

# A Tour of Market Imperfections

(Welch, Chapter 11)

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# Warning

## Do not confuse:

1. PCM-consistent differences in promised RoRs;
  - ▶ default premium.
2. PCM-consistent differences in expected RoRs;
  - ▶ term premium, risk premium.
3. ICM-caused differences in expected rates of return, not consistent with PCM.
  - ▶ many other premia.

# Typical Bond Spreads

Most of the yield spread of big corporate bonds is probably due to higher objective default probabilities.

- ▶ Boston Celtics = 9.4% when T-Bond = 5.6%.
- ▶ The  $\Delta$  of 3.8% is *not* even primarily a higher  $E(R)$ .
- ▶ On average, such bonds will probably pay around 6%.
  - ▶ (Over many firms [like the Celtics], recessions and booms.)
- ▶ And all exp return premia together may be about 0.4%.

# 1. Opinions and Disagreements

# Uncertainty is not ICM

- ▶ Opinions = Differences in information or information interpretation.
  - ▶ Without uncertainty, there can be no information differences.
  - ▶ But uncertainty does not imply information differences.
  - ▶ For example, roulette has only high uncertainty, but no (reasonable) opinion differences.

# Sources

- ▶ Differences of opinion can be behavioral and irrational,
- ▶ ...or *rational* **insider information**
  - ▶ not necessarily illegal to trade on;
  - ▶ customer, suppliers, managers, etc., all may have different information.

## Even Large Companies

- ▶ Larger CFOs of publicly-traded corporations, on their own financial market valuations in 2020:

Opinion	Undervalued	Correct	Overvalued
CFOs	84%	13%	3%

# More Serious For Small Companies

- ▶ Some entrepreneurs know that they have something truly special,
  - ▶ but almost all believe they do.
- ▶ Almost all entrepreneurs believe that they will succeed
  - ▶ Entrepreneurs are notoriously overconfident.
  - ▶ They are often objectively bad risks.
  - ▶ Their higher borrowing rates (credit cards?) often just properly reflects their credit risk, not ICMs.
- ▶ Survivorship bias on graduation speeches!
  - ▶ “You must follow your dream!”



# Opinions and Disagreements

- ▶ Small firms with a lot of uncertainty and disagreements may have to pay (suffer):
  - ▶ higher default premia,
  - ▶ higher risk premia (likely less for bonds),
  - ▶ higher information (expertise) premia,
  - ▶ higher transaction cost premia,
  - ▶ higher liquidity premia, etc.
- ▶ Small firms usually suffer **The Full Monty**.
  - ▶ ⇒ Often difficult to decompose real-world spreads.

# How To Mitigate Information Asymmetry?

- ▶ What mechanisms can mitigate disagreement?
- ▶ PS: What kind of firms benefit most from reducing information asymmetry?
  - ▶ Moody's,
  - ▶ Credit Bureaus,
  - ▶ Sothebys,
  - ▶ Zillow's Z-estimates?

## 2. Liquidity

# Making Markets

- ▶ “Making markets” is big (or even most) business.
- ▶ “Making markets” more perfect or mitigating market imperfections are profitable businesses,
  - ▶ ...as long as you can do so more efficiently,
  - ▶ ...and extract some rents from buyers and sellers.
  - ▶ Think of Uber, AirBnB, Amazon, etc., as making markets

# Transaction Costs

- ▶ Try to think of *round-trip* transaction costs.
- ▶ When you buy a house, the seller pays realtor agents commission, usually 5%.
  - ▶ This does not mean that you, as a buyer, are not implicitly paying for this, too!
  - ▶ If the seller did not have to pay this commission, the seller would accept a lower price.
  - ▶ This transaction cost eats up more than 25% of your equity investment the moment you close.

# Relative X-Costs

- ▶ What does it cost to buy or sell a \$1 million in Intel Corp shares?
  - ▶ say on Dec 31, 2021
    - ▶ about 92,000 INTC transactions on NASDAQ alone,
    - ▶ with about 16.3 million shares, and
    - ▶ price was \$51.50 at end of day.



- ▶ Think  $0.06\% \cdot 1m \approx \$600$  for INTC for each side,
  - ▶ of which 0.04% was \$0.02 bid-ask on \$51.50 share price,
  - ▶ another 0.01-0.03% would be price impact,
  - ▶ mitigateable with smart trading throughout the day.
  
- ▶ What does it cost to sell a \$1 million house?



- ▶ Think 5% commissions, 1% other fees, 1-2% waiting (empty) time, etc.
  - ▶ another 1% on buyer.
- ▶ Think \$100,000 round-trip.
- ▶ Compare \$1,200 vs. \$100,000.
  - ▶ Financial equity shares are almost PCM.
  - ▶ Housing markets are highly ICM.
  
- ▶ PCM formulas work better in stock markets than in real-estate!

# Transaction Costs

- ▶ How do you take care of transaction costs in NPV?

# What is a Liquidity Premium?

- ▶ **Liquidity Premium:** An extra expected RoR to induce you to hold something that may (suddenly) be tough to resell if/when you are in a hurry.
- ▶ This seems more important than it should be.
  - ▶ Very big in the Great Recession (2008) for bonds.
  - ▶ The liquidity premium seems to have a strong interaction with economy-wide financial slack and aggregate borrowing.
  - ▶ Advice: Keep some dry powder! Do not become meat!

# Liquidity Provision as Business

- ▶ Making markets more perfect:
  - ▶ Wall Street I-Bank desks.
  - ▶ Wholesalers
  - ▶ Retailers and Dealers
  - ▶ Amazon?
- ▶ Specialty Dealers and Funds
  - ▶ car gurus? autotrader?
  - ▶ trade-a-plane? barnstormers?
  - ▶ Google??

### 3. Taxes (See Slides)

- ▶ See [c11-imperfect-3.pdf](#)
- ▶ Complex and Painful.

# Often Premia Are Hard to Disentangle

- ▶ but probably contain a good deal of imperfections.
- ▶ like [Supreme Court definition of pornography](#).

	High Liq	Low Liq
BB or worse:	330 bps	380 bps
Short	130 bps	170 bps

(Source: Kelly, Palhares, Pruitt, 2021)

# Guess-Compare Premia For Equity and Stock

- ▶ Term premia are
- ▶ Risk premia are
- ▶ X-cost premia are
- ▶ Liquidity premia are
- ▶ Tax premia are

# Interaction Effects

- ▶ I give up. With taxes and inflation, life is just too difficult. What shall I do?



# Nominal Rates of Return

- ▶ Can the nominal RoR on a bond be negative?

# Real Rates of Return

- ▶ Can the real RoR on a bond be negative?

# Real After-Tax Rates of Return

- ▶ Can the real after-tax RoR on a bond be negative?

# Treasury Bills Today

- ▶ What is the **real after-tax RoR on Treasury bills** today?
  - ▶ You should do this with the prevailing rates instead of the example below.
  - ▶ You pay taxes on the nominal amount in your taxable account (not in your 401k)
  - ▶ At 3.5% nominal interest, you are left with  $(\$103.50 - \$3.50 \cdot 40\%) = \$102.10$  nominal dollars at the end of the period.

# Buy Inflation-Indexed Bonds?

- ▶ TIPS have lower quoted interest rates!
  - ▶ they subtract out inflation rate!
  - ▶ is the tax payment therefore on lower real rates?
- ▶ IRS was not born yesterday:
  - ▶ they infer an as-if-nominal rate
  - ▶ which effectively means that the IRS taxes inflation.

# With Inflation?

- ▶ What are interest rates today?
- ▶ What is the inflation rate today/future?
- ▶ What is the tax rate today/future?
  
- ▶ There is a second-order equilibrium effect: It should be easier to get investors to hold taxable bonds in low-inflation periods, with requisite lower tax penalties.