Liquidity Creation

Robert Schwartz
Zicklin School of Business, Baruch College, CUNY
First Point I Wish to Make

1. Volatility is Endemic in Equity Markets
   - across Stocks
   - across Markets
   - across Countries
   - across Time
An Early Volatility Paper

"Liquidity and Execution Costs in Equity Markets"
Joel Hasbrouck & Robert Schwartz
Journal of Portfolio Management
Spring 1988, pp. 10 - 16

(There are any number of other papers as well)
Prices for Disney & SPY
Opening half-hour, August 10, 2011

Average Price = $30.34, Hi-lo = $2.31  Bid-Ask Spread = $0.02  Hi-Lo percent = 7.55
Second Point I Wish to Make

1. Volatility is Endemic in Equity Markets
   - across Stocks
   - across Markets
   - across Countries
   - across Time

2. Volatility is Linked to Liquidity, & Liquidity is Multi-Facetted
Liquidity Providers

1. Market Makers
2. HFT Participants
3. Limit Order Traders
4. Anyone Else?
Liquidity
What is it?

Common Definition: Ability to buy/sell

- Quickly
- In Reasonable Size
- At a Reasonable Price
Liquidity

A More Operative Definition

Static Dimensions

- **Breadth:** number of orders on the book; typically measured by the bid/ask spread
- **Depth:** size of the orders on the book

Relates to **Reasonable Speed and Size**

Dynamic Dimension:

- **Resiliency:** more complicated

Relates to **Reasonable Price**
“Are Stocks Priced to Yield a Non-Resiliency Premium?”
Jian Hua, Lin Peng, Robert Schwartz, Nazli Sila Alan
Resiliency in Common Usage

An ability to withstand something

- A tree subjected to a wind storm
- A person subjected to a criticism
- A stock subjected to a shock
Volatility: If a **Shock** Jars a Stock’s Price from Equilibrium

Is the return to equilibrium

- Orderly?
- Speedy?
My Third Point

1. Volatility is Endemic in Equity Markets
   - across Stocks
   - across Markets
   - across Countries
   - across Time

2. Volatility is Linked to Liquidity, & Liquidity is Multi-Faceted

3. Non-Liquidity Premiums are Substantial
   (With emphasis on Non-Resiliency)
Why A Non-Resiliency Premium (NRP)?

- A slow, disorderly adjustment commands a premium
- A NRP can be understood in terms of:
  - Blurred price signals that lead to a decline in investor confidence
  - Transaction price uncertainty
  - Unfairness (the system is rigged)
From Shocks to Return Correlations

**Shocks:**
- Liquidity
- Information

**Prices:**
- Open: $P^O$ (call auction)
- Mid: $P^M$ (continuous/call)
- Close: $P^C$ (call auction)

**Returns:**
- $R_1 = P^O$ to $P^M$
- $R_2 = P^M$ to $P^C$

**Correlation:**
- $\text{CORR} (R_1, R_2)$
As \( \text{CORR} \) decreases and becomes a larger negative number:

- The price signal becomes more blurred
- Transaction price uncertainty increases
- The perception of unfairness grows

- We thus expect that the non-resiliency premium will be negatively related to \( \text{CORR} \)
What Do We Find?
(Hua, Pang, Schwartz, Alan)

Our Sample
• All NYSE, Nasdaq, and Amex firms
• 1993 – 2012

We Assess
• Daily opening, 10:00, and closing prices and quotes
NRP-CORR Relationship Assessed

- **Tests**
  - Uni-variate & bi-variate sorts
  - Multi-variate regressions
- **Selection of months**
  - All months
  - Earnings months
  - Recession/crisis months
  - High VIX months
  - Unusual months (December/January)
- **Selection of firms**
  - All firms
  - S&P 500 companies
- **Various robustness checks**
### Monthly Returns for Portfolios

#### All Firms & S&P 500 Firms

<table>
<thead>
<tr>
<th>Deciles/Quintiles</th>
<th>Monthly Ret Diffs Sorted by Liquidity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CORR</td>
</tr>
<tr>
<td><strong>All Firms</strong></td>
<td></td>
</tr>
<tr>
<td>1 - 10 (Low-High)</td>
<td>0.37</td>
</tr>
<tr>
<td></td>
<td>[3.26]</td>
</tr>
<tr>
<td><strong>S&amp;P 500 Firms</strong></td>
<td></td>
</tr>
<tr>
<td>1 - 5 (Low-High)</td>
<td>0.31</td>
</tr>
<tr>
<td></td>
<td>[2.47]</td>
</tr>
</tbody>
</table>
My Fourth Point

1. Volatility is Endemic in Equity Markets
   - across Stocks
   - across Markets
   - across Countries
   - across Time

2. Vol is Linked to Liquidity, & Liquidity is Multi-Faceted

3. Non-Liquidity Premium is Substantial

4. Static & Dynamic Liquidity Provision Can be Integrated
Use a Call Auction

The perfectly liquid, frictionless market solution
Three Papers


What About Circuit Breakers?

There is one big reason to stop trading in a continuous market

So that the market can be reopened using a Call auction

Awesome
Last Point

1. Volatility is Endemic in Equity Markets
   - across Stocks
   - across Markets
   - across Countries
   - across Time

2. Vol is Linked to Liquidity, & Liquidity is Multi-Faceted

3. Non-Liquidity Premium is Substantial

4. Static & Dynamic Liquidity Provision Can be Integrated

5. Liquidity Provision Can be Augmented
   (A proposal)
Two Papers

"A Proposal to Stabilize Stock Prices"
Robert A. Schwartz
Journal of Portfolio Management
Fall 1988, pp. 4 - 11

“A Liquidity Program to Stabilize Equity Markets”
Nazli Sila Alan, John S. Mask, & Robert A. Schwartz
Journal of Portfolio Management
Winter 2015, pp 113-125.
I Propose

1. Establish Stabilization/Liquidity (SL) Funds
2. Source of Funds **US: Listed companies**
3. Source of Funds **China:**
   - Where there is a will, there will be a way
4. With Clearly Specified Operations including,
5. SL Orders Submitted for Call Auction Trading Only
Price Impact of an SL Order in a Call Auction

- Previous Transaction Price
- SL Buy Price
- New $P^*$
- Possible $P^*$
- Possible $Q^*$
- New $Q^*$
## Trading Returns From SL Program

**DOW 30**

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th><strong>2010-2012</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P&amp;L (mil$)</strong></td>
<td>$13.57</td>
<td>$12.99</td>
<td>$16.41</td>
<td>$42.98</td>
</tr>
<tr>
<td><strong>P&amp;L Marked-to-Mkt (mil$)</strong></td>
<td>$0.81</td>
<td>$0.04</td>
<td>-$1.33</td>
<td>-$0.48</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th><strong>2010-2012</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Forward</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Backward</strong></td>
<td>-$5.70</td>
<td>$1.89</td>
<td>-$6.35</td>
<td>-$10.16</td>
</tr>
<tr>
<td><strong>P&amp;L Marked-to-Mkt (mil$)</strong></td>
<td>$1.09</td>
<td>$0.72</td>
<td>$0.68</td>
<td>$2.49</td>
</tr>
</tbody>
</table>
## Trading Returns From SL Program: DAX 30

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2010-2012</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Forward</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P&amp;L (mil$)</td>
<td>$14.10</td>
<td>-$1.81</td>
<td>$12.38</td>
<td>$24.67</td>
</tr>
<tr>
<td>P&amp;L Marked-to-Mkt (mil$)</td>
<td>$3.13</td>
<td>$15.65</td>
<td>$2.32</td>
<td>$21.10</td>
</tr>
<tr>
<td><strong>Backward</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>-$3.62</td>
<td>$15.57</td>
<td>-$8.41</td>
<td>$3.54</td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010-2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P&amp;L Marked-to-Mkt (mil$)</td>
<td>$7.28</td>
<td>$5.58</td>
<td>-$0.43</td>
<td>$12.43</td>
</tr>
</tbody>
</table>
Conclusion

1. Accentuated Volatility is a Challenge
2. Liquidity Provision Matters
3. Market Structure Matters
4. My Suggestion:
   - Make Good Use of Call Auction Trading
   - Consider the Inclusion of SL Funding:

   **This Would be True Liquidity Creation!**

Thank YOU!