

COMMENTARY: THE ECONOMIC LANDSCAPE OF THE UK

Jagjit S. Chadha*

“The major fluctuations in the rate of growth of demand and output in the years after 1952 were thus chiefly due to government policy. This was not the intended effect; in each phase, it must be supposed, policy went further than intended, as in turn did the correction of those effects. As far as internal conditions are concerned then, budgetary and monetary policy failed to be stabilising, and must on the contrary be regarded as having been positively destabilising.”

J. C. R. Dow, *The Management of the British Economy*, 1964.

In a pioneering venture, Christopher Dow at the National Institute of Economic and Social Research helped establish the concept of demand management as the key objective of economic policy. He showed in his 1964 work that although demand management had prevented “the heavy unemployment that accompanied the pre-war trade cycle”, the price paid was that of excessive year-to-year fluctuations resulting from policies that ultimately became known as ‘Stop–Go’. A more damning indictment of policy over this period is that the emphasis on short-run macroeconomic control encouraged the neglect of the more fundamental issue of the long-run rate of productivity growth. Indeed in later work, Dow was himself acutely aware that labour productivity did not regain the path it had adopted in the long expansion after World War II. The tension between short-run demand management and long-run economic prospects is as much a current concern as it was over 50 years ago; accordingly, as we enter an election campaign that may be dominated by the question of Britain’s

exit from the EU, this Commentary highlights the key structural issues facing the UK economy.

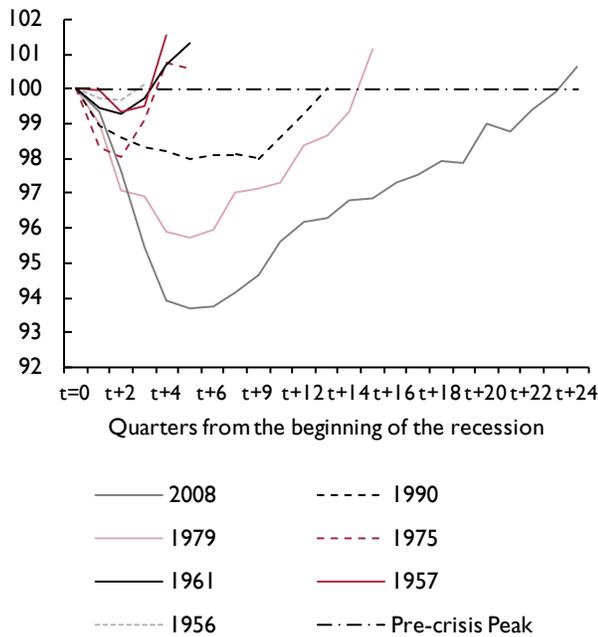
Nearly ten years on from the start of our most recent economic crisis in 2007, which is fast becoming the UK’s ‘lost decade’, we can observe that despite operation and innovation in macroeconomic policies income per head has not recovered especially well, it only passed the peak of 2007 GDP per head in 2015. In comparison to the recovery from previous postwar recessions, there has been a very disappointing growth in the level of GDP since 2008. Figure 1 shows the path of output in the quarters after the start of every postwar recession and we can start to understand the depths of the problems faced at the end of the first decade of this century. Subsequently, income per head has barely exceeded its pre-recessionary level: that against a typical postwar expectation of growth in income per head of 2–2.5 per cent per year. The challenge facing policy is more over the frustrated expectations of economic progress rather

*NIESR. E-mail: j.chadha@niesr.ac.uk. This Commentary has been produced with funding from the Nuffield Foundation as part of its work to ensure public debate in the run-up to the General Election and is informed by independent and rigorous evidence. I would like to thank colleagues at the National Institute of Economic and Social Research: Andrew Aitken, Angus Armstrong, Paola Buonadonna, Peter Dolton, Monique Ebell, Roger Farmer, Amit Kara, Simon Kirby, Paul Labonne, Rebecca Piggott and James Warren for helpful conversations, as well as participants at the NIESR-HSBC ‘Mapping the Route to Brexit Success’ seminars

than simply the management of economic rehabilitation. The key question facing any policymaker is how to bring about sustained growth in income per head, which is intimately tied up with the question of capital employed, total factor and labour productivity.

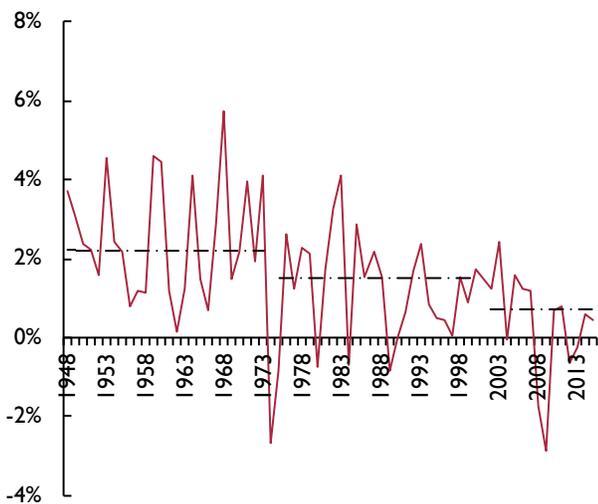
The lessons from the earlier period highlighted by Dow ultimately led economic policy to be conceived more in terms of the formulation of long-run plans or ‘rules’ in preference to discretionary policy. It was argued that these rules would help ensure that the plans of households and firms would be consistent with the stated aims of policymakers and so jointly it would be easier to achieve non-inflationary growth with full levels of employment. Many of these ideas led to the granting of operational independence to the Bank of England to pursue the government’s inflation target on 6 May 1997. We also have had a long period of innovation with fiscal rules, culminating in the creation of the Office for Budgetary Responsibility in 2010. And yet both the Chancellor and the Prime Minister have shown in quick succession that rules are applied with discretion, with changes announced by the incoming Chancellor in last November’s *Autumn Statement* about the date by which the fiscal deficit will be eliminated and also by the Prime Minister’s calling of an early election with relative ease on 18 April, bringing forward the next election by some three years compared to the plan enshrined in the Fixed Term Parliaments Act of 2011. The irony, to some great degree, is that the widespread adoption of rules for fiscal and monetary policy has not improved long-run performance and indeed may have done little to encourage addressing the more fundamental questions of productivity growth. Figures 2a and 2b show that both total factor productivity and labour productivity seem to have descended to ever lower levels in the postwar period and this deterioration in the performance of

Figure 1. Postwar recoveries in the level of real GDP



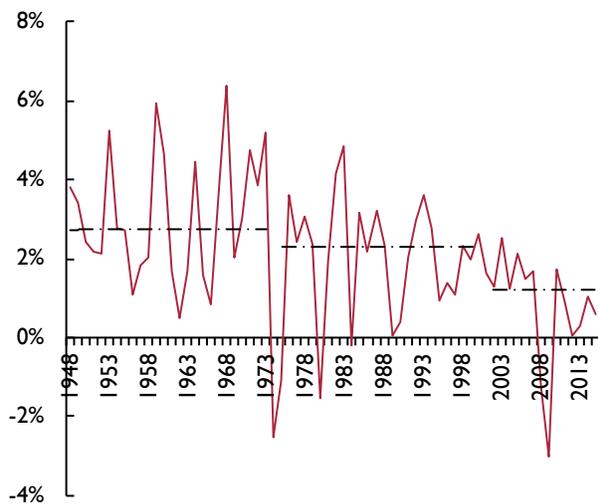
Source: NIESR.
Note: 100 = Pre-crisis level.

Figure 2a. Total factor productivity growth 1948–2015



Source: Bank of England, 3 centuries dataset.

Figure 2b. Labour productivity per head 1948–2015



Source: Bank of England, 3 centuries dataset.

productivity helps us understand the main continuing economic problems: low real wage growth; low levels of investment and a dwindling capital stock; uneven performance at the regional level; rising perceptions of income and wealth inequality; the risk in the household balance sheet from the emphasis on housing as a store of wealth; the lack of infrastructure and R&D expenditure; the concentration of financial intermediation in property based lending; and the evolving need for monetary-fiscal-financial coordination. These major problems are well understood and predate the issues raised by the decision to leave the European Union and yet may end up being neglected in the national debate.

High employment and low productivity

In many larger advanced economies, labour productivity growth slowed sharply and remained subdued for years after the financial crisis of 2007/8. Arguably nowhere was this more obvious than in the UK (see UK chapter, box A). The question of low productivity is a crucial electoral issue, as this productivity weakness has manifested itself in stagnant real wages (figure 3 gives average and median wages over the long run), putting pressure on household incomes and living standards. Understanding the sources of weak productivity growth is crucial for formulating appropriate policy responses.

Existing NIESR work (see Riley *et al.*, 2014) has examined the dynamics of productivity that lie behind this stagnation. Ongoing work breaks down the UK's productivity performance by industry, and by the

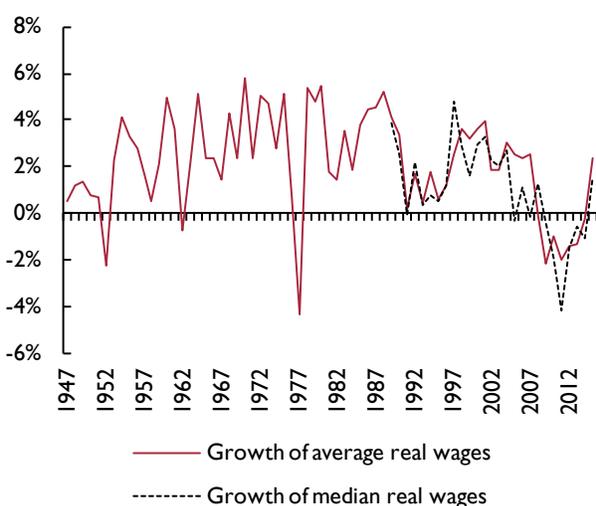
sources of productivity growth. One striking feature is the widespread weakness in total factor productivity within firms, pointing to the importance of a common factor in explaining productivity weakness. Further evidence is consistent with an adverse credit supply shock causing inefficiencies in resource allocation across firms. Indeed, during the immediate recession years 2008/9, this shift was most apparent in sectors with many small and bank dependent businesses. This observation raises important questions about the financing of the UK economy. Other important issues are the roles of skills, innovation and structural reforms (see Aznar *et al.*, 2015).

Even over the long run the UK has suffered from low levels of investment and relatively low increases in total factor productivity. The large recession following the financial crisis has highlighted this problem. And although much of UK employment experience after financial crisis can be understood in terms of labour market flexibility, it has at the same time exacerbated the problems of low investment and productivity. The labour market reforms in the last three decades of the twentieth century created the conditions for a flexible labour market response to the recession. These reforms shifted incentives to employers with reductions in tax and made unemployment (and non-participation) support less generous. There was also an increase in the institutional flexibility of the labour market with some reform of trade union powers and employment protection legislation. Trade union power also diminished because of the decline in both traditional manufacturing industry and of large public sector monopolies.

Economic policy under the coalition from 2010 was focussed on reducing public sector expenditure and employment to create space for the private sector to create employment. It has been argued by Pissarides (2013) that “this was not to be, partly because the public sector spending cuts had an impact on aggregate demand which checked the expansion of the private sector but also because of the debt crisis in the Eurozone, which reduced export demand. The result was a replacement of the lost public sector jobs by new private sector jobs but no job creation over and above this level, with the economy remaining at the initial depressed state”.

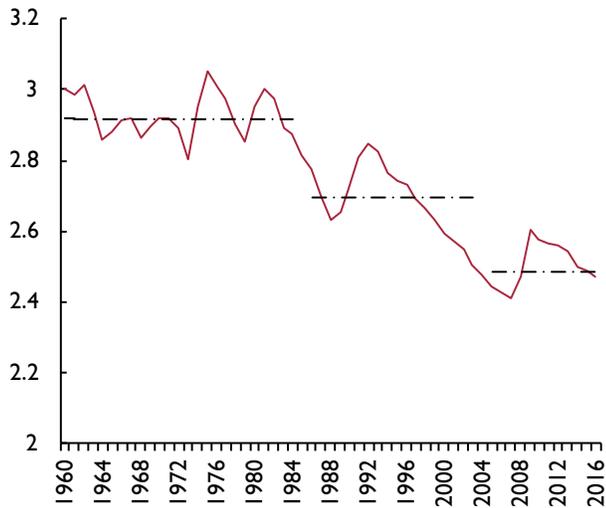
In the aftermath of the large recession in 2008–9, we might have expected a large increase in unemployment if some kind of aggregate Okun Law were in place. But unemployment increased by barely 3 per cent or

Figure 3. Growth of average and median real wages 1946–2015



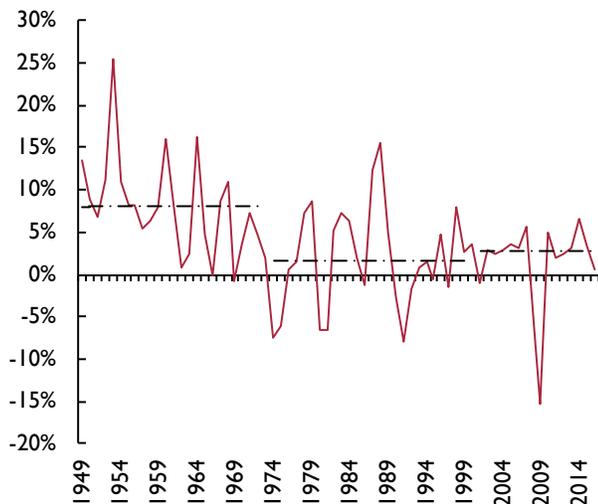
Source: ONS and Bank of England.

Figure 4. Capital–output ratio at constant prices 1960–2016



Source: European Commission and NIESR.

Figure 5. Real investment growth 1949–2016



Source: ONS and NIESR.

so. So even if we make the case that unemployment and employment surprised us in the right way in the aftermath of the recession this surprise has actually revealed major issues of concern. What we can observe is that the real output per hour has not recovered especially well after the recession. We can ascribe this result to both an increase in the overall supply of labour hours but also to a fall in the ratio of capital–labour

employed, which tends to reduce labour productivity. The fall in median real wages and the unemployment faced by younger members of the workforce remains a particular concern looking ahead.

The post-recession fall in real wages suggests that there was both an increase in labour supply and fall in the capital–output ratio (figure 4), as firms hoarded labour rather than invested in new capital machinery in the face of financial constraints but at the same time we can also argue that the movements along the Beveridge curve (see figure A10 in the UK chapter) represented a reasonable labour market response to the shocks suffered. The real answer will be some improvement in productivity and we will wish to examine in particular the relationship between financial conditions and the deterioration in investment behaviour (figure 5) at a time of extraordinarily low real interest rates.

Consumption and the household

At the basic level, households choose to consume or acquire financial and non-financial assets (savings) from a given income stream. The split between consumption and savings is a within-period choice that given the rate of return on savings ought to provide income in the future to the saver. This decision about the consumption path and the according level of saving or debt accumulation provides funds for firms to invest in what is called capital accumulation. It is therefore also the case that if we can characterise households' attitudes to saving, risk and returns in the presence of uncertain income streams we will understand better the constraints that may operate on investment and growth. Furthermore given that financial assets will be acquired to provide income streams under various conditions in the future, what economists tend to think of as hedging risks or providing for contingent claims, the pricing of these assets may be well explained by theories that help us understand planned consumption.

Indeed the operation of monetary policy is essentially trying to offset shocks to income, preferences and asset prices so as to further bring forward or defer consumption by changing interest rates. Interest rate can thus be thought of as the intertemporal price of consumption. So let us suppose that we perceived that debt levels were too high, perhaps as we revised down our notion of permanent income or as the price of loans increases, households would tend to react by increasing the level of savings. If the levels of savings were increased at too abrupt a rate that might lead to a large fall in demand that would in turn induce a persistent or long lived downturn. At this point lower interest rates can smooth the adjustment by slowing down the rate at

which savings accumulate. This means we have a longer but smoother adjustment to lower debt levels.

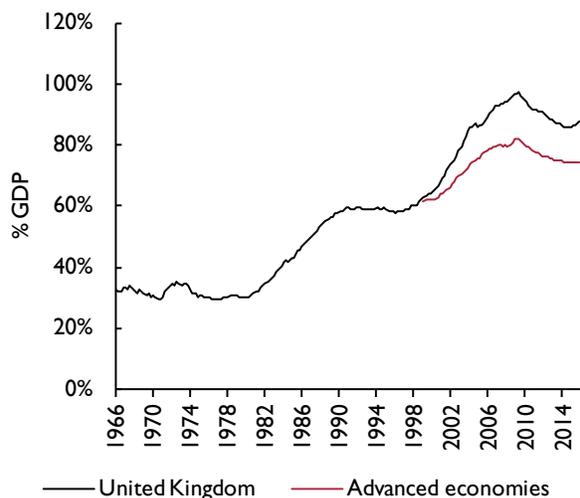
There has been an ongoing debate about the extent to which measured consumption per household is a good way to characterise welfare or well-being. The Easterlin paradox (1974) suggested that reported happiness was flat or falling over the period of 1946–1970, which has been characterised as the golden age of economic growth. And so many economists and social scientists have considered the construction of alternate indices of well-being or happiness in order to use these indices as the objective of economic policy. For example, Oswald *et al.* (2009) suggest that happiness makes people more productive when faced with external shocks and so may be an important key to understanding both the stability of the economy and its advance over time. But whether such findings, which may help us understand changes in income and productivity, necessarily imply that subjective or self-reported measures of well-being are a better way to think about utility than the actual consumption of goods and services is not yet clear.

The choice facing households in terms of consumption comprises both non-durable and durable consumption. And the constraint in terms of income is what we ought to call disposable income, once we have accounted for tax. We also have to remember that the measures of aggregate consumption are the sum of the choices of all households, which each have their own age, skills, wealth and tax positions. Consumption expenditure on durables typically

accounts for under 15 per cent of total consumption expenditure and is considerably more volatile than both non-durable consumption and disposable income. Indeed, non-durable consumption is considerably smoother than disposable income. The mean growth and standard deviation of aggregate disposable income and durable and non-durable consumption differs. Non-durable consumption is very persistent to shocks, which means that it tends to stay at a particular level of growth, whereas disposable income is considerably less so and durable consumption seems to be more likely to reverse after a shock and behave in a more temporary manner. These time series properties mean as well that if surprises in consumption are more related to durable consumption than non-durable consumption they are more likely to be reversed.

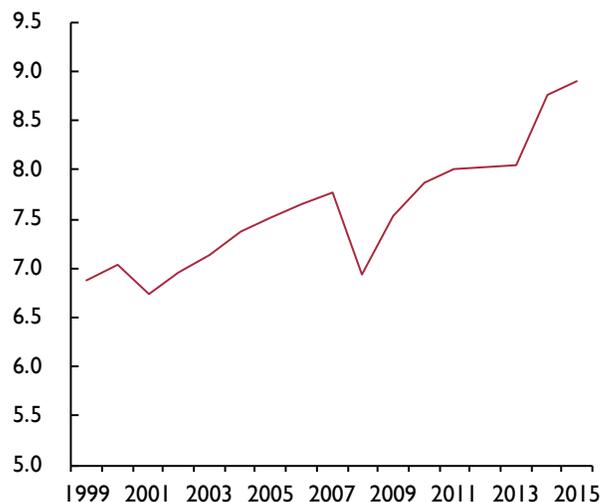
But as with many advanced and ageing economies, household debt indebtedness increased markedly in the period of financial liberalisation in the 1980s. In the UK household debt rose from around 35 per cent of GDP in the early 1980s to just under 100 per cent in 2010 and it now stands at just under 90 per cent. Advanced economies on average peaked at 80 per cent and now stand at around 75 per cent of GDP (figure 6). The ageing economies would suggest that a more likely explanation has been the relaxation of credit constraints, which might throw open the strange possibility that we had sub-optimal levels of household debt in the past. But we cannot understand debt without realising that it is not the case that households are indebted, once we account for

Figure 6. Household debt in the UK compared to the advanced economies



Source: BIS long series on total credit.

Figure 7. Ratio of household net wealth to consumption



Source: ONS, National balance sheet: households and non-profit institutions serving households (NPISH).

Table 1. Balance sheet of the household sector, 1995

Assets	3401	Liabilities	3401
<i>Tangible assets</i>	1257 37%	<i>Financial liabilities</i>	556 16%
Real estate	1132	Loans	493
Durable goods	125	Insurance and pensions	12
		Debt securities	2
		Other	49
<i>Financial assets</i>	2144 63%	<i>Net wealth</i>	
Insurance and pensions	1158	(=asset–liabilities)	2845 84%
Equities	403		
Cash and deposits	468		
Debt securities	43		
Other	72		

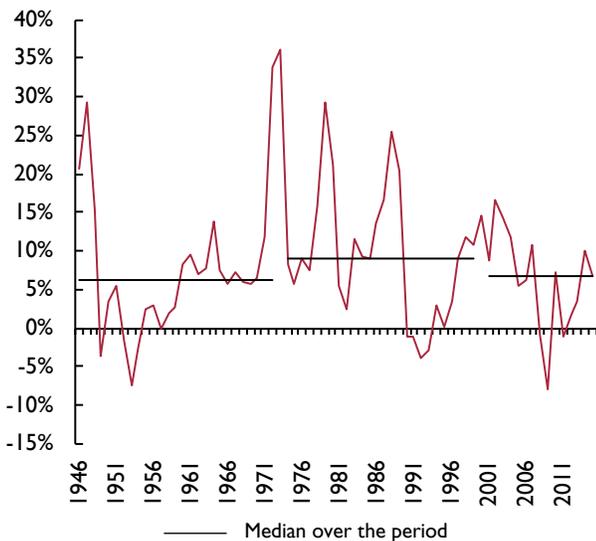
Source: ONS, National balance sheet: households and non-profit institutions serving households (NPISH), £ billions, 1995.

Table 2. Balance sheet of the household sector, 2015

Assets	11948	Liabilities	11948
<i>Tangible assets</i>	5637 47%	<i>Financial liabilities</i>	1751 15%
Real estate	5307	Loans	1622
Durable goods	330	Insurance and pensions	64
		Debt securities	3
		Other	62
<i>Financial assets</i>	6311 53%	<i>Net wealth</i>	
Insurance and pensions	3731	(=asset–liabilities)	10197 85%
Equities	791		
Cash and deposits	1474		
Debt securities	94		
Other	221		

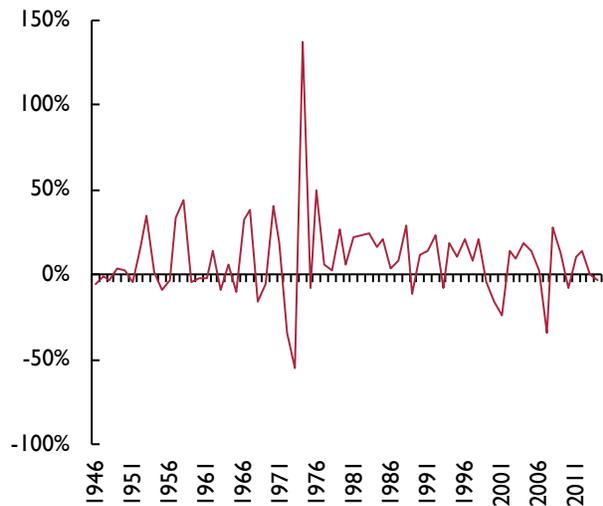
Source: ONS, National balance sheet: households and non-profit institutions serving households (NPISH), £ billions, 1995.

Figure 8. House price growth 1946–2015



Source: Bank of England, 3 centuries dataset.

Figure 9. Equity price growth 1946–2015



Source: Bank of England, 3 centuries dataset.

wealth. Indeed even though loans are about the same level as income, net wealth is a large multiple of consumption (figure 7).

We can examine two snapshots of the household balance sheet in 1995 and then again in 2015 in tables 1 and 2. In 1995 household net worth was £2.8 trillion (some six times the level of aggregate consumption) and this comprised assets of £3.4 trillion of which £1.1 trillion were real estate with a similar amount in insurance and pensions with £0.4 trillion and £0.5 trillion in equities

and cash or deposits, respectively, and financial liabilities of £0.6 trillion, some 90 per cent of which were loans. By 2015, net worth had increased to £10.2 trillion (some ten times the level of aggregate consumption) with assets of £11.9 trillion of which £5.3 trillion were real estate, £3.7 trillion in insurance and pension, £0.8 trillion in equities and £1.5 million in cash or deposits. Net worth has increased, fuelled by low real interest rates, by some 11 per cent per year. But the allocation of assets has moved decisively towards housing, which now accounts for 45 per cent of household assets compared to 32 per cent in 1995 and loans have tripled. The returns

of housing in the UK are comparable to those from equities and may help us understand this seemingly odd preference for this asset class in the UK (figures 8 and 9), unless one understands that housing is an asset that may have less of uncertainty in its value at some future point (e.g. at the end of life) and that allows households to leverage their assets purchases in a bank-dominated system of finance.

Bunn and Rostom (2016) find evidence to show that the build-up of mortgage debt prior to the financial crisis was (unsurprisingly) linked to house price rises. However, they examine the extent to which high levels of secured debt affected household spending patterns. They find that higher debt households had higher consumer spending in the run-up to the 2007 crisis, and that these same households cut back spending more sharply once the crisis broke.

Three hypotheses are posed as to why high-debt households cut back more than others after the crisis: first, that high debt restricted borrowers' access to future credit; second, that high debt may have raised worries about ability to make future interest payments; third, households with high debts may have made larger adjustments to expectations of future income. The authors conclude that the data provide some support for the first two of these explanations but not the third.

The implication of these results is that high levels of secured debt made consumer spending more volatile over the business cycle, as those with high debt tended to spend more during the upturn but also cut back more during the downturn. One conclusion is that policymakers responsible for financial and macro stability should, therefore, be concerned to ensure that debt levels do not become too high and too widespread in the household sector.

Regional policies and infrastructure

Despite the limited growth in real wages and the increase in the value of assets, measured income inequality has not increased since the rise in the first half of the 1980s (figure 10). There has been some increase in income at the top percentile but offsetting that has been a reduction in the fraction of households below 60 per cent of the median.

It is arguably more that large and persistent inequalities in productivity across UK regions have become a key issue and ought to be seen as an urgent policy priority. Figure 11 shows that only London and the South East have levels of productivity above the national average. We can also examine the question by City regions (figure

Figure 10. UK Gini coefficient 1961–2014



Source: *The chartbook of economic inequality*, Atkinson et al.

Figure 11. Labour productivity by NUTS I region or country, 2015

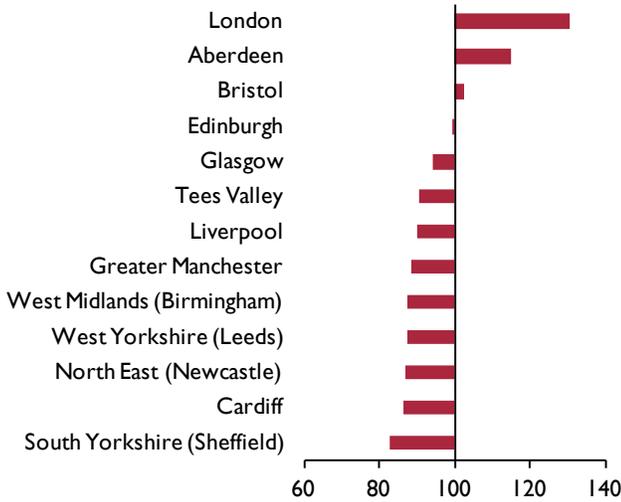


Source: ONS and NIESR, UK=100.

12) and note that only Bristol, Aberdeen and London lie above the City average. The question facing policymakers is the extent to which openness to trade and FDI acts to reduce or widen these inequalities and what role private or public finance can play in ironing out these questions.

Typically, productivity is measured as Gross Value Added (GVA) per head. GVA is a measure of the value-added

Figure 12. GVA per hour worked – city regions, 2015



Source: ONS and NIESR, UK=100.

produced in a region, and is composed of the sum of employee compensation and a measure of profits (gross operating surplus). It is, though, not entirely clear that inequality in productivity is a good measure of regional inequality in household incomes or living standards. Further work is required to disentangle the impact of employee compensation and profits on regional productivity inequalities, as well as regional data on employment generated by FDI, to obtain a clearer picture of the nature of regional inequalities in the UK, and their impact on living standards.

Since at least the start of the Keynesian revolution, infrastructure spending has been placed at the centre of demand management. Indeed, the National Infrastructure Commission has been tasked with locating and designing infrastructure projects that are ready for investment. If we can locate the right type of projects in transport, digital networks, housing, hospitals, schools and universities, then it seems likely that they will help the economy re-orient itself for the 21st Century. We can assess the prospects for infrastructure investment in a number of ways:

First, we can examine the impact of public investment on the overall economy. The key question is whether public investment increases activity by more than its initial level of expenditure, i.e. whether there is a multiplier that is greater than one. Most estimates of the multiplier have been hampered by not being able to evaluate

the counterfactual consequences of spare capacity, the potential increase in borrowing costs and also the contingent set of policies adopted. It is also important to strip out R&D, which has been under 2 per cent of GDP for over a quarter of a century and because of a close relationship between public and private R&D may play an important role in amplifying any multiplier effects.

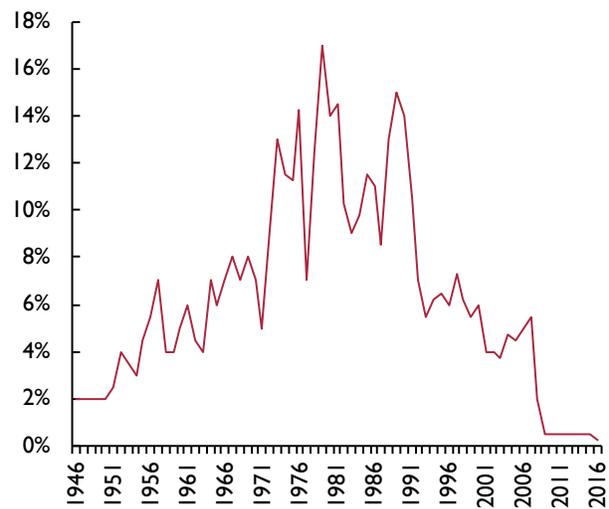
Secondly, there is a genuine need to understand how we use economic assessments such as cost benefit analysis to identify and finance projects with high long-run economic returns. The decision as to whether to use taxes or borrow depends on society’s rate of discount and the returns to investment garnered by current generations of taxpayers. The optimal degree of risk sharing with future generations needs to be explored with respect to infrastructure, particularly at a time when optimal choices seemed to be hampered by an excessive degree of myopia or nimbyism in planning.

Finally, there is a need to think about the financial structure of infrastructure spending. Does such expenditure require a form of Development Bank or the issuance of special instruments by the state, so-called infrastructure bonds? The consensus is that such institutions or hypothecated bonds are not necessary because they are equivalent to existing funding mechanisms.

The monetary-fiscal-financial mix

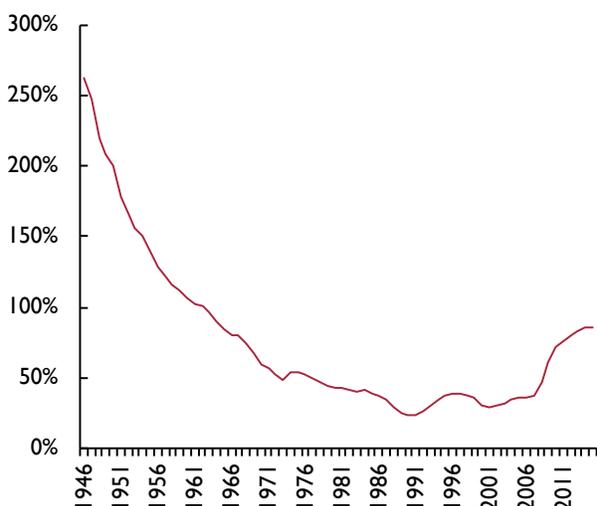
The economy has shown little sign of economic rehabilitation following the financial crash of 2007–8.

Figure 13. Policy rate 1946–2015



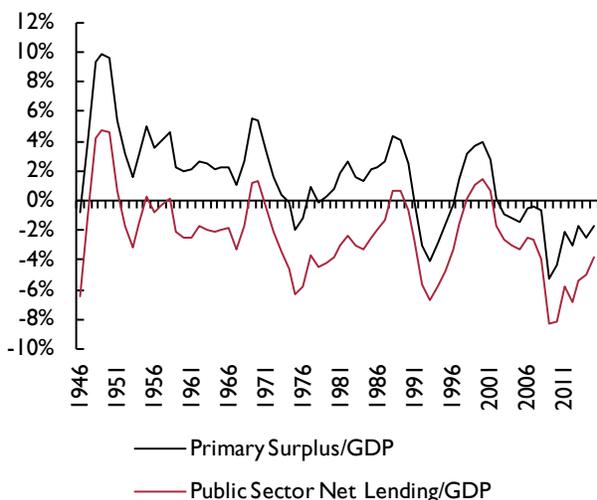
Source: Bank of England, 3 centuries dataset.

Figure 14. UK public debt to GDP, 1946–2015



Source: Bank of England, 3 centuries dataset.

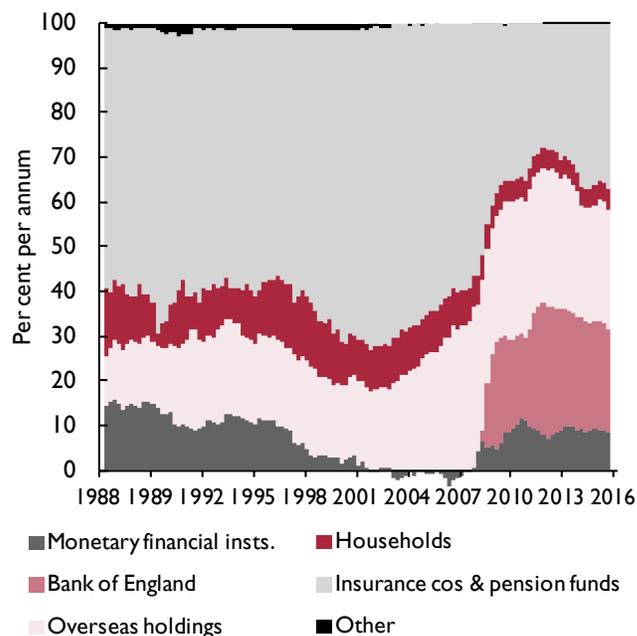
Figure 15. Primary surplus and public sector net lending to GDP 1946–2015



Source: Bank of England, 3 centuries dataset.

Indeed we are not far away, rather like Japan in the final years of the twentieth century, from our own lost decade. The policy response has been to adopt easy money with policy rates at or near to the zero lower bound (figure 13) and for countercyclical fiscal policy to do little more than allow the automatic stabilisers to operate, a policy mix that has been very helpful to property prices. That said, public debt has increased as rapidly as it has ever done in

Figure 16. Holdings of UK central government liabilities, 1987–16

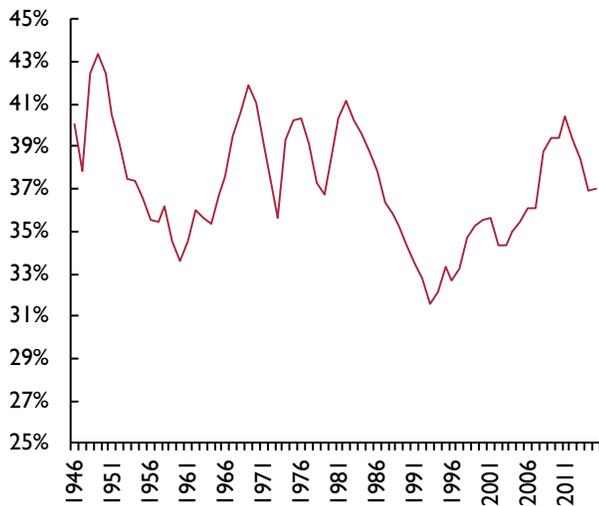


Source: Debt Management Office.

peacetime and now stands at nearly 90 per cent of GDP (figure 14). And yet there is little sign so far that we can return to normal times with fiscal surpluses – we have had a primary deficit regime since the early 2000s (figure 15) – and nominal interest rates to their normal range.

The policy ammunition looks exhausted with both borrowing and interest rates hitting their respective ceiling and floor. And with the Bank of England, through its Asset Purchase Facility, holding some 30 per cent of the stock of outstanding public debt (figure 16) there is a case to consider that monetary and fiscal policy are operating jointly. Furthermore financial stability may be threatened as the low policy rates do not allow financial intermediaries to make the kind of margin required on loans. There are also moves towards the issuance of digital central bank money so that negative interest rates could be charged on electronic balances, but we are running monetary policy without much of an external debate about the efficacy of forward guidance or how we might one day exit from quantitative easing.

Despite all these changes, the Bank of England retains operational independence for monetary policy in pursuit of a simple inflation target set by the government which remains at 2 per cent. It has also been charged with overseeing financial policy towards limiting the risk from

Figure 17. Public sector total receipts to GDP 1946–2015

Source: Bank of England, 3 centuries dataset.

financial sector operations in the new financial policy committee. Fiscal policy has been subject to two new forms of oversight with the inception of the Office for Budgetary Responsibility and the adoption of a fiscal rule that has targeted the date for a return to fiscal surplus. And yet at a time of increasing debt, tax receipts are falling relative to income (figure 17). Financial stability has been assigned to a branch of the Bank of England, the Prudential Regulatory Authority. It is unclear that the interactions of monetary-fiscal and financial policy have been properly reflected in these new arrangements and so we have two possible routes. One is to keep these monetary and financial procedures lodged in the various arms of government and allow coordination to develop over time with the possibility of coordination failures, and the other is to explore the need for a new set of objectives for the monetary and financial authorities that can be jointly pursued.

Concluding remarks

The UK economy faces a number of critical problems. The mix of capital to labour is too low to allow sufficiently high growth in real wages. This outcome, whilst limiting the impact of the recession on unemployment, has limited the growth in productivity in the recovery and has the potential to increase income inequality over time. The vulnerability of the household sector to shocks is cushioned in aggregate by a large increase in net worth. But arguably too much of the debt and the assets are tied up with property, which leave households vulnerable to an adjustment in property prices and also may lead to the

creation of significant price-based barriers to entry to the housing market, which increase the barriers to economic mobility. The concentration of assets in housing rather than equities or fixed income funds may act to limit the availability of loanable funds. Furthermore, the regional disparities in productivity and income are also reflected in the evolution in house prices which may further hamper growth by limiting labour mobility. Monetary and fiscal policies could in principle act to offset some of these distortions, many of which find their way into the housing market, but may be close to the limits of their operating scope. All of these factors may imply a need to rethink the jointly determined objective for monetary-fiscal and financial policy.

The conventional wisdom is that this election is about the UK's decision to leave the EU and this is clearly a critical question. But we may, once again, be in danger of letting the urgent drive out the important. Political parties should not shy away from facing the question of Britain's underlying economic weakness and should be called upon to offer solutions that address the lost decade of economic growth the country has endured.

REFERENCES

- Atkinson, A.B. (2015), *Inequality – What can be done?*, Cambridge, Mass.: Harvard University Press.
- Aznar, A.R., Forth, J., Mason, G., O'Mahoney, M. and Bernini, M. (2015), 'UK productivity and skills in an international context', *BIS Research Paper 262*.
- Blundell, R., Crawford, C. and Jin, W. (2014), 'What can wages and employment tell us about the UK's productivity puzzle?', *Economic Journal*, 124, May, pp. 377–407.
- Britton, A. (2000), 'John Christopher Rodrick Dow, 1916–1998', *Proceedings of the British Academy*, 105, pp. 397–413.
- Bunn, P. and Rostom, M. (2016), 'Household debt and spending in the United Kingdom', in Chadha et al. (eds), *The UK Economy in the Long Expansion and its Aftermath*, Cambridge: Cambridge University Press.
- Chadha, J.S. (2015), 'Fine tuning out of control', Gresham College Lecture, 5 February 2015.
- Dow, J.C.R. (1964), *The Management of the British Economy*, Cambridge: Cambridge University Press.
- (1991), 'The high wage theory of unemployment: theory and British experience, 1920–1989', 1990 Keynes Lecture in Economics, *Proceedings of the British Academy*, 76, pp. 283–309.
- Easterlin, R.A. (1974), 'Does economic growth improve the human lot? Some empirical evidence', in Davin, P.A. and Reder, M.W. (eds), *Nations and Households in Economic Growth: Essays in Honour of Moses Abramovitz*, New York: Academic Press, pp. 89–125.
- Oswald, A.J., Proto, E. and Sgroi, D. (2009), 'Happiness and productivity', IZA discussion papers, No. 4645.
- Pissarides, C. (2013), 'Unemployment in the Great Recession', *Economica*, 80(319), pp. 385–403.
- Riley, R., Bondibene, C.R. and Young, G. (2014), 'The UK productivity puzzle 2008–2013: evidence from British businesses', NIESR Discussion Paper No. 450.