

“MENTAL ACCOUNTING, LOSS AVERSION, AND INDIVIDUAL STOCK RETURNS” (Authors: N. Barberis, M. Huang)

The point of this note is to explain the ideas in the above research paper without using any mathematics or technical jargon (the original paper contains both). The intended reader is someone who is interested in economics and finance but who is not an academic researcher. I welcome your comments on the ideas below, whether you agree with them or not; and also on the write-up itself -- for example, please let me know if it is confusing, so that I can rework it.¹

I'll start with a short summary, and then give the longer version.

SHORT SUMMARY

Some investors probably track their stock market performance at the level of their overall portfolio, i.e. they feel good when their stock portfolio does well, and they feel bad when it does poorly. Other investors probably track their stock market performance at the level of specific stocks that they hold, i.e. they feel good when one of their stocks does well, and they feel bad when it does poorly. In this paper, we argue that *how* investors track their performance – i.e. whether they use “portfolio accounting” or “stock-level accounting” – can affect the behavior of the stock market.

LONGER SUMMARY

A key ingredient in any model of the stock market is an assumption about how investors think about risk. Almost all the stock market models used by academic economists assume that investors evaluate risk using something called the “Expected Utility” framework. In 1979, however, two psychologists, Daniel Kahneman and Amos Tversky, published a paper in which they argued, based on extensive experimental evidence, that Expected Utility is *not* a good model of how people actually think about risk. They proposed in its stead a new model of their own. This model, known as Prospect Theory, eventually won Kahneman the Nobel Prize, and to this day, many researchers -- especially psychologists -- believe that it remains the best description we have of how people think about risk.

Prospect theory has a number of elements, but two of the most important are: (i) that people get pleasure and pain from “gains” and “losses,” respectively; and (ii) that they are more sensitive to losses than to gains, something that Kahneman and Tversky labeled “loss aversion”.

In this paper, Ming Huang and I try to figure out the implications, for financial markets, if investors think about risk in the way described by (i) and (ii). A key issue, one that is at the heart of our paper, is this. Kahneman and Tversky say that people get pleasure and pain from “gains” and “losses”; but in the context of the stock market, what *are* these

¹ This is a preliminary draft. Please do not quote or cite.

gains and losses? Are they gains and losses in the value of your stock market holdings? Or are they gains and losses in the value of specific stocks that you own? These are questions about “mental accounting,” a term coined by Richard Thaler to refer to the way people think about, evaluate, and keep track of their financial performance.

In this paper, we study two kinds of mental accounting and compare their predictions for financial markets. Under the first kind of accounting, investors derive pleasure and pain from gains and losses in the value of their *overall stock market holdings*, and are more sensitive to losses than to gains. We call this “portfolio accounting” because people are paying attention to the performance of their portfolio. Under the second kind of accounting, investors derive pleasure and pain from gains and losses in the value of *individual stocks* that they own, and are again more sensitive to losses than to gains. We call this “stock-level accounting”.

An example may help to clarify the difference between the two accounting systems. Suppose that you own a portfolio of three stocks – A, B, and C -- and that, over the course of a year, your holdings of stock A go up in value by \$1000, your holdings of stock B go down by \$1000, and your holdings of stock C go up by \$500. If you do *portfolio* accounting, you look at the performance of the overall portfolio, and, since its value went up by \$500, you feel good. If you do *stock-level* accounting, however, you look at the performance of each stock separately: you feel good about the performance of stocks A and C, but bad about the performance of stock B.

This example illustrates why mental accounting can dramatically affect your experience of the stock market. If you do portfolio accounting, you will note that your overall portfolio went up in value, and you will feel good about your stock market experience. But if you do *stock-level* accounting, and you are also much more sensitive to losses than to gains, then the pain of the loss on stock B will outweigh the pleasure of the gains on stocks A and C. Overall, you will feel bad about your stock market experience.

Applications

Having introduced the two systems of mental accounting, Huang and I look at what each of them implies for the behavior of the stock market – we look, for example, at what each of them implies for the long-term average return of the stock market, for the volatility of individual stocks, for the volatility of the stock market, and for the relative performance of different groups of stocks.

Let me focus here on just one dimension – on what the two systems of accounting predict about the long-term average return of the stock market. We find that, if investors do *portfolio* accounting, then the average return on the stock market has to be quite high. Why? Someone who does portfolio accounting reasons like this: “If my portfolio goes up next year, I’ll feel good. But if it goes down, I’ll feel really bad. So, overall, the stock market seems quite risky to me”. To compensate for this high perceived risk, the stock market must earn a high average return.

Huang and I also show, however, that, if investors use *stock*-level accounting, the average return on the stock market will be even higher. The reason is that people who do stock-level accounting focus on the fluctuations of individual stocks – and since individual stocks are much more volatile than a portfolio of stocks, these fluctuations will appear very alarming. As a result, these investors perceive the stock market to be *very* risky. The stock market therefore needs to earn a very high average return to compensate.

The 20th century experience

The line of thinking we have just described leads to an interesting interpretation of U.S. stock market behavior over the 20th century. In the *first* half of the 20th century, mutual funds were not common – to get exposure to the stock market, people invested *directly* in individual stocks. This suggests that, at the time, stock-level accounting was quite common: many people probably tracked their performance stock by stock. Towards the *end* of the 20th century, however, mutual funds became very popular. This probably shifted investors towards *portfolio* accounting: after all, mutual funds group stocks into portfolios and report the performance of those portfolios.

Above, we argued that, under stock-level accounting, people perceive the stock market to be more risky than under portfolio accounting. Therefore, if, over the course of the 20th century, there was a shift from stock-level accounting to portfolio accounting, there would also, concurrently, have been a shift in perceptions about the stock market – in particular, a shift towards viewing it as *less* risky. This, in turn, would have led to people to push the value of the stock market up. Perhaps this is one reason why the stock market *did* rise dramatically in the final two decades of the 20th century.