OWNERSHIP CONCENTRATION AND MARKET LIQUIDITY

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Motivation

• Global shift in the IPO market towards developing countries

• Allocated capital to IPOs in developed countries:
  • 1990-2001: 90%
  • 2008-2016: 53%
## Motivation

<table>
<thead>
<tr>
<th>Region / country</th>
<th>Market capitalization (as % of GDP)</th>
<th>Traded volume (as % of GDP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAP</td>
<td>67.7%</td>
<td>59.2%</td>
</tr>
<tr>
<td>ECA</td>
<td>40.9%</td>
<td>29.6%</td>
</tr>
<tr>
<td>OECD</td>
<td>81.1%</td>
<td>100.2%</td>
</tr>
<tr>
<td>SA</td>
<td>79.1%</td>
<td>68.0%</td>
</tr>
<tr>
<td>LAC</td>
<td>49.5%</td>
<td>35.8%</td>
</tr>
<tr>
<td>Argentina</td>
<td>13.6%</td>
<td>9.7%</td>
</tr>
<tr>
<td>Brazil</td>
<td>66.0%</td>
<td>39.0%</td>
</tr>
<tr>
<td>Chile</td>
<td>118.7%</td>
<td>93.3%</td>
</tr>
<tr>
<td>Colombia</td>
<td>55.6%</td>
<td>45.9%</td>
</tr>
<tr>
<td>Mexico</td>
<td>35.4%</td>
<td>38.3%</td>
</tr>
<tr>
<td>Peru</td>
<td>55.3%</td>
<td>41.0%</td>
</tr>
</tbody>
</table>

**LAC: Left behind**
Relation between Concentration and Liquidity:

1. Fewer investors share the costs of liquidity provision

2. Adverse selection: Smaller investors either don’t trade these stocks or need to be compensated for adversely selected trades.
Question

Does ownership concentration affect stock market liquidity?

Naive specification:

\[ liq_{s,t} = \alpha_s + \gamma_t + \beta CONC_{s,t-1} + X_{s,t-1}\phi + \varepsilon_{s,t} \]

1. Omitted variable bias

Corporate policy: Expectations of dividend payments & leverage affect both concentration and liquidity

2. Reverse Causality

Trade-off between maintaining control and the potential intervention from outsiders
Natural Experiment

BBVA Eyes Sale of Latin American Pensions Business

By Santiago Perez And Christopher Bjork
Updated May 24, 2012 9:42 a.m. ET
MADRID—Spain’s Banco Bilbao Vizcaya Argentaria SA said Thursday that it is studying the potential sale of its pensions management operations in Latin America, as part of an effort to focus on its main banking businesses.

ING Completes Divestment of Insurance Latin America

Amsterdam, 29 December 2011

BBVA mulling sale of Latin America pension units
Published: May 24, 2012 2:36 a.m. ET

ING to Sell Latin America Insurance Arm

ING reaches an agreement to sell its Latin American insurance operations for €2.68 billion ($3.85 billion).
The sale, ING said, is the first major step in the divestment of its insurance and investment management activities. It was ordered by the European Commission to sell its insurance arm in order to receive Dutch state aid during the 2008 financial crisis.
Natural Experiment

1. M&A activity between pension funds in Colombia: exogenous to corporate policy of Colombian firms
   - Proteccion-ING: December 2012
   - Porvenir-BBVA Horizonte: December 2013

2. Increased ownership concentration in stocks where target and acquiring AFP had significant amount of common ownership
2. **Increased ownership concentration** in stocks where target and acquiring AFP had significant amount of common ownership

**Shareholders stock “i”**

<table>
<thead>
<tr>
<th>Before M&amp;A</th>
<th>After M&amp;A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Others: 35%</td>
<td>Others: 35%</td>
</tr>
<tr>
<td>AFP B: 5%</td>
<td>AFP A: 10%</td>
</tr>
<tr>
<td>AFP A: 5%</td>
<td></td>
</tr>
<tr>
<td>Inv 4: 10%</td>
<td>Inv 4: 10%</td>
</tr>
<tr>
<td>Inv 3: 10%</td>
<td>Inv 3: 10%</td>
</tr>
<tr>
<td>Inv 2: 15%</td>
<td>Inv 2: 15%</td>
</tr>
<tr>
<td>Inv 1: 20%</td>
<td>Inv 1: 20%</td>
</tr>
</tbody>
</table>
2. **Increased ownership concentration** in stocks where target and acquiring AFP had significant amount of common ownership.

**Shareholders stock “j”**

**Before M&A**
- Others: 40%
- AFP A: 0%
- AFP B: 5%
- Inv 4: 10%
- Inv 3: 10%
- Inv 2: 15%
- Inv 1: 20%

**After M&A**
- Others: 40%
- AFP A: 5%
- Inv 4: 10%
- Inv 3: 10%
- Inv 2: 15%
- Inv 1: 20%
Empirical Strategy

Measure trading activity and liquidity for stocks with high common ownership before and after the M&A

Vis-à-vis

Trading activity and liquidity for stocks with low common ownership before and after the M&A
Preview of Results

One percent increase of ownership concentration implied:

1. **4.0% decrease** in turnover

2. **3.4% increase** in the bid-ask spread

- AFP merger activity was detrimental for trading activity and liquidity
- Our findings question the rationale of allowing concentration in the industry

Caveat: Economies of scale in pension management might be important
Agenda

1. Data
2. Methodology
3. Results
4. Current trends on EM
Data

1. Monthly equity portfolios of Colombian AFPs 2006-2014
2. Quarterly balance sheet and ownership information of listed firms
3. Daily Price and trading volume
Methodology

1. Geometric average of stock ownership between acquiring (f1) and target (f2) AFP

\[ FCAP_{s,k} = (H_{s,f1} * H_{s,f2})^{1/2} \]

2. Measured 6-months and 1-year before the completion of M&A

3. Ownership concentration: Top 5 shareholders
Methodology
Methodology

Two measures of trading activity and liquidity per stock:

1. **Quarterly turnover**: Total shares traded / shares outstanding

2. **Average bid-ask spread**: Average of daily bid-ask spread. Normalized by average mid point
Methodology

Two-Stage Least Squares (2SLS)

First Stage: Estimate changes in ownership concentration

\[ CONC_{s,t} = \alpha_s + \gamma_t + \sum_{k=1,2} \beta_k d_k + \sum_{k=1,2} \lambda_k d_k \times FCAP_{s,k} + \sum_{k=1,2} \phi_k d_k \times X_{s,t} + \varepsilon_{s,t} \]

Second Stage: Estimate effects on liquidity

\[ liq_{s,t} = \alpha_s + \gamma_t + \beta CONC_{s,t-1} + X_{s,t-1} \phi + \varepsilon_{s,t} \]
## Results

<table>
<thead>
<tr>
<th></th>
<th>Panel B. Second Stage</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Turnover</td>
<td>Bid-Ask Spread</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(B1)</td>
<td>(B2)</td>
<td>(B3)</td>
</tr>
<tr>
<td><strong>CONC</strong></td>
<td>-4.000**</td>
<td>-10.083***</td>
<td>3.403**</td>
</tr>
<tr>
<td></td>
<td>(-2.04)</td>
<td>(-4.31)</td>
<td>(2.42)</td>
</tr>
<tr>
<td><strong>AFPT</strong></td>
<td>0.186***</td>
<td></td>
<td>-0.159***</td>
</tr>
<tr>
<td></td>
<td>(4.31)</td>
<td></td>
<td>(-3.41)</td>
</tr>
<tr>
<td><strong>ING</strong></td>
<td></td>
<td>519.598***</td>
<td>-75.061</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(5.83)</td>
<td>(-1.55)</td>
</tr>
<tr>
<td><strong>BBVA-Horizonte</strong></td>
<td></td>
<td>-65.542</td>
<td>-18.171</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-0.64)</td>
<td>(-0.21)</td>
</tr>
<tr>
<td><strong>Controls</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Fixed effects</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>$R^2$</strong></td>
<td>0.7261</td>
<td>0.7515</td>
<td>0.606</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>1069</td>
<td>1069</td>
<td>1069</td>
</tr>
</tbody>
</table>
Summary of Results

- AFP merger activity was detrimental for trading activity and liquidity
- Our findings question the rationale of allowing concentration in the industry
- Question: Concentration beneficial for pension contributors?
1. Cross-border portfolio investments represent 35% of world market cap (19% in 2001)

2. Recent growth in passively-managed funds: Index & closet indexers > 50% AUM (Cremers et al., 2016; Williams et al., 2017)

“Passive investing has become investors’ default, driving billions into funds that track indexes. It’s transforming Wall Street, corporate boardrooms and the life of the neighborhood broker.”

Oct 17, 2016, WSJ
In Colombia
### In Colombia

<table>
<thead>
<tr>
<th>Investor Type</th>
<th>2006 - 2010</th>
<th></th>
<th>2011 - 2016</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Index</td>
<td>Passive</td>
<td>Index</td>
<td>Passive</td>
</tr>
<tr>
<td>Domestic Institutions</td>
<td>4.3</td>
<td>49.5</td>
<td>8.3</td>
<td>63.7</td>
</tr>
<tr>
<td>Corporations</td>
<td>-</td>
<td>13.6</td>
<td>-</td>
<td>15.2</td>
</tr>
<tr>
<td>Pension Funds</td>
<td>-</td>
<td>97.8</td>
<td>-</td>
<td>85.4</td>
</tr>
<tr>
<td>Brokerage Firms</td>
<td>-</td>
<td>45.6</td>
<td>-</td>
<td>74.4</td>
</tr>
<tr>
<td>Others</td>
<td>-</td>
<td>15.8</td>
<td>-</td>
<td>22.5</td>
</tr>
<tr>
<td>Foreign</td>
<td>4.8</td>
<td>22.9</td>
<td>21.8</td>
<td>42.8</td>
</tr>
</tbody>
</table>
Daily Trading Intervals of Foreign Investors

[Bar chart showing trading intervals from 9:30-10:30 to 15:30-15:55, with peaks around 10:30-11:30 and 11:30-12:30, and a closing batch at 15:30-15:55.]
Daily Trading Intervals of Foreign Investors
Daily Trading Intervals of Foreign Investors
Trends in Emerging Markets

1. Liquidity demands by foreign index and ‘passive’ funds is different that other market participants

2. These investors are more driven by international news and macro-hedging strategies than by local news

3. Highly sensitive to changes in benchmark (basket and methodology)

4. Currently trade with at ‘bad’ prices in Colombia

5. Disorderly exit might be problematic for the stock market