

Gibson's Paradox

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Thomas Tooke in 1844 is generally thought to be the first to observe that the price level and nominal interest rates were positively correlated (Blaug 1997). It was Keynes who christened it Gibson's paradox after Alfred Gibson, a British economist who wrote about the correlation in 1923 in an article for Banker's Magazine. Keynes called it a paradox in 1930, because there was no satisfactory explanation for it. He wrote that "the price level and the nominal interest rate were positively correlated over long periods of economic history" (Keynes 1930). Irving Fisher similarly had difficulties with it: "no problem in economics has been more hotly debated," (Fisher 1930) and even Milton Friedman was defeated: "The Gibson paradox remains an empirical phenomenon without a theoretical explanation" (Friedman and Schwartz 1976). Others also attempted to resolve it, ranging from Knut Wicksel (Wicksel 1936) to Barsky and Summers (Barsky and Summers 1958).

Monetary theory would suggest the correlation should have been between changes in the level of price inflation and interest rates. This is the basis upon which central banks determine monetary policy, and now that the gold standard no longer exists, it is probably assumed by those that have looked at the paradox that it is no longer relevant. This appears to be a reasonable explanation for today's lack of interest in the subject, with many professional economists even

unaware of it.

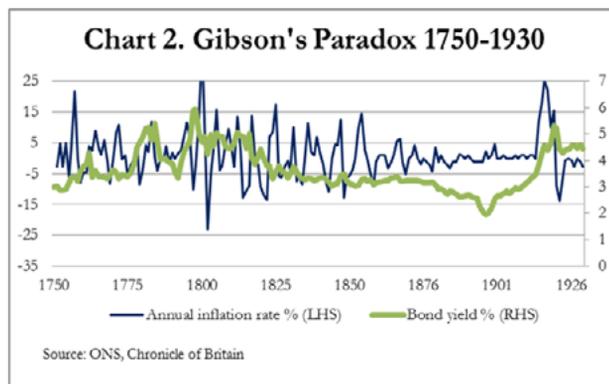
Those economists who have examined the paradox generally agree that it existed. The Author shows that the theoretical reasoning of the Austrian School leads to a satisfactory resolution of the paradox without having recourse to questionable statistical or mathematical methods.

The paradox

Gibson's paradox is based on the long-run empirical evidence between 1730 and 1930, a period of unprecedented change, when it was observed by Arthur Gibson that changes in the level of the yield on British Government Consols $2\frac{1}{2}\%$ Stock positively correlated with the wholesale price level. No satisfactory theoretical explanation for this correlation has yet been published. It is shown in Chart 1 (Note: annual price data estimates from the Office for National Statistics are only available from 1750).



The quantity theory of money suggests that instead there should be a strong correlation between changes in interest rates and the rate of price inflation. However, there is no discernible correlation between the two. Contrast Chart 2 below with Chart 1



If Gibson's paradox is still relevant it presents a potential challenge to monetary policy. The question arises as to whether it is solely an empirical phenomenon of metallic, or sound money,

or whether its validity persists to this day. If the paradox is solely a consequence of metallic, or sound money, it might pose no threat to the modern currency system; otherwise it may have profound implications if it is a general condition of free markets.

We can easily dismiss the suggestion that Gibson's paradox is a feature of the gold standard, or of metallic money. Over the period being considered, silver was in general circulation, though gold became increasingly important. Furthermore, the gold standard was only introduced after the Napoleonic Wars, and it never fully replaced the issue of unbacked banknotes. Under the Bank Charter Act of 1844, this question was polarised, because the Bank of England gained the monopoly of issuing new gold-backed banknotes in England and Wales, and banks were permitted to issue unbacked credit. Scottish banks continue to issue bank notes to this day, backed by instant-access reserves at the Bank of England. Therefore, there were from time to time large amounts of unbacked fiat notes in circulation before the 1844 Act, particularly during the Napoleonic Wars, and following the Act, substantial amounts of additional fiat credit were in circulation.

Furthermore, the late nineteenth century witnessed a rapid expansion in the quantity of above-ground gold, the result of discoveries in California, Australasia, South and West Africa. From 1730 to 1930, the period of observation, it is estimated that above-ground stocks increased from 2,400 tonnes to 33,000 tonnes. The British population increased at roughly half the pace of accumulated gold stocks. Therefore, it can be asserted that there was a degree of monetary inflation underlying the expansion of bank credit, and money supply was not as constant as the term metallic backing implies.

The errors in the quantity theory of money

At the outset of this paper it was stated that conventional monetary theory would suggest the correlation should have been between changes in the level of price inflation and interest rates.

The quantity theory as it is generally understood today dates back to David Ricardo, who ignored the transient effects of changes in the quantity of money on prices in favour of a long-run equilibrium outcome. In 1809 Ricardo took the position that the reason for the increase in prices at that time was due to the Bank of England's over-issue of notes. His interest in this respect glossed over the short-run distortions identified by Cantillon and Hume. In the Ricardian version an increase in the quantity of money would simply result in a corresponding rise in prices.

While this relationship is intuitive, it makes the mistake of dividing money from commodities and putting it into a wholly separate category. An alternative view, consistent with the theories of the Austrian School, is to regard money as a commodity whose special purpose is to act as a fungible medium of exchange, retaining value between exchanges. This being the case, it must be questioned whether or not it is right to put money on one side of an equation and the price level on the other.

This is not to deny that a change in the quantity of money for a given quantity of goods affects prices. That it is likely to do so is consistent with the relationship between the relative quantities of all exchangeable commodities. Furthermore, there is the issue of preferences

changing between the relative ownership of one commodity compared with another; in this case between an indexed basket of goods and money. Changes in the general level of cash liquidity can have a disproportionate effect on prices, irrespective of changes in the quantity of money in issue at the time.

By ignoring these considerations, it is possible to conclude that changes in the quantity of money in circulation are sufficient to control the price level. It is this assumption that Gibson's paradox challenges. To modern macroeconomists the price of money is its rate of interest, though to followers of the Austrian school, this is a gross error. To them, the price of money is not the rate of interest, but the reciprocal of the price of a good bought or sold with it. This is consistent with their contention that money is merely another commodity, albeit with a special function. Furthermore, under this logic money has several prices for each good or service, which will differ between different buyers and sellers depending on all the circumstances specific to a transaction. This is also consistent with the Austrian school's observation that prices are entirely subjective and they cannot be determined by formula.

Neo-classical macroeconomics today does not recognise this approach, and averages prices to arrive at an indexed price level. In contrast, Austrian school economists argue that mathematical methods are wholly inappropriate applied to the real world. Apples cannot be averaged with gin, nor can gin be averaged even with another brand of gin. Averaging the money-values of different products cannot escape this reality.

The rate of interest on money is an expression of its time-preference; and again, depending on what the money is intended to be exchanged for, its time-preference must match inversely that of the individual good. In other words, by deferring the delivery of a good and paying for it up-front it should be possible to acquire it at a discount. There is the possession of the money foregone, the uncertainty of the contract being fulfilled and the scarcity of the good, which all combine into a time-preference for a particular deferred transaction. The quantity theory of money ignores this temporal element in the exchange of money for goods, and erroneously concludes instead that the interest rate is the cost of borrowing or lending money.

This gives us an insight into why the quantity theory of money is flawed, and when we explore the Gibsonian relationship between interest rates and the price level it will become obvious why interest rates do not correlate with the rate of price inflation.

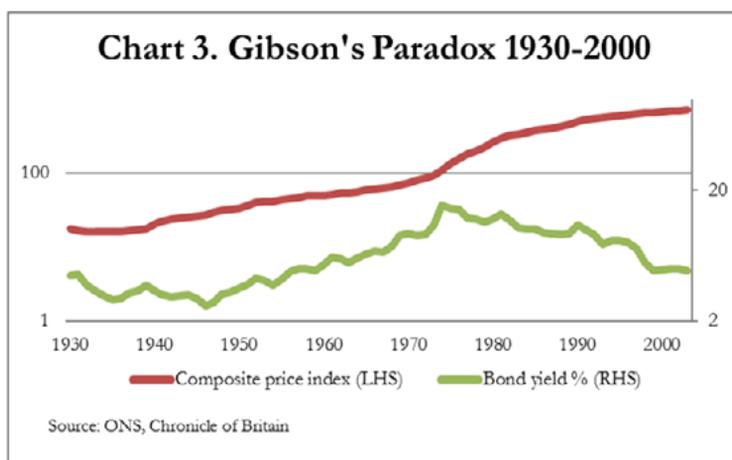
The resolution

In essence, we are discussing the flows between savers and investors, or put another way, deferred consumption and the acquisition of productive assets. The value to a businessman of a productive asset is the net present value of its total output. So he must allow for today's prices, his expectation of future prices, the interest cost and his anticipated profit. His starting point is always current prices for his goods. While his estimate of future prices is a subjective judgement, current prices are not. Therefore, the interest he is prepared to pay for investing in his business must be firmly based on the existing price level, hence the Gibsonian correlation.

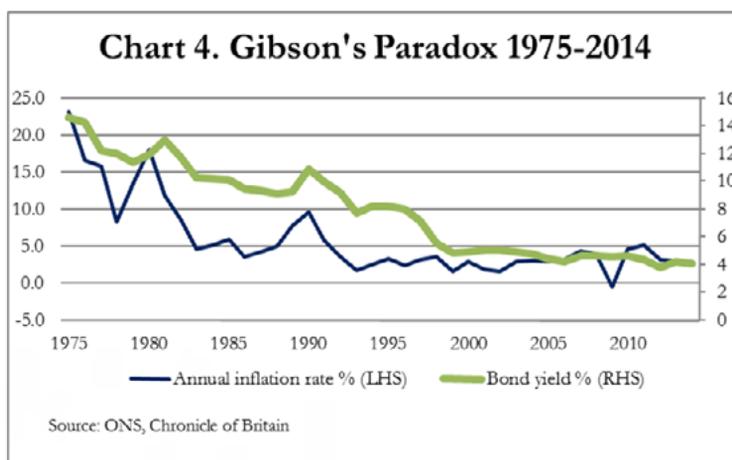
If we look at it from an Austrian business-cycle theory perspective, we can obtain further

confirmation that our conclusion is correct. We are concerned with the relationship between savers and the deployment of their savings into productive investment. The quantity of savings available is a consequence of the relative preference between goods and money. If this preference swings towards money, savings increase and the price level falls. Assuming the businessman wishes to continue to progress his business when prices fall, he will invest savings at an interest rate not set by the glut of savings, but by the price level of the products he will manufacture as a result of the new investment.

Thus, in a free market, the level of interest rates is set not by the savers, but by competing entrepreneurs and businessmen with reference to the prices expected to be obtained. Those who throughout history have accused capitalists of usury, and one should include those with an antipathy towards them, such as Keynes, have it the wrong way round. It is the use to which savings are put that drives interest rates, not the *rentiers*' greed.



Therefore, free market relationships, as defined by Say's law, are the underlying condition for Gibson's paradox, which persisted until the 1970s, as shown in Chart 3.



The use of logarithmic scales in Chart 3 has been introduced to emphasise that Gibson's

paradox, the correlation between term interest rates and the price level, held until 1975. Term rates peaked during a general economic crisis in the UK, five years before the US Federal Reserve Board raised short-term dollar rates to record highs in 1980/81. Subsequently, Gibson's paradox has not held, moving towards a correlation between term bond yields and the annualised inflation rate, as shown in Chart 4.

From 1975, the UK government through the Bank of England sought to reduce price inflation without creating unemployment. The widespread liquidation of malinvestments, which was previously a feature of every credit cycle, has been successfully prevented by monetary policy ever since. Instead, outstanding debt has accumulated in government and non-financial private sector accounts, so the interest rate relationship today is governed by the cost of refinancing the growing mountain of debt. When the Bank of England raises interest rates it does so either to respond to price inflation, or in anticipation of the effect of monetary inflation on prices. Consequently, the rise in interest rates is limited by the inevitable crisis that develops from the increased cost burden it imposes on accumulated debt. In every succeeding credit cycle the proportion of debt that supports unliquidated malinvestments grows, lowering the level at which cyclical liquidation is triggered. Every time the liquidation of malinvestments threatens, it has been prevented by the Bank of England rapidly reversing monetary policy by cutting interest rates aggressively and embarking on monetary expansion designed to offset any contraction of bank credit.

The end of the correlation between the price level and wholesale borrowing costs for the last thirty-five years has profound implications, the full examination of which is a subject for further study. However, for the purpose of this article, it is sufficient to note that state-sponsored monetary and economic policies, in the UK at least, have obtained the upper hand over free markets since the mid-1970s, evidenced by the breakdown in the correlation between the general price level and wholesale borrowing costs.

References

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