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Growth, de-regulation and rent-seeking in post-war British Economy

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ABSTRACT

There is a view that the financial sector of the post-war British economy was in need of reform that was postponed to the detriment of growth for 30 years until liberalisation started in full earnest after the election of 1979. There is another side of the story in this comparison. The first three decades of the post war period witnessed a decline in the share of wages accruing to the top percentile of earners. The trend was reversed around 1979, without any commensurate rise in output per person employed. The average growth rate of GDP in the second period was no greater than that in the first period because cyclical fluctuations were deeper. The de-regulation of the financial system allowed for recycling the wealth of the rich to contribute to housing inflation and rent seeking opportunities, creating an illusion of prosperity.

Keywords: Financial liberalisation; Productivity trends, Growth

JEL Classifications: N14, N24, P34, Z19

I. Introduction

Concern has been expressed by US economists for quite some time about increasing inequality (Thurrow 1984), but especially about the trend in the polarisation of income distribution at the extremes (Levy 1987). Various measures have been proposed (Levy and Murnane 1992, Wolfson 1994) to describe this type of income inequality. Following the credit crunch and meltdown in the banking sector, a specific attention of focus in the US and also in the UK has been the growing disparity between the top 1 per cent and the rest 99 per cent of the wage earners (Atkinson 2005, Atkinson, Pickety and Saez 2011). A reason for this concern is that the failed banking sector is a contributor to the concentration at the top, and financial sector remunerations may contain a significant element of rent (Philippon and Reshef 2009).ⁱ To the extent that expenditure of resources is entailed in rent capture, this has been to the detriment of economically efficient allocation of resources in the economy (Turner 2010, Cecchetti and Kharroubi 2012).ⁱⁱ

We divide the post-war period of 1950-2007 into two parts, 1950-1979 and 1980-2007, periods of pre- and post-liberalisation of the financial sector. During the first two decades of the post-war period, the financial sector was shielded from competition and, in return, this industry submitted to restriction on activities. A small number of clearing banks held “85% of total UK banking assets” and these banks “were almost entirely funded by customer deposits, 60% of which were held in [non-interest-bearing] current accounts”. These banks limited themselves mostly to the provision of short term loans to businesses (Davies and Richardson 2010:322). There were specialised investment banks providing other corporate services, for example under-writing issues of new securities and engaging in trade finance and dealing in foreign exchange. Housing finance was largely left in the domain of building societies which emerged as mutual organisations in the distant past. Ensuring the stability of the financial system was the main concerns of the authorities until the memories of the depression era began to fade. The call for introducing competition in banking became louder leading Jack Revell (1973:113) to lament that “[m]odern thinking tends to deny that banks are unique among financial institutions ...” He was especially concerned about the externalities of the “payments mechanism in the economy...[because] its influence reaches into all corners.”.

The lack of competition was addressed in the Competition and Credit Control Act of 1971, allowing all types of banks to engage in newer activities and reducing prudential regulatory constraints on the leverage ratio and financing foreign investment. However, some of the changes were slow in coming. For example, the leverage ratio increased slowly until further liberalisation of the banking system that were initiated in the 1980s (Chart 14 Davies and Richardson 2010:329).

Problems in manufacturing in the 1970s were partly laid at the door of the banking sector, and a committee under the chairmanship of a former Prime Minister (Wilson Committee) was set up to review, amongst other things, the provision of finance needed for industrial innovations. The Committee published various interim reports in a “deliberate attempt to stimulate informed discussion” (Moore 1981:33) before the final report was issued in 1980. By that time, the political desire for radical change in favour of de-regulation had gained momentum, and legislation followed.

There was another distinguishing feature of the second period, which we call the period of liberalisation. The share of wages in the economy for the top 1 per cent of wage earners having steadily declined since 1950 began to rise sharply around 1979 (Atkinson 2005). Executive compensation in the corporate sector began to rise so sharply that Sir Nicholas Goodison, the then Chair of the London Stock Exchange, was reported to have expressed disquiet about these developments in testifying before a parliamentary committee in 1988 (Rodgers 1988:11). He was reported to have used strong language in describing, especially, the decoupling of executive compensation from any realistic measure of performance.

The trends in gross domestic product do not suggest that the UK economy performed better during the period of liberalisation (1980-2007) than it did in the previous decades following the war (1950-1979). We have left out the financial crash after 2007. Volatility in the yearly growth rates in GDP increased in the second period. It may also be the case that very large incomes that accrued to the very few in this period may have been circulated through the financial system to create asset price bubbles, especially in housing assets for those that could obtain a mortgage, producing an illusion of prosperity that was not there. We find that the rise in the share of wages of the top 1 per cent is strongly correlated with rise in mortgage advances.

Household debt rose sharply in the back of asset price rises creating a sense of well-being as consumption spending rose. As explained by Bhaduri (1973, 1977) in the context of “backward agriculture”, changes in ownership, *per se*, can benefit certain groups of investors without necessarily increasing productivity. Whilst a group of individuals can benefit from investment which provides return by inflating the price of existing assets, this type of investment does not necessarily increase productivity and output in the economy. We find that output per person employed in the country during the second period did not improve over the first. ⁱⁱⁱ

The paper is organised as follows. Section II below sets out the background information and contains a discussion of the data. Section III identifies changes in trends and cyclical patterns, and Section IV concludes.

II. Background and Data

Measurement of the output of an economy, the gross domestic product, is based on the conventional identity of equating output of goods and services available in the economy with the money in households’ pockets to purchase the output. GDP is thus set equal to the sum of wages and profits prevailing in the economy.

In a market economy under perfect competition, a competitive equilibrium is defined by the following outcome: the relative prices of goods reflect the relative cost of production at the margin in terms of other goods, and wages track the contribution of labour to the marginal product. Prices obtaining in a competitive equilibrium are known as market clearing prices equating supply and demand for every commodity and service, “under certain conditions” (Hahn 1982 :5). When these conditions, the assumptions entailed in the model of perfect competition, do not hold, wages and profits are partly determined by competition for influencing prices. This attempt at influencing prices in favour of oneself is called rent seeking behaviour, and it entails “expenditure of real resources” which might otherwise have gone to increase the output of the economy (McNutt 1996: 139). When the share of wages of the top percentile rises sharply, it is difficult to hold on to the belief of the emergence of a competitive equilibrium brought about by liberalisation.

The sharp rise in the share of wages of the top percentile in the UK economy since 1979 is explained by trends in the performance related pay for top executives that are often based on movements in share prices which then become the focus of attention by corporate management. Analysing UK data on employee remunerations, Bell and Van Reenen (2013:156) note that executive performance is indeed measured in terms of share prices. Moreover, much of the performance related pay accrues to senior executives, and it is “practically non-existent for workers”. In so far as some of these wages may have in fact fed into a rise in the price of existing assets, published figures for GDP may have over-estimated the contribution of liberalisation to real output. It does not seem credible that the rise in pay for the top earners corresponds to any real rise in the productivity of these earners. Similar changes have taken place also in the United States. “Before the mid-1970s there was a broad social consensus: executives were well paid, but not fabulously so; rents got divided largely between loyal workers and management” (Stiglitz 2013:83). “In 1999, the average chief executive earned 419 times more than his or her coworkers, up from 25 times in 1981, while the 10 highest-paid executives have seen their income soar an astonishing 4,300 percent between 1981 and 2000. If factory workers' pay had grown at the same clip, their average annual earnings would now be \$114,035 instead of \$23,753” (Useem 2002). Pushing up executive rent became easier with the introduction of stock options and bonuses based on short term performance measures that are amenable to flexible accounting rules in declaring profits. As Stiglitz explains (2003:116), these accounting rules can “create the appearance of alluring success...before the world discovered the truth.” This raises a particular problem about the reliability of measures for output based on current wages and profits.

The picture in the UK is not very different from that in the US corporate sector described by Stiglitz (op cit). Testifying before a committee of parliament, the then Chairman of the London Stock Exchange Sir Nicholas Goodison lamented as early as 1988 that corporate executives had come to behave in recent years like “robber barons” who “think that they run their companies for their own benefit” (Goodison 1988:11). Around 60 per cent of the top percentile now comprise of high earners in finance (Bell and Van Reenen 2013). Using the standard measure of value added by industrial sectors, these wages count towards the reported contribution of the finance industry to UK output.

Using standard measure of value added by industrial sectors, the financial sector in the UK is a success story. For example, if it were not for “the ‘excess’ growth of financial services, the

growth rate over this period would have been reduced by 0.2 per cent per annum (Weale 2009:4). Rent is conflated with output in the above method of measuring the contribution of the financial services to the economy: "... it is possible for financial activity to extract rents from the real economy rather than to deliver economy (sic) value." (Turner 2010, Ch 1).

The rationale for many of these high rewards is now being brought into question. Malkiel (2013) finds that fees charged by US asset management funds are not warranted by performance. These funds which charge fees for actively managing investment allegedly using their expertise provide no better returns for clients, often they generate worse returns, than investment in a broad-based portfolio chosen to follow some chosen stock market index.

The impetus for examining the growing divide in wages between the top 1 per cent and the rest, especially when the much of the top wages accrued to those that are now blamed for collapse in output, is motivated partly by historical debates seeking distributive legitimacy in society.^{iv} The legitimacy of unequal distribution in market economies derives from the connection between contribution and reward when markets are allowed to operate unfettered, and the assumption that choice made by one economic agent has no impact on any other holds. As long as the initial distribution is accepted as fair, subsequent market prices and wages arrived through voluntary transactions enjoy legitimacy according to the procedural view of justice of the market distribution of income: "If each person's holdings are just, then the total set (distribution) of holdings is just" (Nozick 1973:49). If wages are distorted by rent capture by special interests, the legitimacy in the distribution of income in a market economy where some can be very rich and others poor comes into question. Put it bluntly, unequal distribution in income resulting from market transactions "can be tolerated as long as every individual feels that his position in it due to fate or to his own merits". (Robinson 1971:93).

In real life, markets may be constrained by imperfections, for example due to the existence of oligopolies, monopolies, and organised pressure groups. Arguments for social intervention to keep in check those who seek to take advantage of market imperfection by capturing rent through, for example, forming cartels, are rejected by those who subscribe to the Friedman conjecture (Friedman 1962). The conjecture is that attempts at rent seeking through collusion amongst subsets of economic agents to form a cartel are not likely to succeed in the long run, unless such cartels enjoy government support. According to this view, reliance on markets is

the best way to eliminate rent. Insofar as equilibrium prices and wages even in a perfect market depend on the initial distribution of property rights, social intervention of one-off transfers to address earlier wrongs is the only intervention permitted in a market economy envisaged by the likes of Milton Friedman and Robert Nozick (Williams 1982).

The Friedman approach in defence of the inherent justice of the market outcome assumes that contribution should be measured in terms of wages and prices that would obtain in a free market, bypassing the thorny normative idea of the moral merit of contributions. Prices reflect valuations at the margin balancing supply and demand for all goods and services in the economy using up all the available resources when economic agents optimise their objectives having access to identical information and holding identical beliefs about processing this information^v. Valuations based on prices are justified on the ground of individual liberty to choose as one pleases. According to Hayek (1960), attempts to formulate a policy of distribution based on moral merit leads to interference with individual liberty, an issue which has been forcefully taken up by, amongst other, Lord Peter Bauer (1981). In Hayek's vision of a free society, "there will be distribution in accordance with value rather than moral merit; that is, in accordance with the perceived value of a person's actions and services to others Nozick (1974:158)." The value can be determined by reference to market prices. The outcome of a market where the pursuit of individual gain leads to the unintended consequence of social gain is asserted in the much-quoted sentence from Adam Smith: "man is led to promote an end which was no part of his intention" (quoted in Sen 1982:1). Market-determined wages can thus enjoy legitimacy but only if the distribution of income is not contaminated by rent.

For this reason, even those that may have been cheerleaders of liberalisation and de-regulation in the past are now beginning to worry about sharp increases in income inequality. David Stockman, the Director of the Office of Management and Budget in the first Reagan administration is exercised about the damage done to the reputation of the markets by the "Wall Street casino". In that Stockman appears to have come now to embrace a Keynesian view contained in the General Theory: "When the capital development of a country becomes a by-product of the activities of a casino, the job is likely to be ill-done" (quoted in Mihm and Roubini 2010: 231) He laments that "Republicans have been oblivious to the grave danger of flooding financial markets with freely printed money and, at the same time, removing traditional restrictions on leverage and speculation" (Stockman 2010). Between 2002-2006, "the top 1 percent of Americans — paid mainly from the Wall Street casino — received two-

thirds of the gain in national income, while the bottom 90 percent — mainly dependent on Main Street’s shrinking economy — got only 12 percent” (Stockman op cit) . Not just the Republicans, de-regulation was pursued with even more vigour during the Clinton administration (Stiglitz 2003). An unintended consequence of the way modern capitalism, especially with the emergence of liberalised finance, has evolved in recent decades is that individual and social interests are no longer automatically aligned through prices obtaining in the markets, as envisaged in the market ideology. The salient features of these developments are gradually being sketched. In this paper we examine UK data.

Data on the top one percent income (TOP1) is taken from the database referred to in Atkinson, Pickety and Saez 2011: <http://g-mond.parisschoolofeconomics.eu/topincomes/>. The data series are spliced to obtain a time series from 1949-2007 of the share of wages obtained by the top 1 per cent of the income earners. The rest of the data were taken from the website of the Office of National Statistics at <http://www.statistics.gov.uk/> and are as follows: (a) The real GDP series (RGDP) is from the quarterly national accounts, series of chained volume measures, seasonally adjusted and with base period of 2009 (the series has now been rebased to 2010); (b) output per filled job (OUTPUTPERJOB) is from productivity measures, is seasonally adjusted and expressed as index with base period of 2009 (the series has also been rebased to 2010); (C) the data on housing are all obtained from the house price index (HPI) files, reference table no. 29, and are for the mortgage advances on all dwellings (ADWAD) and on first time buyers (FTBUYAD).

III. Salient features of the data and Discussion

There are two features of the level and trends in the movement of real GDP and also the wage share in the economy of the top percentile of wage earner that emerges from the data (Figure 3.1). The share of wages for the top group continued to decline for the first three decades of the post-war years only to register a sharp rising trend since 1979. The volatility increased in both the above share of the top percentile and in real GDP. The red line is a smoothed series.^{vi}



Figure 3.1: Trends in real GDP and the wage share of the top percentile

Increases in the volatility during the second period can be seen more clearly from trend in the yearly deviation figures, in the respective units of measurement of Figure 3.1, plotted in Figure 3.2 below.

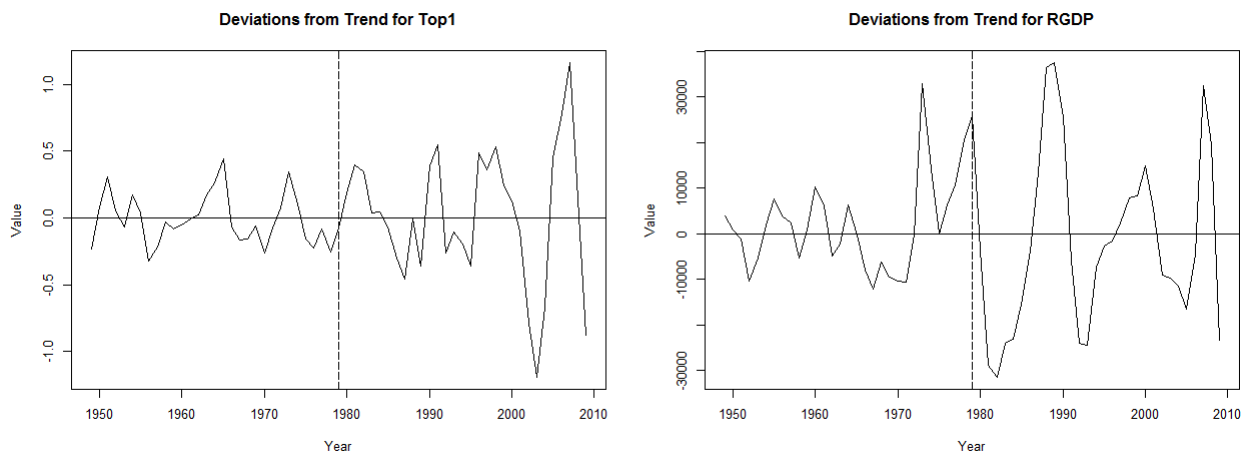


Figure 3.2: Deviations from smoothed trend

An advantage of the method that we use for smoothing and trend extraction is that it allows the computation and plot of the corresponding velocity^{vii} measures for the underlying level series. Such a measure has two advantages over the traditionally used “rate-of-change” series, i.e. growth rates or trend deviations, such as in Figure 3.2: first, it produces a smoother plot of the evolution of the change over time and, second, it allows us to more easily identify periods of particular interest in the series. The velocity diagrams in Figure 3.3 below tell an interesting story. During the first period, the velocity was negative (although rising) for the share of wages accruing to the top 1 per cent, indicating that the share was in decline. The velocity became positive and rose sharply for a period after 1979, indicating a sharp rise in

the top percentile's share of the total wage, and then the velocity settled down to a constant but remaining positive whilst the velocity of the increase in real GDP sharply declined, starting this decline well before the onset of the financial crisis. This gives rise to the possibility that the share of wages accruing to the top 1 per cent may have gone not into purchasing new output but into pushing up asset prices, after the beginning of liberalization. Furthermore, it is interesting to note two additional things from these velocity plots: first, see that before 1979 the velocity of GDP was approximately constant and, second, that the sudden rise in output velocity occurs after the top per cent velocity has reached its peak at about the 1990's.

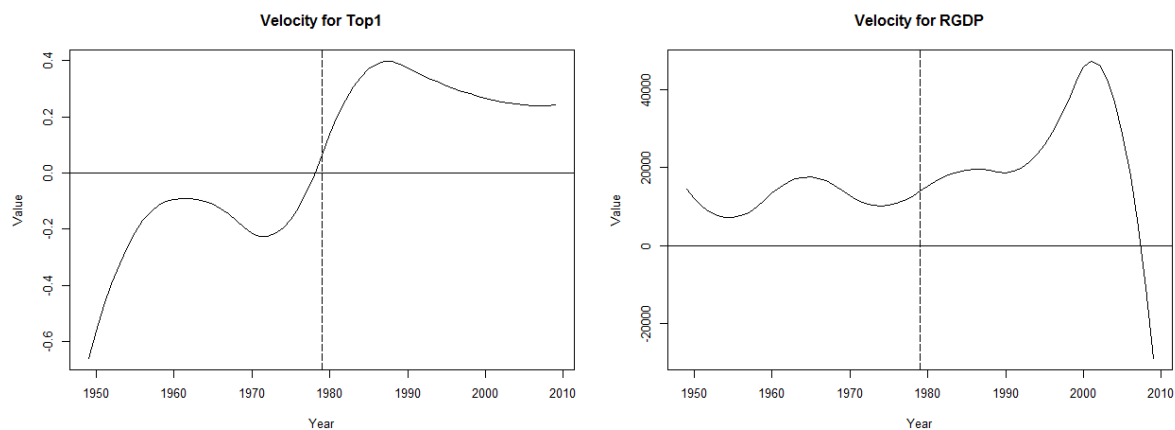


Figure 3.3 Velocity

Moving on, we note that the above visuals are supported by some straightforward tests. The average growth rate in the second period was not statistically significantly greater although inequality was higher (Table 3.1). We can see the mean growth estimates for both series as well as the corresponding test for equal means (note that the tests were performed using robust standard errors from which the corresponding p-values were calculated).

If it is now assumed that the share of profits have accrued at the same rate as the share of wages for the top 1 per cent of wage earners, we can calculate the percentage change in the share of GDP accruing to the top 1 per cent between our comparison periods (Table 3.2).^{viii} During the second period (1980-2007), the trend rate of growth in RGDP was the same as it was in the earlier period, and RGDP doubled (105 per cent increase), but the share of the top 1 per cent increase by 160 per cent. This contrasts with a decrease of 47 per cent in the first period.

Table 3.1: Average growth rates of GDP and the share of wages of the top percentile

	Average growth rate (1949-1979)	Average growth rate (1980-2007)	Test for equal growth rates
Top 1% Share	-0.021	0.036	35.467
<i>p-value</i>	0.007	0.007	0.000
Real GDP	0.027	0.026	0.346
<i>p-value</i>	0.004	0.004	0.852

Table 3.2: Capture of GDP growth by top 1 per cent

Period	Growth (% p.a.)		Percentage increase in trend (%p.a.)	
	RGDP	TOP1	RGDP	TOP1
1949-79	2.7	-2.1	122	-47
1980-2007	2.7	3.6	122	160

Changes in the output per job and changes in the wage share of the top 1% is positively correlated in the first period but the coefficient is negative in the second period (1980-2007) ignoring the precipitous downturn after 2007. The correlation is significant at 10 per cent level in the first period and it is not significant in the second period (1980-2007). The coefficient becomes positive in the second period if the period is extended by two years (1980-2009), but still remains insignificant. It is difficult to justify the remarkable rise in the wages share of the top 1% as a reward for contribution to greater productivity in the country.^{ix} Output per job filled in the economy did not change between the periods (Table 3.3 below).^x

Table 3.3 Growth rate output per job filled in the whole economy

	Average growth 1961- 1979	Average growth 1979- 2007	Test for equal growth rates p-value
Output per job	0.026	0.022	0.545
<i>p-value</i>	0.004	0.003	0.465

Our results so far can be strengthened if we consider a simple VAR model for the three variables of interest together: real GDP (RGDP), top 1 per cent share of wages (TOP1) and output per person employed in the economy (OUTPUTPERJOB). Due to the small sample available to us, and the lack of evidence for co-integration among the three series, we consider the annual growth rates in performing our computations. First, we consider the Granger causality among the variables and then we present the corresponding impulse responses.

Table 3.4: Granger causality test on 3-variable VAR

Dependent variable: TOP1			
Excluded variables	Test value	d.f.	p-value
OUTPUTPERJOB	6.63	2	0.04
RGDP	5.42	2	0.07
Dependent variable: OUTPUTPERJOB			
Excluded variables	Test value	d.f.	p-value
TOP1	1.68	2	0.43
RDGP	8.81	2	0.01
Dependent variable: RGDP			
Excluded variables	Test value	d.f.	p-value
TOP1	0.50	2	0.78
OUTPUTPERJOB	2.02	2	0.36

The Granger causality tests over the period 1963 and 2007 (Table 3.4) suggest the following. Increases in productivity (OUTPUTPERJOB) and real GDP (RGDP) growth probably cause the growth of the share of wages of the top percentile (TOP1) to go up. However, an increase in TOP1 growth does not have a significant causal effect on productivity. An increase in real GDP is, however, followed by a rise in productivity. Neither TOP1 nor OUTPUTPERJOB has a significant causal association with changes in real GDP. Admittedly the model is basic, the data seem to support our earlier conjectures about the relationship on the temporal path of GDP and productivity growth with the wage growth of the top 1 per cent.

Another way of looking at the impact on variables on each other is to look at the impulse responses of variables due to changes in other variables (Figure 3.4 below). The red lines define the 95 per cent confidence interval, computed via bootstrap to enhance inference due to the small sample we have available.

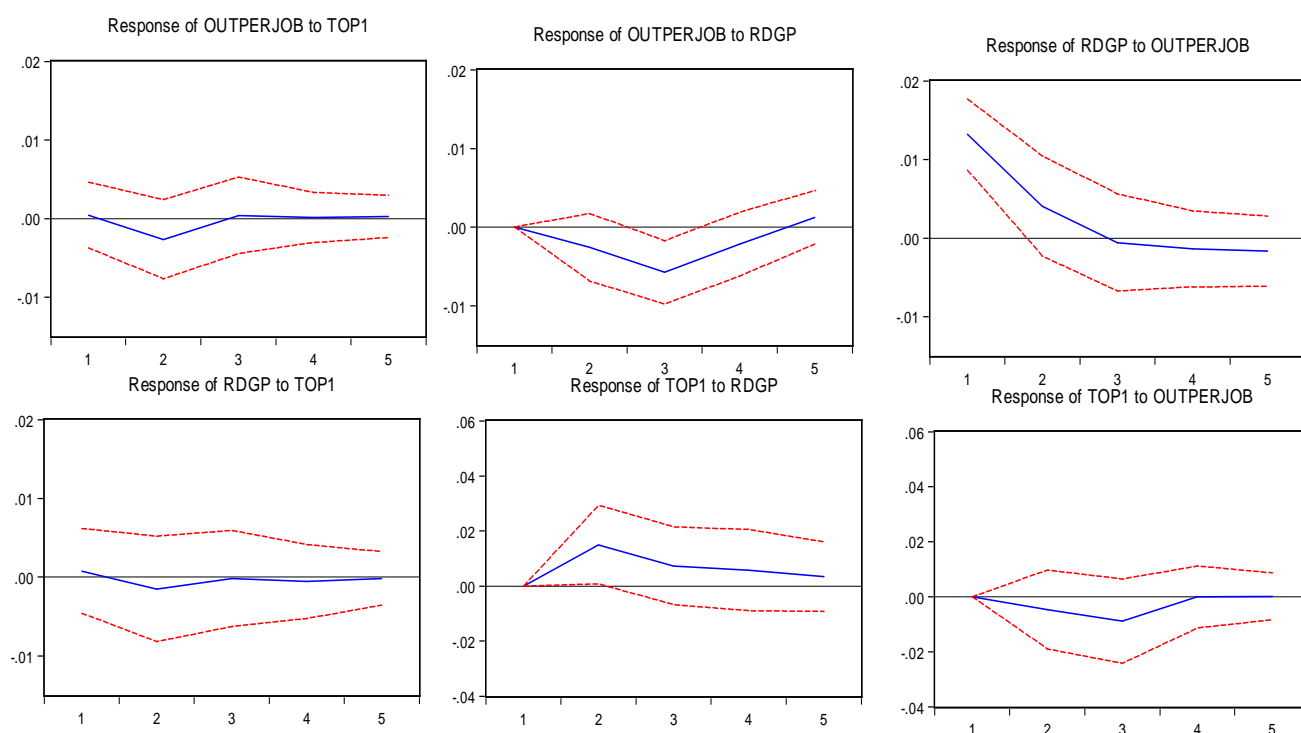
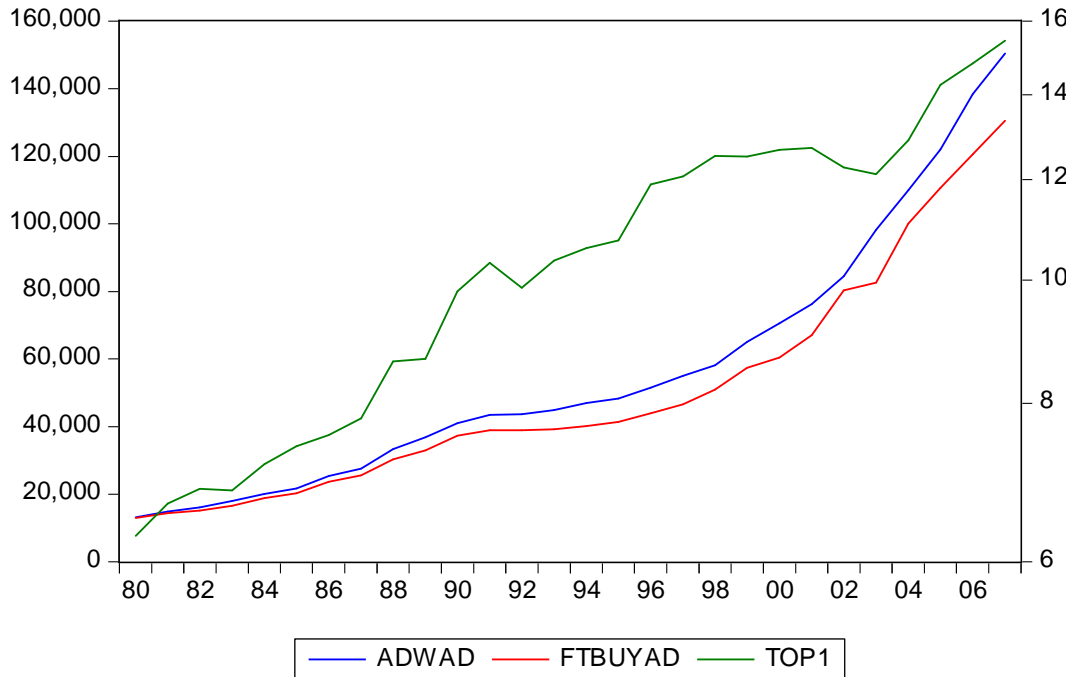


Figure 3.4: Impulse responses of 3-variable VAR

The main conclusion from the impulse responses is as follows. A shock on real GDP leads to a fall in productivity, the zenith being reached in 3 years (2nd figure on top row), presumably suggesting that unskilled jobs are created. However, the share of wages for the top percentile goes up (2nd figure on the bottom row). If there is a productivity shock, there is an immediate positive impact on real GDP lasting for 3 years (3rd figure on top row). Increases in the share of wages of the top percentile (1st figure on bottom row) have a mild retarding impact on real GDP. Productivity increase has a negative impact on the share of wages for the top 1 per cent (3rd figure on bottom row).

The top percentile share of wages has become very strongly correlated with the housing market, especially after 1979. The diagram for mortgage advances for housing (all dwellings and first time buyers) traces the diagram with that of top 1 per cent share of wages (Figure 3.5). The correlation of the top 1 per cent share with the other two variables is over 90% for the post 1979 period (in levels; in growth rates it's still a respectable 30%). Running a simple dynamic regression on the growth rate of mortgage advances on its own lag and the contemporaneous growth rate of the top 1 per cent of wages we find that, even after accounting for the own dynamics of the growth of mortgage advances, the growth of the top

1 per cent share can explain a significant proportion of variation in advances and (more importantly) it cannot explain the variation in average house prices.^{xi} The results for the impact on mortgage advances are given in Table 3.5.



Parameter Estimates and model fit

ADWAD	<i>Impact</i>	<i>Long-run</i>	<i>p-value</i>	<i>Adj. R-squared</i>
1971-2009	0.23	0.46	0.22	22%
1980-2009	0.48	0.90	0.02	36%
FTBUYAD	<i>Impact</i>	<i>Long-run</i>	<i>p-value</i>	<i>Adj. R-squared</i>
1971-2009	0.34	0.54	0.14	13%
1980-2009	0.64	0.82	0.01	21%

As we can see from the table above, for first time buyers, and after 1979, 21% of variation for mortgage advances can be explained by the growth in top 1 per cent share, even after accounting for the own dynamics in mortgage advances. As it became cheaper to borrow, even those that did not enjoy the fruits of liberalisation through higher wages enjoyed an illusion of prosperity as house prices soared. The reality is that asset bubbles cannot continue to grow indefinitely. They eventually burst.^{xii}

IV. Conclusions

We have examined the trends in output and top percentile wages in the economy for two distinct periods in the post-war period. Financial activity was more regulated during the first period, even after the passage of Competition and Credit Control Act of 1971. The pace of de-regulation picked up speed in the 1980s. Stock markets flourished and executive pay went up sharply. A steady rise in the share of wages for the top percentile was the outcome. This group of 1 per cent of top earners increase their share of the national output by 160 per cent, while the output only rose by 105 per cent, during 1980-2007. We have noted above that there has been no discernible rise in the average rate of growth following liberalisation. Instead, asset prices, especially house prices, have risen creating an illusion of rising prosperity for many.

This type of inequality associated with economic liberalisation has been possible due to changes in social attitudes (Stiglitz 2013) tolerating earnings that are not related to any productive contribution to the economy. In his testimony to the Commons Treasury and Civil Service Committee, the then chairman of the London Stock Exchange expressed “distaste” from the growing practice of lavish rewards appropriated by corporate executives of companies listed on the Exchange (Rodgers 1988:11). These practices gradually became the norm over time. Rise in the share of the income going to the top percentile has been driven both in the US and the UK by sharp rises in the wages of top executives (Kennickell 2009, Piketty and Saez 2003, Bell and Van Reenen 2013). Interrogation of UK tax data between the years 1998 and 2007, suggest that sixty “percent of the increase in income share accruing to the top percentile has gone to financial service employees (“Bankers”) although they account for only around one-fifth of such workers” (Bell and Van Reenen 2013:154). Income that is not matched by output goes into fuelling asset prices, especially when the creation of financial assets is not regulated.

Attitude surveys suggest that a belief developed amongst majority of professional economists both in the UK and the US that the individual and social interests are aligned in a free market economy (Kearl et al 1979). They became persuaded by Nozick’s assertion that income distribution “according to benefits to others is a major patterned strand in a free capitalist society” (Nozick 1974: 158). Even those economists that doubted that proposition in its

extreme version, for example Varian (1975), often did so simply on technical grounds of the transmission of noise through time in the determination of wages and profits, and not on the substantive problems of measurement of contribution. This consensus may be coming into question because of the emergence during the final quarter of the 20th century a sharp divergence in the trends of income between a very small minority of one percent and the rest. Ayres and Edlin (2011) urge social intervention to correct this particular type of inequality between the top percentile and the rest. We have outlined evidence that justifies concern about the particular type of inequality, 1 percent versus the rest, which has emerged.

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ENDNOTES:

ⁱ The much-hyped “Big Bang” de-regulation of the UK financial sector occurred in the 1980s, but the liberalisation process had begun earlier. Several key regulatory events in the second half of the 20th century were then instrumental in even more fundamentally altering the structure of the UK financial system. These included, most notably, Competition and Credit Control in 1971 and the Big Bang in 1986” (Davies and Richardson 2010:327).

ⁱⁱ A parallel line of concern about extreme inequality leading to public choice capture of the political process bringing into question the democratic legitimacy of governance is also being heard. Ackerman and Ayres (2004) suggest ways of reducing the influence of money in elections, and Ayres and Edlin (2011) have resurrected the idea of Brandeis tax on inequality originally proposed by the noted jurist and US Supreme Court justice Louis D Brandeis in response to clashes between the rich and the poor in the US in the earlier part of the 20th century: “We may have democracy, or we may have wealth concentrated in the hands of a few, but we cannot have both.” (Quoted in Ayres and Edlin op cit).

ⁱⁱⁱ US data suggest that the contribution of financial activity to the income of non-financial companies went up with the liberalisation of the financial system (Orhangazi 2008, Krippner 2011).

^{iv} For example, John Stuart Mill holds to the view of the “right of producers to what they themselves have produced” (quoted by Schwartz 1968:199).

^v This assumption about belief is critical. For an agent to calculate now the optimal choice entailing allocation of resources over time, every agent must be endowed with infinite amount of computational power (Radner 1968).

^{vi} Smoothing, here and elsewhere, was performed using the Functional Data Analysis (FDA) approach of Ramsay and Silverman (1997) for a single series. An advantage of using FDA is the minimal assumptions that it requires on the nature of the data to perform smoothing: it does not impose parametric constraints, other than the use of either knots or penalty-based smoothing, it has application to either stationary or non-stationary (trending) data and the resulting smoothed series has a nicer interpretation as a function – thus (see next footnote) measures such as velocity can be computed and interpreted. Details on the computations are available on request, including comparisons with a local-level model estimated via Kalman filter.

^{vii} Velocity here is the first derivative with respect to time of the smoothed trend series which is now considered as a continuous function of time. This derivative would correspond to the average growth rate in a log-scale model but here it provides a much more general representation about the smooth evolution of rate of change over time, for the top 1 per cent and the real GDP series.

^{viii} Instead of using GDP, calculations could be performed for equivalised household disposable income, published in Social Trends issued by the Office of National Statistics. However, data do not go back to our starting point.

^{ix} The correlation coefficient is 38 per cent in the 1961-1979 period with a p-value of 0.1, ie significant at 10 per cent. The corresponding figures for 1980-2007 are -23 per cent but insignificant (p-value of 0.23) and the longer period of 1980-2009 are 18 per cent but again insignificant (p-value of 0.35).

^x Data for output per job is not available before 1961 and the period is thus truncated from 1961-1979.

^{xi} Running the same regression using the average housing prices instead of the mortgage advances we find no significance for the estimates on the top 1 per cent share.

^{xii} There are also suggestions that growth of the financial sector may have displaced talents from productive activities by luring away scientists and engineers into the banking industry (Cecchetti and Kharroubi 2012) and diverting investment into ownership changing activities which do not always lead to productivity increase but which allows top earners to extract rent (Orhangazi 2008).