

The Great Transition.

Global Opportunities

US Profitability



July 2016

'The Great Transition' highlighted many of the pressures facing the modern day firm or corporation. These include the challenge of competition, greater information and the application of productivity enhancing technology. The conclusion drawn from that analysis was that the profitability outlook for firms has and will continue to be diminished.

But corporate profitability, as it applies to equity owners, is more than just gross profits and profit margins. Instead, the return on equity (ROE) offers a more comprehensive assessment of current and future conditions for owners of corporate American equity. This analysis highlights some surprisingly positive findings about future corporate ROEs and less intuitive corporate responses to monetary policy.

The analysis that follows uses data from the national accounts to assess the ROE accruing to owners in the entire economy, not just the listed sector. Despite a 54% increase in profit as a share of national income from 2001 to 2015, the ROE has been relatively stable. Indeed, it is falling steeply at the moment. It suggests, however, that the ROE can begin to rise if trends in corporate leverage reverse and become positive. In the short-term, however, this seems unlikely.

Do equity owners in the economy earn an excess return?

The ROE is calculated as profit after tax divided by net worth (total assets minus total liabilities). Excess return will occur if the ROE is greater than the cost of equity.

James White

Portfolio Manager

Andrew Huang

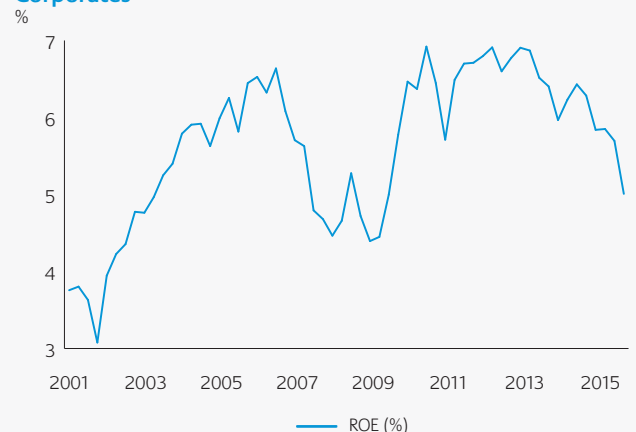
Manager, CBA Group Strategy

Stephen Halmarick

Head of Economic and Market Research

Analysis of national income data in the United States (US) shows that the return on equity has averaged 5.6% from 2001 to 2015. The economy wide ROE fell as low as 3.1% at the end of 2001 and rose to as high as 6.9% on three occasions in 2011 – 2013. Unsurprisingly, this highlights the cyclical nature of the ROE. Interestingly, the economic expansion between 2001 and 2007 yielded a lower cyclical peak in ROE than the post Global Financial Crisis (GFC) period, which is shown in chart 1.

Chart 1: Return on Equity (ROE) for US Non-Financial Corporates



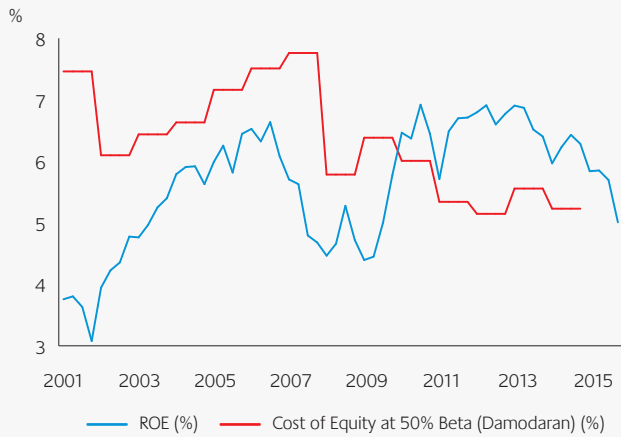
Source: Bureau of Economic Analysis, CEIC, CFSGAM.

The NYU Stern School of Business professor Aswath Damodaran¹ has provided estimates for the cost of equity in the US economy using listed data. This analysis includes an estimation of beta and the equity risk premium. On the basis of Damodaran's annual data, using an overall economy beta of 50% of the listed market beta, we estimate non-financial corporate sector ROE in the US has only exceeded its cost of equity in the period 2010 – 2014, which is illustrated in chart 2.

¹ http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/wacc.htm

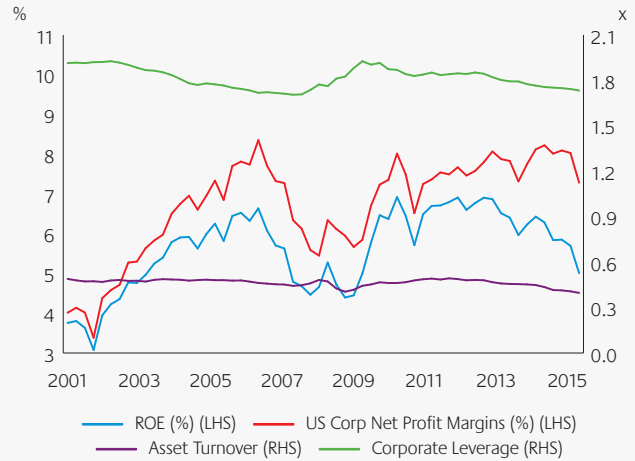
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Chart 2: US Non-Financial Corporates ROEs versus estimated Cost of Equity (@ 50% beta)



Source: Bureau of Economic Analysis, CEIC, Damodaran Online, CFSGAM estimates.

Chart 3: Return on Equity (ROE) for US Non-Financial Corporates



Source: Bureau of Economic Analysis, CEIC, CFSGAM.

The analysis of ROE trends, outlined above, suggests ROEs are already relatively low. Further, the rise in profit as a share of income from 2001, has only positively impacted equity holders in the period from 2010 to 2014. In the period before the GFC, equity owners did not seem to capture their cost of equity. A more substantial analysis requires breaking down the ROE to make a more thorough analysis.

Returns on equity: a Du Pont Analysis

Du Pont analysis of the ROE enables a more specific understanding of how operational and financing decisions influence return outcomes for equity owners.

Du Pont analysis expands the definition of ROE to create three company-wide return factors. These three factors measure margin, volume and leverage through corporate profit margin, asset turnover, and corporate leverage. This can be expressed as;

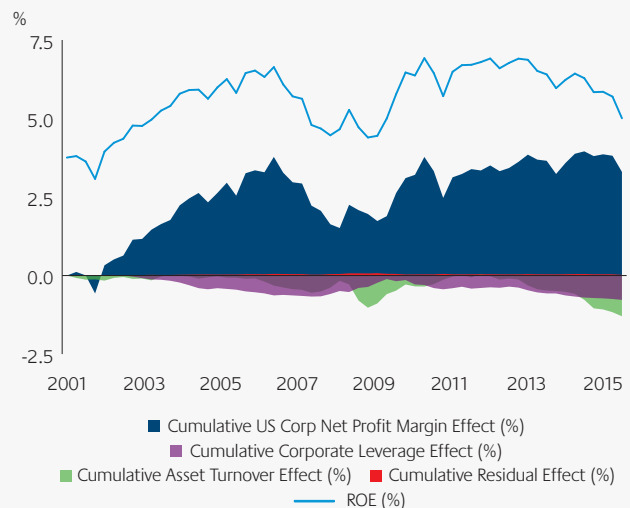
$$ROE = (\text{Net Profit} / \text{Sales}) \times (\text{Sales} / \text{Assets}) \times (\text{Assets} / \text{Equity}) = \text{Net Profit} / \text{Equity}.$$

Our analysis highlights some interesting findings.

Using this analysis, we have decomposed movements in the ROE of the US economy into the three factors listed above and this analysis is shown in chart 3.

From 1992, the largest positive contribution to ROE has been expansion in net profit margins. By contrast, corporate leverage has generally detracted from ROE while asset turnover has been, unsurprisingly, quite cyclical. This can also be seen in chart 4.

Chart 4: Du Pont Factor contribution to changes in Non-Financial Corporate ROE since 2001



Source: Bureau of Economic Analysis, CEIC, CFSGAM.

Asset turnover is a relatively minor player in the determination of ROE. Further, the cyclical nature of asset turnover is unsurprising. Sales is the dominant driver of the figure over the cycle. It may be that the under-reporting of nominal sales and disinflationary trends as a consequence of productivity growth, as discussed in the Great Transition research², explain this lower figure.



The negative contribution of corporate leverage to ROE is perhaps the most surprising outcome from this analysis. Our *a priori* assumption, given the dramatic decline in interest rates and the consequences of overleverage in determining economic cycles, was that corporate leverage should be a positive and substantial driver of increasing ROE. However, this has not been the case. As chart 4 demonstrates, corporate leverage (assets/equity) has declined from just over 2.0x in 1993 to 1.75x in 2015. This is despite the five year US Treasury yield falling from 6.8% in 1992 to 1.75% in 2015.

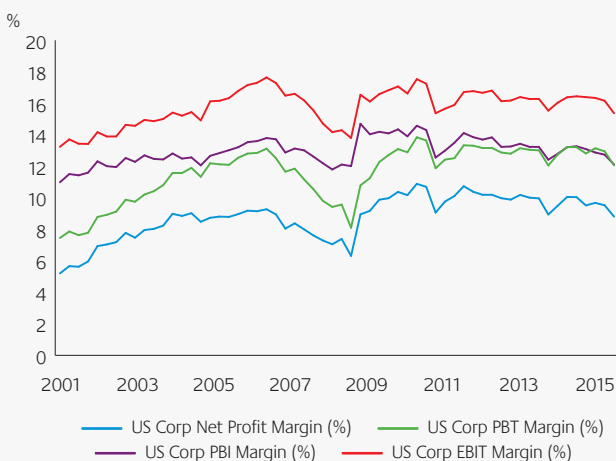
By contrast, profit margins have contributed substantially. Profit margins have risen in each of the two business cycles from 2001. The peak in profit margins was 8.4% in 2006 and about 8.0% in 2010, 2013 and 2014. Similarly, the low in 2001 was 3.4%, which was lower than the 5.4% low in 2008. Profit margins in the US have been in a strong uptrend since 1992 and have kept relatively stable at high levels since 2010.

This suggests further analysis of profit margin is warranted.

Profit margins in the US

A competitive economy should ensure that profit and profit margins are mean reverting. Periods of high and low profitability should not persist in a competitive economy. The first piece of evidence, net profit margins, suggest this is not the case. Structurally, from 1992, profit margins have risen. However, analysis of profits before tax and interest (EBIT) suggests the counter, that profits have been relatively stable.

Chart 5: Corporate Profit Margins



Source: Bureau of Economic Analysis, CEIC, Federal Reserve of St Louis, CFSGAM.

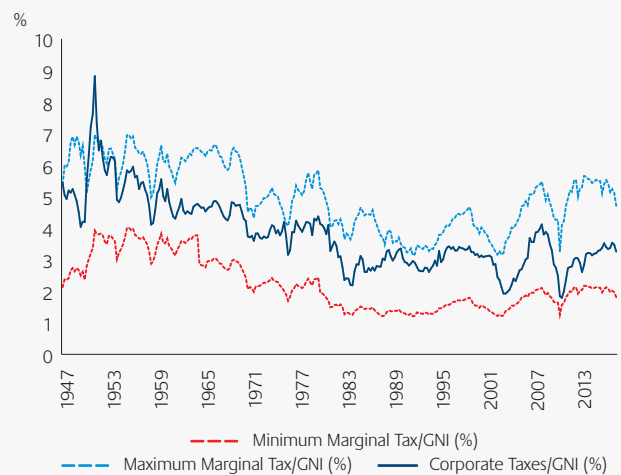
The rise in net profit margins seems to be explained by the difference between profits before tax and profits before interest payments. That is, it is simply lower interest rates that explain higher profit margins in the US. By contrast, falling tax rates have not contributed to rising margins. This would suggest that corporations believe falling tax rates are permanent and are prepared to use these lower tax rates to invest. Corporations, however, do not seem to believe current interest rates are permanent. This is an important issue to be discussed later.

The impact of taxes on profitability

Tax, as a share of profit before tax, has fallen steeply in the period from 1947. From over 30% in the 1950s, the figure has fallen to around 20% in the period after the GFC. In part, this has been a function of falling tax rate schedules. Maximum marginal corporate tax rates have fallen from a peak of 53% in the 1940's to 39% today.

But there is another story in the data. The effective corporate tax rate in the US has shifted away from the top marginal rate, towards the lowest marginal rate. Chart 6 shows corporate tax as a share of Gross National Income. It also shows the proportion of national income corporations would pay if they paid tax at the top marginal rate, and at the bottom marginal rate. As the chart shows, there has been a migration towards the lower bound, something that has accelerated in the years post the financial crisis.

Chart 6: Corporate Tax as % of GNI



Source: Bureau of Economic Analysis, CEIC, Urban-Brookings Tax Policy Center, CFSGAM.

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In part, this can be explained by the losses recorded as a consequence of the global financial crisis. But it would also seem likely that the declining effective tax rate reflects the ability of firms to avoid paying tax in the US. There are two possible drivers; offshore earnings and tax inversions. The offshore earnings of US companies are, according to Bloomberg, equivalent to \$2.1 trillion. These earnings remain offshore as cash assets so as to avoid domestic taxes. A tax inversion is the process of shifting the headquarters of a company from one international jurisdiction to another. For instance, 700 American firms have re-located their headquarters, rather than their primary operations, from the US to Ireland so as to take advantage of a lower tax rate. Ireland's corporate tax rate is 12.5%.

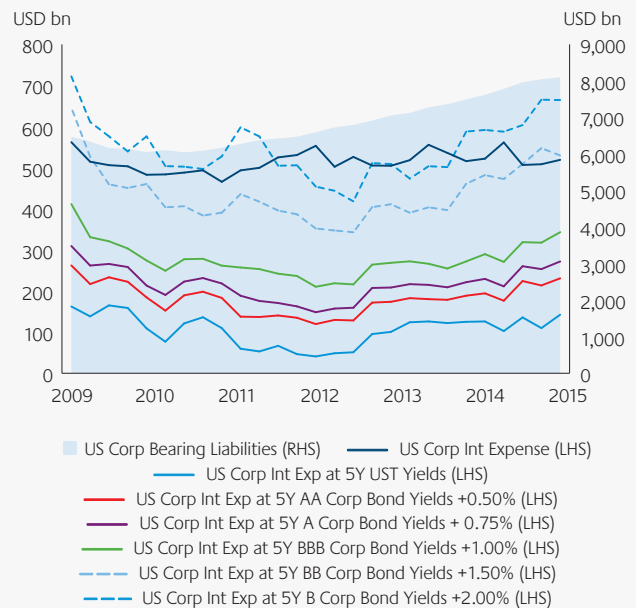
The impact of falling interest rates

The other secular trend impacting corporate profitability has been interest rates. Interest rates peaked in 1982 and have since declined. For corporations using debt as a capital source, this has been a boon.

First, the effective interest rate in the US economy is still relatively high, at 6.5%, while the US 10 year government yield has remained below 2% from January 2016. Chart 7 illustrates that in the period between 2009 and 2015, it most likely reflects both the credit cost associated with lending across all companies in the economy from AAA to CC, and also allows for a higher cost of borrowing for lower rated companies without access to bond markets. The lagged effect of refinancing may result in seeing weighted average costs of debt rise as we move into a higher credit spread environment and debt raised in low spread environments roll off.

Second, actual, nominal interest payments made by US corporations are just 16% higher than they were in 1992. This is an extraordinarily low number. It reflects both the decline in interest rates and the decline in corporate leverage. In real terms, interest payments are 30% lower than they were in 1992.

Chart 7: Effective US corporate interest expense



Source: Bureau of Economic Analysis, CEIC, Bloomberg, CFSGAM.

Discussion of themes

The analysis is helpful in outlining the future path of profitability in the US, both over the medium and long-term. The analysis also raises questions about the level of corporate leverage in the US which, in turn, leads to a discussion on the effectiveness of monetary policy.

Outlook

The current short term downtrend in ROE and profitability would generally suggest the probability of a recession is rising. In the last thirty years, a decline in ROE has preceded a decline in the broader economy. But the decomposition of ROE using the Du Pont methodology presents reasons for optimism. It is likely that both profitability and ROE could rise in the next twenty-four months, supported by rising asset turnover, profit margin expansion and perhaps increasing corporate leverage.

The decline in asset turnover in the last eighteen months has been driven by declining sales. US sales have fallen 4% which is almost entirely due to the decline in the oil price. As the oil price stabilises and oil demand continues to grow, sales will begin to rise in nominal terms. Sales more broadly, do not show evidence of decline on a trend basis. Furthermore, on the denominator side, in the coming eighteen months, it should be expected that asset growth slows. This will be wholly due to low to falling net growth in assets within the oil and gas industry. This should be a substantial driver for a reversal in ROE trends.



As with asset turnover, any improvement in the economics of the oil and gas industry is likely to boost profit margins and economy wide ROE. More broadly, interest rates should continue to positively impact profit margins as economy-wide effective interest rates continue to fall.

The largest potential improvement in ROE is also the least likely to happen; an increase in corporate leverage. There is substantial room for US corporates to increase their gearing ratios. It would seem worthwhile exploring the reasons for this anomaly.

From a long-term perspective, based on EBIT profit margins, it would seem that the impact of technology and disruption, at this stage, has been to redistribute profits within the economy. Technology and disruption seem to be neither increasing the profit pool, nor decreasing it.

Corporate leverage: why the reticence to lever?

The combination of rising corporate leverage and profit margin expansion due to falling effective interest rates could have a multiplicative impact on ROE. Yet firms have been steadfast in their refusal to increase leverage. Not only is this negatively impacting the ROE for asset owners, it calls into question the responsiveness of firms to current monetary policy.

Since the GFC, bank regulation has discouraged lending which has undoubtedly contributed to lower levels of corporate leverage. However, it is not only regulation. Corporate leverage has fallen consistently from 1992.

In the discussion below, a number of potential explanations for this will be explored:

1. A game theoretic explanation
2. Permanently high hurdle IRRs
3. Principal / agent problem
4. A Ricardian view

A game theoretical explanation

A simple explanation for low corporate leverage in the US may be that firms do not believe in the permanence of current interest rate levels.

Historically, the relationship between the US Federal Reserve (Fed) and US firms has been cooperative. The Fed has signalled an easing in policy through lower interest rates with the intention of encouraging firms to invest. In turn, firms have invested.

It would seem that this historical relationship has broken down. Firms, from a game theoretic perspective, are cheating, largely because they believe the Fed will also cheat. Firms now understand that if they respond to Fed stimulus, they are likely to suffer negative consequences as the easing cycle becomes a tightening cycle. Such that a decision to increase investment might also contribute to higher activity levels more broadly, they are probably correct. Firms, and other economic actors, are fully aware of the Fed's reaction function to economic data and so behave accordingly.

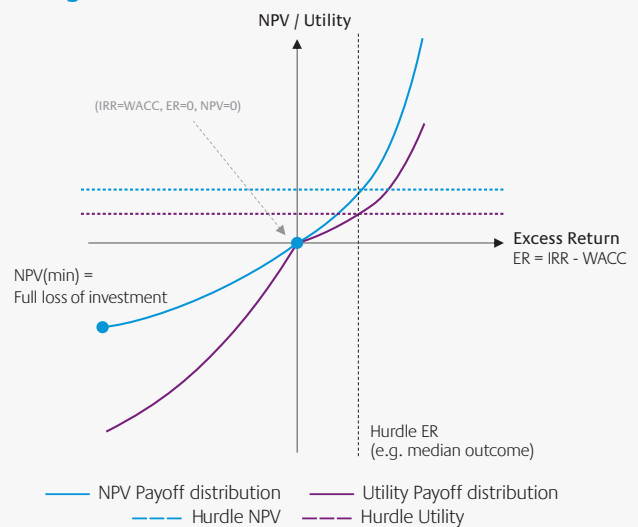
Firms still do not believe that interest rates are permanently low. They believe that if they were to act as if rates are permanently low, the Fed would likely cheat on them by raising rates. Perversely this breakdown in the game is likely to ensure permanently low rates.

Permanently high hurdle IRRs

A current and common criticism of firm decision making, from a policy-maker perspective, is that the internal rate of return (IRR) that firms apply to investment decision making is too high and does not reflect the decline in cost of capital. Economists often complain that firms have unrealistic return expectations when considering new investment opportunities. As the cost of capital falls, the argument goes, firms should be lowering their return expectations and increasing investment. They are not.

A potential explanation for this is set out in chart 8. The blue curve illustrates the shape for a hypothetical Net Present Value (NPV) payoff for a potential investment opportunity a firm faces, based on a distribution of Excess Return (ER) outcomes. ER is the difference between a realised investment IRR and the Weighted Average Cost of Capital (WACC).

Chart 8: Why could there be reticence to invest even with falling WACC?



*For illustrative purposes only.

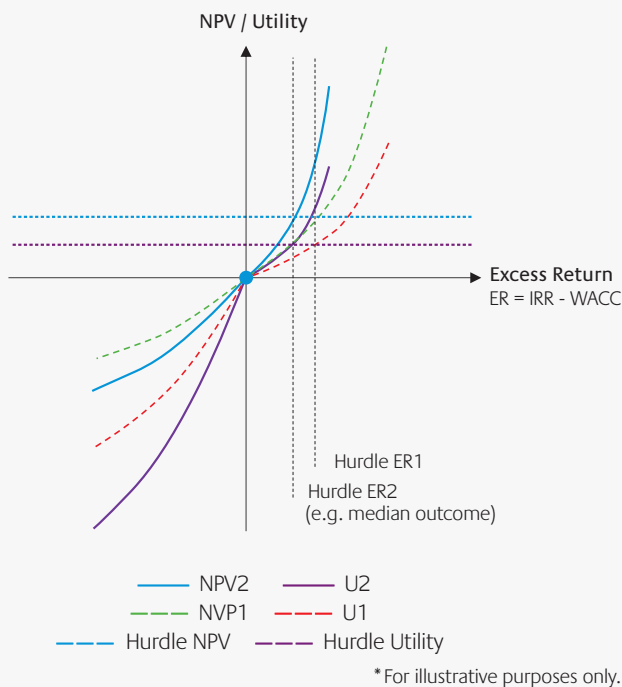
Source: CFSGAM.

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It is important to note that although the blue NPV curve shows a slight skew toward positive NPVs and ERs over negative ones, the purple curve illustrates the impact of utility preferences for risk or loss averse investors: negative outcomes are perceived as disproportionately worse than gains. The greater the loss aversion, the greater a firm's sensitivity to utility losses. To compensate, firms may seek higher hurdles for both NPV and ER. To illustrate our point later in chart 9, we show how NPV or corresponding ER investment hurdles could move in response to changing conditions.

Chart 9: Falling WACC increases NPV sensitivity of outcomes. In many cases this would increase the risk of negative NPV outcomes



What happens when WACC falls? All things equal, it should mean that ER should rise. But this is often not the case: project returns are not decoupled entirely from the conditions giving rise to a particular cost of capital. Project return distributions generally fall as WACC falls. Chart 9 shows the impact a decreasing WACC has on increasing NPV sensitivity to ER by steepening existing curves. As curves compress from falling WACC and IRR (from the faint dash lines to the solid lines), we find that hurdle ERs to generate the same utility as before have shifted lower.

However, as discount rates have fallen, the risk of larger NPV losses and gains have increased. Firms that are risk averse, quite rationally, require higher compensation for larger tail downside risk in the form of higher hurdle IRRs (or ERs).

The implication is that firms, all things equal, will not decrease their IRR in lock-step with a decline in their WACC. Lower interest

rates, consequently, are unlikely to promote higher levels of investment as they also imply an increase in the probability of firms experiencing an outright loss. Losses hurt more in a low return environment. Importantly, lower WACCs are likely to encourage firms to change the type of risk they take; ideally a smaller commitment and bias towards shorter term investments with very high IRR. Examples of such projects would be concentrated in technology, particularly, so-called disruptive technologies. More broadly, they are likely to favour projects where the downside is very small, even if the upside return is necessarily constrained.

Principal agent problem

The principal agent problem highlights the different incentive structures for those people who own the business versus those who manage the businesses. Incentive structures might include effective time horizons or return profiles. For instance, an owner may wish to pass on a business to future generations while a manager may have a short-term contract. Similarly, a principal is rewarded through long-term ROE, while a manager might be rewarded for short term earnings growth.

These differing incentive structures would seem to suggest that principals are less likely to respond to current interest rate levels than agents. Agents are more likely to use current interest rate levels to increase leverage in order to drive ROE and increase profit growth.

The existence of this divergence will be examined in the analysis of data from the listed sector.

The Ricardian view

Ricardian equivalence suggests that when a government tries to stimulate demand by increasing deficit spending, aggregate demand remains constant because rational agents assume increasing future tax obligations.

This framework of rational expectations about future obligations might be useful when considering corporate leverage in the context of private sector leverage. It may be true that corporate leverage is low, but it is also true that household leverage is high. As a consequence, it may be the case that corporate decision makers are as concerned with their customers' leverage as they are with their own. If their customers cannot afford current leverage levels, then corporate leverage levels may be similarly unsustainable, even though they are at a lower level.



Conclusion

Analysis of US national accounts provides some interesting insight into the corporate economy and consequently, US monetary policy.

First, profit margins and the return on equity are falling. This usually precipitates the end of an economic cycle. It is not clear, however, that it will be the case this time. The decline in profit margin and return on equity seems to be driven by the decline in the oil price. In coming quarters and years, it is likely that both can rise as the economy cycles through the lower oil price.

Second, the US economy may not have become less competitive in the last 25 years. Gross profit margins are not too far from their starting point in 1992. The increase in net profitability is most likely a function of lower interest rates than a less competitive economy.

Third, the national account data shows the average firm as very conservative. The return on equity earned by American firms is, most often, insufficient to cover the cost of equity, even at the peak of cycles. This is largely accounted for by the low and falling corporate leverage of American firms.

Finally, the analysis strongly suggests that the effectiveness of monetary policy is weak in the corporate sector. It is even weaker at zero.

Yes, the financial markets react rapidly to changes in policy expectations but the corporate sector as a whole does not. Presumably, this suggests the average firm in America has only limited interest in the economic cycle. Private firms seem to look through cycles. They seem to wish to optimise their balance sheet for the long-term, rather than positioning for the current cycle.

Further, the analysis argues that at the lower bound for interest rates, firms are less, not more inclined to invest. As WACC falls, larger gains and losses are more likely. This makes an absolute loss more likely. For firms, a loss at low interest rates makes recovery substantially more difficult and they don't seem to see this as worth the risk.

This analysis would suggest that low interest rates may benefit firms where management is incentivised to optimise earnings over the short-term. Such firms are likely to employ leverage to boost the return on equity. Most often, this is achieved through share buy-backs. For the majority of firms, with management and owners incentivised to look through changing economic cycles, low interest rates are not an encouragement for higher investment. Indeed, arguably, it is the opposite.



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