



Are individuals in China prone to money illusion?

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ABSTRACT

We replicate the landmark study of Shafir, Diamond and Tversky (1997) to examine whether individuals in China are prone to money illusion. We find that money illusion is prevalent in China as well. Respondents in the Chinese sample are often somewhat more likely to base decisions on the real monetary value of economic transactions compared to respondents in the U.S. sample. If asked explicitly to evaluate a transaction in terms of happiness or satisfaction instead of economic terms, money illusion among respondents in the Chinese sample is comparable to money illusion among respondents in the U.S. sample.

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“It isn’t the sum you get, it’s how much you can buy with it, that’s the important thing; and it’s that that tells whether your wages are high in fact or only high in name.”

Mark Twain *A Connecticut Yankee in King Arthur’s Court* (1889)

1. Introduction

The term “money illusion” refers to a tendency to think in terms of nominal monetary values rather than real monetary values. The relevant literature presents various experiments to establish whether people are subject to money illusion, and various potential psychological causes that underlie this phenomenon. In this paper we examine how respondents in Beijing, China, respond to changes in inflation and prices, using the questionnaire designed and implemented by Shafir, Diamond, and Tversky (1997).

We set out to examine whether there is money illusion in China. In addition, we examine whether respondents in China tend to think in different terms about economic transactions than respondents in the United States, where the original questionnaire was held. Shafir, Diamond, and Tversky (1997) conclude on the basis

of the responses to the survey that money illusion is a widespread phenomenon in the United States.

Our survey-based findings suggest that money illusion is widespread in China just as it is in the United States. Respondents in the Chinese sample are often somewhat less prone to money illusion than respondents in the United States. If asked explicitly to evaluate an economic transaction in terms of happiness or satisfaction, respondents in the Chinese sample are as likely as respondents in the United States to prefer the transaction with the highest nominal monetary value instead of the economic transaction with the highest real monetary value.

As recent research shows that money illusion may play a much greater and more disruptive role in the economy than economists have allowed for in the past, both with regard to the functioning of the labor market (Gordon, 2013) as well as the housing market (Bernanke, 2010; Brunnermeier and Julliard, 2008), it is important to shed further light on the phenomenon in all its forms, and its implications for economic theory.

The outline of our paper is as follows. We first give a review of the relevant economic literature on money illusion. Next, in Section 3, we discuss potential occurrences of money illusion in China. Section 4 deals with the main contribution of our study, which is the survey and the responses, for which we interviewed many Chinese individuals. This unique dataset allows us to answer the question in the title. Table 1 describes the core results of our research. In Section 5 we conclude with a discussion of the main results and we suggest avenues for further research.

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2. Literature overview

In the early '20s John Maynard Keynes coined the term 'money illusion' to describe the tendency of people to be fooled by thinking in nominal rather than real terms, ignoring the effect of inflation on the purchasing power of money. A few years later Irving Fisher devoted an entire book to the subject (Fisher, 1928). But even though money illusion was recognized early on in the economic literature (see also Leontief (1936) and Patinkin (1965)), mainstream economists have generally considered money illusion an anathema, as the phenomenon is irreconcilable with the rational expectations postulate (Fehr and Tyran, 2001, page 1239).

That did not prevent Shafir, Diamond, and Tversky (1997) from drafting a fascinating questionnaire and collecting evidence that people often tend to think about economic transactions in both nominal and real terms, resulting in a bias toward a nominal evaluation. Shafir, Diamond, and Tversky (1997) conclude on the basis of the responses to their survey that money illusion is a widespread phenomenon in the United States.

There have also been more experimental approaches to money illusion. Using a pricing game with students in Switzerland as participants, Fehr and Tyran (2001) show that seemingly innocuous differences in payoff representation cause pronounced differences in nominal price inertia, indicating the behavioral importance of money illusion. Moreover, money illusion causes asymmetric effects of negative and positive nominal shocks. While nominal inertia is rather small after a positive shock, it is quite substantial after a negative shock.

Noussair, Richter, and Tyran (2012) find an asymmetry in the price response to inflationary and deflationary nominal shocks in a laboratory asset market situation as well. Fehr and Tyran (2008) show that deviations from individual rationality, i.e. money illusion on the part of individuals, can have important effects on aggregate outcomes. Daly, Hobijn, and Lucking (2012) show that downward nominal wage rigidities are the key reason that real wage growth has stayed relatively solid during the Great Recession in the face of high unemployment. The tendency of employers is to avoid cutting the dollar value of wages.

According to the Modigliani-Cohn hypothesis (1979), stock markets suffer from money illusion, discounting real cash flows at nominal discount rates. When inflation is high (low), the rational equity-premium expectation is higher (lower) than the market's subjective expectation, and the stock market is undervalued (overvalued). Cohen et al. (2005) show that the money-illusion hypothesis not only has implications for the pricing of the aggregate stock market relative to Treasury bills, but also for the pricing of risky stocks relative to safe stocks.

Brunnermeier and Julliard (2008) show that a reduction in inflation can fuel run-ups in housing prices if people suffer from money illusion. They mistakenly assume that real and nominal interest rates move in lockstep. Hence, they wrongly attribute a decrease in inflation to a decline in the real interest rate and consequently underestimate the real cost of future mortgage payments. According to Brunnermeier and Julliard (2008), inflation and nominal interest rates explain a large share of the mispricing in the U.K. housing market from 1966 to 2004. Genesove and Mayer (2001) show that loss aversion determines seller behavior in the housing market. Their findings suggest that sellers are averse to realizing (nominal) losses and help explain the positive price-volume correlation in real estate markets.

Bernanke (2010) asserts that mortgages with exotic features, which lowered monthly mortgage installments significantly, are to blame for the U.S. housing boom in the 2000s. This suggests not so much money *illusion* on the part of economic subjects, but rather money *delusion*. Regardless of the veracity of Bernanke's

claim, mortgages with exotic features accounted for less than 5 percent of total mortgage originations from 2000 to 2006 (Mees, 2011). Brunnermeier and Julliard (2008) find for the United States a similar link between housing market mispricing and inflation as for the United Kingdom.

Akerlof and Shiller (2009, Ch. 4) and Fehr (2007) discuss occurrences of money illusion in daily life and its impact on markets.

In view of the findings of Brunnermeier and Julliard (2008), Bernanke (2010) and Fehr and Tyran (2008), money illusion may be of greater economic significance than most mainstream economists allow for because of the interaction between the housing market, stock market and the real economy. Given its potential impact on the functioning of the economy, it is of interest to see whether money illusion also holds for China.

3. The occurrence of money illusion in China

Shafir, Diamond, and Tversky (1997) distinguish three phenomena in the real economy that suggest the existence of money illusion on the part of economic subjects.¹ One is that prices are sticky. A second is that indexing does not occur in contracts and laws in times of relatively low inflation, as theory would predict. The third occurrence is through conversation, rather than behavior, that is, people talk and write in ways that seem to indicate some confusion between money's nominal and real value. We would like to add a fourth phenomenon to the previous ones, which occurs at the intersection of asset markets and the real economy, and that is that parameters from the real economy (nominal interest rates, dividends) are used as yardsticks for asset pricing (Modigliani-Cohn hypothesis).

Within the context of China, which still has abundant characteristics of a centrally planned economy, price stickiness may primarily be the result of price and quantity controls.² Kim, Nan, Wan and Wu (2011), for example, find that significant price stickiness exists for U.S. imports from China. The mean duration is 11 months compared to 7 months for China imports from the United States. The price stickiness of U.S. imports from China however declined after June 2005, when China switched from a fixed exchange rate regime to a managed floating one (Kim et al., 2013).

Compared to the United States and Europe, you find in China less indexed contracts, which should not come as a surprise as China is still very much an economy in transition. Even in developed economies you do not find indexed contracts in nearly as many places as economic theory suggests they should be found. According to Shiller (1997), the history of the United States largely seems to be one of missed opportunities for indexation, with the possible exception of labor markets. U.S. debt contracts rarely protect creditors against inflation. As China is the largest foreign holder of U.S. treasuries and agency bonds, it is worthwhile to note that only few are so-called treasury inflation-protected securities (TIPS).

Liu (2010) suggests that money illusion may account to a large extent for the mechanism of sharp run-ups in stock prices in China during the low inflation period. There is no similar research available for China's still young housing market. Though Hong and Chen (2010) conclude that there is a strong correlation between mortgage credit and housing prices, the variation in inflation and mortgage rates over 10 years is insufficient to find a link between housing market mispricing and inflation.

¹ See Shafir, Diamond and Tversky (1997) for an in-depth discussion of money illusion in the United States.

² In an attempt to dampen inflation, the Chinese government in 2010 announced price controls and said it would put state commodity reserves (grains, edible oils and sugar) on the market when necessary in order to guarantee supplies (*China Daily*, November 17, 2010).

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