Discussion of
The Shorting Premium and Asset Pricing Anomalies
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Overview

- Key findings
  - "Shorting premium": substantial net-of-fee returns earned for shorting high lending fee stocks.
  - Anomalies are stronger among high lending fee stocks
  - Cheap-minus-expensive-to-short (CME) factor captures anomaly returns: Proxy for wealth portfolio (SDF) of short-sellers?
- Contribution
  - Compared with earlier studies using lending fees (e.g., Cohen et al. 2007): Much more extensive data coverage
  - Compared with earlier studies intersecting anomaly portfolios with loan supply proxies (Nagel 2005): Lending fee data
Comment 1: Does lending fee reflect private information of short sellers?

- Portfolios formed based on lending fee at the end of prior month
  - Lending fee level is not public information
- In tests with long sample and short interest/institutional ownership ratio
  - Short interest level and institutional ownership not publicly known until later in month/quarter
- Concern: Does “shorting premium” reflect private information of short sellers or mispricing conditional on public information?
- Check: Are high returns of high lending fee stocks concentrated in first month after portfolio formation?
  - Test useful to extent that private information is unlikely to be long-term information
CME factor returns beyond the first holding period month

Comparision: Stocks with increase in loan quantity and loan fee (DOUT) in Cohen et al. (2007)

Cohen, Diether, and Malloy (2007)
**Comment 2: Should anomalies be stronger among high lending fee stocks?**

- Single stock, zero net supply, fundamental value $F$
- Sentiment investor demand $x$
- Arbitrageur demand (short sellers and non-short sellers)

\[ y = \beta^s \min [\beta^s(F - P + \tau), 0] + \beta^n \max [(F - P), 0] \]

with stock lending fee $\tau$.

- Stock loan demand follows as

\[ L^d = -\beta^s \min [(F - P + \tau), 0] \]

- Stock loan supply

\[ L^s = \ell \tau \]

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**Equilibrium price and loan fee**

- Assume $\beta^n \approx \infty$, but finite $\beta^s$, i.e., limited risk-bearing capacity of short sellers
- Market clearing in stock and stock lending market pins down $\tau$ and $P$
- Equilibrium mispricing

\[ P - F = \begin{cases} \left( \frac{1}{\beta} + \frac{1}{\ell} \right) x & \text{if } x > 0 \\ 0 & \text{if } x \leq 0, \end{cases} \]

- Equilibrium lending fee

\[ \tau = \begin{cases} \frac{x}{\ell} & \text{if } x > 0 \\ 0 & \text{if } x \leq 0, \end{cases} \]
Implication 1: Measuring the “shorting premium”

- Now apply to cross-section of stocks $i = 1, ..., N$, with cross-sectional variation in $\ell_i$ and $x_i$
- Focusing on mispriced stocks and noting that $\tau_i = x_i/\ell_i$,

$$P_i - F_i = \left(1 + \frac{\ell_i}{\beta^s}\right) \tau_i$$

- Roughly supports “shorting premium” analysis: Sort on $\tau_i$ generates spread in $P_i - F_i$
- But double-sort on $\tau_i$ and (proxy for) $\ell_i$ would be cleaner: $\frac{\ell_i}{\beta}$ reflects limited risk-bearing capacity of short sellers
  - High $\ell$ for a given fixed $\tau \Rightarrow x$ must be high $\Rightarrow$ Short-sellers’ position is bigger $\Rightarrow$ short sellers demand higher risk premium

Implication 2: Identifying stocks with strong anomalies

- Not clear that focusing on anomalies **within** high lending-fee segment makes sense
- Within the model

$$P_i - F_i = \left(\frac{1}{\beta} + \frac{1}{\ell_i}\right) x_i$$

$$\tau_i = \frac{1}{\ell} x_i$$

- If a stock characteristic proxies for $x_i$ so does the lending fee!
- If lending fee measures $x_i$ without error, but stock characteristics measures $x_i$ with error, then sort within high lending-fee segment is a sort on **measurement noise**
- What if lending fee is measured $x_i$ with error, too?
Implication 2: Identifying stocks with strong anomalies

- With (Gaussian) measurement error
  - Characteristic $\tilde{x}_i = x_i + \varepsilon$
  - Lending fee $\tilde{\tau}_i = \tau_i + \eta$
- Optimal prediction: Combine $\tilde{x}_i$ and $\tilde{\tau}_i$

$$E[P_i - F_i|\tilde{x}_i, \tilde{\tau}_i] = \left( \frac{1}{\beta} + \frac{1}{\ell_i} \right) \left( \frac{\sigma^2_\eta}{\sigma^2_\varepsilon + \sigma^2_\eta} \tilde{x}_i + \frac{\sigma^2_\varepsilon}{\sigma^2_\varepsilon + \sigma^2_\eta} \tilde{\tau}_i \right)$$

- Therefore: Instead of
  - (high $\tilde{x}$, high $\tau$) - (low $\tilde{x}$, high $\tau$),
  look at
  - (high $\tilde{x}$, high $\tau$) - (low $\tilde{x}$, low $\tau$)
- Or, even better,
  - (high $\tilde{x}$, high $\tau$) - (low $\tilde{x}$, low $\tau$) within low $\ell_i$ stocks
  - Institutional ownership as proxy for $\ell_i$ (Nagel 2005)?

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Implication 2: Identifying stocks with strong anomalies, applied to momentum

- Sample period: 1992 - 2002
- Corner portfolios from independent quintile sorts on %inst. own. (IO), %short interest (SI), past 6-month return
- Value-weighted returns, bottom 20 percent by size dropped
- High lending fee $\approx$ Low IO & high SI

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<th>High Short Interest</th>
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<td>L</td>
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<td>Low Inst. Own.</td>
<td>0.73</td>
<td>1.85</td>
<td>-1.69</td>
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<tr>
<td>High Inst. Own.</td>
<td>0.24</td>
<td>1.76</td>
<td>0.32</td>
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- WML among high lending fee stocks $\approx 2.24\%$
Implication 2: Identifying stocks with strong anomalies, applied to momentum

- Using both SI and W/L as mispricing signal, focused on low loan supply (=low IO) stocks

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- (Low SI, low IO, Winners) - (High SI, low IO, Losers) \( \approx 3.54\% \)

Comment 3: CME factor as shorting-risk factor

- Idea: Price stocks based on short-sellers' first-order condition: expected returns should line up with covariance with short-seller wealth portfolio \( \Rightarrow \) shorting-risk factor
- Paper uses CME portfolio as proxy: “A systematic risk for this arbitrageur is the covariance of a stock’s return with the return on the expensive-to-short stock portfolio.”
- But: short-seller portfolio is not composed only of expensive-to-short stocks but of stocks with high short interest
  - Example: Stock with tiny loan supply can have negligible share in short-seller portfolio but high lending fee
- Further: Not clear why SMB, HML, and MOM should be included along with short-seller wealth portfolio proxy
Results provide further support for view that anomalies are viewed as “exploitable” by short sellers
- Abnormal relative to pervasive market-wide risk factors
- Perhaps not abnormal from viewpoint of short-seller’s Euler equation
- Weak in stock market segments where short selling is cheap

Potential improvements
- Distinguish from private information stories
- Focus on anomalies within set of high lending-fee stocks not well motivated
- Short-seller wealth portfolio = high short interest stocks, not high lending fee stocks