Firms, investors, and stock market returns

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Outline

1. Main findings
2. Actual cost of capital (published)
3. Firms, investors, and market returns (working paper)
4. Conclusion
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A tale of two papers...

1. Actual Cost of Capital (published)

   Actual cost < theoretical cost

   ...and that is okay plus another manifestation of the small size effect

2. Firms, investors, and stock market returns (working paper)

   \[ R_{\text{Mr. Market}} > R_{\text{Firm}} \]

   Over the 2010-2015 time frame Mr. Market contributes substantially more to market returns than firms themselves
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Motivation

- Discount rates are critical for investors (firm valuation) and firms (project selection).
- If a company IPOs (think Facebook) and never pays a dividend nor repurchases stock, what is the “cost” of capital?
- If we look at this over a broad sector-based cross-section what do we see?
Methodology

- “Actual average cost of debt” [Frank and Shen, 2016]
  \[ R_{\text{debt}} = \frac{\text{interest payments}}{\text{book value of debt}} \]

- Actual average cost of equity [Moore, 2016]
  \[ R_{\text{firm}} = \frac{\text{dividends} + \text{repurchases} + \text{additions to retained earnings}}{\text{market value of equity}} \]

- Theoretical cost of equity - Capital asset pricing model
  \[ R_{\text{capm}} = R_f + \beta \left( E[R_m] - R_f \right) \]
Methodology / motivation

- Cost of Equity, Firm: $R_{firm}$
- Cost of Equity, CAPM: $R_{capm}$
- Cost of Equity, Market: $R_{mkt}$

- Firm
  - IPO, SEO, ARE
  - Dividend, repurchases
  - Bond purchase, loans
  - Interest payments

- Common equity investor
  - Stock trades

- Debt investor
  - Bond trades

- Stock market
  - Bond market

- Cost of Debt: $R_d$
Data

- 101,817 firm-year observations from 1972 to 2015
- 8,112 firms total, roughly 2,300 firms per year on average
- Annual financial data from S&P Compustat North America
- Stock return data from CRSP
Results

$WACC_{\text{actual}} < WACC_{\text{capm}}$
Bonus result - small size effect

- The effect: small firms have higher market returns than CAPM predicts [Fama and French, 1996]

- \( R_{\text{firm}} \) and \( R_{\text{mkt}} \) confirms effect:
  
  \[
  R_{\text{firm, value-weighted}} < R_{\text{firm, equal-weighted}} \\
  R_{\text{mkt, value-weighted}} < R_{\text{mkt, equal-weighted}}
  \]

  That is, average returns are higher when small firms are allowed a higher weight (equal-weighted measures).

- \( R_{\text{capm}} \) has an opposite result

  \[
  R_{\text{capm, value-weighted}} > R_{\text{capm, equal-weighted}}
  \]

  Why? Exclusion of firms with negative operating equity as did Frank and Shen [2016].
Conclusions - cost of capital

- Firms in this broad sector-based cross section pay lower capital costs than theory (CAPM) predicts
- This is okay for both firms and investors
  - Firms: conservative (higher) hurdle rate
  - Investors: conservative *expected* return measure (actual returns are on average higher)
- Small-size effect: maybe small firms have higher returns
  \[ R_{\text{mkt, small}} > R_{\text{mkt, large}} \]
  simply because they contribute more to returns: \[ R_{\text{firm, small}} > R_{\text{firm, large}}. \]
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Motivation

- Results from Moore [2016] show significant differences between actual stock market returns $R_{\text{mkt}}$ and firm returns $R_{\text{firm}}$.
- Since TSLA’s IPO (June 29, 2010)
  - Negative free cash flow every year since IPO
  - Modest book value growth\(^1\) ($2.18 to $17.03, +681\%) relative to stock price ($17.00 to $204, +1100\%)  
  - .. and of course no dividends
  - → excellent job of selling hope
- Central question: **In the long-run, are investors better off purchasing stocks of companies that contribute more on a percentage basis to stock market returns?**

\(^1\)Note: shares outstanding increased from 100 million in 2011 to 148 million currently
Data

- Quarterly financial data: S&P Compustat
- Quarterly returns: derived from S&P Compustat. This saves a merge step and provides a more straightforward linkage between financial data and market returns.
Preliminary results

In recent history, Mr. Market drives returns, not firms
Preliminary results - more signs of hope

Wide cross-section of returns: “contribute” vs “take”?
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Conclusion

- **Actual cost of capital**
  - Firms in this broad sector-based cross section pay lower capital costs than theory (CAPM) predicts and that is okay.
  - Small-size effect: maybe small firms have higher returns simply because they contribute more to returns.

- **Firms, investors, and market returns**
  - Something fishy is going on: from 2010-2015 Mr. Market drove returns. Why not firms?
  - Will this hold in the long-run? I hope not.
  - Stay tuned!

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