MONEY ILLUSION – A REAL PHENOMENON?

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The price mechanism is a fundamental cog in the self-equilibrating market machine of classical economic theory. Unfortunately, prices are not quite as flexible as the classics maintained. 'Sticky' prices, as they are euphemistically labelled, are a symptom of a much more serious ailment: money illusion. The ability of inflation to erode nominal worth is frequently misunderstood, and more generally, nominal values are erroneously interpreted as being real by supposedly rational economic agents. Charlie Nolan investigates the existence of this irrational anomaly. By considering a number of psychological biases and presenting a review of the empirical evidence, he concludes that the illusion is very real.

Introduction

> 'We have standardised every other unit in commerce except for the most important and most universal of all, the unit of purchasing power. What businessman would consent for a moment to make a contract in terms of yards of cloth, or tonnes of coal? And leave the size of the yard or tonne to chance? We have standardised even now the unit of electricity, the Ohm, the Kilowatt, the Ampere and the Volt. But the dollar, the most important unit of all, is still left to the chances of gold mining' (Fisher, 1913: 214).

Money illusion refers to the confusion of nominal values with real ones: 'An individual will be said to be suffering from money illusion if his excess demand functions for commodities do not solely depend on relative prices and real wealth' (Patinkin, 1965: 2). This paper will begin by examining money illusion and some other closely related psychological biases. By considering the empirical research undertaken by different sets of monetary economists, it is suggested that money illusion is very much a real phenomenon. There is a discussion of how

supposedly rational economic agents can be so easily confused, and why, in many ways, nominal values have become the bedrock of 'popular' economics. Some specific aspects of money illusion are explored, with special regard to the stock market and the housing market. Finally, the effects of money illusion on labour markets are reviewed.

Money Illusion and Related Psychological Biases

Money illusion is closely related to a number of other psychological biases. In a perfect world in which only real values matter, money is a veil and nominal prices have no bearing on decision-making. Life is not, however, based on textbooks, and some of the aforementioned psychological biases prevent the individual from piercing this 'veil' (Brunnermeier and Julliard, 2006). Life is dynamic, and irrationality may certainly exist in the short run.

The 'framing effect' states that alternative representations (framing) of the same decision problem can lead to substantially different behaviour (Shafir et al., 1997). The authors maintain that, to a large extent, an agent's performance depends significantly on whether a problem is phrased in nominal or real terms. Assuming that a problem is phrased in nominal terms, the agents will prefer the nominally less risky option to the other option, which is more risky in real terms. That is, they avoid nominal risk rather than real risk. The reverse is also true; a situation phrased in real terms will likely encourage the agent to avoid real risk over nominal.

These assertions led to empirical research in cognitive psychology which indicated that 'alternative representations of the same situation can lead to systematically different responses' (ibid: 343). Consider a person who receives a 2% rise in nominal wages in times of 4% inflation. Note that we assume this person is aware of inflation and momentarily ignore other factors such as the possible social significance of the salary rise. Naturally this person would be happier with the same nominal rise in times of no inflation. However, because this nominal change is positive, we expect him to be happier than with a 2% nominal wage cut in times of no inflation. This is despite the fact that the 'real' outcome of the two scenarios is identical, i.e. a 2% reduction in real spending power. Thus it seems that holding real change constant; people's reactions will be determined by nominal changes. Incredibly in some situations, a nominal increase may even offset a downward real change. Results from the studies carried out by these authors suggest that the preferences of many people are heavily affected by nominal values: 'The answers of many people indicate that not only do they believe themselves prone to money illusion but also that they expect others to be

affected by money illusion' (Shafir et al., 1997: 370).

'Anchoring' is a special case of 'framing' which is especially pertinent to the housing market. Holding real (replacement) cost constant, it has been shown that in times of changing relative prices, people's reactions will be determined by the change between an items current price and its historical, nominal anchor. Loss aversion thus occurs relative to a reference point, and that reference point can indeed be nominal, yielding further manifestation of money illusion. Genesove and Mayer (2001) document that investors are particularly reluctant to realise nominal losses, even if they are gaining in real terms.

It is alleged that money illusion is manifest in economic behaviour in three main ways. It is often given as a leading explanation for the phenomenon of 'sticky prices'. Money illusion can perhaps help explain why nominal values are slow to change even when inflation has caused real prices and costs to increase. A second anomaly that theorists have sought to explain is the the fact that contracts and laws are not indexed to inflation as frequently as one would expect based on the predictions of monetary theory. Indexed contracts are often only introduced very slowly as inflation picks up, and even more startlingly, partially disappear when inflation slows down. Governments frequently use contracts that are not indexed, or only partially so. Courts do not actually treat inflation the same as any other unexpected event, which destroys the value of a contract (Lejonhufvud, 1977). Thirdly, money illusion is evident in social discourse and the media. Even in familiar contexts and among people who, on one level, know better – frequent newspaper articles, news stories and other sources give accounts of unadjusted costs, charitable donations and salaries across time (Fehr and Tyran, 2007).

Why Have Many Economists Rejected the Idea?

Recognition of the possibility of money illusion has a long standing in economics. Indeed in 1928, Irving Fisher dedicated an entire book to it. That is not to say that the theory has always been held in high esteem among monetary economists. In actual fact the converse is true. Large circles of monetary economists, who maintain that agents act rationally, heavily dispute the existence of money illusion. Subscribing to nominal values in deference to real ones is clearly not rational, but may well happen irrespectively.

Nevertheless, developing equilibrium models that account for money illusion goes against the grain of 'rational' modelling. Commenting on the prevailing attitudes amongst professional economists, Tobin states that: 'An economist can, of course, commit no greater sin than to assume money illusion'

(Tobin, 1972: 5). The same economist said that a great way to ensure that an article would not be published in one of the 'prestigious' economic journals, was to associate the article or indeed its author with money illusion.

Money illusion has been anathema to the profession for a number of decades. The index of *The Handbook of Monetary Economics* by Ben Friedman and Frank Hahn (1990), for example, does not even mention the term. The intuition behind rational economic agents rejecting money illusion is two-fold. Firstly, the objective function of the individual must depend only on real magnitudes. Secondly, people must perceive that purely nominal changes do not affect their opportunity set: i.e. people have to understand that equi-proprtionate changes in all nominal magnitudes leave their real constraints unchanged. Whether or not people are, in fact, able to pierce the veil of money, i.e. whether they understand that purely nominal changes leave their objective circumstances unchanged is at the heart of the money illusion question.

The ambivalence with which the profession regards the idea of money illusion is probably best represented in Howitt's entry in *The New Palgrave Dictionary on Economics*:

> 'The absence of money illusion is the main assumption underlying the long run neutrality of money proposition of the quantity theory of money ….. Many economists have reacted adversely to explanations based on such illusions, mainly because illusions contradict the maximising paradigm of microeconomic theory and partly because invoking money illusion is often too simplistic an explanation of phenomena that do not fit well into the standard equilibrium mould of economics… the assumption is frequently invoked and frequently resisted…' (Howitt, 1987: 518).

How Does Money Illusion Confuse 'Rational' Economic Agents?

So have supposedly rational economic agents been duped by relying excessively on nominal valuations? Explanations of money illusion generally describe it in terms of heuristics. Nominal prices provide a convenient 'rule of thumb' for determining value, and real prices are only calculated if they seem highly salient. Such cases might include the signing of very long contracts, or in a period of very high inflation. A number of authors point to the 'ease, universality and salience' of the nominal representation, and the sophistication of the decision maker (Blinder, 2000; Patinkin, 1969; Shafir et al., 1997).

People attend to nominal value because they are salient, easy to use, and

in many cases provide a reasonable estimate of real worth. Furthermore, it fits with our generl perception that most objects around us, particularly units of measurement, do not regularly change. Fundamentally, it is considered easier and more natural to think in nominal rather than real terms. This tendency is likely to continue despite economists' attempts to educate the public (Fisher, 1928). The persistence of money illusion indicates that learning fails to eliminate this monetary phenomenon. Salience is not as important as accuracy however, and using nominal values in favour of real ones can clearly be highly misleading.

Empirical Research on Money Illusion

Irving Fisher was most likely the first person to use the term 'money illusion', in his 1928 book of the same name. To gather information for his research, Fisher took the logical step and conducted interviews in post-war Germany, a country suffering from huge price-level problems. He found significant evidence that people were suffering from money illusion (Fisher, 1928). Once again using Germany as their subject, Stefan Boes and Markus Lipp used a test is based on people's self-reported satisfaction with their income. In the absence of money illusion income satisfaction should remain unchanged if commodity prices and nominal income increase or decrease in the same proportion (Boes and Lipp, 2006). If, on the other hand, a proportional increase in prices and nominal income increases subjective wellbeing, then we have evidence for money illusion. Their findings overwhelmingly suggest the widespread existence of money illusion.

Shafir et al. (1997) have provided compelling evidence for the existence of the phenomenon, showing its affect on behaviour in a variety of experimental and real world situations. Money illusion would be observed if, in the presence of inflation, nominal accounting affected real decisions, a possibility recognised by Fischer and Modigliani (1978). Moreover, with changing relative prices, the effect of past nominal values on purchase or sales decisions would be tantamount to money illusion, even in the absence of inflation. This could manifest itself in a reluctance to sell a house, shares or other assets, which result in a nominal loss, and also in a reluctance to accept nominal wage cuts.

Money Illusion and the Stock Market

Several studies suggest a negative correlation between nominal stock returns and inflation (Litner, [1975]; Fama and Schwert, 1977). This appears puzzling since the Fisher relation implies that nominal rates should move one for one with expected inflation. One possible interpretation is that since inflation proxies for future economic conditions, higher inflation is associated with a bleak economic outlook (Fama and Schwert, 1977). Modigliani and Cohn (1979) used a different approach, basing this negative correlation on money illusion. They claimed that prices significantly depart from fundamentals since investors make two 'inflation-induced judgement errors'. Firstly, they tend to capitalise equity earnings at the nominal rate rather than at the real rate of interest. Secondly, they fail to realise that a firm's corporate liabilities depreciate in real terms. Hence stock prices are too low during inflationary periods. This idea has become known as the 'Modigliani-Cohn' hypothesis and has become the basis for further studies on the effects of money illusion on the stock market (see Cohen et al., 2005).

Money Illusion and the Housing Market

Money illusion can also have profound effects on the housing market, as discussed by Brunnermeier and Julliard (2006). The authors point out that a reduction in inflation can fuel a boom in house prices. For example, investors who formulate their decision on whether to buy or rent a house by comparing rent and mortgage payments are not taking into account the fact that inflation reduces the real cost of future repayments: 'they mistakenly assume that nominal and real interest rates move in lockstep' (Brunnermeier and Julliard, 2006: 2). People incorrectly attribute a decrease in inflation to a reduction in the real interest rate and thus underestimate the future costs of mortgage repayments. This mistake helps to encourage people to purchase property, consequently putting upward pressure on the housing market in times of reducing inflation.

By trying to isolate the fundamental components of house-price changes, such as land prices, economic growth, and property taxes, the authors aim to distinguish between 'fundamental' factors and those which are influenced purely by inflation. The close link between inflation and large run-ups in housing prices may well be attributable to money illusion. As stated above, inflation may lead people to erroneously believe that real interest rates on borrowings are lower than they actually are – thus confusing nominal and real terms.

So the current depression in the UK and Irish housing markets (where

sub-prime loans were not nearly as common as in the US) may indeed be partly attributable to the effects of money illusion. Recent increases in Irish inflation rates are now hurting homeowners and potential buyers as nominal interest rates are finally beginning to catch up with real ones.

Money Illusion in the Labour Market

In the short run, it is possible that workers may be more responsive to money wages than to real wages. Depending on the speed with which reliable information on wages and the price level becomes available, people may respond more quickly to changes in nominal wages. Only in the long run is it likely that the real wage is the most influential factor in the labour markets.

Money illusion is perhaps the most undeniable explanation of the 'wage-rigidity' phenomenon. Even in countries with persistently high levels of unemployment, nominal wages tend to be 'sticky' and unconducive to downward shifts. According to J.M. Keynes, the best way to expand employment is to reduce real wages by pushing up the price level. Economic agents, prone to money illusion, will fail to take account of their newly reduced spending power. If workers use nominal wages as a reference point when evaluating wage offers, firms can keep real wages relatively lower in a period of high inflation as workers accept high nominal wage increases. These lower real wages would allow firms to hire more workers in periods of higher inflation.

If workers are not prepared to accept a reduction in their real wages, brought about by wage cuts, then why should they accept a similar reduction engineered through price increases? According to Keynes, economic agents are prone to irrationality, so he actually advocated the controlled increase of inflation. In other words, not only did Keynes believe in the existence of money illusion, he actually supporteed its perpetuation as a method of helping the government finance the war effort! (Keynes, 1940)

Further analysis of the Phillip's curve, long regarded as the empirical embodiment of the Keynesian theory of inflation, occupies a more dubious position in latter macroeconomics. Nevertheless, money illusion may well be involved in the formation of inflation expectations. An eminent Neo-Keynesian, wrote:

> 'The Phillips curve idea is in a sense a reincarnation in dynamic guise of the original Keynesian idea of money illusion in the supply of labour. The Phillips curve says that increased money wages are in some significant degree prized in themselves even if

> they do not result in equivalent gains in real incomes' (Tobin, 1967 cited in Fehr and Tyran, 2001: 1244).

It has been suggested that, as a result of money illusion, the negative relation between inflation and unemployment as described by the Phillips curve may indeed hold – contrary to modern revisions of the model (Fehr and Tyran, 200).

Conclusion

> 'A small amount of individual level irrationality can have large aggregate effects'(Akerlof and Yellen, 1985: 139).

It would be wrong to suggest that everybody is guilty of placing excessive importance on nominal values. Some economists contend that people do understand the importance of basing decisions solely on real values. But, as the above quote from Akerlof and Yellen implies, even small illusory effects on an individual level can have large aggregate effects.

Perhaps the greatest problem facing the 'rational' economists battling the concept of money illusion, is the promulgation of nominal values throughout the media and everyday social discourse. As stated at the outset, nominal values have become the bedrock of 'popular', 'lay-man's economics.

The large number of empirical studies in this area, some of which have been discussed in this essay, offer indisputable evidence for the existence and indeed prevalence of money illusion in today's society. The phenomenon is not a purely economic one, having also been extensively studied in the realm of psychology and behavioural finance. The great John Maynard Keynes not only acknowledged money illusion but actually advocated using the phenomenon as a method of financing the war! It is hard to disagree with Blinder when he states that:

> 'In fact, I am persuadable – indeed, pretty much persuaded – that money illusion is a fact of life'(Blinder, 2000: 54).

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