

When the Options Market Disagrees

Fournier, Goyenko, and Grass

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Overview

Paper constructs two disagreement measures using data on option orders by customers (not firms/prop trading desks):

- *DIS*: is volume concentrated in buys/sells or evenly mixed?
 - Min when 100% buys or 100% sells, max when 50/50
 - Computed for calls and puts separately, then averaged
- *DIS-CP*: is volume concentrated in +/− bets or mixed?
 - + bet = buy call or sell put, − bet = buy put or sell call
 - Min when 100% positive or 100% negative, max when 50/50

Weekly DIS_t and $DIS-CP_t$ negatively predict weekly r_{t+1}

- 1 Regardless of whether there is good, bad, or no news in week t
- 2 4× stronger among top 10% of stocks by loan fees
- 3 Up to 5 weeks into future

Disagreement and future returns

Authors interpret their results as indicating:

- *DIS* and *DIS-CP* are good measures of **disagreement**
- High disagreement \Rightarrow stock overpriced \Rightarrow low future returns

Prior evidence on disagreement and future returns:

- **Measures**: analyst forecast dispersion, volume, breadth of institutional ownership, dispersion in institutional holdings
- **Results**: some positively predict returns, some negatively predict returns

Advantages of an options-based measure:

- Actual trades, available daily/weekly
- Natural venue for speculation by leverage-constrained investors, can cleanly measure active side of trade

My discussion

- Authors ask an important question that is unresolved empirically: does disagreement correlate with high or low future returns? Why?
 - Have theories for both directions
- Given prior empirical results, they contribute to the extent their disagreement measure cleaner than alternatives
- My goal today: help understand if they succeed
 - Spoiler: they do, but further tests would improve their case

Disagreement and asset pricing

Disagreement and **short-sale constraint** (Harrison and Kreps (1978))

- Optimists over-value stock, over-weight it in their portfolio (levering up if necessary)
- Pessimists under-value stock, under-weight it in their portfolio (but cannot short)
- Deep-pocketed arbitrageurs fully match any imbalance created by excess demand by pessimists, but cannot do the same for optimists because not allowed to short

⇒ overpricing whenever sufficient disagreement, future returns **negatively** related to disagreement

Disagreement and asset pricing

Disagreement and **risk aversion** (Banerjee (2011))

- Optimists over-value stock, over-weight it in their portfolio (levering up if necessary)
- Pessimists under-value stock, under-weight it in their portfolio (short-sell if necessary, borrowing shares from optimists)
- Risk aversion channel:
 - **Agree to disagree**: if investors don't condition on prices, private information reduces subjective risk \Rightarrow higher prices
 - **Rational expectations equilibrium**: if investors condition on prices, concern about other investor's information increases subjective risk \Rightarrow lower prices

\Rightarrow future returns **positively or negatively** related to disagreement depending on whether investors condition on prices

Disagreement and asset pricing

Disagreement and **share lending constraint** (e.g. Duffie (1996))

- Optimists over-value stock, over-weight it in their portfolio (levering up if necessary) but do not lend their shares
 - Hold all shares outstanding at inflated price, don't sell or lend
- Pessimists under-value stock, hold short positions, pay non-trivial lending fee to borrow shares from arbitrageur
- Deep-pocketed arbitrageurs buy shares and lend them to the pessimists to capture non-trivial lending fee

Think of lending fees like dividends: you receive them when you long, pay them when you short, prices decline in proportion

⇒ overpricing whenever sufficient disagreement, lending fee proportional to mispricing so there's no after-fee arbitrage
⇒ future returns **negatively** related to disagreement, but fee-inclusive future returns **unrelated**

Distinguishing between theories

Direction of relation with future returns helps

- **Positive**: consistent with **rational expectations equilibrium** or **increased subjective risk**
- **Negative**: consistent with **reduced subjective risk**, **short-sale constraint**, or **share lending constraint**

Further distinguish among “negative” stories using lending fees

- ✓ **Reduced subjective risk**: should work, perhaps more weakly, when lending fee = 0
- ✓ **Short-sale constraint**: disagreement negatively related to future returns when short-selling ‘constrained,’ (top 10% of lending fee/utilization) not otherwise
- ? **Share lending constraint**: future returns = $-1 \times$ lending fee, no incremental role for disagreement

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Empirical evidence on distinguishing between theories

New tests the authors could use to help distinguish between disagreement theories:

- Add lending fee as linear control
 - **Share lending constraint** story implies this will drive out disagreement proxy
 - If result goes away, it's OK! Just means disagreement simultaneously causes lending fees and poor future returns
- Use 2008 short-sale ban as a direct test (small-sample, admittedly) test of the **short-sale constraint** story
- Some more-direct test of the **reduced subjective risk** story?

Do *DIS* and *DIS-CP* measure disagreement?

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My interpretation

- Measures of disagreement among options 'customers'
- But they may be *inversely* related to disagreement between options and stock traders, and disagreement between option customers and firms
 - When option volume is 100% buys, or 100% + bets, this means all options traders seem to agree with each other but disagree with whoever sets current price

Do *DIS* and *DIS-CP* measure disagreement?

Theories pertain to to disagreement among stock investors

- Need this to be correlated with disagreement among options customers but *not* disagreement between options customers and options firms/stock investors
- Control for $|\text{put-call parity deviation}|$ as measure of stock-option disagreement?

Mechanical link from *DIS* and *DIS-CP* to option volume

- Low volume means more likely to (by chance) have high concentration in buys/+ bets \Rightarrow lower *DIS* and *DIS-CP*
- High volume means law of large numbers makes % of buys/+ bets converge towards 50% \Rightarrow higher *DIS* and *DIS-CP*
- *DIS* and *DIS-CP* \sim 60% correlated with $\log(\text{Option Volume})$
 - Linear control in regressions, but mechanical link isn't linear
 - Problematic given evidence in Johnson and So (2012) that Option Volume/Stock Volume negatively predicts returns

Summary

Using options data to measure disagreement is a good idea

- Authors execute it well
- Current evidence indicates disagreement leads to overpricing
- Further evidence could help disentangle possible stories
- Separate measures for disagreement among options traders and disagreement between options and stock traders?