Undergraduate Student Investment Management Fund

Semi-Annual Presentation
April 29th, 2016
Meet the Fund
Agenda

1. Theory Review
2. Implementation
3. Returns
4. Moving Forward
Overview of Investment Thesis

Invest in securities with two key features:

- **Underpriced**
  - Determined by ranking securities along five pricing anomalies

- **High Idiosyncratic Risk**
  - Individual risk of a stock after removing effects (in excess) of market/systematic risk

*Arbitrage Asymmetry and the Idiosyncratic Volatility Puzzle*
Stambaugh, Yu, Yuan (2015)
CAPM and Idiosyncratic Risk

- CAPM assumes the market is in equilibrium and all investors are fully diversified.
- The real-world market has frictions that prevent full diversification (Levy 1968, Merton 1986); idiosyncratic risk is priced and has a positive expected premium.
- Ang, et al. (2006) found empirically that idiosyncratic risk has a negative premium.
- Stambaugh, et al. (2015) explain this using a combination of mispricing and constraints on arbitrage.
Idiosyncratic Risk Defined: IVOL

SPY vs. SSNC Returns
October 2015

SPY vs. SONC Returns
October 2015
Mispricing

Overpriced Security
- Negative momentum
- High asset growth
- High net stock issuance
- Unprofitable
- High accruals

Underpriced Security
- Positive momentum
- Low asset growth
- Low net stock issuance
- Profitable
- Low accruals
Arbitrage Constraints

SSNC Margin Requirements
October 2015

SONC Margin Requirements
October 2015

Assumes 50% initial margin, 30% maintenance margin
Asymmetric Arbitrage

![Diagram showing the concept of asymmetric arbitrage.]

- Overpriced Securities + Unable to Short = Negative Expected Return
- Underpriced Securities + Unable to Long = Positive Expected Return

Negative Overall Expected Return to IVOL
Anomaly Selection

• Goal: narrow down 11 mispricing anomalies from Stambaugh’s IVOL Theory to 5 to make mispricing forecasts more manageable

• Chosen based on:
  • Confidence in supporting research & returns
  • Ease of calculation
  • Covariances

Five Anomalies

- Accruals
- Profitability
- Asset Growth
- Net Stock Issuance
- Momentum
Portfolio Implementation
Trading Costs

• First rebalance: monthly turnover of 156.6%

• Trading costs were $.02/share plus spread
  • Effective trading costs of ~30-35bp
  • Expected premium was only 30-50bp

• Goal: control trading costs while still capturing expected premium
Anomaly
Underpricing

IVOL

BUY
SELL

35%
80%

35% 80%

BUY SELL

35% 35%
### New Buy Ranking Method

#### Old Method

<table>
<thead>
<tr>
<th>Security</th>
<th>IVOL Percentile</th>
<th>Anomaly Percentile</th>
<th>Average</th>
<th>Bid-Ask</th>
<th>Commission</th>
<th>Closing Price</th>
<th>Transaction Cost Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company A</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>0.02</td>
<td>0.02</td>
<td>20</td>
<td>0.20</td>
</tr>
<tr>
<td>Company B</td>
<td>14</td>
<td>5</td>
<td>9.5</td>
<td>0.04</td>
<td>0.02</td>
<td>34</td>
<td>0.18</td>
</tr>
<tr>
<td>Company C</td>
<td>20</td>
<td>35</td>
<td>27.5</td>
<td>0.01</td>
<td>0.02</td>
<td>55</td>
<td>0.05</td>
</tr>
<tr>
<td>Company D</td>
<td>15</td>
<td>10</td>
<td>12.5</td>
<td>0.02</td>
<td>0.02</td>
<td>45</td>
<td>0.09</td>
</tr>
</tbody>
</table>

#### New Method

<table>
<thead>
<tr>
<th>Security</th>
<th>IVOL Percentile</th>
<th>Anomaly Percentile</th>
<th>Average</th>
<th>Bid-Ask</th>
<th>Commission</th>
<th>Closing Price</th>
<th>Transaction Cost Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company C</td>
<td>20</td>
<td>35</td>
<td>27.5</td>
<td>0.01</td>
<td>0.02</td>
<td>55</td>
<td>0.05</td>
</tr>
<tr>
<td>Company D</td>
<td>15</td>
<td>10</td>
<td>12.5</td>
<td>0.02</td>
<td>0.02</td>
<td>45</td>
<td>0.09</td>
</tr>
<tr>
<td>Company B</td>
<td>14</td>
<td>5</td>
<td>9.5</td>
<td>0.04</td>
<td>0.02</td>
<td>34</td>
<td>0.18</td>
</tr>
<tr>
<td>Company A</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>0.02</td>
<td>0.02</td>
<td>20</td>
<td>0.20</td>
</tr>
</tbody>
</table>
## Results

<table>
<thead>
<tr>
<th>Rebalance month</th>
<th>Turnover %</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>December</td>
<td>156.60%</td>
<td></td>
</tr>
<tr>
<td>January</td>
<td>63.65%</td>
<td>Implemented holding range</td>
</tr>
<tr>
<td>February</td>
<td>46.48%</td>
<td>Implemented transaction cost ranking</td>
</tr>
<tr>
<td>March</td>
<td>8.43%</td>
<td></td>
</tr>
<tr>
<td>April</td>
<td>30.15%</td>
<td></td>
</tr>
</tbody>
</table>

*Original Seeding in November*
Returns
Total Portfolio Returns

<table>
<thead>
<tr>
<th>Date</th>
<th>Portfolio</th>
<th>S&amp;P 500</th>
<th>Russell 3000</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/20/2015</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12/22/2015</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/21/2016</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/22/2016</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/23/2016</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4/22/2016</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Return**
  - **Total Port.**: 4.36%
  - **S&P 500**: 1.53%
  - **Russell 3000**: 1.03%

- **Std Dev**
  - **Total Port.**: 4.98%
  - **S&P 500**: 3.77%
  - **Russell 3000**: 4.03%

*Since inception, through 4/22/16*
GIC Industry Average Weight Comparison

- Utilities: 3.30
- Telecommunication Services: 2.34
- Materials: 3.12
- Information Technology: 7.84
- Industrials: 6.27
- Health Care: 9.13
- Financials: 17.63
- Energy: 6.04
- Consumer Staples: 6.29
- Consumer Discretionary: 13.43

*Averages across entire holding period*
Industry Benchmark Construction

<table>
<thead>
<tr>
<th>Seeding</th>
<th>Rebalance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SIMF Portfolio (Stocks)</strong></td>
<td><strong>Benchmark (ETFs)</strong></td>
</tr>
<tr>
<td>A</td>
<td>Weight 20% Return 4%</td>
</tr>
<tr>
<td>B</td>
<td>40%</td>
</tr>
<tr>
<td>C</td>
<td>40%</td>
</tr>
</tbody>
</table>
Portfolio Returns vs. Industry Benchmark

<table>
<thead>
<tr>
<th>Date</th>
<th>Portfolio Return</th>
<th>Industry Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/20/2015</td>
<td>-16</td>
<td>-14</td>
</tr>
<tr>
<td>12/22/2015</td>
<td>-12</td>
<td>-12</td>
</tr>
<tr>
<td>1/21/2016</td>
<td>-10</td>
<td>-10</td>
</tr>
<tr>
<td>2/22/2016</td>
<td>-8</td>
<td>-8</td>
</tr>
<tr>
<td>3/23/2016</td>
<td>-6</td>
<td>-6</td>
</tr>
<tr>
<td>4/22/2016</td>
<td>-4</td>
<td>-4</td>
</tr>
</tbody>
</table>

Results & Analysis

<table>
<thead>
<tr>
<th>Metric</th>
<th>Total Port.</th>
<th>Ind. Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tot Return</td>
<td>4.36%</td>
<td>1.75%</td>
</tr>
<tr>
<td>Std Dev</td>
<td>4.98%</td>
<td>4.56%</td>
</tr>
</tbody>
</table>

*Since inception*
Total Portfolio Market Cap Holding

- **Cash**: 1.05%
- **Large Cap**: 6.94%
- **Mid Cap**: 23.40%
- **Small Cap**: 65.46%

*Averages across entire holding period*
Portfolio Returns vs. Size Benchmark

<table>
<thead>
<tr>
<th>Date</th>
<th>Portfolio</th>
<th>Market Cap</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/20/2015</td>
<td>-16</td>
<td>-14</td>
</tr>
<tr>
<td>12/22/2015</td>
<td>-14</td>
<td>-12</td>
</tr>
<tr>
<td>1/21/2016</td>
<td>-12</td>
<td>-10</td>
</tr>
<tr>
<td>2/22/2016</td>
<td>-10</td>
<td>-8</td>
</tr>
<tr>
<td>3/23/2016</td>
<td>-8</td>
<td>-6</td>
</tr>
<tr>
<td>4/22/2016</td>
<td>-6</td>
<td>-4</td>
</tr>
<tr>
<td>2/22/2016</td>
<td>-4</td>
<td>-2</td>
</tr>
<tr>
<td>3/23/2016</td>
<td>-2</td>
<td>0</td>
</tr>
</tbody>
</table>

**Return Total**
- Portfolio: 4.36%
- Market Cap: 0.55%

**Std Dev**
- Portfolio: 4.98%
- Market Cap: 4.20%

*Since inception
Long-term: Improving SIM Fund Processes

**Portfolio Database**
- Utilize SQL Server to track key portfolio information
- Create an infrastructure to calculate holdings, returns, attributions

**XBRL**
- Pull financial statement data directly from company XBRL filings
- Fix bugs to integrate XBRL into portfolio construction process
XBRL Update: Process

- Pull Data From SEC
- Clean and Insert
- Run Anomaly Rankings

Moving Forward:
1. Integrate with Bloomberg to fill in missing data
2. Add filters for charter restraints
3. Compare XBRL to previous rebalance data
Conclusion
At this time we would be happy to take your questions
Portfolio Database

Transactions
- CUSIP
- Name
- Ticker
- Price
- Date (at rebalancing)
- Buy/Sell Binary
- # of Shares
- Strategy Identifier

Attributes
- CUSIP
- Name
- Ticker
- Industry
- Market Cap
- Date (at rebalancing)
- # Dividend Payment

Dividends
- CUSIP
- Name
- Ticker
- Ex Date
- Pmt Date
- Amount

Portfolio Returns
- Strategy Identifier
- Frequency
- Start Date
- End Date
- Return

Portfolio Attributes
- Strategy Identifier
- Date (at rebalancing)
- Cash
- Industry Attribution
- Market Cap Attribution