

Table 1.10 Applications of prospect theory to economics

Domain	Phenomenon	Description	References
Labour economics	Downward sloping labour supply curve	NYC cabdrivers quit around daily income target	Camerer <i>et al.</i> (1997)
Consumer goods	Asymmetric price elasticities	Purchases more sensitive to price increases than to cuts	Hardie, Johnson and Fader (1993)
Welfare-economics	Insensitivity to bad income news	Consumers don't cut consumption after bad income news	Shea (1995), Bowman, Minehart and Rabin (1999)
Consumer choice	Status quo bias	Consumers do not switch health plans, chose default insurance	Samuelson and Zeckhauser (1988), Johnson <i>et al.</i> (1993)

Source: Reproduced with permission from 'Prospect theory in the wild', C. Camerer (2000) by Cambridge University Press.

already (i.e. the house's money) than if they started the evening on a losing streak

(Figure 1.17).

13.3.1 Application: Implied Equity Risk Premium and TAA

Dynamic prospect theory looks highly useable. It clearly shows that risk perceptions change dependent upon prior returns. Put into a market context — when a stock or market has done well, investors charge less for accepting the risk. This tallies exactly with what we observe when we back out an implied equity risk premium from the market. I tend to use a very simple method for deriving the implied equity risk premium. I take the current dividend yield on the market plus the long-term growth rate (generally nominal GDP growth) minus the current 10 year bond yield. It isn't sophisticated in any sense, but it does give a quick and dirty sense as to where in the investors' risk tolerance cycle we are.

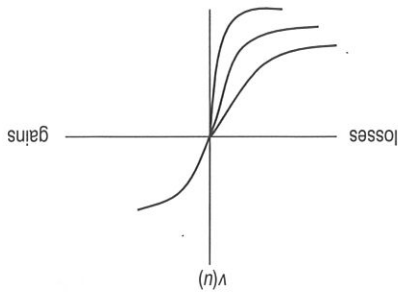


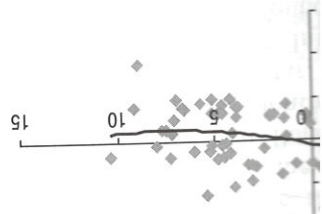
Figure 1.17 Shifting value functions

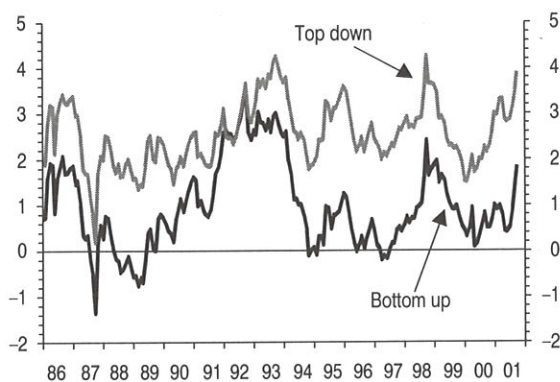
over one-shot games — i.e. no repeats cover decisions in a dynamic context of risk changes dependent upon prior people's attitudes to risk changed over more willing to take a gamble if they were more willing to take a gamble interpreted money. Thaler and Johnson interpreted if they occur after prior gains, and more result of their experiment was to show that This is also known as the house money. This is also known as the house money more willing to bet money they have won

has been particularly useful. Table 1.10 more (2000) is an excellent short survey are turning to prospect theory to explore that can benefit from a healthy dose of market has done well, investors charge less for accepting the risk. This tallies exactly change dependent upon prior returns. Put into a market context — when a stock or Dynamic prospect theory looks highly useable. It clearly shows that risk perceptions

are is a highly non-linear relationship VIX traders' pricing. A 5% month on 30% increase in implied volatility. A 5% ated with a mere 8% decline in implied

tion and VIX





**Figure 1.18** Implied equity risk premium

Data Source: Thomson Datastream.

As a check I construct a ‘bottom-up’ implied equity risk premium (ERP) by doing the same calculation as above, but replacing the nominal GDP growth rate with the product of the current payout ratio multiplied by the long-term earnings growth forecast from bottom-up analysts (from I/B/E/S).

As you can see from Figure 1.18, the implied ERP does drop during long bull market during which investors build up a store of gains, and then it starts to rise as prices start to drop, slowly but surely eroding the gains in the store. Indeed, if you had been watching this measure you might even have spotted the peak of the US market in early 2000 — when the implied equity risk premium reached the same lows it did in 1987!

## 1.4 CONCLUSIONS

This chapter serves as a brief introduction to the psychological biases that plague investors. If you are anything like me, then a lot of these biases will ring all too true. The high priests of market efficiency say that whilst all of this is interesting it is irrelevant — efficient markets don’t require all participants to be rational. Instead, they require only that some are rational, and they will drive the rest out of business. Plus, many of these biases suggest over-reaction, and others suggest under-reaction, efficient market zealots tell us that they cancel each other out. As we will see in the next chapter, psychological biases do affect prices, and to such an extent to make arbitrage a risky business for the hyper-rational amongst us.

## Imperfect Markets

Traditional Finance is more concerned with the price of one bottle of ketchup is close to the price of one of the 16 oz bottle

To make a parrot into a learned financial analyst — arbitrage

The market can stay irrational longer

It were not best that we should all be rational — makes horse races

## 2.1 IN

At the very heart of the standard approach to finance is the assumption of riskless — that the market mechanism will ensure that the price of identical goods must have identical prices. The assumption of ‘no arbitrage’ (no arbitrage) is embodied in just about every aspect of financial pricing to corporate capital structure. In this chapter, investors as a whole can and do experience random blips of efficient markets, but the extent of predictable outcomes of psychological biases. Economists are fond of trotting out the argument that identical goods must have identical prices. The same price (expressed in pounds) in London and New York. In the case then silver would flow from London to New York. This is expected to hold in perfectly competitive markets with no barriers to trade. Students of international finance studying the imperfections that can exist in financial markets. However, finance students are aware that high and low barriers to entry ensure that international financial markets.

However, as we have already shown, the market mechanism does not ensure that identical goods must have identical prices. In the case study on the forward bias puzzle, we showed that LOOP simply didn’t describe the data. This chapter will explore other aspects of market imperfections and explore the impact of these violations of

### 3.9 TIMING THE SWITCH

#### 3.9.1 The Equity Risk Premium

One of the measures that we have found to be successful at timing investors' style rotation has been the implied equity risk premium. If the rotation between value and growth is driven by an investor's subjective beliefs, then we need to find proxy measures for the fear and greed inherent in the equity markets. We construct a very simple measure of the implied equity risk premium.

Here we define the implied equity risk premium as follows:

$$\text{Implied ERP} = (100/12 \text{ month forward consensus PE}) - \text{Long-term growth}$$

— Current 10 year bond yield

We generally use the long-run economic growth rate as the proxy for long-term growth, as it is impossible for dividend/earnings growth to exceed economic growth in the very long run. Figure 3.11 shows the relationship between value/growth and the implicit ERP for the US market. It certainly seems to capture the turning points relatively well.

The reason that the ERP seems to work lies in the fact that the ERP can be seen as a proxy for investors' time horizons. As we showed in Chapter 1, Benartzi and Thaler (1995) have combined prospect theory and myopia to discuss the ERP. They produced the chart in Figure 3.12 showing the linkage between time horizon and ERP.

Value and growth also have an interpretation in the time domain. As Dechow, Sloan and Soliman (2001) show, price to book serves as a noisy proxy for implied equity duration. Duration is a concept more usually associated with bonds than equities. However, it can be useful to think in terms of equity duration. Essentially, duration refers to the change in an instrument's return for a one percentage point interest rate move. The measure captures not only how much return an investor might expect, but also when to expect it. Duration can be thought of as a weighted average maturity, and hence it is measured in years. For example, consider two 30 year bonds — similar in

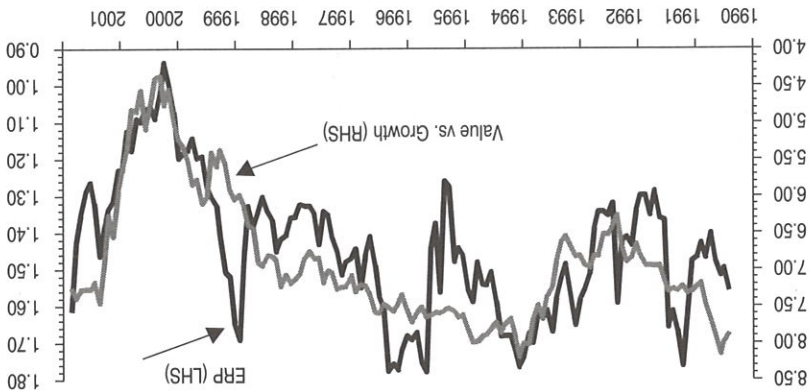


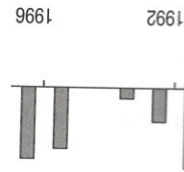
Figure 3.11 Implied equity risk premium and value vs. growth  
Data Source: Thomson Datastream.

Behavioural Finance

cross the various categories. Piotroski  
He formed market to book quintiles  
ed as value stocks. This yields a final  
s are measured as one year buy and  
(those with 0 or 1 score) and high  
portfolio consistent with the extant  
it is highly concentrated. Only 43%  
ear following formation. Sorting on  
formed. This is of course in direct  
return on low price to book stocks  
Table 3.7).

NOBS

57
339
859
1618
2462
2787
2579
1894
1115
333



Financial vulnerability  
al of Accounting Research,  
shers.