

Market Structure

Sufferin Smallcaps

Market Commentary

28 July 2014

Key Points

- Smallcap stocks undeniably pose unique challenges.
- But is their low liquidity a problem that we need to (or even can) “fix”?
- We’ve analyzed various measures of market quality and find that:
 - Smallcap trading costs have declined over the past nine years, on par with largecaps.
 - Posted size has not degraded relative to largecaps.
 - Smallcaps face less “flickering quotes”.
 - Largecaps have gotten more efficient at eliminating price gaps, while smallcaps have not.
- In an effort to help smallcaps, the SEC has proposed a pilot program to widen tick sizes.
- While it’s likely that the program will achieve one goal of increasing posted sizes, it’s unclear whether that is necessary – or even a good thing.

Do Smallcaps Suffer from a Lack of Liquidity?

Smallcap traders have long recognized that they face unique challenges in trading less liquid securities. This makes sense, of course, given just how small and illiquid some smallcaps are. Now, however, it seems that Congress is similarly acknowledging the disparity with largecaps and is making an effort to do something about it (see page 4).

Is there really a “problem” with smallcap liquidity that we need to address though? And has the game *changed* for smallcap traders in the past few years as fragmentation has increased and high frequency trading has, by some estimates, grown to account for over half of all trading?

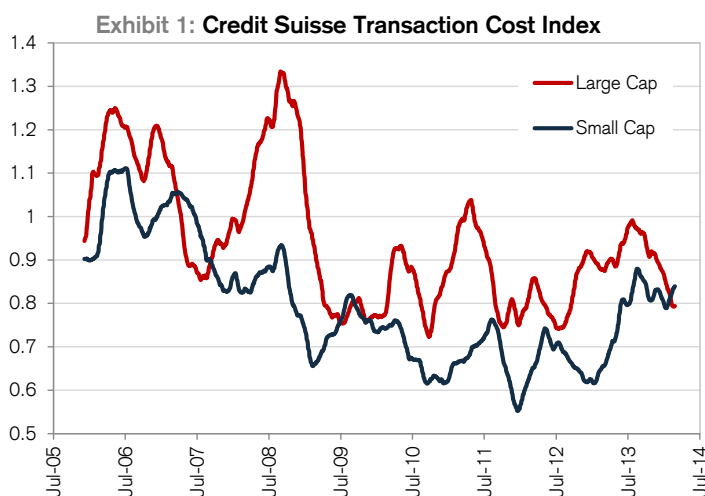
Smallcap Characteristics

Despite wider spreads, costs for smallcaps are down

The average bid-ask spread for a Russell 2000 stock is 24 bps. For an S&P stock, it is 3 bps (see Exhibit 6). Interestingly, though, one “benefit” to having wider spreads is that trading costs are a bit more insulated from market fluctuations. When we look at relative transaction costs for largecaps compared to smallcaps, largecap costs seem to vary more with the market.

In Exhibit 1 we see the Credit Suisse Transaction Cost Index, which shows how costs for largecaps and smallcaps have varied over time. (Note that this is an index so it does not compare them directly. Rather, they are both normalized to 2005). We find that:

- 1) Costs for both small and largecaps are lower today than nine years ago, when our data begins. Both groups have seen a comparable level of overall improvement.
- 2) Costs for largecaps seem to exhibit wider swings with market volatility.



Source: Credit Suisse Trading Strategy

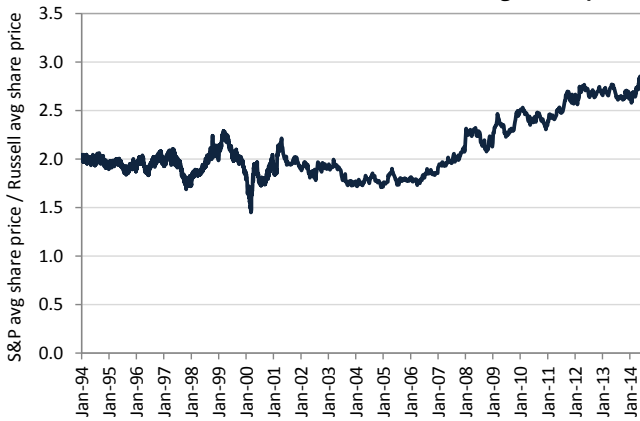
Smallcap posted size has not suffered relative to largecaps

A chief goal of the SEC’s new pilot program is to increase posted size, and indeed, as we later discuss, it will likely do so (in test groups 2 & 3). However, data suggest that smallcaps may not be lagging their larger counterparts as much as we might otherwise believe.

It is true that posted size for smallcaps is much lower than for largecaps, by a factor of about four. But, this ratio has remained consistent for the past 8 years. If smallcap “liquidity” (defined narrowly here as simply posted size in \$notional) has been suffering in any way, largecaps have been suffering in the same way.

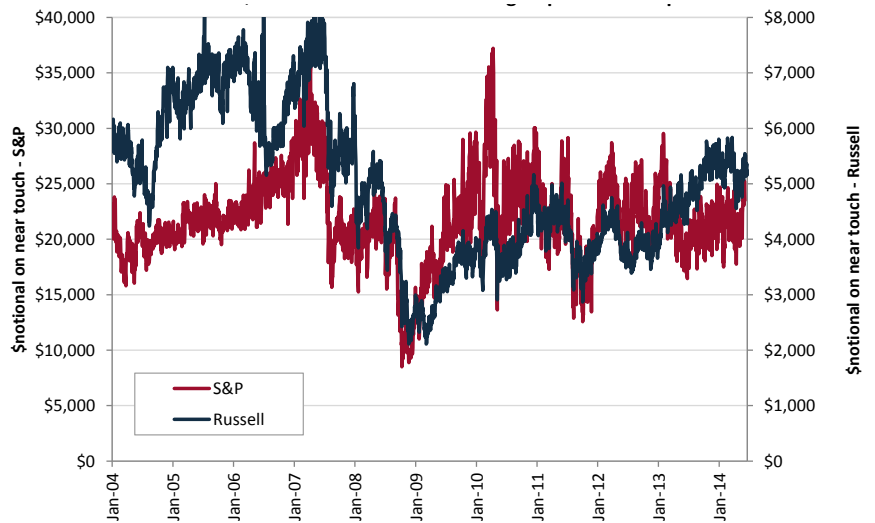
Also keep in mind that the average share price for largecaps used to be around 2x that of smallcaps, but lately, with a dearth of stock splits, that multiple has climbed to almost 3x. This means that the number of *shares* posted for largecaps has actually *declined* relative to smallcaps.

Exhibit 2: Ratio of S&P 500 / Russell 2000 avg share price



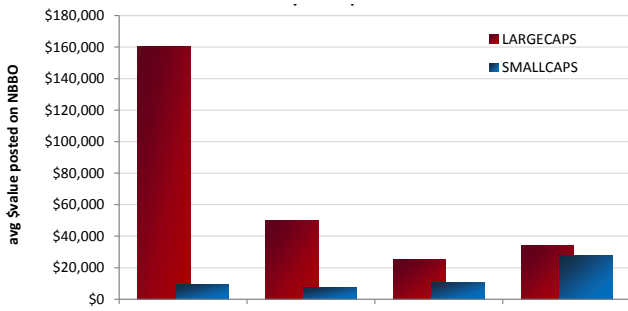
Source: Credit Suisse Trading Strategy

Exhibit 3: Posted \$notional on near touch – largecaps vs smallcaps



Source: Credit Suisse Trading Strategy

Exhibit 4: Average posted NBBO \$notional of smallcaps vs largecaps by stock price



Source: Credit Suisse Trading Strategy

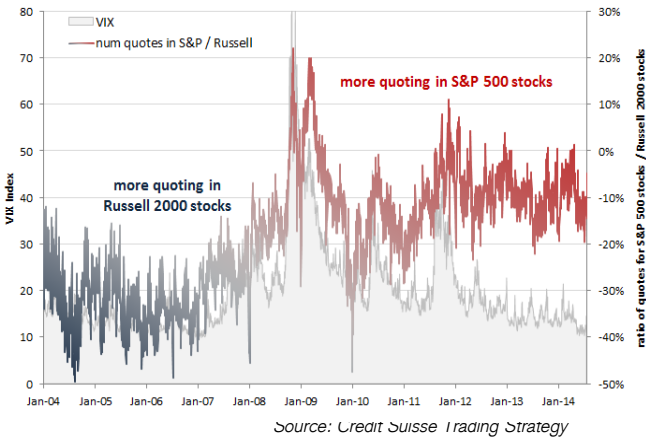
Where there is a large gap: HFT activity

It makes intuitive sense to believe that HFT are less active in smallcaps. Since HFT, acting as market-makers or arbitrageurs, rely on being able to get in and out of a trade quickly, their business model is most suited to liquid, largecap securities. Our data demonstrate just how true this is.

Extreme concentration in large, cheap, liquid stocks

When we look at posted \$notional *by stock price* for smallcaps and largecaps, we can see a striking clustering in large, cheap, liquid stocks that HFT tend to favor (Exhibit 4). This concentration is even more dramatic when you consider that the prices in this bucket are half as large as the next bucket, so size would have to be double just to equal the \$notional. In fact, the \$notional posted in these large, cheap, liquid stocks is over three times greater than the next bucket.

Exhibit 5: Quote rates in S&P 500 vs Russell 2000 stocks



Source: Credit Suisse Trading Strategy

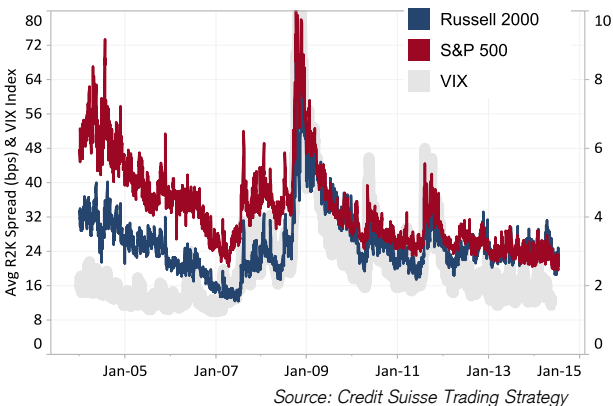
Largecaps experience more flickering quotes

To measure how HFT's presence in smallcaps has *changed* over time, we looked at "flickering quotes". A major complaint about high frequency trading is that they change quotes so often that it is impossible to actually hit anything you see on screen (flickering quotes). We counted how often the NBBO changes (in price or size) for smallcaps compared to largecaps.

The results (shown in Exhibit 5) show that the rate of quote changes was roughly equal prior to 2009. Since then, however, largecaps have seen an increasing rate of flickering quotes as HFT activity has increased.

This may be a sign that HFT is increasingly congregating in largecaps rather than smallcaps. However, it may also be necessary risk management since largecaps tend to have higher prices and tighter spreads. This leaves a smaller margin of error for a market maker and requires them to update their quotes more frequently as the market moves.

Exhibit 6: Bid-Ask Spreads vs VIX



Source: Credit Suisse Trading Strategy

But largecap spreads have also tightened more

One upside of the high level of HFT activity that is behind the frequent quote changes is that the competition has compressed bid-ask spreads to all-time lows – for largecaps.

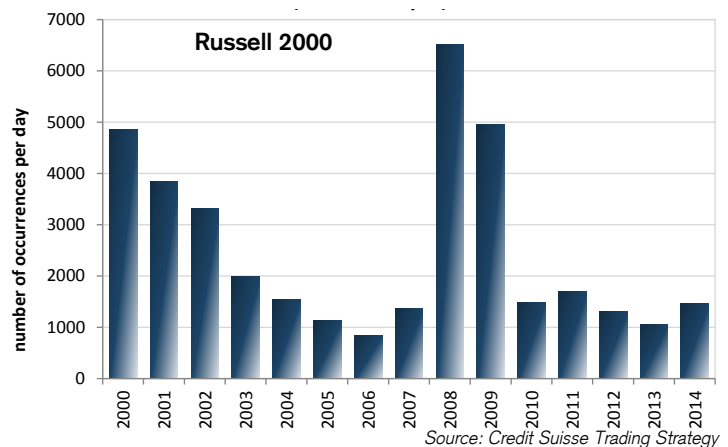
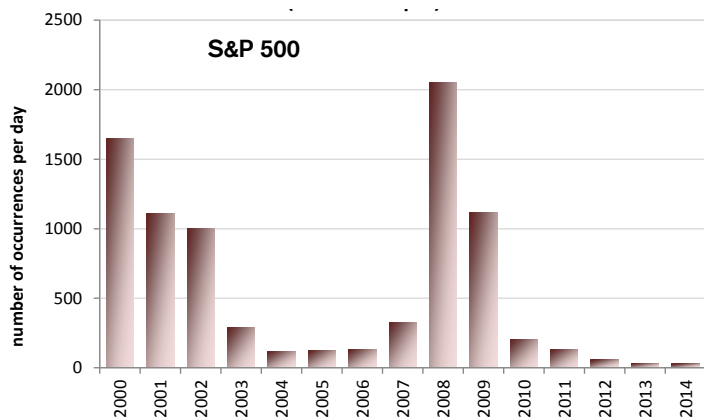
In Exhibit 6, we can see bid-ask spreads for smallcaps and largecaps and their relationship with volatility. Pre-crisis, the ratio between small and largecap spreads was about 5:1. Post-crisis, that ratio expanded to around 8:1. This means that largecaps have experienced better spread improvement than smallcaps have as we've recovered from the crisis.

Arbitrageurs have made largecaps more efficient

We also find evidence that arbitrageurs have made largecaps more efficient and less susceptible to price gaps. In Exhibit 7 below, we count the number of times stocks in each index move by at least 1% within 1 minute. The results show that:

- 1) Occurrences of price gaps in largecaps are at all-time lows, much lower than during the prior record-low-volatility environment in 2004-2006. The numbers have been declining consistently every year post-crisis, as HFT has become a larger part of the market. Not so for smallcaps.
- 2) Smallcaps are still affected by market events, but largecaps have become more idiosyncratic. We can see an increase in price gaps in 2011 when US sovereign debt was downgraded and again in early 2014 when volatility spiked, but largecaps were immune.

Exhibit 7: Average number of times a stock gaps by 1% within 1 minute (10am – 3:30pm)



Source: Credit Suisse Trading Strategy

Should We Force A Change?

In an effort to address smallcap liquidity, Congress and the SEC plan to increase the minimum tick size.

The Path to a Pilot

In their July 2012 JOBS Act, legislators directed the SEC to investigate the impact that decimalization has had on “emerging growth” companies. Their premise is that decimalization has hurt quoted depth, which hurts secondary liquidity, and in turn, makes it harder for these companies to IPO and produce the jobs needed to boost our economy.

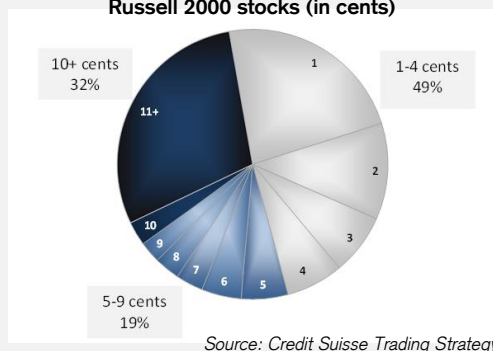
The official Commission Decimalization Report was inconclusive on smallcap liquidity (and found no known studies linking decimalization with IPOs). In addition, the SEC Advisory Committee recommended *not* to impose a pilot program. Nevertheless, the SEC – with urging from Congress – decided to proceed anyway.

On June 24, the SEC released a directive for the exchanges and FINRA to file plans for a tick pilot program according to the SEC’s specifications (below), which the SEC will then post for public comment. Following the comment period, the SEC will officially vote to approve the plan. The plan would then be effective for 1 year.

Proposed Smallcap Tick Pilot Program Parameters	
Scope of program	1 control group, 3 test groups, 300 securities in each group
Criteria for selecting securities	Market cap <= \$5bn ADV<=1 million Share price>=\$2
Timeline	1) Exchanges and FINRA must submit a formal plan per the SEC's specs by Aug 25, 2014 2) SEC will open the plan for public comment 3) SEC will formally vote on the plan 4) If approved, plan will be in effect for 1 year

Securities Groups	Tick increment (for quoting)	Where trades can print
Control	existing rules: 1 cent tick size	existing rules (sub-penny prints possible)
Test Group 1	5 cents	existing rules (can trade within the spread)
Test Group 2	5 cents	only at 5 cent increments (with exceptions)
Test Group 3	5 cents	5 cent increments as above, but also subject to "trade-at"

Average size of bid-ask spread for Russell 2000 stocks (in cents)



Tick increment matters more than wider spreads

Many stocks in the Russell 2000 already trade at least 5 cents wide (see chart at left), so the program won’t necessarily cause spreads to increase by much. A five cent tick increment, however, will cause quotes to cluster at those designated intervals.

When a stock has a wide spread today, it is easy for someone to move to the front of the line by simply offering a 1 cent price improvement. If a trader must instead give up 5 cents in price improvement, it becomes more meaningful and traders will be more reluctant to do so. This should cause those bid/offers to build up at the near touch, increasing size.

Avoiding spread costs by crossing

When a stock’s spread is wide, traders today often try executing in crossing networks to:

- 1) Save costs by executing within the spread
- 2) Avoid long wait times (opportunity cost) by just sitting on the near touch.

Because of this, stocks with larger spreads (smallcaps) tend to have a higher amount executed off-exchange (see [Who’s Afraid of the Dark? Trading Off-Exchange](#) for more). And, going the other way, the reduced tick sizes/spreads in Japan have caused alternative venues to lose market share.

In recognizing that there would be a strong urge to rely on off-exchange trading to avoid the wider spreads, the SEC has included a “trade-at” provision as part of the pilot. The trade-at rule specifically prohibits trading in alternative venues until all lit liquidity on the near touch is exhausted, or unless the alternative venue is offering “significant price improvement”. See box on p.5 for more on trade-at.

What is “Trade-At”?

A trade-at rule means that all lit orders at the prevailing NBBO must be honored first before executing in an alternative venue, unless the alternative venue offers a substantial price or size improvement. In the case of the proposed smallcap tick pilot program, “substantial” price improvement is 5 cents, and the size improvement is 10K shares or \$200K notional. Midpoint executions are also allowed.

Price discovery vs buy-side protection

Proponents of trade-at believe it will keep more volume on lit venues, thereby enhancing market quality and price discovery.

The counter-argument is that alternative venues are necessary for hiding one’s identity in order to avoid predatory players in the marketplace (recall that dark orders were first created in order to help the buy-side achieve this goal).

Increased costs due to excessive access fees

A trade-at provision is also unfair, another argument goes, because it requires paying exchange access fees on every order that must be routed to these lit venues. Access fees are often as high as 30 mils.

This would not be an issue – and opposition to trade-at would likely diminish – if access fees were reduced.

No trade-at plans for regular trading

While some have advocated for introducing trade-at in a broader context for general trading, it has never been seriously considered by the Commission.

Potential impact of trade-at

We can see what the effect might be of a trade-at rule by turning to our northerly neighbors as well as down under. Both Canada and Australia have introduced trade-at provisions in the past two years and both have seen off-exchange volumes plummet. The EU is also considering a version of trade-at as part of their upcoming MiFID directive.

Potential impact of tick pilot program

What might we expect to see from increased tick sizes? Japan offers a fine example. In 2013, the TSE recognized that artificially wide tick sizes were constraining their market and embarked on a sweeping program that is expected to reduce average spreads from 20th in the developed world to first. Through Phase I of their program, [we’re already seeing](#) spreads decrease and queue wait times decrease, but also seeing a decline in top of book liquidity and trade size.

We have not seen any change in volume in the affected stocks, but we did observe an increase in messaging activity for stocks with tighter spreads (which, recall, we now also see in the US. See page 3).

As the SEC proposes to move ticks in the opposite direction, we might expect to see the opposite results: wider spreads, longer wait times, more posted liquidity, and larger trade sizes.

If we do see these results, though, would that actually be a good thing? Will the larger tick size and the corresponding wider spreads, longer wait times, and increased costs help “real investors”? Do smallcaps actually “suffer” from not having enough posted size?

Wider ticks may hurt price discovery

Furthermore, is imposing a barrier to natural market forces a good thing? Our Japan report points out that when the order book builds at the minimum tick increment, it suggests that investors perceive “fair value” to fall within the spread and that there is latent demand to trade within the (artificially wide) spread.

Interestingly, the inclusion of trade-at is supposed to increase posted liquidity, which is meant to facilitate price discovery – but the price we will be “discovering” will not be what investors deem to be the “correct” price since traders will be prohibited from trading within the spread at what they really believe is the fair value.

Increasing ticks and forcing trading to stay on exchanges may actually be hurting price discovery.

To judge the change, must clearly define criteria

Regardless of what happens, though, a pilot is the perfect way to test market structure changes, since a pilot will come to an end and will allow interested parties to assess the effectiveness. For this, though, we must be sure we have clearly defined metrics with which to judge various outcomes. Those metrics have not been identified yet.

Adapting to New Smallcap Characteristics

Whether you are a supporter of wider ticks or not, the pilot will almost definitely be approved. How should a trader adjust his trading strategies?

In the algo space, the availability of dark liquidity, which is different for each of the three test groups, should drive the decision to use opportunistic strategies (which look to source liquidity in the dark), versus schedule-based tactics that take advantage of posted liquidity. One must also consider that with wider spreads and more posted size, it may be possible to display larger size since the signaling risk goes down deeper in the queue.

On the cash desk, having fewer price points might facilitate block trading since it will be easier to agree on the price.

CREDIT SUISSE QUANTITATIVE & STRATEGY TEAMS

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