

Not Cyclical but Secular

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Key Points

- Classical economics assumed that interest rates would adjust, or could be adjusted, to ensure that there was no mismatch between private sector intentions to save and invest. Interest rates were therefore assumed to be the sole policy tool needed to maintain full employment.
- Keynes revolutionised economics by postulating the possibility of a liquidity trap in which interest rates could not fall low enough to boost demand and that fiscal deficits would then be needed to prevent large-scale unemployment. The consensus today is that demand can be maintained by some mixture of fiscal and monetary stimuli, with the latter including quantitative easing ('QE') as well as by the management of short-term interest rates.
- The underlying assumption of this consensus is that the private sector's *ex ante* net savings surplus is cyclical, at least after allowing for the impact of fiscal policy, i.e. it is purely due to those temporary weaknesses in demand which accompany the business cycle and is thus not a secular problem arising from some structural change in the economy.
- Neoclassical economics, on which monetary policy is based, has no adequate model which explains how private sector savings and investment are determined. The consensus view that the *ex ante* savings surplus is cyclical has therefore no support in economic theory.
- Neoclassical theory wrongly assumes that the savings/investment balance is the only source of economic disequilibrium. Another is q , which is the ratio between the market value of companies and their net worth. QE drives up q , which is mean reverting through changes in equity prices which, when sharp, have a marked impact on the economy. Falls in q are faster than rises, but their timing cannot be known. The economy is thus unstable and unpredictable when q is high.

Introduction

The problem

The consensus assumption is that a private sector *ex ante* net savings surplus is cyclical (short-term) and not secular (long-lasting). To support or refute this it is necessary to ask:

- (i) How fiscal and monetary policy bring intentions to save in line with those to invest?
- (ii) Whether these policies create other imbalances?
- (iii) How long, if imbalances exist, can they continue without an adverse impact on the economy?
- (iv) If they are not indefinitely sustainable, are net *ex ante* private sector imbalances solved quickly enough by fiscal and monetary policy to render other policies unnecessary?

Neoclassical economics does not address these questions. It assumes they cannot arise because, as George Akerlof has recently remarked, it has oversimplified Keynes's work by restricting the equilibria needed for a stable economy to one, namely the balance between *ex ante* savings and investment: 'neoclassical supply had resolved the determination of the price level and assets prices (as the inverse of the interest rate)'.¹ The determination to stick to accepted assumptions and ignore the evidence that they are invalid shows that neoclassical economists have much in common with Hobbits who '... liked to have books filled with things that they already knew, set out fair and square with no contradictions'.²

At least one other equilibrium is needed for a stable economy in addition to that between *ex ante* savings and investment, which is that between leverage (the equity/debt ratio of the corporate sector) and portfolio preference (the equity/debt ratio of the household sector).³ Monetary policy, both when restricted to the management of short-term interest rates and when enhanced by quantitative easing (QE), works through its impact on investment and, via

¹ George Akerlof (2019). *What they were thinking then: the consequences for macroeconomics during the past 60 years*. *Journal of Economic Perspectives* 33, 4 – Fall 2019.

² J.R.R Tolkien (1954). *The Lord of the Rings*, Part 1: *The Fellowship of the Ring*, Prologue Chapter (London: George Allen & Unwin Ltd).

³ This identity has been generally ignored by economists but is central to a recent paper by Xavier Gabaix and Ralph S.J. Koijen, *In search of the origins of financial fluctuations: the inelastic markets hypothesis*. Swiss Finance Institute Research Paper No. 20-91, 11 June 2021.

changes in asset prices, on household savings. The changes in asset prices that monetary policy uses to achieve the balance between *ex ante* savings and investment must be consistent with household portfolio preference. QE causes equity prices to diverge from corporate net worth and therefore causes economic instability.

James Tobin proposed that the stock market value of companies divided by their net worth must rotate around an average value of one and called this ratio q .⁴ Tobin's assumption is supported by the evidence of stock market real returns, including their negative serial correlation and the mean reversion of the ratio of equity market capitalisation/net worth, so q cannot be indefinitely maintained at a high, or indeed low, level. Contrary to the assumptions of the neoclassical consensus, we know from the negative serial correlation of real equity returns that q returns to its equilibrium level through changes in share prices,⁵ not through changes in net worth.⁶ Share prices fall more rapidly than they rise, and we know from such experiences as 1929 and 2008 that sharp falls in asset prices cause recessions through occasioning sudden jumps in net private sector *ex ante* savings. The practical issue is therefore for how long and how far q can diverge from its equilibrium value (one) compared with how long and how strongly monetary policy can be effective in maintaining full employment without a rise in inflationary expectations. *Ex ante* imbalances in the private sector can thus be addressed by monetary policy only if they are not prolonged and are thus cyclical rather than secular.

Both corporate and household savings and their level of investment adjust to the growth rate of the economy. If the trend growth rate is unchanged their fluctuations normally vary with temporary (cyclical) variations in household confidence and the 'animal spirits of entrepreneurs'. Monetary policy can then act quickly enough for confidence to be restored and any *ex ante* net savings imbalance is rectified without monetary ease having to be sustained. As Keynes showed, a problem can arise in a liquidity trap. Monetary policy is then an

⁴ James Tobin (1969). *A general equilibrium approach to monetary theory*. Journal of Money, Credit and Banking 1, 1 February. Tobin's model used the ratio of stock market equity + debt/net worth + debt, which requires that stock market equity/net worth is mean-reverting around a value of one.

⁵ John Y. Campbell and Luis M. Viceira (2002). *Strategic Asset Allocation* (Oxford: Oxford University Press), particularly Figure 4, and Andrew Smithers (2019). *Productivity and the Bonus Culture* (Oxford: Oxford University Press), particularly Figure 28. See also Andrew Smithers, *The Economics of the Stock Market* (Oxford: Oxford University Press, March 2022).

⁶ Fumio Hayashi (1982). *Tobin's marginal q and average q : a neoclassical interpretation*. Econometrica 50, 1.

inadequate solution and must be supplemented by fiscal ease. But the efficacy of both requires that the imbalance that needs to be corrected is cyclical.

Causes of Secular Imbalances

Cyclical imbalances, however, are not necessarily the sole cause of mismatches in *ex ante* savings and investment. I therefore consider the motivations for savings and investment in the household and business sectors.

(a) *Capital spending by business* (the third section of this article) depends on the speed at which technology improves and on the willingness of business to exploit these changes by spending on new equipment. Such tangible investment is usually essential for technological advances to produce improvements in labour productivity. Once installed the productivity of equipment per person employed is, with some limited exceptions, fixed. It may improve a bit as employees learn on the job and occasional inventions may allow machines to work faster, but the efficiency of most capital is embedded when the investment is made. It is ‘hard-baked’ rather than ‘putty-putty’,⁷ with the result that ‘... technical progress and investment are intertwined in a way which growth accounting does not generally recognise’.⁸ Companies are only willing to invest in tangible capital if the prospective return on the equity capital needed for its finance exceeds the minimum required (‘the hurdle rate’), whose level has been raised by the change in the way senior executives are paid (‘the bonus culture’), so that the level of nominal long bond yields which would formerly have stimulated sufficient investment to match the intended savings of the private sector are no longer low enough to do so.

(b) *Business savings* (the fourth section of this article), when defined as profits after tax – cash distributed to shareholders, adjust quickly to the amount needed to finance the trend growth of the economy. However, this definition differs from that used in the national accounts due to the important difference between dividends as normally defined and the ‘broad dividend’ which is the proportion of profits after tax distributed to shareholders in cash. Companies adjust the proportion of their net profits paid out to shareholders (the ‘broad dividend’ ratio) to the level needed to finance investment. Their savings, as

⁷ Robert M. Solow (1962). *Substitution and fixed proportions in the theory of capital*. *Review of Economic Studies* 29, 3.

⁸ Martin Weale, foreword to Smithers, *Productivity and the Bonus Culture* op. cit.

measured in the national accounts, are net profits minus the narrowly defined dividend, so they increase when net buybacks rise relative to dividends.

(c) The fifth section of this article discusses *household investment and savings*. Investment responds to changes in living standards, the perceived utility of spending on housing and its relative cost. Interest rates can therefore be adjusted to boost housing investment if there is an *ex ante* savings surplus. If interest rates and the utility function are stable, investment rises in line with output, while savings adjust to its expected changes, so a decline in the trend rate of growth causes a more than cyclical rise in household savings. Household savings respond to perceived income, which depends on the narrow dividend.

It follows from this analysis that there are three ways in which an *ex ante* imbalance can arise between savings and investment which are more than cyclical:

- (i) A slowdown in the trend rate of output growth.
- (ii) A rise in the ratio of the broad to the narrow dividend.
- (iii) A rise in the hurdle rate (the required return on investment).

While (i) is likely to fade over time as the household sector adjusts to the prospect of slower growth, (ii) will persist so long as buybacks constitute a high proportion of the broad dividend and (iii) requires a reduction in nominal long-bond yields through flattening the yield curve, for which there are limits and unintended consequences.

Business Investment

The neoclassical synthesis holds that growth depends on changes in labour, capital and technology. Labour and technology are assumed to be exogenous, and changes in capital depend on its cost. A recent paper represents this as providing the cost of capital r :⁹

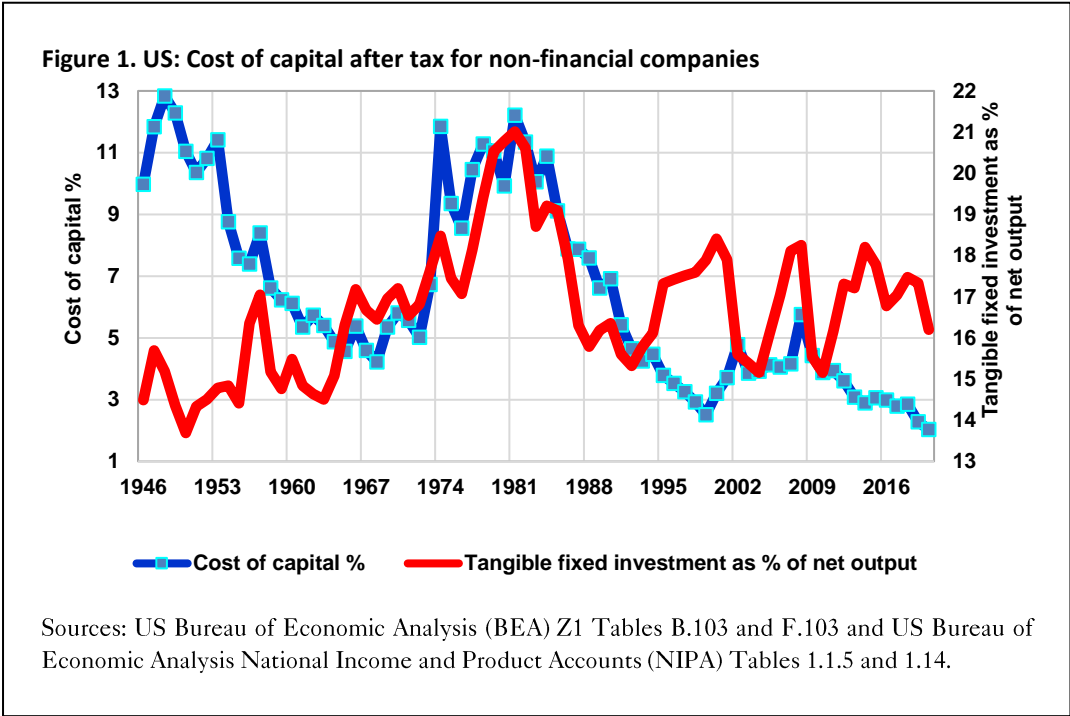
$$r_t = (I_t - \Pi_t) + \delta \quad (1)$$

where I is the nominal 'interest rate', Π the rate of inflation at period t and δ the rate of depreciation.

⁹ Jan de Loecker, Jan Eeckhout and Gabriele Unger (2020). *The rise of market power and the macroeconomic implications*. Quarterly Journal of Economics 135, 2.

The authors claim, with I think sufficient justification, that ‘... we follow standard procedure in the literature’. Given the authority of the journal in which this paper appears it can be properly used to represent the neoclassical consensus, which thus involves the following assumptions:

(i) That companies seek to maximise the present value of their net worth (often termed profit maximisation). If they did they would vary their rate of investment inversely with the cost of capital. As Figure 1 illustrates they clearly do not do so. For example, between 1965 and 1995 the relationship was perverse, with investment rising and falling in line with increases and declines in the cost of capital. The unreality of the neoclassical hypothesis in assuming otherwise has long been criticised by economists, including Robin Marris: ‘we start from the proposition that corporate directors may subject corporate policy decisions to utility functions of their own’.¹⁰

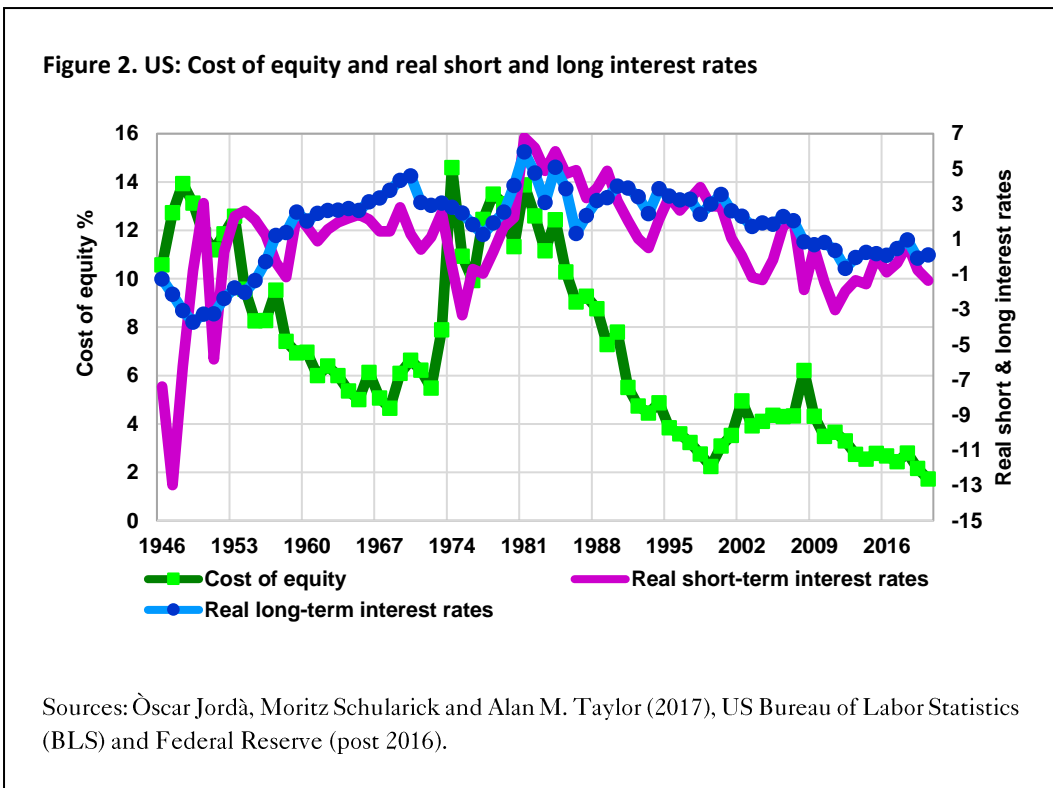


¹⁰ Robin Marris (1964). *The Economic Theory of 'Managerial Capitalism'* (London: Macmillan).

(ii) That investment responds to real rather than nominal rates of interest. The evidence is, however, the other way around.¹¹

(iii) That real interest rates vary with the cost of equity capital. The assumption that there is such a thing as a single ‘rate of interest’ has been criticised by George Akerlof as oversimplifying Keynes’s work by restricting the equilibria needed for a stable economy to one, namely the balance between *ex ante* savings and investment: ‘neoclassical supply had resolved the determination of the price level and assets prices (as the inverse of the interest rate)’.¹²

That George Akerlof’s criticism is fully justified is illustrated in Figure 2, which shows that there is no relationship between real interest rates and the cost of equity capital, as assumed by neoclassicists (R^2 correlations 0.003 (short-term rates) and 0.037 (long-term rates)).



¹¹ Ray C. Fair (2015). *Reflections on macroeconomic modelling*. B.E. Journal of Macroeconomics 15. (Elsevier)

¹² Akerlof (2019) op. cit.

The neoclassical synthesis is not necessarily a coherent body of doctrine and other models have been proposed which assume that unexplained costs are involved in changing the capital stock, allowing the rate of return to diverge from the rate of interest. One strand of work focuses on the ‘wedges’ which are needed to account for failures of the marginal conditions. These can only be valid models if they are testable, and it appears that they cannot be tested as they involve ‘unexplained costs’, which are presumably therefore unmeasurable. Models that define growth as depending on the cost of capital which can only be measured from the resulting rate of growth are tautological, untestable and thus useless.

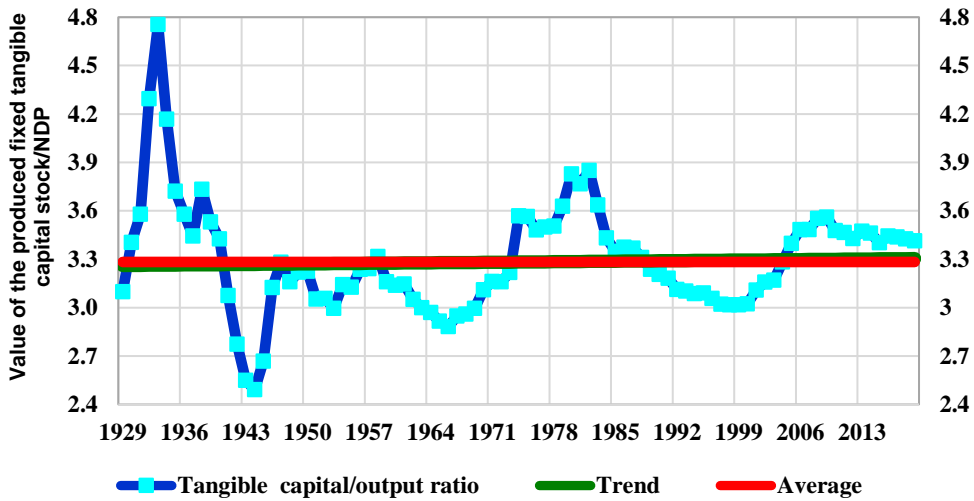
We therefore need a growth accounting model which is testable. I have proposed we should use a model which makes no assumptions about the impact of inflation, the level of corporation tax, long or short-term interest rates or the required return on equity. I have called this the non-technology variable (‘NTV’) model in which NTV represents all the variables that determine growth other than labour and the impact of changes in technology.

Profits are the share of output (Y) which can be financed at the current level of technology, which depends on the non-technology variables. Profits after depreciation and labour costs will vary with the NTV and are thus the level of output divided by some multiple (ε) of NTV. So $\Pi = Y/(\varepsilon\text{NTV})$. The value of the fixed produced capital stock (V) will be some multiple of profits after tax and that multiple will vary with the constituents of NTV, so value equals profits (Π) after tax at some multiple (θ) of the non-technology variables. Thus $V = \Pi \times \theta\text{NTV}$. Thus:

$$V = (Y/(\varepsilon\text{NTV})) \times (\theta\text{NTV}) = (\theta/\varepsilon) \times (Y) \quad (2)$$

This model can be tested insofar as it results in the ratio of output to the value of the produced capital stock being stationary. As Figure 3 shows, the model is robust when tested by this criterion.

Figure 3. US: capital/output ratio



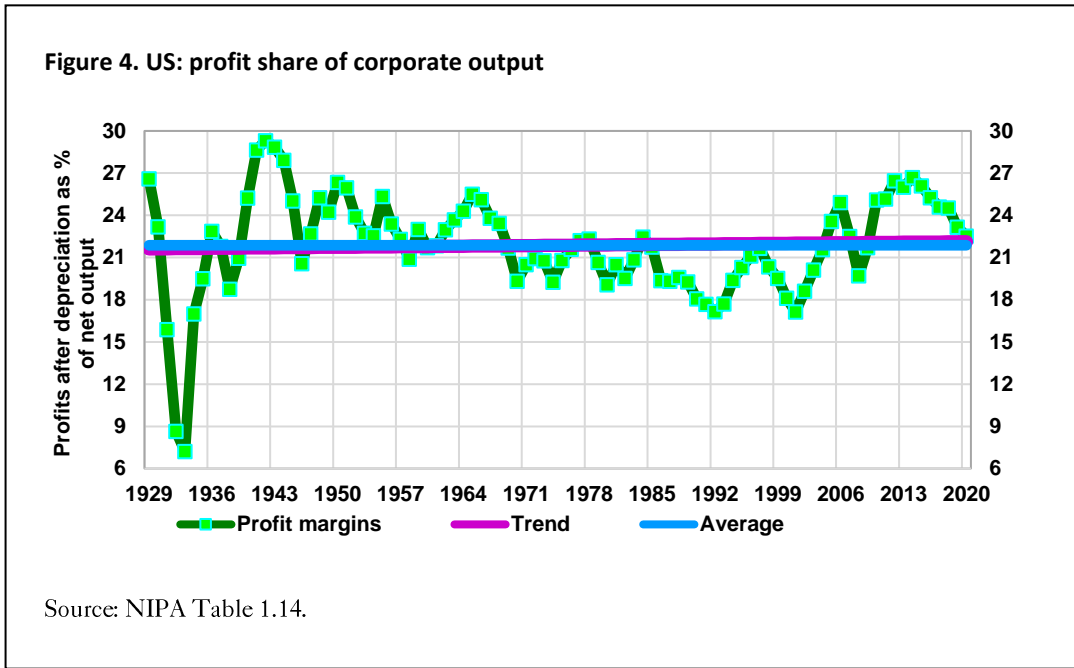
Sources: NIPA Table 1.1.5 and BEA Fixed Asset Tables 1.1 and 1.3.

As NTV excludes the quantity of labour and the level of technology, it must comprise all the other variables which could affect investment and with cyclical fluctuations in the ‘animal spirits of entrepreneurs’ these can, I think, only be profit margins, leverage, nominal interest rates, corporation tax and the required return on equity (the ‘hurdle rate’).

The long-term real returns on equity appear to be mean-reverting, as shown by their negative serial correlation,¹³ and our ability to value the market via q and the cyclically adjusted P/E ratio (CAPE),¹⁴ as do corporate profit margins (Figure 4), so the main determinants of changes in the cost of capital are fluctuations in q which determines the cost of equity, changes in leverage because debt is much cheaper than equity, the amount of interest payments which depends on leverage and the level of nominal interest when the funds were raised, and the level of corporation tax.

¹³ Campbell and Viceira (2002), Smithers (2019) op. cit.

¹⁴ Robert Shiller (2000). *Irrational Exuberance* (Princeton, NJ: Princeton University Press) and Andrew Smithers and Stephen Wright (2000). *Valuing Wall Street* (Maidenhead: McGraw-Hill). The former shows how the market can be valued through CAPE and the latter via q (equity market capitalisation/net worth). The results from each method agree and as they are derived from different data series they each confirm the validity of the other approach.



While managements may have many aims and ambitions, those that dominate their decisions are the success of their business, their pay and tenure. The first two tend to move together so managers’ utility function is determined by the interaction of pay and tenure. The result is shown by the stability of the real return on equity, which is mean-reverting around a long-term average of about 6 ½%.

Changes in incentives will, however, alter the utility function of management decisions to invest or increase their current remuneration. If the second rises with less investment the cost of it will rise relative to the risk of postponement and there will be a rise in the hurdle rate. This has occurred as a result of the dramatic changes in management remuneration that took place in the 1990s (‘the bonus culture’)¹⁵ and, although this is unlikely to be a permanent change, it is likely to be more than a short-term cyclical one.

¹⁵ Andrew Smithers (2016). *How managerial incentives affect economic performance*. *World Economics* 17, 1 and Smithers (2019) op. cit.

Business Savings

In a closed, two-sector economy, i.e. one without a foreign or government sector, the household sector owns the corporate sector. All savings belong to households whether they are made by individuals or by corporations and it is a matter of indifference to the household sector as a whole whether savings are made by companies on behalf of households or by households directly, although the proportions are likely to be important for income inequality within the household sector.

This stability requires that over time investment is made when and only when the expected return on equity is at or above this level ('the hurdle rate'). As debt is much cheaper than equity, the greater its proportion in the financing of new projects the higher will be their prospective return on the equity portion and the greater the number that will pass the hurdle rate.

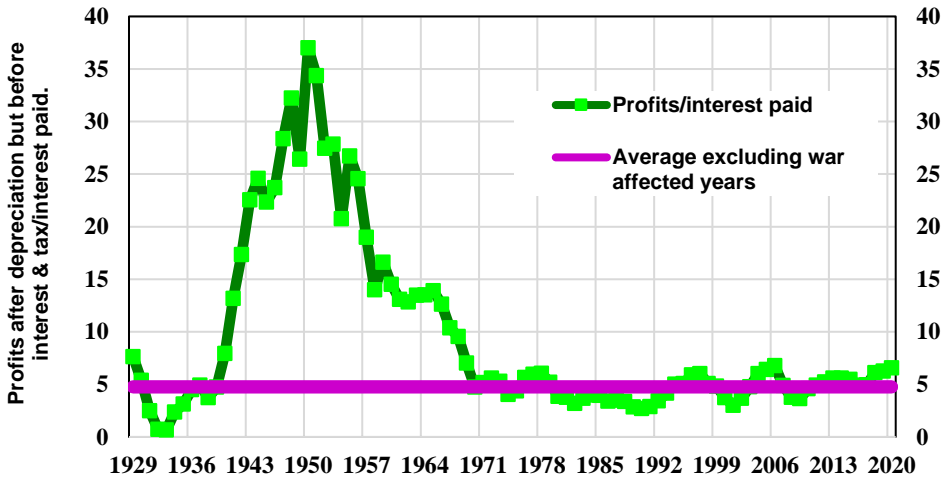
Both over and underleveraging threaten managements' jobs, so the ratio of debt interest to profits before interest and tax will tend to be stable, or at least swing around a stable average as the confidence of managers ebbs and flows. This average appears to be around five times as illustrated in Figure 5.¹⁶ Investment and growth are therefore encouraged by leverage, which is limited by the cost of long-term debt.¹⁷

The ratio of output to the value of the fixed produced capital stock is also mean-reverting around a stable average (Figure 3) so, with stable leverage, corporate equity will also have a stable ratio to output.

¹⁶ Leverage fell sharply in the Second World War when access to the bond market was restricted to the government and then rose sharply to around its pre-war level.

¹⁷ Short-term debt is risky because inflation has a much greater short-term impact on interest rates than on profits.

Figure 5. US: Non-financial interest cover

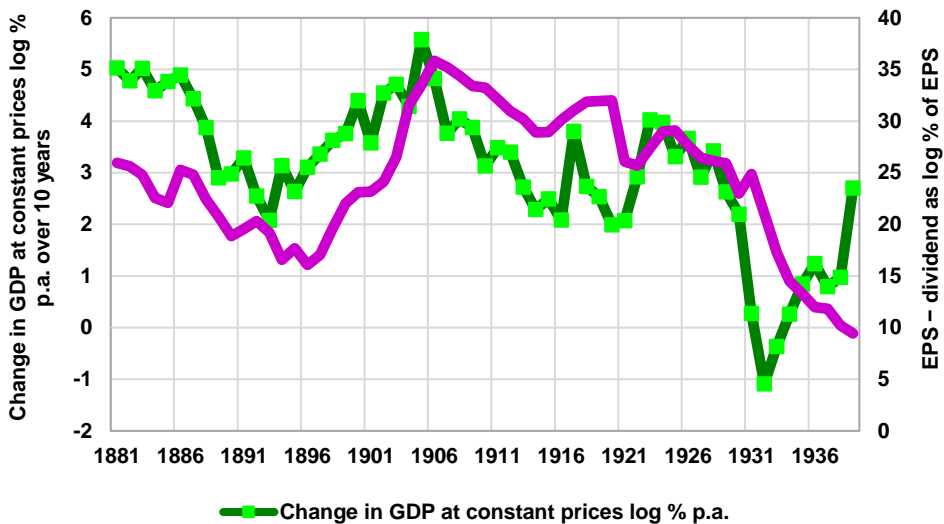


Source: NIPA Table 1.14.

Thus, if the yield on long-dated bonds is stable, leverage will be also,¹⁸ and corporate equity will need to rise in line with output. Changes in corporate equity can occur through variations in the levels of buybacks, new issues and the dividend pay-out ratio. Shareholders respond differently to the method chosen. Reductions in the level of buybacks and a failure to increase dividend pay-out ratios cause little concern, but cuts in dividends and the issue of new equity are deeply disliked, so overleveraging threatens managements' jobs. Companies therefore retain enough cash from their profits, if leverage is stable, to allow their net worth to rise in line with output.

¹⁸ Subject to land prices, inventory and trade finance ratios also being stable, which historically they have been, although the ratio of land prices/output has swung considerably around its mean.

Figure 6. US: growth and corporate retentions 1871 to 1940

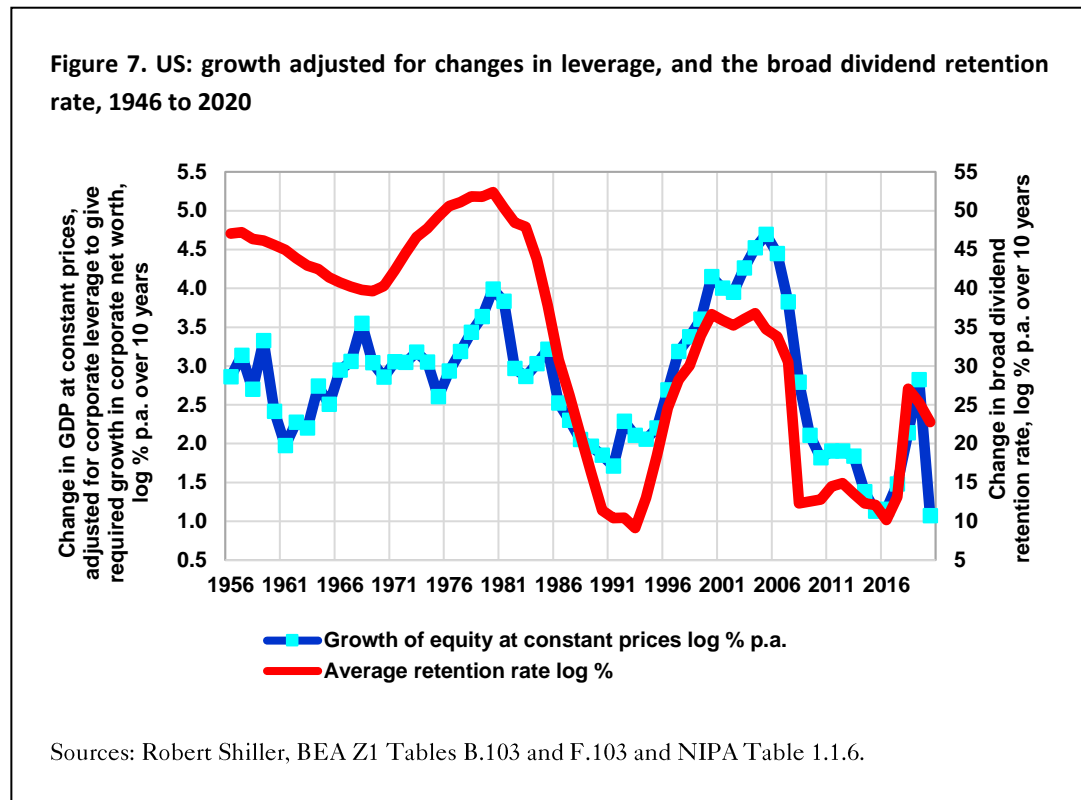


Sources: Angus Maddison and Robert Shiller.

Cash can be distributed to shareholders through dividends or through reductions in equity capital by buybacks, net of new issues, and takeovers financed by debt. The sum of these is known as the ‘broad dividend’. As output rises in line with the value of the net stock of produced fixed capital, rising output requires a fall in the broad dividend pay-out ratio, i.e. a rise in the retention rate, unless long-dated bond yields are favourable to increased leverage.

As the return on equity is stable, the retention rate will equal the growth of output adjusted for changes in leverage. We do not have data on corporate leverage before 1946, but if there had been no change in leverage or in the ratio of the broad to narrow dividend then changes in output would have moved with the retention rate and Figure 6 shows that these two conditions applied before the Second World War. Corporate savings thus rose and fell with the growth rate

of the economy and as the capital/output ratio is stable (Figure 3) corporate savings rise and fall with net corporate investment.¹⁹



While we do not have data on corporate leverage during the Second World War it was clearly not stable, as Figure 2 shows, due to access to the long bond market becoming a government monopoly. We do, however, have data from 1946 and these show that leverage has since risen sharply. There has also been a large change in the relationship between the narrow and broad dividend retention rates. The growth of corporate equity will be less than the growth of the economy to the extent that leverage has risen. The growth of the economy, adjusted for the change in leverage, will then move with the proportion of net profits after tax – the cash paid out to shareholders, which is the broad dividend retention rate, as Figure 7 illustrates.

¹⁹ The correlation between corporate savings and corporate investment was apparently noted in J.R. Meyer and E. Kuh (1957). *The Investment Decision: An Empirical Study* (Cambridge, MA: Harvard University Press), as this is mentioned in Nicholas Kaldor (1966). *Marginal productivity and the macroeconomic theories of distribution*: comment on Samuelson and Modigliani. *Review of Economic Studies* 33, 4. I have not yet, however, been able to check the original source.

The change in the ratio of the broad to the narrow dividend alters the relationship between corporate savings, as defined in national accounts, and the proportion of net profits retained and the change in leverage reduces the extent to which corporate savings are needed to finance growth. While these changes modify the relationship between corporate savings and corporate investment, companies must retain profits to finance the growth of business output and the retention rate must be stable unless leverage changes.²⁰

Household Savings

Households save as well as businesses and these funds are needed to finance housing and much of the formation of new companies. If these needs also move in line with output, a stable level of intended household savings will mean that the private sector's *ex ante* savings will exceed investment. Fiscal or monetary stimuli will then be needed to avoid rising unemployment.

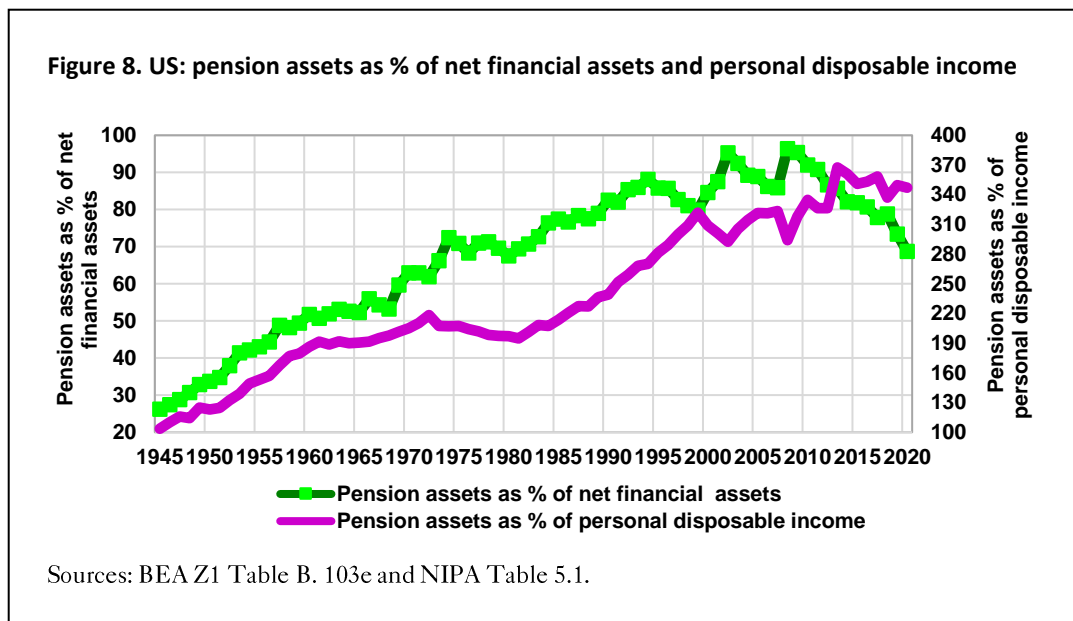
Savings may be made to enhance future consumption at the expense of current enjoyment or to protect future living standards. Falls in living standards are far more painful than the joy generated by the equivalent improvement, so income preservation has a higher value than income enhancement. If savings were primarily driven by the wish to raise future consumption, the return on equities would be much lower relative to that on long bonds than it has proved to be.²¹ The large gap between the two is consistent with models which assume that savings are primarily made with the aim of protecting future consumption.

To protect living standards, households need sufficient assets to finance periods of unemployment and ill health, and to pay for retirement. The threat presented by unemployment and ill health has fallen with the rise in social security and the great reduction in cyclical fluctuations in employment. The development of pooled pension funds and the use of tax incentives to encourage it provide us with data on the funds that have been clearly saved for retirement. It is likely that there are other assets held for this purpose; they provide us with evidence of the minimum proportion of household assets earmarked to preserve living standards in old age. As Figure 8 shows they currently amount to 70% of total household net financial assets and 340% of personal disposable income and

²⁰ The coefficient of correlation for Figure 6 is 0.454 ($R^2 = 0.206$) and for Figure 7 it is 0.605 ($R^2 = 0.366$).

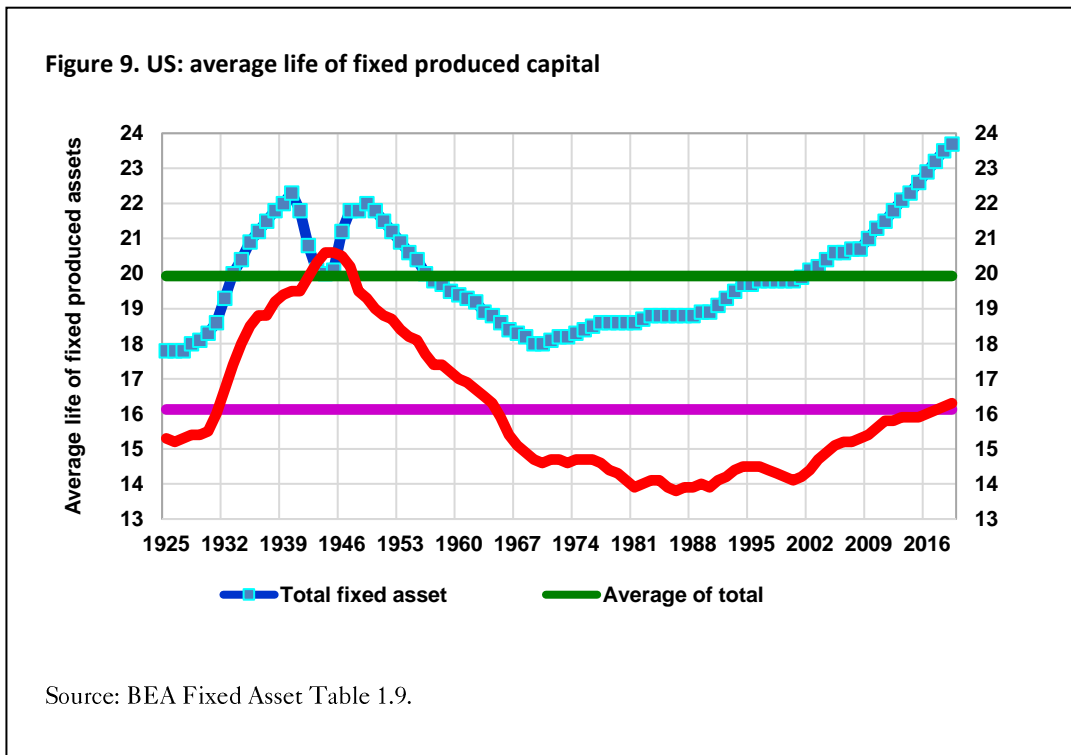
²¹ Rajnish Mehra and Edward C. Prescott (1985). *The equity premium: a puzzle*. Journal of Monetary Economics 15.

the speed with which these ratios have risen provides an indication of their importance for household savings.



The amount that households will need to save to preserve their expected future living standards will depend on the growth of the economy and their return on savings. Retirement savings have a long time horizon and since the risk over that horizon is no greater for long-dated than shorter-dated bonds and the return is greater, the portfolio choice for them is between equity and long-dated bonds.

Inflation raises interest rates much faster than profits. For example, a rise of one percentage point in inflation, in the absence of other changes, would be matched by a rise in short-term interest rates from 5% to 6%, i.e. by 20%, while profits would rise by only 1%. Companies therefore prefer to borrow long-dated bonds rather than debt instruments of shorter duration. The average life of fixed corporate-produced assets is currently around its longer term average of 16 years (Figure 9) so companies have no incentive to pay more for much longer-term debt, which is why the yield curve steepens up to 20 years' duration and then flattens.



The choice for both retirement savings portfolios and corporate balance sheets is thus between long-dated bonds and equities. As debt is much cheaper than equity, companies will prefer to be financed by bonds up to the point when interest payments equal five times pre-tax profits, as illustrated in Figure 5. Post-war we have seen a large rise in corporate leverage which, in a two-sector economy consisting of just household and corporate sectors, must have been matched by an equal and offsetting change in the household sector's

preferences. The desire of households to own bonds or equities will vary with their risk aversion, as bonds yield less than equities but are much less risky. Although individuals have a wide variation in their risk aversion it is likely that populations with stable demographics and unchanged systems of pension funding will have stable risk aversion. The post-war rise in household preference for bonds follows from the change in demography and the growth of defined contribution pensions relative to those with defined benefits. This has been matched by the rise in leverage, a decline in long bond yields and a consequent fall in the cost of capital. While investment has fallen due to a slowdown in the rate at which technology has advanced, at least in terms of the investment opportunities it offers, and more recently because of a rise in the equity hurdle rate due to the bonus culture, the decline in investment has been less than would have occurred if interest rates and leverage had not risen.

As portfolio preference changes the relative returns on bonds and equity must change, through changes in either bond or equity returns depending on their relative elasticities. Figure 5 shows that profits before tax and interest payments, but after depreciation, are when unaffected by borrowing restrictions, around five times interest payments. Leverage thus responds elastically to small changes in bond yields while for equities, which have infinite duration, returns respond weakly and proportionately to changes in price. Due to the low elasticity of households' portfolio preference to changes in equity prices and the high elasticity of leverage to changes in bond yields, the change in relative returns needed when portfolio preferences change is achieved solely by changes in long bond yields and the long-term real return on equities is stationary despite changes in demography and the institutional structure of retirement savings.²²

As equity returns are much higher than those on bonds, the return on retirement savings varies with portfolio preference and leverage, but at any given degree of leverage the return on them will be stable and household savings will depend on the growth rate of the economy.

Both household and corporate savings will thus match growth so private sector *ex ante* savings and investment will be equal in equilibrium conditions.

²² A detailed account of the relative elasticities of equity returns and long bond yields is set out in Smithers (2022) *op. cit.*

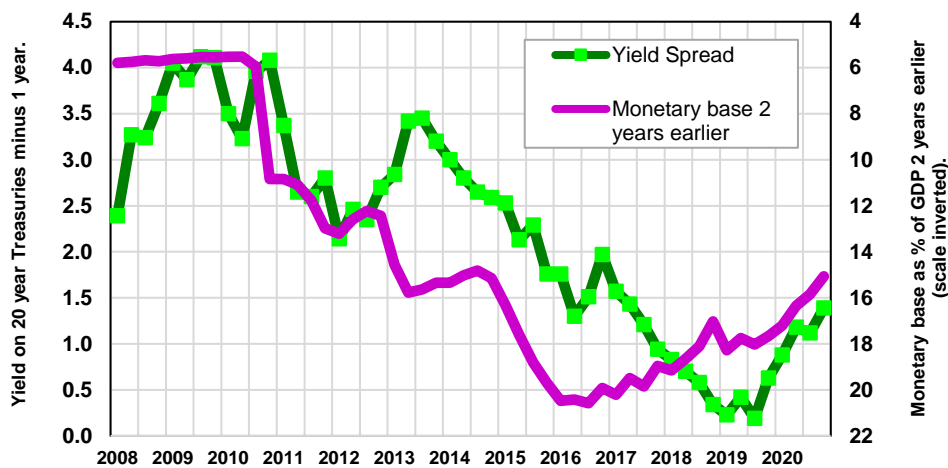
The Two Equilibria

Two equilibria are needed for stability, independent of its growth rate – the balance between *ex ante* levels of savings and investment and that between the leverage of the corporate sector and the ratios of equities and debt in the financial asset portfolio of the household sector. In the absence of changes in fiscal policy these two equilibria will need to be preserved by changes in monetary policy. Historically, the neoclassical synthesis assumed that both would respond to one policy tool, through changes in short-term interest rates. Central banks have now introduced another policy tool in the form of QE but have no model for its impact on the economy. Or, if they have one, they have been extremely coy in revealing its existence.

In so far as neoclassical theory provides a coherent and self-consistent model it holds that central banks can control short-term interest rates, and these determine the cost of long-term debt and equity and thus the cost of capital. As Figure 2 illustrates, the cost of capital does not fluctuate with interest rates. It follows that if the central banks seek to change the cost of capital they cannot do so simply through changes in short-term interest rates.

The monetary base measures those liabilities of the government which have zero maturity and consists of the deposits of commercial banks with the central bank plus currency in circulation. Because commercial banks need to hold some reserves in the form of till cash and reserves with the central bank, this provides at least in theory a limit to the growth of measures of money supply. Monetary economists are divided about its practical significance, but it provides a useful measure of one aspect of monetary policy, which is the net effect of fiscal policy, funding and QE. If the fiscal deficit is fully funded, there will be no increase in the monetary base unless QE is in operation.

Figure 10. US: Monetary base as % of GDP and Treasury yield spread (20 year – 1 year)

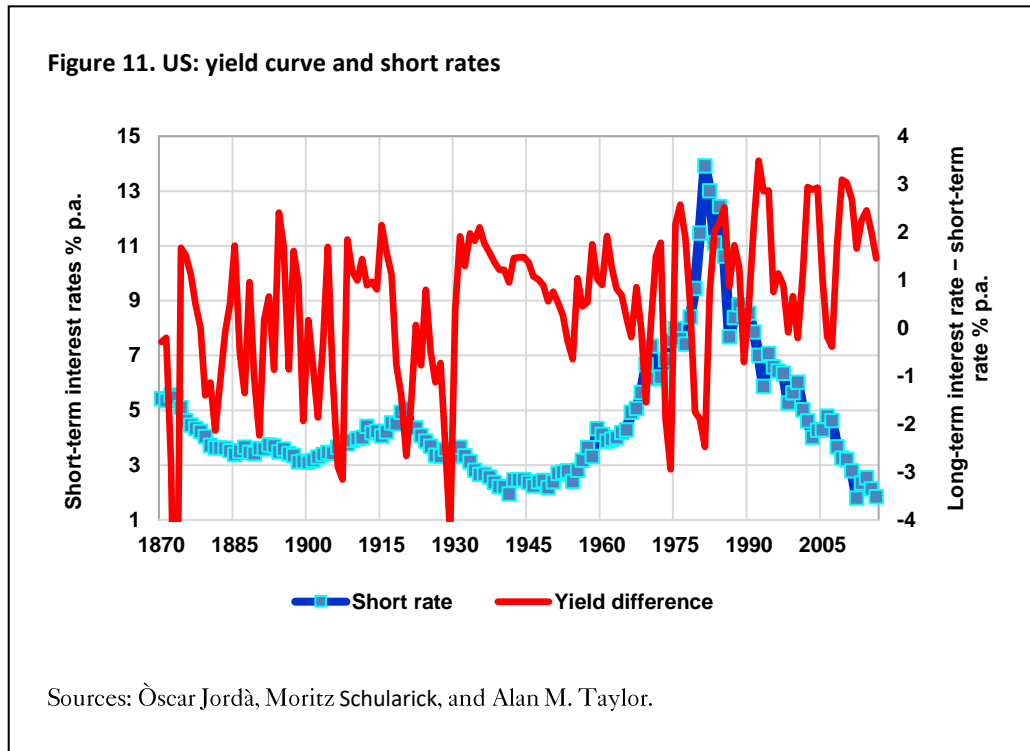


Sources: Federal Reserve H6 and H15 and NIPA Table 1.1.5.

When short-term interest rates were the only policy tool, central banks were using it to maintain *ex ante* equality between savings and investment and the balance between leverage and household financial assets was assumed to be either unchanged or unimportant. QE, however, involves altering the monetary base and as Figure 10 shows this has been accompanied by a change in the yield curve.

As short-term rates have also been falling while QE has operated it is important to note that while the yield curve has moved recently with interest rates the two have not been historically related either for nominal rates as Figure 11 illustrates ($R^2 = 0.0037$) or for real interest rates ($R^2 = 0.1080$). We are therefore witnessing a monetary policy innovation which operates by adding to changes in short-term interest rates, changes in the yield curve and this exacerbates the changes in long-dated bond yields. As the neoclassical consensus assumes that short-term rates, long bond yields and short-term interest rates move together, this change is a break away from that consensus, without any published theoretical support.

In one sense this is a positive development, because central banking policy appeared to have formerly been based on the neoclassical synthesis, which is unsound. But it is worrying in the absence of any published alternative. The introduction of QE has simply made the lack of a coherent theory for central banking policy more obvious, and we must hope that this will speed up the replacement of the neoclassical consensus by a sounder theory.



Seeking to Maintain Full Employment

The economy is seldom if ever in equilibrium and swings away from it can be large. Economic policy has historically been concerned with seeking to maintain full employment and a stable rate of inflation by fiscal and monetary means. The other equilibrium between corporate leverage and household portfolio preference has been ignored or assumed to adjust without causing financial crises and this view has become increasingly questioned.²³

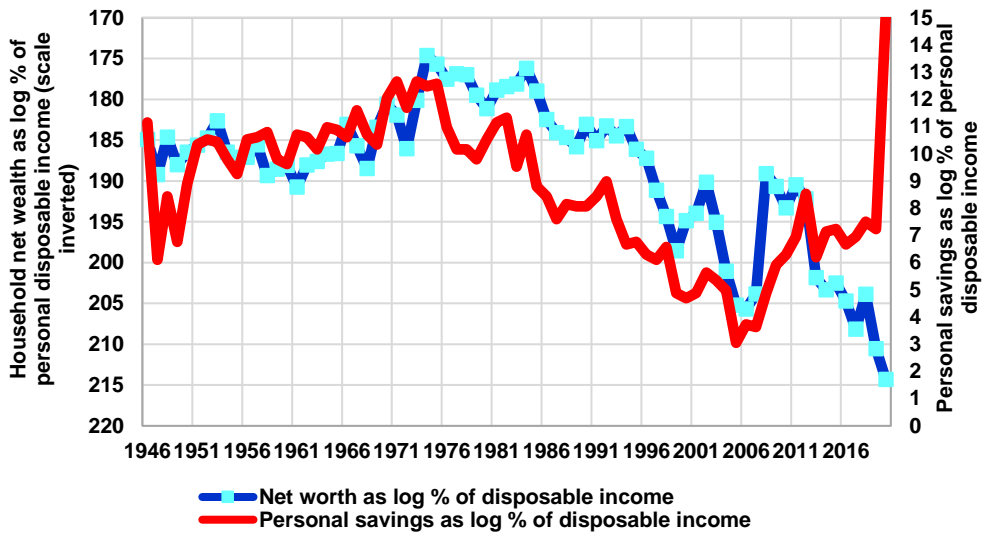
²³ For example, in Andrew Smithers and Stephen Wright (2002). *Stock markets and central bankers: the economic consequences of Alan Greenspan*. *World Economics* 3, 1.

Changes in the long bond yield occur through alterations in shorter-term interest rates and the yield curve. Traditional monetary policy determines the former and the interaction of fiscal policy and QE has a major influence on the latter (Figure 10). Demand responds to changes in the cost of capital which moves with bond yields and inversely with leverage. Both short-term interest rates and QE can thus be used to maintain an *ex ante* balance between savings and investment. But as they change corporate leverage, they must also alter the balance of household financial assets between bonds and equities. It is, however, important to note that the change occurs when measured in the same way as leverage and thus when equities are valued at their net worth, not at their market price. Households' portfolio preferences are determined by market value.²⁴ If they were not the market would never be misvalued. In the absence of other changes, cutting short-term rates and flattening the yield curve through QE thus means pushing up share prices relative to net worth, which means increasing the *q* ratio.

It should also be noted that changes in leverage and thus in *q* depend on changes in nominal not real interest rates because changes in inflation have a much larger impact, in the short term, on increases in interest payments than on profits. Nominal output rises proportionately with inflation but arithmetically with interest rates. For example, a rise from 5% to 6% to allow for a one percentage point rise in inflation is twenty times greater than the change in inflation.

²⁴ For the importance of the market values see William R. White (2006). *Measured wealth, real wealth and the illusion of saving*. Presented at the Irving Fisher Committee Conference on 'Measuring the financial position of the household sector', Basel.

Figure 12. US: personal wealth and household savings



Sources: BEA Z1 Table B. 101 and NIPA Table 2.1.

As equity returns are mean-reverting a rise in the q ratio will raise the household sector's net worth and lower future returns, and the impact on bond holdings will be similar. The effect on savings of rising asset prices thus depends, *inter alia*, on investors' myopia. If they assessed the consequences of a rise in value and the fall in returns equally the impact on savings would in this respect be unchanged. However, as Figure 12 shows, households are myopic regarding the way their savings respond to changes in their wealth, though the relationship has been changed by the impact of COVID-19. (For 1946 to 2018 $R^2 = 0.5135$, but from 1946 to 2020 $R^2 = 0.2794$.)

Economic Policy for Secular Imbalances

In the absence of additional fiscal stimulus, current monetary policy would need to be indefinitely sustained while the unstable and mean-reverting q ratio remained high above its equilibrium level. It is impossible to predict how long this would last and there are many possible proximate causes for its demise.

Using fiscal policy to offset a secular *ex ante* savings/investment imbalance is clearly much less dangerous, but an ever-expanding national debt/GDP ratio is not a viable long-term economic solution.

Economic policy should therefore change to tackle the secular causes of the net private sector's *ex ante* savings surplus. This could be done by introducing tax credits for tangible investment, as is planned in the UK for the next two years, whereas plans to raise corporation tax are likely to make the structural *ex ante* net savings surplus more severe. The damage from a rise in corporation tax could be more than offset if these were made permanent, and if similar credits were introduced in the USA, and might well end the structural *ex ante* savings surplus;²⁵ and at the very least would have the following benefits:

- (a) It would raise the trend growth rate of the economy.
- (b) It would raise the ratio of the narrow to the broad dividend because reductions in buybacks offend shareholders much less than cuts in dividends.
- (c) It would reduce the net savings of the corporate sector through higher tangible investment.

Economic Outlook

Such a change in economic policy seems sadly unlikely in the USA, though less so in the UK. Fiscal policy has, however, become more stimulatory and the economic out-turn depends on whether it is sufficient to allow monetary policy to be tightened and whether this is done strongly enough to prevent a rise in inflationary expectations with a consequent rise in the non-accelerating rate of unemployment (NAIRU). While no outcome is certain, the most likely are:

- (i) An inadequate fiscal stimulus with unchanged monetary policy, which would be followed by falling profits combined with continued near-zero interest rates and continued QE. The stock market would be likely to decline and, as it is heavily overvalued, the fall would be large. This would cause a marked cyclical rise in the net private sector's *ex ante*

²⁵ For a fuller explanation see Andrew Smithers (2021). *Corporation tax*. World Economics 22, 2.

savings surplus, requiring a strong fiscal or monetary response to prevent a serious recession.

- (ii) An adequate fiscal stimulus with an inadequate monetary response, which would result in rising inflationary expectations, causing a rise in the NAIRU. To bring the former under control the rise in bond yields would have to be even greater, combined with the rise in the NAIRU; the rise in employment would come later than in (i) but would be substantially greater and last much longer.
- (iii) An adequate fiscal stimulus combined with perfectly judged monetary tightening would see stable profits combined with sharp falls in equity and bond prices. As such declines would raise household savings and probably depress business investment, the required perfection of judgement would be a continuing necessity.

Each of these outcomes is possible, as are minor variations such as the non-trivial risk that (i) would be made worse by rising inflationary expectations. I think that (iii) is the least likely, as it requires continuing great judgement and, given the uncertainty of economic forecasts, huge luck. To me (ii) seems the most probable, because US fiscal stimulus seems likely to be strong and the Federal Reserve will be reluctant to see a sharply falling stock market. Whichever occurs, the secular imbalance in *ex ante* private savings and investment would remain in place.

The main conclusions are thus that a happy outcome for the US economy seems sadly unlikely and that Hyman Minsky was unfortunately correct when he wrote that ‘modern orthodox economics is not and cannot be a basis for a serious approach to economic policy’.²⁶

Acknowledgement

This paper owes a great debt to detailed advice and suggestions from William White and Charles Goodhart. Its faults are those of the author, but any virtues that it may have result from their help.

²⁶ Hyman P. Minsky (2008). *Stabilizing an Unstable Economy* (New York: McGraw-Hill).

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