

Week 1 – An Introduction to Behavioural Finance

Humans make predictable, repeatable & consistent mistakes in financial decision making & it is very hard to see them! BF uses insights from cognitive psychology to explain many mistakes.

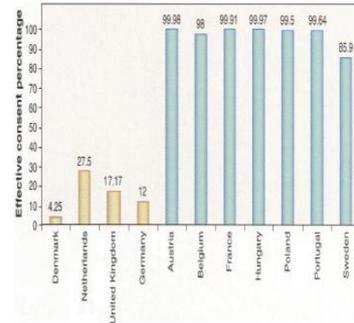
Organ Donation – Do Defaults Save Lives, Johnson & Goldstein, 2003

🚩 Countries on the Right (Explicit Consent Countries)

- Check the box **if you want to participate** in the organ donor program
 - People don't check the box

🚩 Countries on the Right (Presumed Consent Countries)

- Check the box below **if you don't want to participate** in the organ donor program
 - People don't check box



In an experiment, 42% opted into donation, 82% of the opt out & 79% of the neutral groups also donated. And 16.3% increase in actual donations in real life when donation is the default.

Possible Reasons – Why Do People Not Check the Box?

1. When people do not know what to do, they pick what has been chosen for them already (*the default or status quo*)
 - a. Changing the status quo involves a trade-off & losses loom larger than equivalent gains – loss aversion
2. We are susceptible to external influences when decisions are complex
3. **Large impact** when preferences are not well articulated or the decision is complex
4. **People Procrastinate** – making a decision involves effort (*forms, calls etc.*), accepting default is effortless
 - a. Avoid making an active decision regarding organ donation – *unpleasant & stressful (emotional & cognitive costs)*

Physician/Patient Study - Redelmeier & Shafir, 1995

You've told your patient to have a hip replacement, but you have realised you forgot to try 1 medication. Do you cancel the hip replacement? The majority of physicians tried the medication. You've told your patient to have a hip replacement, but you have realised you forgot to try 2 medications, X & Y. Do you cancel the hip replacement? If you do which medication do you try, X or Y? The majority of physicians let the patient go.

Take Home Message

The default option (*status quo*) has a huge influence when the alternative is complex. *If we pulled the patient back we face a complex decision between X or Y → Complexity of the alternative action makes the default option more attractive. Real estate agents know if they want to make a sale, they shouldn't show you too many houses.*

Rome or Paris?

Choice between an all-expense paid trip to Rome or Paris? No option dominates. Now we look at the decoy effect; Choice between a trip to Rome all expenses paid, a trip to Rome without coffee included, or a trip to Paris? Rome.

The Dollar Auction

Common for final bids to be within \$30-\$70. **BAZERMAN, 1992** conducted an auction where the final bids were \$204 & \$203. The auction is driven by **greed** → then **fear** → then **suicidal vengefulness**.

- At first, people are interested as they are greedy for cheap money. Once at \$8-\$10, greedy drop out leaving top 2
- Then, the top 2 battle it out to be the highest bidder (*so that they aren't the 2nd highest who loses money*)
- From here, the top bid does not care how much he loses, so long as it is less than the lower bid, & the lower bid drives up his bid to make the winners victory hollow (*also don't want to be the loser*)

“This is the logic of market giants who engage in mutual bloodletting to avoid being handed the 2nd best label”. This can also be seen in M&A *the 1988 sale of RJR Nabisco*. There are other forces driving human negotiation than reason *scarcity effect*.

Why is it Important to Understand Our Cognitive Limitations?

Behavioural Finance 1: If we account for people's cognitive limitations, we can explain market phenomena that are puzzling in a framework with rational agents; (BF1's decision/price linkage).

Behavioural Finance 2; When we build stock markets, retirement & healthcare systems, we need to account for our cognitive limitations. Purpose of BF2 is we try to understand individual decision making in financial environments

Week 2 – Limits To Arbitrage

Traditional Finance

The traditional paradigm assumes agents are rational. In this world, markets are efficient & prices reflect. However, there are some empirical anomalies (*deviations from fundamental value*).

Classical Objection – although some agents may not be fully rational, rational agents will ensure they don't influence security prices for long via the arbitrage process. Because mispriced assets create opportunities for riskless profit (FRIEDMAN, 1953), rational traders will undo any dislocations caused by irrational traders, i.e. speculation is stabilising; irrational agents cannot affect prices too much & even if they can, will lose money & disappear.

Rebuttal – limited arbitrage theory shows if irrational traders cause deviations from FV, these deviations will be persistent

Example of a Free Lunch; Ford FV = \$20, A Group of Irrational Traders Push Price to \$15.

Rational traders will buy security at bargain price (\$15) & hedge their bets by shorting GM (a perfect substitute security at \$20 – same cash flows). **Today** = +\$20 - \$15 = \$5 profit. **Tomorrow** = \$0 for sure (no risk) = Free lunch. The buying pressure on Ford means the price rises to its FV.

Friedman's Argument – 2 Debatable Assertions

1. **As soon as a mispricing occurs** (*deviation from FV*), an attractive arbitrage opportunity is created
 - a. Friedman's 'rational arbitrage strategies' are not necessarily arbitrage opportunities because they're often risky.
 - b. *Note:* because prices are different to FV does not mean there are excess returns for the taking
2. **Rational traders will immediately want to exploit the opportunity**, thereby correcting the mispricing
 - a. Rational speculation can be destabilising (*in some contexts*)

Limits to Arbitrage; strategies designed to correct mispricing can be both risky & costly, allowing the mispricing to survive.

Destabilising Arbitrage; *mispricing's + positive feedback traders*

When mispricing occurs in the presence of positive feedback traders – traders who buy (sell) after a price increase (decrease) – arbitrageurs earn money by accentuating the mispricing. Both points above establish that in an economy where rational & irrational agents interact, irrationality can have a substantial & long lived effect on prices.

Limits to Arbitrage

Fundamental Risk – Imperfect Substitutes

Substitute securities are rarely perfect. In the previous example, GM is an imperfect substitute. Arbitrageurs face the risk of bad news specific to GM's FV i.e. shorting GM provides a limited hedge as it doesn't protect against adverse news specific to Ford. Since many arbitrageurs are risk averse & not well diversified → fundamental risk makes arbitrage less attractive.

Noise Trader Risk – Price Momentum/Uncertainty

Individual investors pick stocks based on their research or advice of gurus – i.e. they act on noise ("Noise Traders", Black, 1986). There is a risk that noise trader's beliefs will not revert to their mean for a long time. For example, the pessimists causing Ford to be undervalued become more pessimistic – lowering the price further – don't know what the price will be in

the short term! This causes the arbitrageur to liquidate & suffer a loss before the price recovers as they have **SHORT INVESTMENT HORIZONS** (making short term uncertainty important) [SHLEIFER & V, 1997](#)

- Arbitrageurs manage the \$ of investors who don't know what the arbitrageur is doing (allocate based on past ST returns)
- Investors see arbitrageur lose money → incompetent → **withdraws \$** → arbitrageur forced to liquidate prematurely
 - Fear of premature liquidation makes the arbitrageur less aggressive in combating mispricing

But why can't they convince investors to provide LT capital if the contrarian strategy will pay in the long run? "Because arbitrageurs themselves are not convinced they should commit their capital to arbitrage". [BRAV & HEATON, 2002](#) state that **arbitrageurs are uncertain of the existence of arbitrage able mispricing** i.e. *will price return to alleged FV.*

✚ Mispricing due to structural uncertainty or maybe the presence of irrational traders

✚ Elimination of mispricing may require the participation of many rational arbitrageurs

[DE LONG, SHLEIFER, SUMMERS, WALDMANN, JPE 1990](#), claim that the **unpredictability of noise traders' opinions** makes **arbitrage less attractive**. In fact, noise traders may earn higher average returns than arbitrageurs since assets subject to noise trader risk can be under-priced (if noise traders are minority $D_r > D_n$). *Noise trader risk makes assets less attractive to ST arbitrageurs* → *prices fall* → *noise traders invest in under-priced securities which means they can earn excess returns by bearing more of the risk they created themselves*. Friedman is wrong about irrational people surviving only in ST.

Implementation Costs: Short Sale Constraints

- 1) **Transaction Costs** – fee charged for borrowing a stock
 - a. **Horizon Risk** → risk that mispricing takes long to correct that any profits are swamped by accumulated transaction costs (applies even when no 3rd party will force the arbitrageur to liquidate early)
- 2) **Legal Constraints** – pension/mutual fund managers may not be allowed to short sell

Arbitrage Can Be Destabilising – Stabilising vs. Destabilising Rational Speculation

In cases we've looked at, arbitrageurs have dampened price movements (stabilising influence) pushing price back to FV. In some cases (with positive feedback traders) rational speculation can be destabilising. Positive feedback trading is sourced from **adaptive/extrapolative expectations** (forecasted returns based on latest realisations)

Evidence of Positive Feed Back Traders

- Investors in the 1987 crash sold following price declines as they anticipated further price falls ([SCHILLER, 1988](#))
- Investors who've done well in 401k accounts save more than those with poor experiences ([CHOI, 2009](#))
- Stop Loss

Betting on Future Crows Behaviour

Rational speculators **anticipate** that a price increase today would cause further price increases by positive feedback traders tomorrow. *i.e. buy heavily today* → *prices rise* → *positive feedback traders buy* → *higher prices*. [DE LONG, SHLEIFER, SUMMERS, WALDMANN, JPE 1990](#) Found this

1. **Accumulation** – purchases by smart money in anticipation of price rise
2. **Distribution** – the smart money sells to positive feedback traders
3. **Liquidation** – prices return to FV's

Cases of Mispricing's

Evidence that Arbitrage is Limited

Examples of persistent mispricing must be limited arbitrage. If it weren't, the mispricing would disappear. In order to claim $FV \neq Price$, one must test both the mispricing & a model of discount rates. However, there are some certain mis-pricings.