought that, if demand is weak, an economy may limp along indefinitely with excess capacity, low investment and slow growth. Under a wage-led regime, an increase in wages would lead to higher capacity utilization, higher profits and more investment, thereby shifting the economy onto a faster growth path. Under a profit-led regime, the same result would be achieved through a wage reduction.

Skott (2012) and others question this line of argument. Their criticism revolves around the issue of excess capacity. Excess capacity, as it appears in the Kaleckian models, is unintended spare capacity. It is not the same as planned or desired spare capacity. There are various reasons why firms should choose to operate with a margin of spare capacity: to build ahead of anticipated demand growth, to meet unforeseen demand or to deter price-cutting by actual or potential rivals. But this is not genuine excess capacity. Excess capacity arises when firms, individually or collectively, have made a misjudgement about future demand. It is unintended. Along a long-run growth path there should be no systematic excess capacity. Firms should normally be operating at the 'normal' level of capacity utilization, with their planned amount of spare capacity. Individual firms may from time to time find themselves with unintended spare capacity, but collectively they should not persistently be in this situation.

If Skott is correct, it means that the Kaleckian models apply, if at all, only to episodes during which an economy is operating some way below potential. They are not relevant to the analysis of long-run growth during which firms are normally operating with their 'normal' level of utilization. In answer to Skott, some authors have argued that what counts as 'normal' capacity utilization is endogenous or conventional (Dutt 2010; Lavoie 2014). If a change in the wage rate or in the savings propensity shifts the economy onto a lower utilization path, this new level of capacity utilization will become the new normal. I am not entirely convinced by this argument. Firms may deliberately choose to have a margin of spare capacity, but the size of this margin will be influenced by considerations of profitability.

There have been several attempts to reconcile the Kaleckian short-run analysis with the Classical view that a higher saving propensity or lower wages are conducive to economic growth. Duménil and Lévy (1999) supplement the Kaleckian wage-led model with a Phillips curve and a monetary policy reaction function. In the short run, a higher savings propensity or a lower wage rate will cause the economy to contract and investment to fall. However, at a certain point, monetary policy will kick in and start to pull the economy back to normal capacity utilization and a new long-run growth path. On this new growth path, the growth rate will be higher than it was originally. This is an elegant reconciliation of the Kaleckian and Classical models. Shaikh (2009) achieves a similar outcome by allowing for endogenous changes in the fraction of profits that firms save.

Skott's critique of Kaleckian models is perhaps less serious than it appears. These models may be unsuitable for analysing long-run growth, but they may still be useful

for understanding prolonged periods of depressed demand and sluggish growth such as the eurozone has witnessed following the financial crisis. This is the view of Chick and Caserta (1997). It leaves open the question of what determines the long-run growth rate of economies.

16   CONCLUSION

This brings me to the end of my survey. My conclusion is that Keynesian economics has made 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. 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 QE, there has been a groundswell of support amongst mainstream and heterodox economists alike for 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 monetizing 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 to such policies, as recommended by Giavazzi and Tabellini (2014) to jumpstart the eurozone economy.[8]

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

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