

The Impact of the Bonus Culture on the UK Economy

Andrew Smithers

Key Points

- The decline in UK tangible investment since 2000 has led to a sharp decline in labour productivity and the trend growth rate of the UK economy. A similar decline in the USA was caused by the perverse incentives of the bonus culture, but due to poorer statistics the connection between the bonus culture and investment is less easy to demonstrate for the UK than for the USA.
- More than 100% of the fall in UK investment is attributable to private non-financial companies (PNFCs). The factors that could possibly explain this weakness are: (i) low return on equity (RoE), (ii) weak labour supply, (iii) a perceived need to reduce leverage, (iv) a rise in monopoly power, (v) low expectations and (vi) a rise in the hurdle rate due to the bonus culture.
- I show that while other explanations are not necessarily impossible they are highly unlikely; a rise in the hurdle rate, i.e. the required return on equity, is thus the only credible one.
- Even before the COVID-19 crisis raising the trend growth rate of the UK was by far its most important economic issue. The policy challenge is therefore to reverse the damage done by the bonus culture. I suggest that the most likely way to achieve this is through introducing a tax credit for tangible investment.

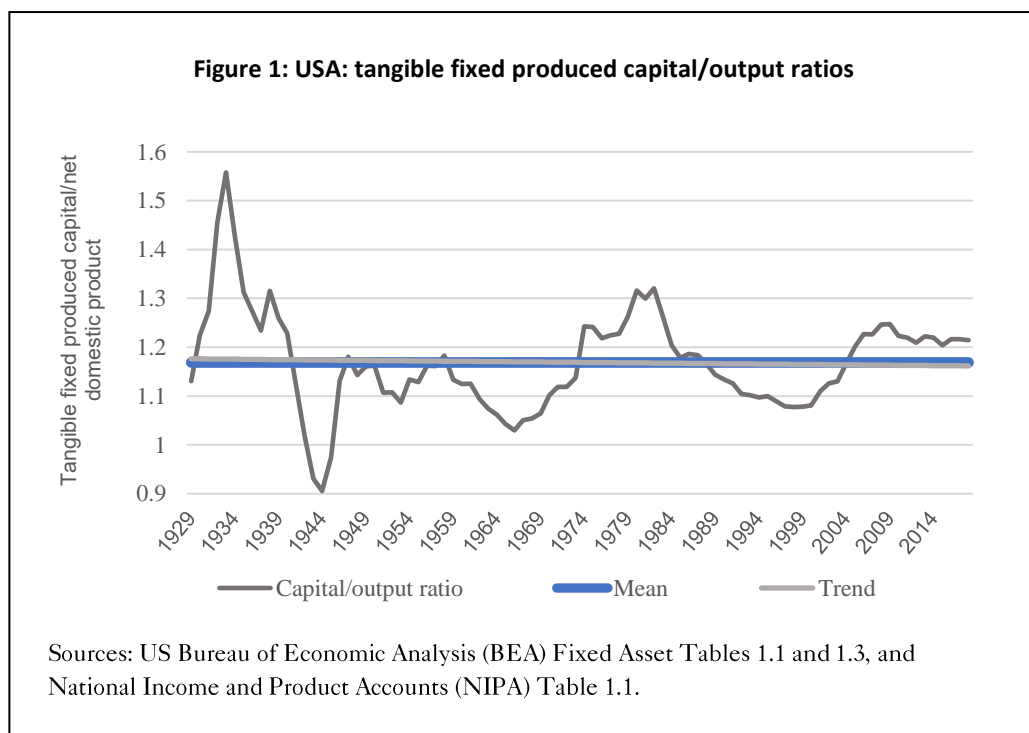
Introduction

The revolution in the way senior corporate management is paid ('the bonus culture') arrived in the USA in the 1990s and was followed by a sharp drop in

US business investment. In the USA it is evident that the bonus culture caused the decline in investment.¹

It is probable that the UK has reacted in a similar way but demonstrating this is less straightforward because UK statistics are not as good as those for the USA. Much of the relevant UK information is only available since 1997 and long time series are needed for strong conclusions to be drawn from the data. One important example is the relationship in the USA between business investment and the effective rate of corporation tax. After the Second World War the two were highly correlated until 2000 but not since, thus providing strong evidence for a change in corporate behaviour following the dramatic change in bonus payments in the 1990s. This relationship cannot be tested in the UK because we do not have the necessary data for private non-financial companies (PNFCs) before 1997.

Business Investment and Output

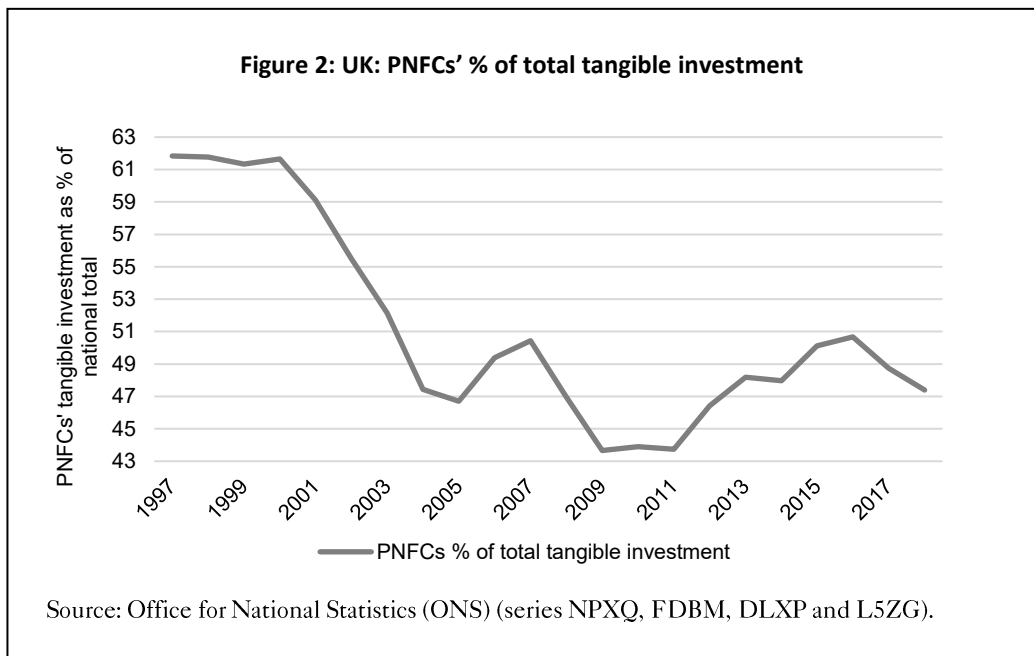


¹ *Productivity and The Bonus Culture* by Andrew Smithers (Oxford University Press, 2019).

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The value of the produced fixed capital stock has a stable long-term ratio with output measured after capital consumption both in theory² and as shown by US data, which is illustrated in Figure 1. The economy's growth potential is thus determined by the speed at which the value of the capital stock grows. Intangible capital (IP) depreciates quickly. In 2018 the depreciation rate for IP in the UK was 14.3% compared with 3.3% for tangible capital, and in the USA 21.3% and 3.9% respectively.³ IP has therefore little sustainable value and the trend growth rate of the capital stock is thus determined by net additions to the produced fixed tangible capital stock.⁴

The bonus culture only affects investment by PNFCs, but it is these which have caused the fall in total investment. As Figure 2 shows, their share of fixed tangible produced capital investment fell from 61% in 2000 to 47% in 2018.

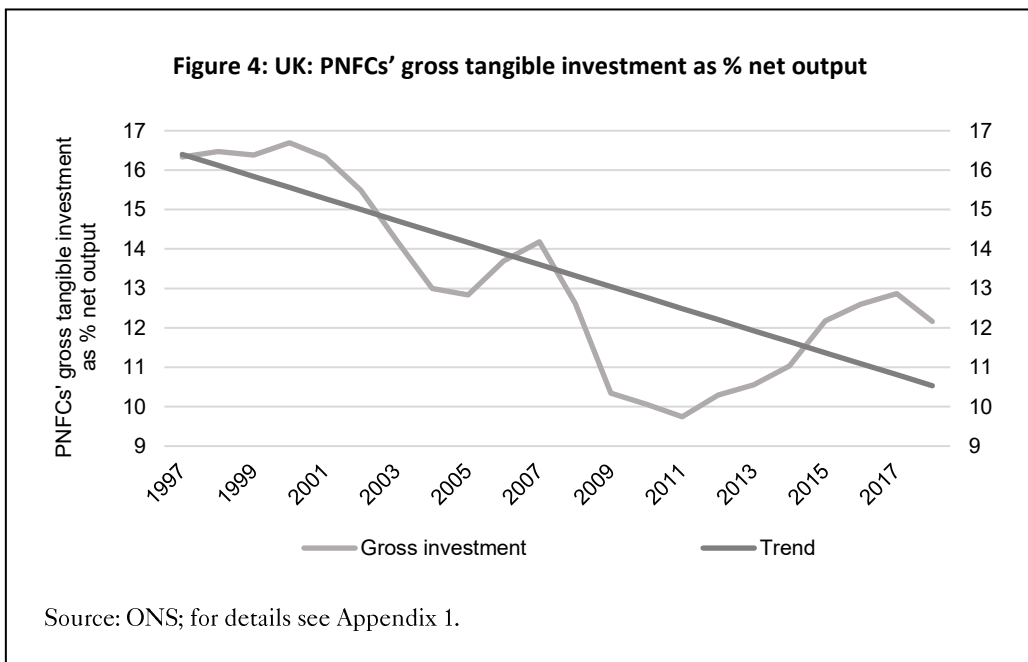
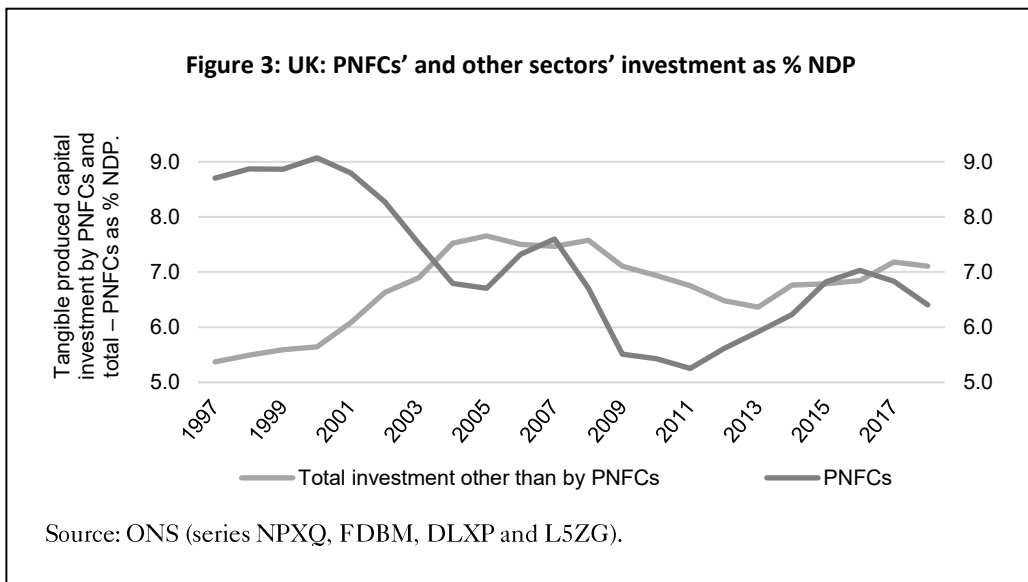


² See *Productivity and the Bonus Culture*, and 'Building a new testable model to estimate total factor productivity' by Andrew Smithers, *World Economics* 18, 7 (April–June 2017).

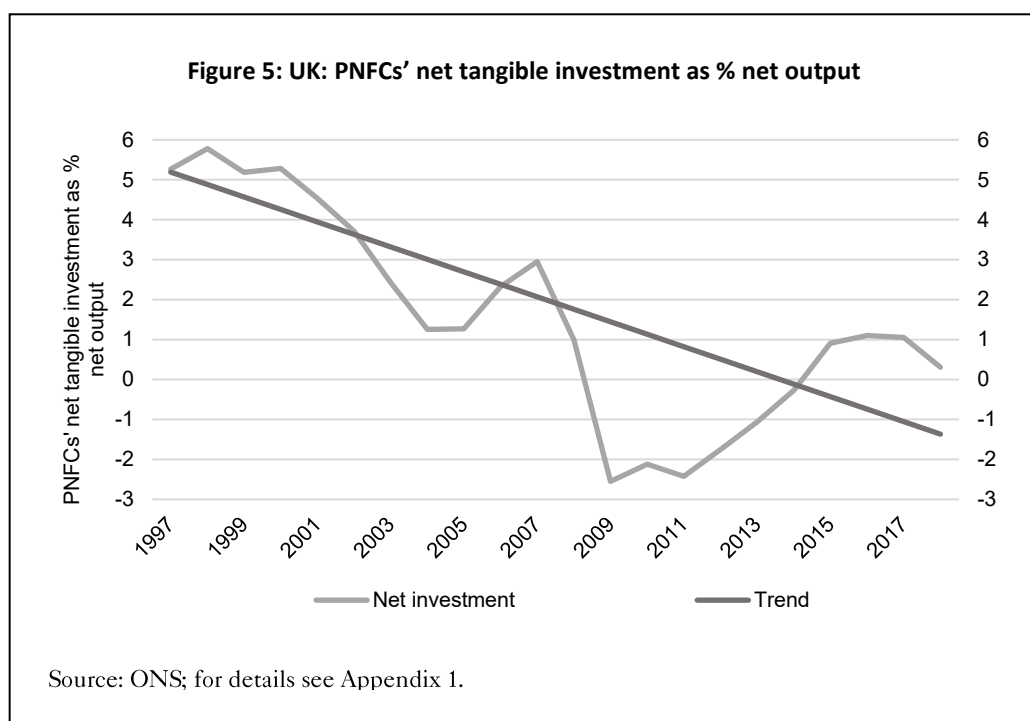
³ The faster rate for IP in the USA appears to be due to the continued rise in IP investment as a percentage of the total, whereas in the UK this ratio peaked in 2011. The rate applicable to new investment is probably similar in the UK and USA.

⁴ As the level of IP investment is unimportant, we do not have to be concerned that its level is probably mis-measured, as I show in *Productivity and the Bonus Culture*.

Figure 3 shows that the investment by other sectors of the economy has risen as a proportion of net output, while that of PNFCs has fallen. PNFCs have thus been responsible for more than 100% of the decline in tangible fixed produced capital investment since 2000.



The trend growth rate of the economy depends on the growth of the tangible capital stock and thus on the rate at which additions are made to it by net investment. The rate of depreciation changes over time as the rate of change of labour productivity alters⁵, but is nonetheless relatively stable, as the changes in gross investment (Figure 4) and net investment (Figure 5) follow similar patterns and changes in gross investment have therefore a major impact on the trend growth rate of the economy. Both gross and net investment have been falling since the data series start in 1997, having peaked in 2000.



Business decisions determine the level of gross investment, while net investment determines that of the consequent growth potential of the economy; both are therefore important. The decline in PNFCs' tangible investment caused the fall in the total for the economy and its recovery

⁵ *Neoclassical Growth with Fixed Factor Proportions* by R.M. Solow, J. Tobin, C.C. Weizsacker & M. Yaari *The Review of Economic Studies* Vol 33 No 2. Shows that the rate of depreciation depends on the growth of real wages.

appears therefore to be essential if the growth potential of the UK is to be improved. As Figure 5 shows the net investment in 2018 amounted to 0.3% of net output and thus with stable capital/output ratio the growth potential of PNFCs is, without a rise in investment, only 0.3% p.a.

The unimportance of IP, as shown by the stationarity of the tangible capital stock/output ratio, depends on its depreciation rate being correctly measured and this has recently been questioned by several economists, who claim that spending on intangible capital is under-recorded in the national accounts and the rate of depreciation overstated. If this were correct, it would mean that expenditure on IP would have a meaningful impact on the growth of the net capital stock and thus on output. I have, however, shown that these claims cannot be sustained as they are incompatible with other independently derived data.⁶

The level of IP could nonetheless be important if it affected total factor productivity (TFP). It does not, however, appear to do so either because IP is mis-measured or because TFP is exogenous. The US data show that IP investment has risen strongly since the introduction of a tax credit for R&D in 1981 while TFP has declined. This could be due to companies redefining general management expenses as R&D, for which there is anecdotal evidence, or because companies consider the benefit from the tax credit to justify greater spending on R&D despite its apparent fruitlessness.⁷

Reasons Why Business Investment Falls

Subject to short-term fluctuations in expectations, ‘the animal spirits of entrepreneurs’ or possibly balance sheet considerations, companies invest if the expected return on equity from that expenditure is above their required minimum (‘the hurdle rate’).

The UK has no exchange control and capital is free to move between it and other developed economies, so the expected return on equity must be

⁶ ‘The debate over the depreciation of intangible capital’ by Andrew Smithers, *World Economics* 21, 1 (January–March 2020).

⁷ For a fuller explanation see Chapter 9 of *Productivity and the Bonus Culture*.

the same in the UK and in the USA, where it has been stationary at 6.4% over the past 217 years.⁸

The possible reasons for the weakness in UK investment since 2000 are:

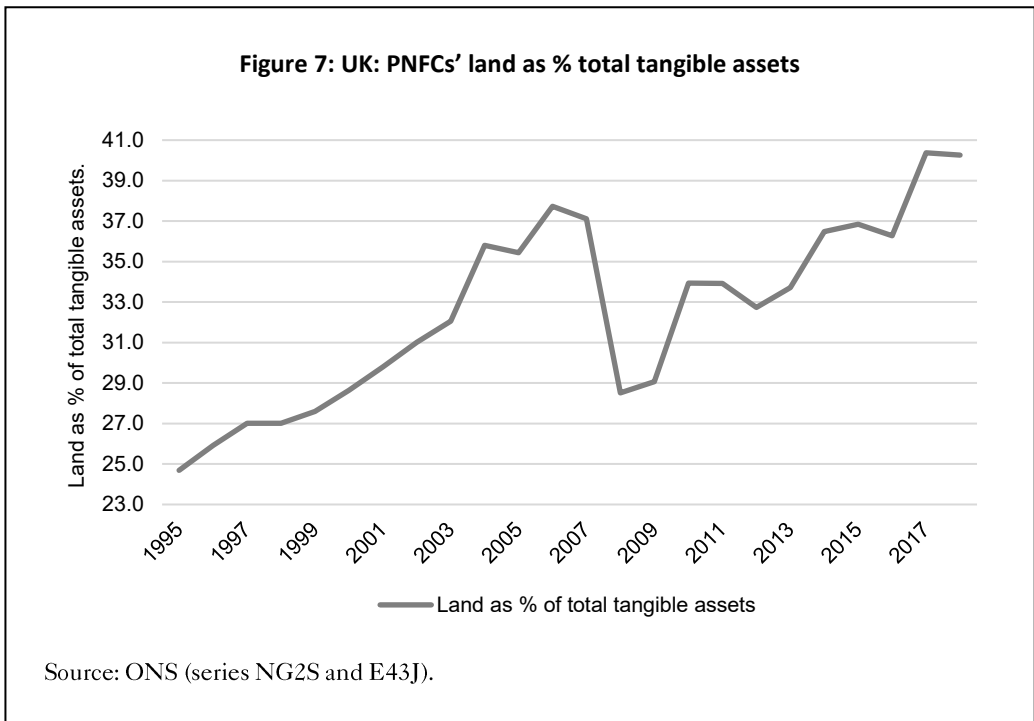
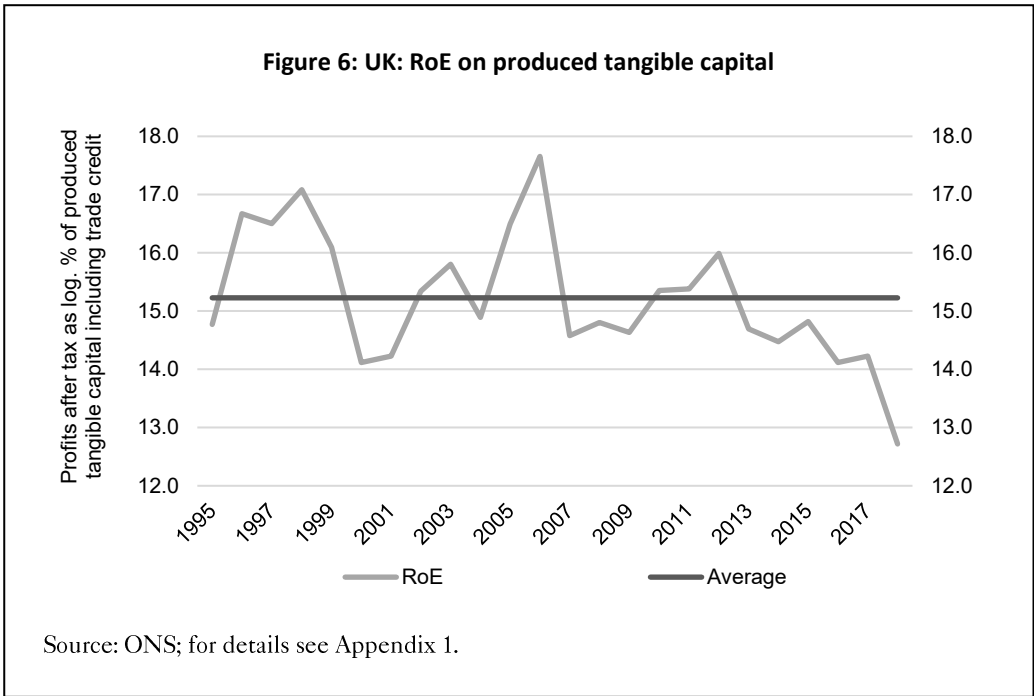
- (i) RoE below 6.4% (log. % 6.2),
- (ii) a decline in labour supply,
- (iii) a perceived need to reduce leverage,
- (iv) a rise in the hurdle rate due to increased monopoly power,
- (v) expectations that future RoE will be below the hurdle rate and
- (vi) a rise in the hurdle rate due to the bonus culture.

RoE for PNFCs' UK Investment

Only if the expected return on the equity needed to finance new investment exceeds the hurdle rate will the decision be made to invest in fixed produced tangible capital. An increase in output resulting from the new investment will also require additional capital to finance the consequent expansion of inventories and trade credit. Figure 6 shows the RoE on fixed produced tangible capital, including inventories and trade credit.⁹

⁸ See Appendix 2 for an explanation as to why the US long-term return on equity is a better guide to the UK hurdle rate than the lower long-term UK return.

⁹ The calculation and the specific data sources are set out in detail in Appendix 1.



In addition to produced tangible capital and trade credit, output requires land. This complicates matters because profits, which are the change in corporate net worth before dividends, differ from those recorded, which do not usually include those that arise from increases in the value of land, and the proportion of PNFCs' assets represented by land has risen sharply, as Figure 7 shows.

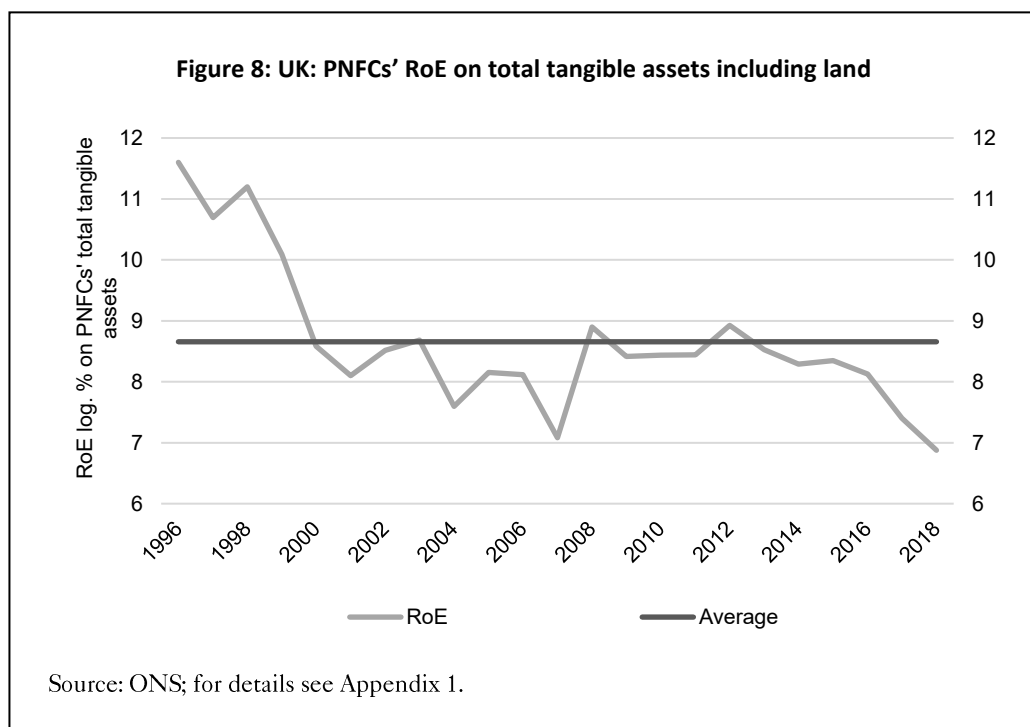
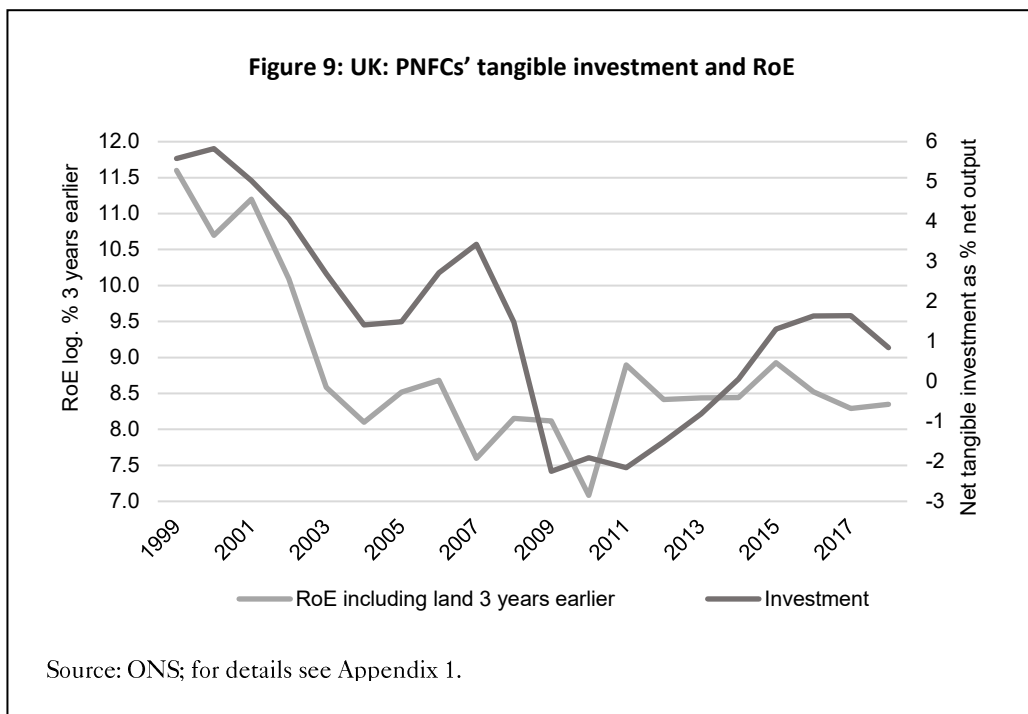


Figure 8 shows UK PNFCs' RoE, including both the value of land in the equity capital and the impact of its fluctuations on total profits. The RoEs illustrated in Figure 8 are all above the required benchmark of log. 6.2% derived from US data on shareholder returns (1801 to 2019).

Figure 9 compares the level of investment with the RoE three years earlier. The fluctuations in the two are correlated, as I show in Table 1, but the decline in investment since 2000 is much stronger than the fall in RoE, as shown in Table 2.



There was a decline in both investment and RoE from 1995 to 2018 but a slight rise in RoE from 2000 to 2017, while investment fell from 5.4% to 1.1% of net output. There should therefore be no element of serial correlation over the later period.

Table 1: R² correlations between PNFCs' investment and RoE, including land

	RoE, contemporary	RoE 1 year earlier	RoE 2 years earlier	RoE 3 years earlier	RoE 4 years earlier
1995 to 2018	0.164	0.285	0.462	0.517	0.59
2000 to 2017	0.064	0.014	0.282	0.591	0.591

Source: ONS; for details see Appendix 1.

As Table 1 shows, there is very little difference in the correlations when 1995 to 2018 is compared with 2000 to 2017; the results are thus unlikely to be significantly distorted over either period by serial correlation.

Table 2 shows that investment has fallen much more than RoE, whether the time periods compared are contemporaneous or with investment lagged by three years. It appears that the fluctuations in investment have responded to those in RoE but there has also been a downward trend in investment which is not attributable to any decline in RoE. (Both investment and RoE are measured in log. percentages, so the proportionate changes are measured by the differences.)

Table 2: Changes in RoE and investment

	Investment	RoE		RoE
2000	5.83%	14.57%	1997	10.70%
2018	0.84%	13.10%	2015	8.35%
Difference	-4.98%	-1.48%		-2.35%

Source: ONS; for details see Appendix 1.

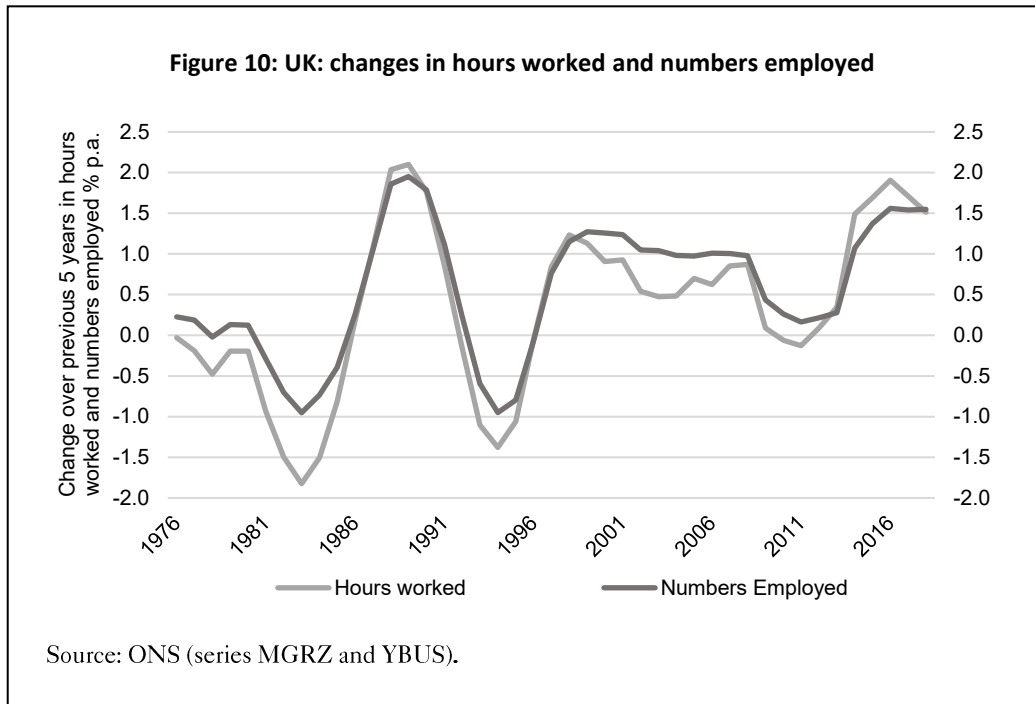
It therefore appears that the short-term fluctuations in business investment reflect changes in RoE, but that the longer-term decline in investment is not related to weakness in RoE, which has remained above the long-term hurdle rate throughout the period.

The Supply of Labour

The level of investment is naturally stimulated by a rise in employment as the additional equipment is usually needed; and equally it is retarded by a fall. If investment holds up despite a decline in labour supply, it will either be offset by other changes or result in a fall in RoE.

Figure 10 shows that both employment and hours worked have grown strongly by historic standards with employment growing at 0.93% p.a. from 2000 to 2018 compared with 0.40% p.a. between 1971 and 2000, with the comparable rates for hours worked being 0.83% p.a. and 0.13% p.a. The

weakness in investment since 2000 cannot therefore be attributed to a slowdown in employment.



Investment and Leverage

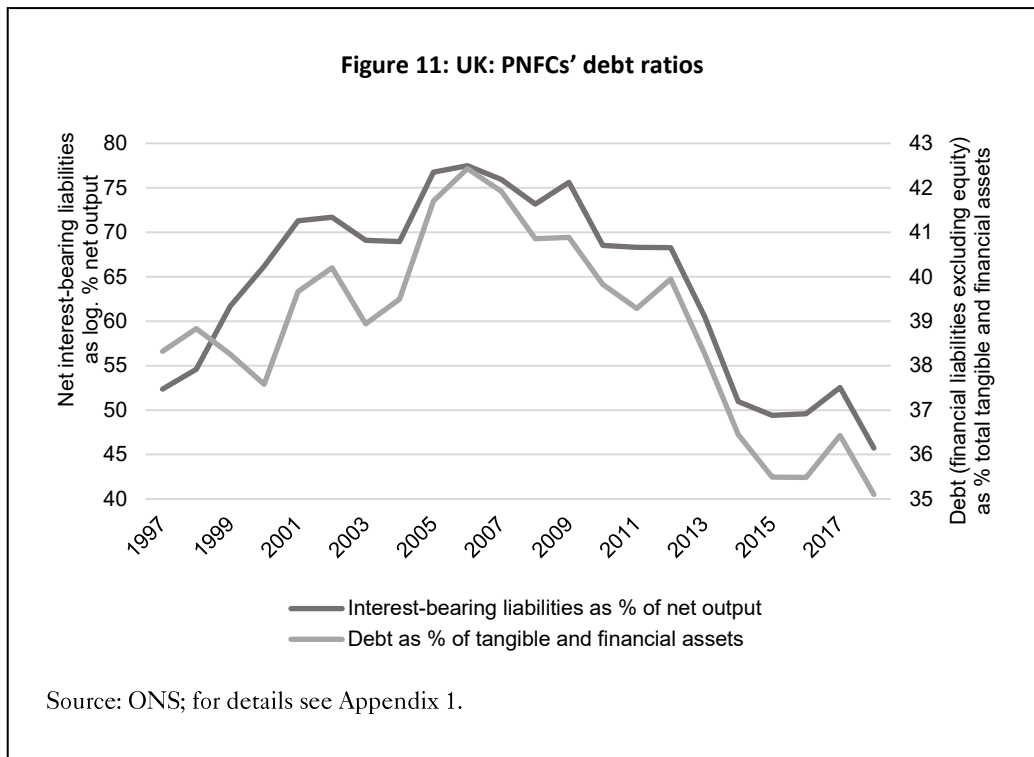
When financial markets crash companies become nervous that credit will be in short supply, and their fears are often justified as banks fear a rise in defaults and households feel poorer and more cautious. The result, which is part of the standard Keynesian analysis, is that *ex ante* savings rise and *ex ante* investment falls, leading to a recession. There have, however, been new non-Keynesian claims that high corporate debt levels have held back investment on a secular rather than just a cyclical basis.

These claims that investment has been held back on a secular basis have been applied to both Japan¹⁰ and the USA, but in neither case is the argument

¹⁰ *The world in balance sheet recession: causes, cure and politics* by Richard Koo (2011). Real-World Economics Review (issue no 58) Nomura Research Institute, Tokyo & *The Escape from Balance Sheet Recession and the QE*

credible. If companies were concerned to improve their balance sheets, they would seek to reduce their debt ratios by retaining a higher proportion of their profits or by issuing new equity. In both Japan¹¹ and the USA¹² companies have been increasing their leverage by high levels of buybacks, net of new equity issues and higher than normal pay-out ratios.

While incorrect when applied to either Japan or the USA the claim could nonetheless be valid for the UK, so I compare the leverage of UK PNFCs with their level of investment. Figure 11 measures leverage by both net interest-bearing debt to output ratios and total debt to total assets. Compared with balance sheet ratios those for output have larger fluctuations but they follow each other closely.



Trap: A Hazardous Road for the World Economy (2014) John Wiley & Sons, and *Why aggressive monetary easing is pushing on a string* Financial Times 10th September, 2019.

¹¹ Letter to the Financial Times rebutting Koo's article 16th September, 2019 by Andrew & Pelham Smithers, available at http://smithers.co.uk/news_article.php?id=152&o=0.

¹² 'Are corporate pay-outs abnormally high in the 2000s?' by Kathleen Kahle and René M. Stulz, NBER Working Paper 26958, 2020.

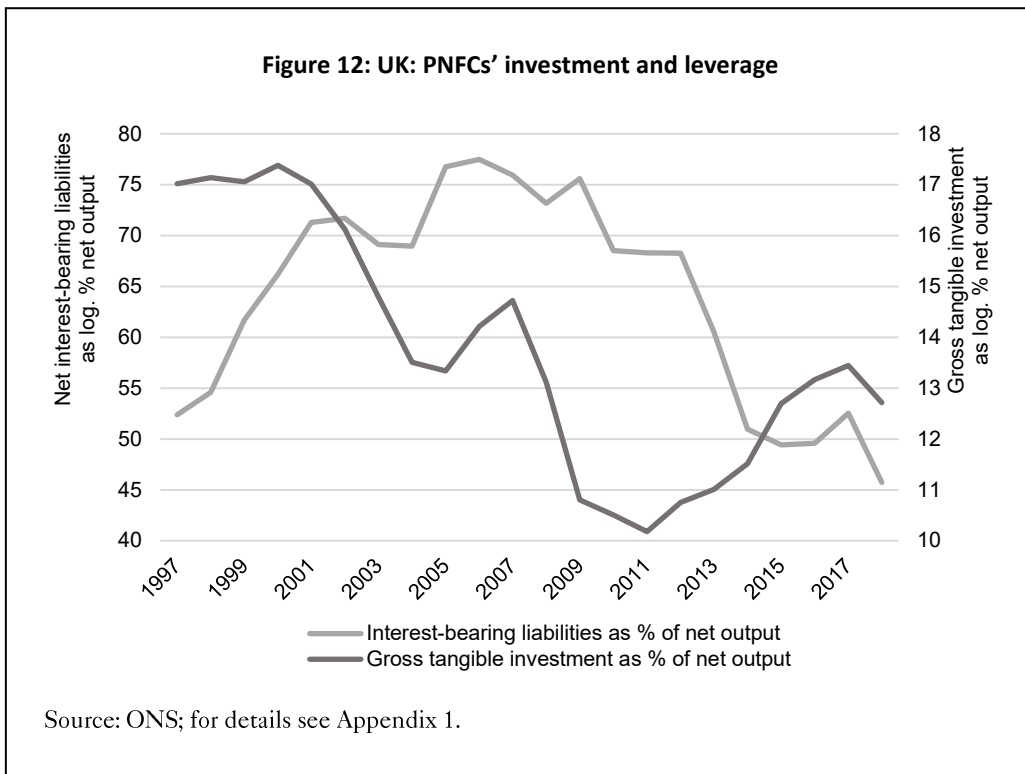
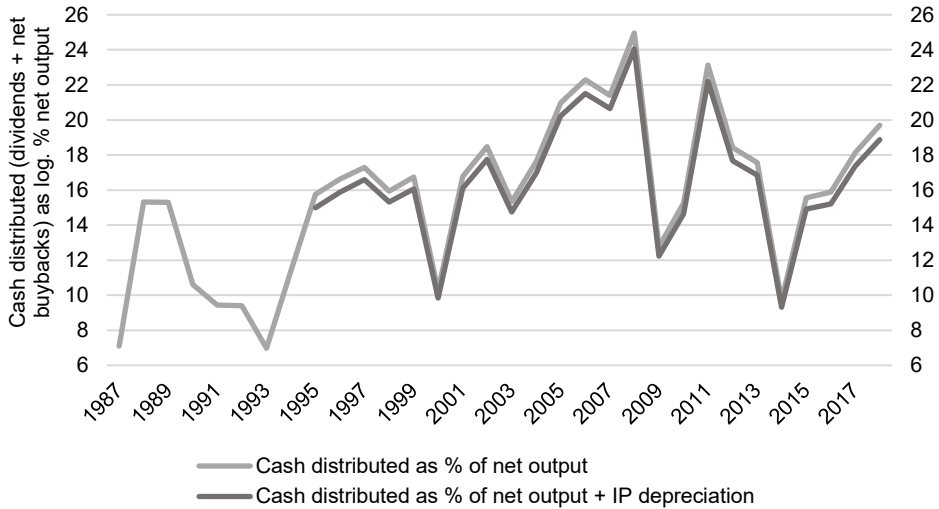


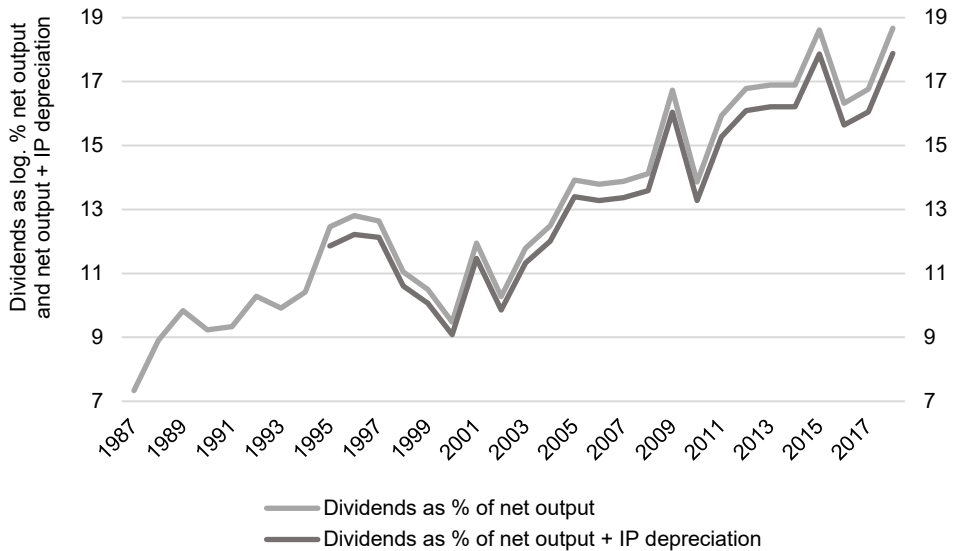
Figure 12 compares the fluctuations in leverage with those in investment. As investment fell from 2000 to 2008 while leverage rose, it is clear that a wish to reduce leverage cannot have been the cause of the long-term decline but, since both investment and leverage fell after 2008, such a wish might have contributed to the weakness of investment since the recession.

Figure 13: UK: PNFCs' cash distributed to shareholders



Source: ONS; for details see Appendix 1.

Figure 14: UK: PNFCs' dividends as % output



Sources: ONS for details see Appendix 1.

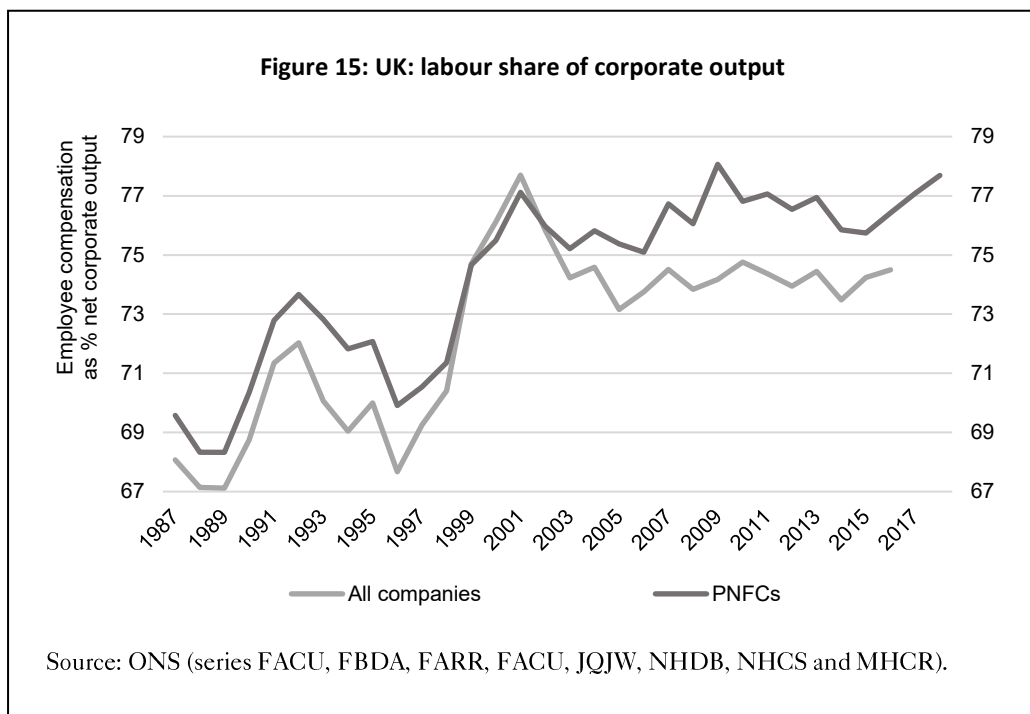
If PNFCs had restrained their investments in order to improve their balance sheets they would have reduced the amount of cash they distributed to shareholders. While, as Figure 13 shows, this has fallen back since 2008 it is still high by historic standards. Figure 14 shows that dividends have risen strongly, which is unlikely if companies are concerned about their leverage.

The level of net buybacks is not solely dependent on companies buying their own shares but also on takeovers, where they are wholly or partially financed by debt. The volatility of cash distributions is thus likely to be enhanced by the uneven incidence of takeovers. It is also likely that there will have been a reduction recently in companies buying their own shares because companies have been under pressure to modify bonus payments, where these are based on earnings per share, to exclude any benefit from buybacks.

It is therefore unlikely that investment has been held back by companies wishing to improve their balance sheets. The UK is thus no different from Japan and the USA where, despite claims to the contrary, it is improbable that weakening balance sheets have led to any reduction in investment as shown by the level of dividends and buybacks.

Monopoly Power

The bonus culture is not the only possible cause for a rise in the hurdle rate and an increase in monopoly power has been canvassed as another possibility. It is argued that monopolies have less incentive to invest as their businesses are less vulnerable to losing market share than companies which face the full force of competition. While it is difficult to find evidence to support this assumption, it is *a priori* reasonable. It is then argued that competition has weakened.



If monopoly power were above average this would be likely to show up in high profit margins and a declining labour share of corporate output. However, as Figure 15 shows, the labour share of output has risen significantly over the period for which we have data.

A reduction in competition is not the only thing that produces temporary fluctuations in profit margins around their average, so the chart does not prove that monopoly power has not increased, but profit margins tend to be high when demand is strong and unemployment low, so falling profit margins are unexpected when, as in recent years, unemployment has fallen (today it is exceptionally low). It is therefore unlikely that competition has weakened in the UK.

The Change in Incentives

People make decisions, not companies. It is therefore the behaviour of managements that determine the savings, investment and leverage of the corporate sector. The main concerns of management are the success of their

business, their pay and tenure. The first two tend to move together so it is only over issues that involve pay and tenure that difficult choices must be made.

Investment tends to lower profits in the short term but protects companies over the longer term by improving labour productivity and thereby supporting profit margins. Managements therefore balance their short-term prospects for higher pay against the longer-term security of their careers. Investment lowers profits in the short term if the increase in depreciation, capital and maintenance costs are greater than the increase in output per employee and this is the frequent cost of the long-term benefits of investment.

While for the corporate sector in aggregate the level of investment is quite stable, it tends to swing more sharply for individual companies. Increases in output capacity are often lumpy but this seldom applies to rises in output, so after a period of heavy investment profits fall initially before rising. As new equipment is more efficient than old, it will be more profitable even at a lower capacity-utilisation rate and more profitable at the same level. As real wages rise the old equipment will cease to be profitable and new investment is thus essential for survival. So long as businesses can increase output with their existing capital, the decision when to instal new equipment is flexible. Delay usually has problems and costs. Potential output from existing capital can also be lumpy if it involves putting on an extra shift and where output cannot be raised it will mean loss of market share as demand rises. The decision to invest will often be good for long-term profits and essential for survival but carries the cost of a short-term reduction in the return on capital. As the stock market seldom welcomes this, managements have historically treated investment decisions with caution and this has been aggravated by remuneration contracts in which they are well rewarded for short-term results. The bonus culture has shifted the balance of management decisions against investment.

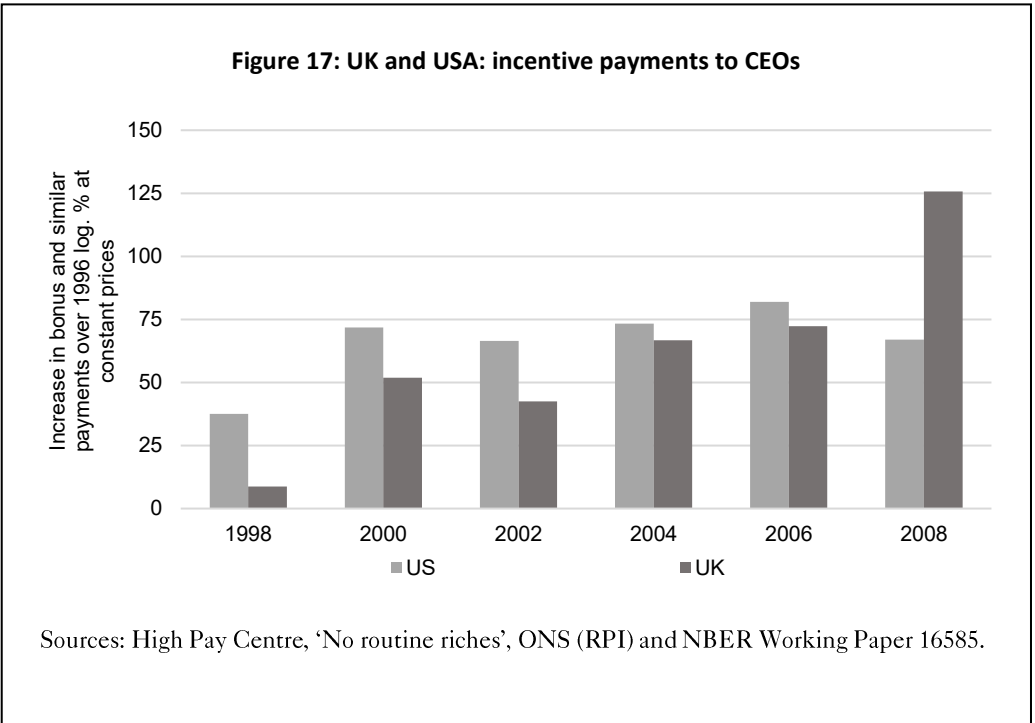
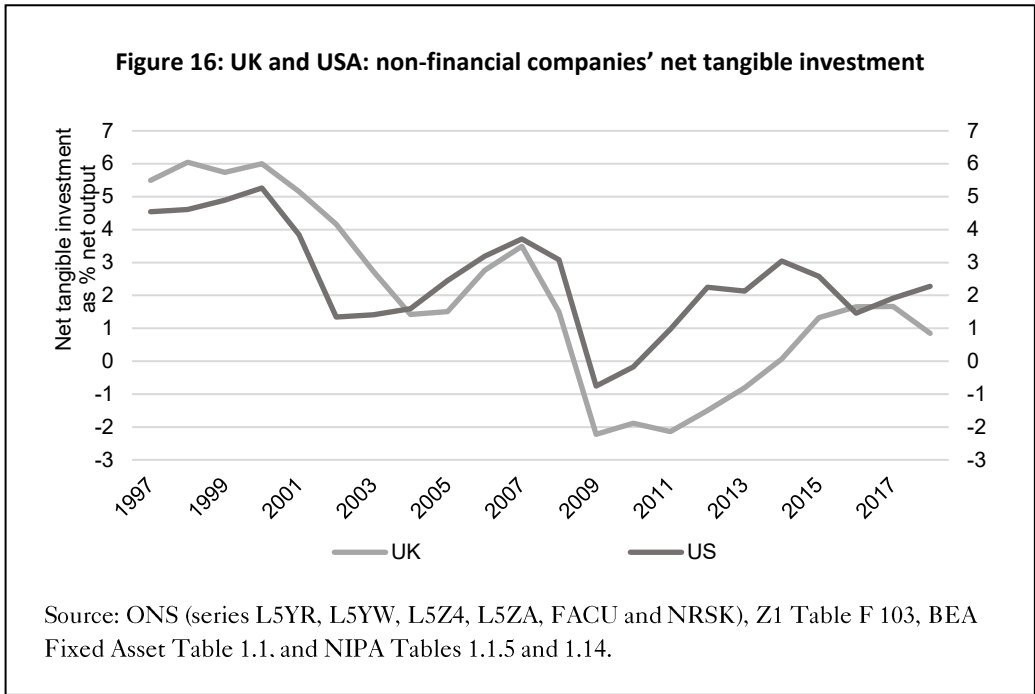
The long-term return on equity to shareholders is stationary at around 6.4%, so that on corporate equity ('net worth') must be also. While the return on new investment is uncertain, managements' investment decisions are based on their expectations and they must therefore have in effect a target

return of 6.4% on the equity needed to finance new investment ('the hurdle rate'). Investment decisions which result in a lower return on equity, or a higher one, threaten managers' jobs. If the return on equity is below average their companies risk being taken over and, if they fail to invest when such returns are available, their companies will have higher production costs than their competitors, which will then be able to gain market share at their expense through lower pricing or greater expenditure on marketing.

The change in incentives that came with the bonus culture has shifted the balance of decisions away from investment so that the hurdle rate will have risen above its long-term level of 6.4%. Quoted companies are responsible for a higher proportion of total output in the UK and the USA than in other major economies and the impact of the bonus culture is much weaker for unquoted ones. It has therefore had a much greater adverse impact on their economies. It is also likely to be a temporary phenomenon, as quoted companies will lose out to unquoted companies including foreign-owned ones. Expectations and outcomes differ over the short and medium term, so corporate returns on equity fluctuate around their long-term level and, as the impact of the bonus culture is unlikely to be long-lasting, no change in the long-term stationarity of the expected return on equities or its counterpart in the hurdle rate is likely.

Both the UK and the USA have experienced falls in business investment since 1997 and, as Figure 16 shows, not only has the direction of the falls been similar but so have their fluctuations.

In both countries the decline in investment was preceded by a dramatic rise in the level of CEO pay and the proportion that was performance-based. The arrival of the bonus culture is therefore a strong candidate to be the cause of the fall in investment.



I show in Figure 17 the relative rates of growth of incentive-based payments for CEOs in the UK and the USA, from a common base of 1996 when the UK data series starts, showing the change every two subsequent years, as the US data are biennial. By 2000 there had been a sharp rise in both countries which then steadied except for another sharp rise in the UK in 2008. Since 2008 there seems to have been little change.¹³

Conclusion and Policy Implications

It is improbable that expectations that future RoE would be below current returns could persist for many consecutive years in which they have remained unrealised. As neither labour supply, nor balance sheet considerations, nor increased monopoly power provide credible explanations, the likely cause of the decline in UK PNFs' investment since 2000 has been a rise in the hurdle rate due to the bonus culture.

While the damage done to the economy is likely to ease over time, policy should aim to overcome its medium-term damage. The slow growth of productivity and output potential has been socially and politically damaging in addition to its economic impact. The Covid-19 virus has made a return at least to the pre-2000 trend growth rate even more important as the fiscal deficit needed to cope with it will raise the level of the national debt. If, as seems likely, it approaches or exceeds 100% of GDP, it can, without a budget surplus, only be brought down if growth exceeds the level of real interest rates. The slower the economy grows the more difficult will it be to manage.

While there are several ways in which this could be done, my own preferred suggestion is that tax credits should be given for investment.

It is important to understand that this is not the same as accelerated depreciation. With the latter published profits do not rise in line with the fall in tax, because there is an increased liability for future tax. For the same cost in terms of current revenue, a tax credit for investment would cause the incentives of the bonus culture to favour rather than inhibit investment, accelerated depreciation will not do this.¹⁴

¹³ A report on executive pay by the Chartered Institute of Payroll Professionals in association with the High Pay Centre shows that total median remuneration of FTSE 100 CEOs remained virtually unchanged in nominal terms from 2010 to 2018.

¹⁴ Letter from Andrew Smithers to the *Financial Times*, 16 March 2020.

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There need be no reduction in the revenue from corporation tax as the cost of the credit can be offset by an increase in the tax rate.

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Solow, R.M., J. Tobin, C.C. Weizsacker and M. Yaari (1966). Neoclassical growth with fixed factor proportions. *The Review of Economic Studies* 33, 2.

Appendix 1

The Data Used in the Charts

For several of the charts and tables I refer to this Appendix for details and I set out below the data sources and the method of calculation.

Figures 4 and 5

Gross output is net operating surplus (series FACU), plus total depreciation (NRSK), plus employment costs (FBDA). Net output is gross output minus depreciation (NRSK) plus, because the comparison is with tangible investment, IP depreciation (data emailed by Kris Johannsson of ONS).

Gross investment is the sum of investment, excluding land, in dwellings (L5YR), other buildings (L5YW), transport equipment (L5Z4) and machinery (L5ZA). Net investment is gross investment minus depreciation (NRSK) plus IP depreciation because the comparison is with tangible investment.

Figure 6

When considering the level of PNFCs' fixed produced tangible investment in the UK, domestic RoE, rather than the overall figure including foreign subsidiaries, is the relevant figure. I have calculated domestic RoE in Figure 6 therefore as follows:

Profits after tax are:

Operating surplus (series FACU) plus IP depreciation (the return being calculated is for tangible capital and thus excludes IP) equals profit before net interest (DSZV – DSZR) and after sundry small miscellaneous items (FCFP, FAOL and FCFU) equals profit from domestic operations before tax and subtracting tax (FCCP) gives the post-tax figure.

The tangible produced equity capital plus trade credit used for this output is:

Total produced non-financial assets (NG2S) plus net trade credit (NLCO – NKWK) which is financed by net interest-bearing liabilities (domestic, non-equity, net financial liabilities (NKJZ + NKKI + NKWY – NLBC –

NKZA) and equity which is produced, non-financial assets plus net trade credit minus net interest-bearing liabilities.

Figure 8

The return on total tangible capital including land is based on the data set out for Figure 6 with the addition to profits from the increase in land price over the year (series NG2X change over previous year) and to capital of land (NG2X).

Figure 9

The RoE is that calculated for Figure 8 and net tangible investment as % net output is that used in Figure 4.

Figure 11

Net interest-bearing liabilities are gross interest-bearing liabilities (series NKZA + NLBC) minus gross interest-bearing assets (NKJ = NKKI + NKWY). Net output as for Figure 5.

Debt as % of tangible and financial assets is net interest-bearing liabilities as % tangible assets (NG2S) plus financial assets (NKWX).

Figure 12

Interest-bearing liabilities as Figure 11, net output as Figure 5, gross tangible investment and net output as Figure 4.

Figures 13 and 14

Cash distributed is dividends plus buybacks (series NETZ + NESH) minus equity issues (NEVL).

Appendix 2

The UK Hurdle Rate

As explained in the text, the expected returns on equity will be the same worldwide in the absence of exchange control. In the absence of capital destruction expected returns are likely over the long term to equal those realised. As the USA has been free from the capital destruction involved in two world wars and we have data for stock market returns from 1801 to 2019, the stationary real equity return for the USA of 6.4% is the likely expected return on equity worldwide.

We have UK shareholder data from 1899 to 2012, which show a return of log. 5.1%, which is below the US return of log. 6.2%. But capital losses in two world wars are likely to mean that between 1900 and 1945 realised returns were below expectations but should have matched them since then. Table A1 (below) shows that the postwar returns were significantly higher than those from 1899 to 1945. The subsequent returns are below the likely hurdle rate derived from US data and therefore even further below the returns shown in Figure 7. There is, however, no conflict between the lower UK returns of 5.5% over the period 1945 to 2019 and the expected return of 6.4%, because even over 74 years the relative levels of the stock market at the beginning and end of the period have a significant impact on the return measured between the two dates. I illustrate this in Table A1 by showing the returns from 1947 to 2012 and 2019.

Table A1: Real log. % p.a. returns to equity shareholders

	US \$	£
1899 to 1945	3.21%	3.37%
1945 to 2019	5.54%	5.73%
1899 to 2019	4.66%	4.84%
1947 to 2012	7.71%	6.44%
1947 to 2019	6.50%	5.68%

Source: Dimson, Marsh & Staunton updated from FT All Share Index, and ONS (CPI).

The Impact of the Bonus Culture on the UK Economy

The postwar returns for the UK may also have been affected by the existence of exchange controls until 1978 and by the impacts of nationalisations and privatisations.

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