

Risk and Uncertainty

We conclude our discussion of financial markets with some discussion of the role of uncertainty. Uncertainty simply means that we do not know what is going to happen. When we are able, however, to put odds on an uncertain outcome, we call this risk. A simple example is a coin-flip. We do not know if it will be heads or tails. But we know the odds are 50% for each. It is a risky outcome. Financial markets are pretty good at dealing with risk. We have already seen several examples:

1. In bond markets, we must estimate the risk of default and the cost of that default: will I lose 25% of my loaned funds, or will I lose 100%.
2. In mortgage markets, we must do the same. What are the odds a borrower will default? How much will it cost the lender if they have to foreclose on the home?
3. What are a firm's future dividends going to be? What are the odds they grow rapidly? What are the odds that the company goes bankrupt?
4. What are future rents going to be?

Suppose for example, that we observe the spread between corporate debt and Treasury yields go up. It is tempting to conclude that this is because we have determined that corporations are more likely to default. This could be the case. It turns out, however, that there is another possible explanation. The taste for risk varies over time. Specifically, during bad economic times, and for reasons that are not yet well understood, participants in financial markets become more risk averse. Lenders, for example, require higher risk premiums, even if the odds and costs of default are unchanged, during bad times. In contrast, when times are good, people become less risk averse. Lenders may require smaller risk premiums, even if default odds and cost are unchanged.

The following chart examines the risk premium in corporate debt. It breaks it down into two parts, default risk and the taste for risk. The statistical techniques used to break risk premiums down into

these two parts is well beyond the scope of this class. It is interesting to note that the taste for risk appears to be a very good economic indicator.¹

Figure 1: Excess Bond Premium



This result ties into a popular view of recessions. During recessions, people across the economy appear to be more risk averse. This causes consumers to pull back. Firms reduce their investment. Both of these lead to reduced aggregate demand. The field of macro-finance seeks to better understand the relationship between risk aversion and the business cycle.

¹This breakdown is taken from: Gilchrist, S., and E. Zakrajsek. 2012. "Credit Spreads and Business Cycle Fluctuations." *American Economic Review*, 102(4): 1692-1720.

Ambiguity

So far, we have discussed risk, where the outcome is uncertain but the odds are known. Now suppose that we do not even know the odds. There is some chance that a stock price soars and some chance that it crashes. But we cannot quantify these odds. This is ambiguity.

Financial markets are good at dealing with risk. They struggle, however, with ambiguity. Mathematical models do not work. Often, markets fail in that there is no price that buys and sellers can agree on. Ambiguity is usually not a major issue in financial markets. Occasionally, however, it can be a major problem during moments of financial distress. Consider a couple of recent examples:

1. During the Global Financial Crisis in 2008, the housing market crashed. For a while, markets were unable to quantify the risk associated with mortgages. The mortgage market failed, making the crisis worse.
2. At the start of covid-19, we could not quantify the risks of the virus: how contagious was it?, how fatal it was? etc. As a result, the public pulled back more than it would have had it known the odds. This made the recession that accompanied covid-19 worse.