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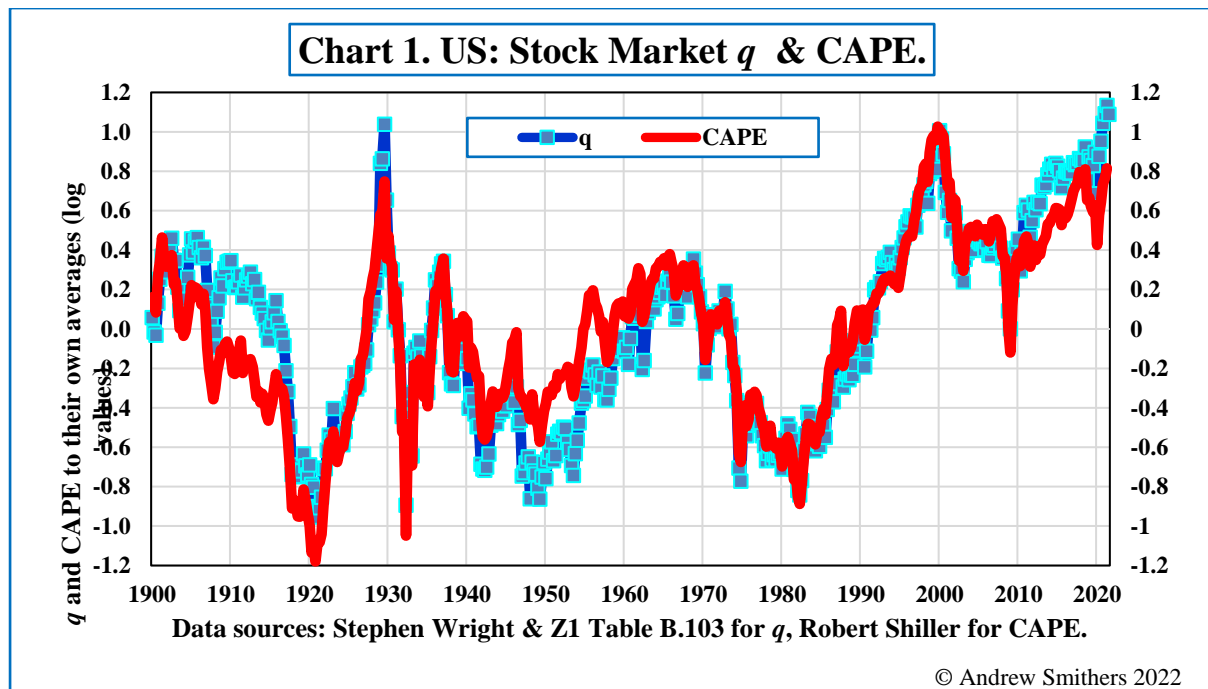
US – The High Risk of Another Financial Crisis.

A detailed explanation of the economics on which this paper is based is set out in *The Economics of The Stock Market* (“TEOTSM”) due to be published on 10th March this year by Oxford University Press. Footnotes below give the chapters and figures in TEOTSM which set out the evidence supporting the claims and elaborate on the explanations made in this paper.

Summary.

- Since 1900 the US stock market has had 6 peaks from which major bear markets followed. In four of these the degree of overvaluation shown by q and CAPE were the same.
- The two outliers were 1929 and 2021, when the overvaluations shown by q were significantly greater.
- 1929 and 2021 were also years in which financial profit margins were at levels unmatched in any other period. As q excludes financials their exceptional profitability explains the difference,
- Neither interest rates, money supply nor inflation were similar in 1929 and 2021. The only common characteristic appears to be the high level of the “Carry Trade.” The current uninsurable level of “option risk” is high and suggests that the next bear market will be accompanied by a financial crisis.

Value.



The stock market can be valued by q or CAPE. To be valid the two criteria must agree with one another and, as Chart 1 shows, they track each other closely. Exact similarity is, however, unlikely partly because they measure slightly different groups of companies. CAPE measures the value of quoted companies in the S&P 500 Index, while q measures US-owned non-financial companies whether quoted or not, using data from The Federal Reserve's Z1 Table B 103, in which unquoted companies are valued at a 25% discount from their estimated "if quoted" value. The financial subsidiaries of non-financial companies are excluded from the Z1 data.

The difference between the market's value as measured by these two metrics is unusually large. This is not obviously important as both metrics indicate an alarmingly high degree of overvaluation. But, as q and CAPE apply to significantly different groups of companies, I look at the reason why they differ and conclude that it suggests a much higher risk of a financial crisis than occurred, for example, after the market peak in 2000.

Testing Value.

A valid measure of stock market value must be based on a coherent definition of value and must also be testable. The ability to value the stock market depends on the mean reversion of real equity returns,¹ which results from their negative serial correlation.² It follows that after a sustained period of above average returns, future ones will be poor, and vice versa.³ The market is thus cheap when it will give above average future returns and the higher those returns the cheaper it is. The value of the stock market at any one time can thus be ranked by the returns subsequently given.

Cheap markets can, however, fall and expensive ones can rise. Value cannot therefore be assessed by comparing short-term results and even when using longer term returns the result will depend on the market's value at the end as well as the beginning of the period. To avoid this dependence on one time period, it is necessary to calculate returns over all possible holding periods. The strength of mean reversion is such, however, that if we measure all possible quarterly holding periods over 30 years, the market values that we obtain barely differ from those using 50 years,⁴ although there are significant differences between results based on 10 year returns.⁵

We can therefore value the market by hindsight, based solely on historic returns if we have 30 years' data of future returns. As these values are independent from the net worth and PE multiples used for calculating q and CAPE, they can be used to test the validity of these metrics. (Equally they could be used to test other valuation metrics, though I am not aware that any have been.) Both q and CAPE track the fluctuations in

¹ Figures 22 & 23.

² Figure 20.

³ Chapter 15.

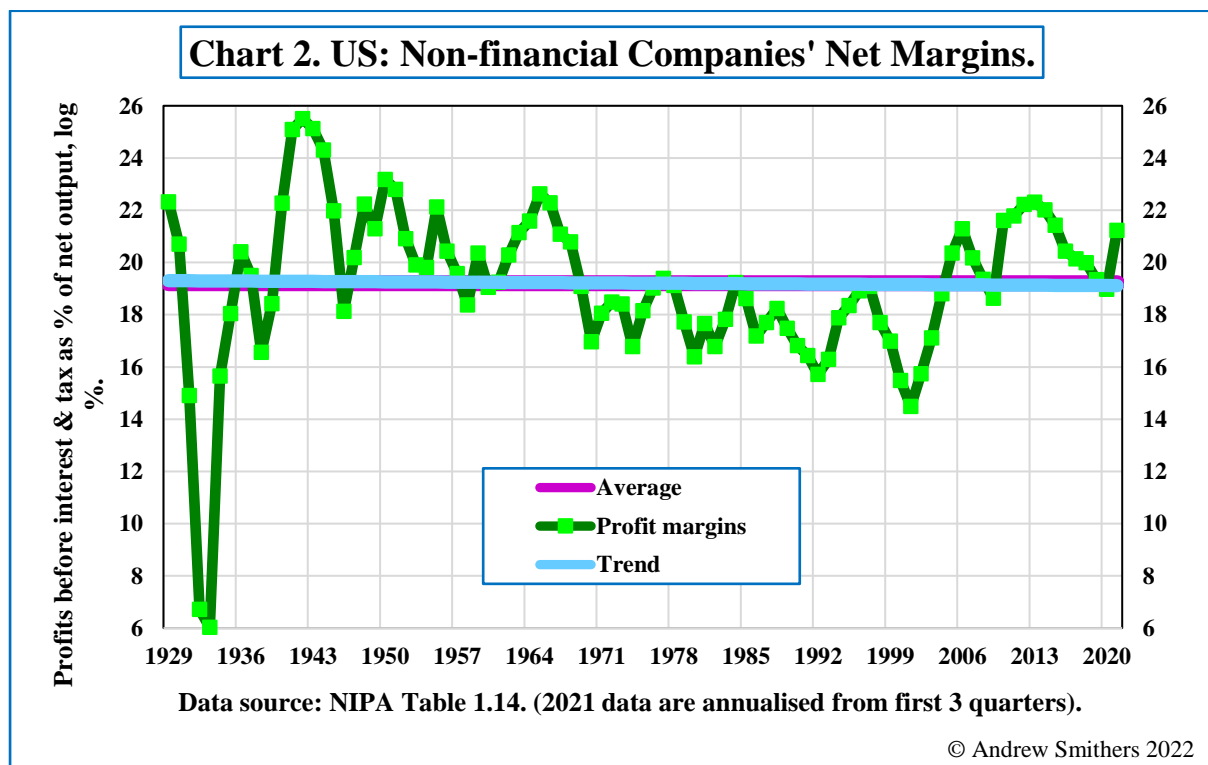
⁴ Figure 33.

⁵ Figure 32.

value shown by hindsight though q does so more closely, as is shown by the R^2 correlations which are 0.80 for q and 0.52 for CAPE.⁶ These correlations show that the current level of the US stock market is more likely to be the higher of the two values shown in Chart 1 and would need to fall by 54% to be at fair value.

Profit Margins.

Chart 2 illustrates the profit margins of US non-financial companies. The close similarity between the average and the trend shows that they are probably mean reverting in accordance with the Cobb-Douglas Production Function. It should be noted that profit margins are measured from profits before interest and tax as a percentage of output net of capital consumption. They were at their average level in 2020 having fallen since 2014 and even after the sharp rise in the first nine months of 2021 are still below their 2014 level. This pattern is strong evidence against the widespread claims that competition has weakened in the US in recent years. It is important not to compare incomes from employment with gross corporate output and GDP, as capital consumption is a cost not a form of profit or income. The labour shares of income are thus their ratios with net corporate output or NDP (net domestic output).



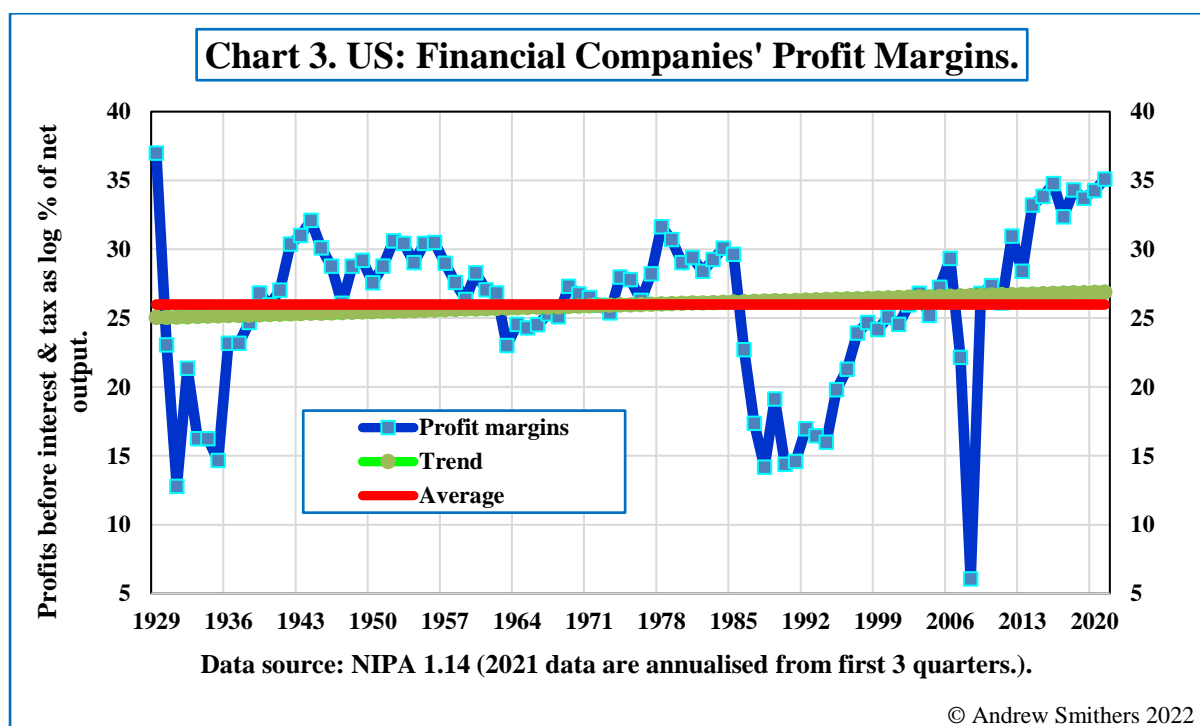
The profit margins of financial companies, including the subsidiaries of non-financial corporations, have however behaved very differently and are, as I illustrate in Chart 3, at a level not seen since 1929.

⁶ Ch. 15 Valuing the US Stock Market.

Table 1. Stock market peaks, financial profit margins & differences between q & CAPE. (Data sources: Stephen Wright, Z1 Table B 103, Robert Shiller & NIPA Table 1.1.4)

Time	q	CAPE	q minus CAPE	Financial profit margins log %	Financial profit margins minus average level log %
1902 Q3	1.59	1.45	0.13	Not available	
1929 Q3	2.83	2.11	0.71	37.0	11.0
1937 Q1	1.41	1.43	-0.02	23.1	-2.9
1968 Q4	1.43	1.38	0.05	24.9	-1.1
2000 Q1	2.73	2.73	0.00	25.9	-0.1
2021 Q3	3.11	2.26	0.85	35.7	9.7

As shown in Table 1, there have been six peaks followed by major bear markets. Those of 1929 and 2021 differ from the others in that their q and CAPE valuations and the current level of financial profit margins (Chart 3) are significantly different.



As the main difference between q and CAPE is that the former excludes financial profits, the exceptionally high level of financial profit margins today thus provides the probable explanation of the unusually wide gap between the two valuation metrics.

The Significance of High Financial Profit Margins.

In financial markets there are two main reasons why profit margins are exceptionally high. Competition may be unusually weak, or risk taking unusually high. Given the number of financial institutions and the ease with which new ones are formed, it is unlikely that there is a significant degree of monopoly profits, but there is abundant evidence of high risk taking in both 1929⁷ and in recent years.⁸ These rewards are not only found by reducing standards for bank lending; they have also been particularly high for those who offer insurance against falls in asset prices, including shares, credit, bonds, and currencies. The equity market appears to be typical in that share prices fall faster than they rise and periods of negative return are rare.⁹ Asset owners can hedge their risk of falling prices by buying options and those who sell them can insure against the risks of small changes by delta hedging. However, as Henry Kaufman wrote in his autobiography, “financial options create risks that cannot be hedged perfectly without, in effect, undoing the transactions altogether.”¹⁰ Selling options is a profitable business in the long-term, but subject to large occasional losses. As *The Rise of Carry* explains, the longer volatility remains low, as it has in recent years, the more money is likely to be attracted into selling options and the greater becomes the risk that a sharp market fall will become a crash.

Sustained profits from option selling are usual and the losses rare, albeit severe. Businesses where managements participate in rewards during good times, but investors take the hit in bad ones, are therefore encouraged to take the uninsurable risks involved. *The Rise of Carry* argues convincingly that such misaligned incentives are common for hedge funds and other unincorporated entities. The high profit margins of financial companies seem therefore likely to greatly understate the level of risk in financial markets.

The published profits of non-financial companies in the S&P 500 Index include the profits made by their financial subsidiaries. A fall in financial profit margins will not therefore show up solely in lower profits by banks and insurance companies but will be partly reflected in the published results of non-financial companies. The incentive structures of quoted companies have also had a marked impact on the way profits are published, by encouraging managements to overstate the decline in profits in bad years and to overstate the subsequent recovery. This can be seen in the marked differences in the volatility of published profits before and after 2008 compared with those in the national accounts.¹¹ If, as seems probable, this pattern is repeated, profits as published in the next recession will again fall much more than those in the national accounts and add to financial instability.

⁷ *The Great Crash* by J.K. Galbraith Houghton Mifflin (1955).

⁸ *The Rise of Carry: The Dangerous Consequences of Volatility Suppression and the New Financial Order of Decaying Growth and Recurring Crisis* by Tim Lee, Jamie Lee, and Kevin Coldiron McGraw-Hill (2019).

⁹ Figure 26.

¹⁰ *On Money and Markets: A Wall Street Memoir* by Henry Kaufman McGraw-Hill (2000).

¹¹ Figure 68.

1928 and 2021.

The probability that a rise in risk taking is responsible for the exceptional level of financial profit margins is enhanced by the lack of other similarities in financial conditions in 1928 and 2021 as shown in Table 2.

	1928	2021
Broad Money 1 year change	4.26	13.15
Broad Money 3 year change % p.a.	3.82	14.20
Short-term interest rate	6.04	0.05
Long-dated bond yield	3.58	1.29
Yield gap	-2.46	1.24
Inflation 1 year	0.00	5.26
Inflation 3 year change % p.a.	-0.77	2.77

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