Under The Radar: Structural Alpha in the Small-Cap Equity Market

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Executive Summary

As the hedge fund industry has grown over the last decade, alpha has become more elusive. This paper examines several properties of the U.S. small-cap equity market and identifies a number of structural inefficiencies that may be exploited to generate alpha.

We show that small-cap equities are covered by fewer analysts and their analyses are published less frequently, with "noisier" earnings forecasts than those published for large-cap equities. We also demonstrate that large hedge fund investors tend to gravitate to large-cap stocks. Further, despite limited attention from both the sell-side and the buy-side, we underscore that most M&A deals occur among small caps. Lastly, the majority of returns from small caps are driven by stock-specific factors rather than by industry or style-related variables. In conclusion, we believe small cap stocks offer a more fertile ground than large caps for alpha-focused investors.

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Section One Hedge Fund Alpha Has Become More Elusive

The hedge fund industry has grown significantly over the past 15 years from \$540 billion in 2001 to \$2.9 trillion in Q1 2015². Meanwhile, alpha – the return that investment managers deliver beyond what the market offers them – has significantly declined, as shown in Figure 1. In 2001, hedge funds in the HFRI Composite index generated a rolling 3-year alpha of +25%. Alpha peaked at approximately +35% in 2002, then decreased before plateauing between +5 and +10% after 2008.³ Strategies with lower barriers to entry – such as long/short equities – have experienced the steepest decay in alpha generation as more players have entered the industry.⁴ Within the long/short equities strategy, managers focused on small and mid-cap stocks have generated more alpha and exhibited less alpha decay than their large-cap focused peers since mid-2004, as shown in Figure 2.



Source: Investcorp, Bloomberg

What is it that has helped small-cap managers preserve their edge and why has it occurred? It has been widely-accepted that the small-cap equity space provides a more attractive opportunity set for alpha generation through investments in "under the radar" stocks identified by talented stock pickers. We believe managers who focus on small and mid-cap equities can benefit from the "structural alpha" that exists in this space by exploiting inefficiencies, such as the limited volume and quality of information (e.g., fewer analysts, less frequent publication of research reports, and significant dispersion for earnings estimates) and from a less crowded playing field when compared to that of large caps. To support our hypothesis, we have developed a robust data set that examines the structural characteristics of the equity universe across various market capitalizations.

Source: Investcorp, Bloomberg

^{2.} HFR Global Hedge Fund Industry Report - First Quarter 2015.

^{3.} The alpha estimation methodology is explained in detail in Appendix 1.

^{4.} Alpha has been more resilient, however, for niche strategies with higher barriers to entry such as Distressed Credit and Event.

Section Two Trading Volumes Have Declined

First, we consider how trading volumes have evolved over the last ten years for stocks included in the S&P 500 and the Russell 2000, the two main indices that track large and small-cap companies, respectively. We obtained the total monthly trading volume for each stock within both indices and divided this number by the stock's free float. We used this normalized measure of trading volume to compute an average monthly number across the constituents of each index. We plotted these monthly averages from January 2006 to February 2015 in Figure 3, which shows a significant downward trend for both indices, indicating decreasing trading volumes. The decline for small caps, however, is much more pronounced – from 27% in 2006 to 10% in early 2015, ignoring spikes – while large-cap volume has shrunk from 21% to 16%, half of the rate for small caps.



Figure 3: Trading Volume Comparison – Russell 2000 and S&P 500 (Jan'06 – Feb '15)

Source: Investcorp, FactSet

We surmise that as overall trading volume and turnover lessened during the last 10 years, the income that investment banks derived from these activities has also shrunk. The result is that banks have concentrated their analytical resources on the more profitable segment of the market capitalization spectrum, leaving small-cap equities materially under-covered by sell-side analysts.

Section Three Small-Cap Equities Are Materially Under-Covered by Sell-Side Analysts

In this section, we examine various aspects of sell-side coverage for small and large-cap equities. We focus on the number of analysts covering each stock, the number of analyst publications per stock over a given period and the dispersion of analyst forecasts as indicators of consensus or quality of information. These three points lead us to the same conclusion. Small-cap equities are materially under-covered, when compared to large-cap stocks.

3.1 The Number of Analysts Covering Small-Cap Equities Is Significantly Smaller than for Large-Cap

We begin by comparing the number of analysts covering stocks in the S&P 500 and the Russell 2000 indices. The S&P 500 includes the 500 largest companies with common stock listed on the NYSE or the NASDAQ. As of April 2, 2015, the capitalization of companies in the S&P 500 ranged from \$2.8bn to \$730bn, with a median of \$19bn and an average market cap of \$39bn.

The Russell 2000 index includes the smallest 2,000 of the 3,000 largest U.S. companies. As of April 2, 2015, the market cap of stocks in the Russell 2000 ranged from \$5mm to \$16bn with a median of \$755mm and an average market cap of \$1bn. We used *Bloomberg* data to count the number of sell-side analysts following each stock in the corresponding index, as shown in Table 1. The median count of analysts covering S&P 500 stocks was twenty-three, versus seven for Russell 2000 stocks. Some stocks in the Russell 2000, such as Loral Space & Communications (LORL), had no sell-side coverage at all. In contrast, Apple (AAPL), the most widely covered stock in the S&P 500, was followed by 58 analysts. This is nearly twice as many as the number of analysts that cover the most widely covered stock in the Russell 2000, American Eagle Outfitters (AEO), which was covered by 31 analysts.

Table	1:	Sell-Sid	le Ana	lyst (Coverage	(Mar	(15)
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	S&P 500	Russell 2000
Average	24	8
Median	23	7
Minimum	1	0
Maximum	58	31

Source: Bloomberg as of March 13, 2015

Next, we broadened the study to the S&P Broad Market Index (BMI), which includes approximately 3,000 U.S. stocks. We looked at analyst coverage data available via the FactSet database, and we divided this index into market capitalization deciles. The smallest decile includes companies with market caps of \$200mm or less. The top decile includes companies with market caps of \$17bn or more. In Figure 4, the box plots show the distribution of analyst coverage across deciles and, consistent with our expectations, analyst coverage increases monotonically along with market capitalization.



Figure 4: Number of Analysts per Market Cap Size Decile (Mar '2015)

Source: Investcorp, FactSet as of March 18, 2015. For clarity, outliers with values that are 1.5x IQR (interquartile range, e.g., the distance between the 25th and 75 percentiles) less than the 25th percentile or 1.5x IQR greater than the 75th percentile have been excluded.

3.2 Publication Frequency Is Significantly Lower for Small Caps

Now that we have established that fewer analysts tend to cover smaller-cap stocks, the next question we ask is, "How often do they review or publish reports on these stocks?" To answer this question, we used the data service *CapitalIQ* to count the number of publications for the 10 largest and 10 smallest constituents of the S&P 500 and the Russell 2000 indices over the previous 30 days, three months, six months and one year. We used a broad definition of publications, which includes research reports, research notes, earnings estimates, fixedincome reports, and industry overview articles as they relate to the company, initiation of coverage memos, financial models, rating change notices and summaries of reporting results. Our results are reported in Tables 2a and 2b.

We find that the difference in publication frequency for members of the two indices substantial. On average, there were 36 updates for a large S&P 500 stock versus 10 for a large Russell 2000 stock – a ratio of 3.6 to 1 - for the 30-day

period prior to our study.⁵ This ratio stayed within a 4 to 1 range for the prior three, six, and twelve-month periods. When we compare coverage of the largest 10 stocks in the S&P 500 versus the smallest 10 stocks in the Russell 2000, the ratio jumps to ~7 to 1 across periods. While Russell 2000 stocks may receive initial coverage, fewer updates are published. We believe that this relative lack of information accounts for a portion of the inefficiency that persists in the small-cap equity market. We also believe that this persistent inefficiency creates more uncertainty around earnings estimates and pricing for these companies

small-cap equity market. We also believe that this persistent inefficiency creates more uncertainty around earnings estimates and pricing for these companies and, hence, more opportunities for talented stock-pickers to generate alpha. This leads us to our next section, which examines return on opportunities.

	S&P 500		Russel	Russell 2000		
	Largest 10	Smallest 10	Largest 10	Smallest 10		
Last 30 days	36	14	10	6		
Last 3 months	104	50	27	14		
Last 6 months	204	100	51	29		
Last 12 months	389	188	100	51		

Table 2a: Average Number of Analyst Publications per Stock (Mar'15)

Source: Capital IQ as of March 2015. Analyst Publications are broadly defined to include: Research Reports; Research Notes; EPS Estimates; Fixed Income Reports; Industry Overview Articles; Initiation of Coverage Memos; Financial Models; Rating Change Notices; Summaries of Reporting Results

	S&P 500 vs.	Russell 2000	S&P 500 Largest 10 vs.		
	Largest 10	Smallest 10	Russell 2000 Smallest 10		
Last 30 days	3.6	2.3	6.0		
Last 3 months	3.9	3.6	7.4		
Last 6 months	4.0	3.4	7.0		
Last 12 months	3.9	3.7	7.6		

Table 2b: Ratio of Average Number of Analyst Publications per Stock (Mar'15)

3.3 Dispersion of Analyst Forecasts Is Higher for Small Caps

We have established that (1) fewer analysts cover small-cap stocks and (2) they tend to publish less frequently. But when they dispense research, how useful are their analyses for investors? We use dispersion of earnings estimates as a measure of the 'noise' around analyst forecasts. Low dispersion indicates consensus among analysts and sends a clear message to investors. High

^{5.} For example, there were 83 publications on Apple (AAPL) and 42 on Google (GOOG) – the top stocks in the S&P 500 – compared to 13 publication on American Eagle Outfitters (AEO) – the top stock in the Russell 2000 – and 4 on the York Water Company (YORW) – the smallest stock in the Russell – over the prior 30 days.

dispersion indicates greater uncertainty around a company's fundamentals and sends a less clear message to investors. Below, we compare dispersion of analyst earnings forecasts across stocks with different market capitalization and find a strong correlation between size and consensus.

First, we define *Dispersion* of analyst earnings per share ("EPS") forecasts as the standard deviation of the EPS forecasts for each stock, normalized by the absolute of the median of the forecasts across analysts for that stock:

 $Dispersion = \frac{StdDev(EPS)}{|Median(EPS)|}$

We sort the universe by that measure and show the results in a box chart of each decile (Figure 5). The top and bottom boundaries of each box show the 25th and the 75th percentiles of the distribution within that decile, and the white line is the median. The horizontal bars outside the box mark the maximum and minimum of forecasts for each decile and the vertical dashed lines denote the range for outliers that have been trimmed. We find analyst estimates for companies with market caps of \$7bn or more vary in a tight range, less than 10%, and dispersion increases monotonically as size of the market cap drops.





Source: Investcorp, FactSet as of March 18, 2015. For clarity, outliers with values that are 1.5x IQR (interquartile range, e.g., the distance between the 25th and 75 percentiles) less than the 25th percentile or 1.5x IQR greater than the 75th percentile have been excluded.

To summarize, smaller companies receive less analyst attention, resulting in coverage by fewer analysts, less frequent publication of reports and estimates with more dispersion than those of large-cap stocks.

Section Four Largest Hedge Funds Gravitate to Large Caps

Since the 2008 crisis, one of the strongest trends in the hedge fund industry was that the vast majority of asset flows were directed to the largest hedge fund managers. In 2010, 80% of net asset flows went into funds with more than \$5 billion in assets under management. In 2011, this figure was 71% and in 2012 more than 100% of flows went into larger funds (as there were net redemptions out of funds with assets under management between \$1bn and \$5bn).⁶

By construction, the biggest equity-oriented hedge fund managers running assets of \$5 billion or more allocate their capital to larger market capitalization names in order to meet liquidity requirements. In Figure 6, we analyze the holdings obtained from 13F filings of the 20 largest managers in the event driven space to demonstrate this effect. We have disaggregated the holdings of these funds across market capitalization deciles. The results indicate that the top 20 event driven managers allocate nearly 90% of their AUM to large-cap stocks (i.e., greater than \$4bn). Interestingly, the next section highlights that the majority of M&A activity is actually in small and mid-cap stocks (market caps of less than \$5bn).





Source: 13F filings from Bloomberg, Investcorp

Section Five Majority of Event Activity Occurs in Small and Mid-Caps

While less information is available for small-cap stocks and fewer institutional investors allocate to this subset, it appears that much more event activity occurs in this universe (e.g., small-cap companies are more likely to merge or become acquired). We used *Capital IQ* data to analyze merger activity across small-cap (< \$1bn), mid-cap (\$1bn-\$5bn) and large-cap (>\$5bn) equities in the U.S. since 2009, and show the results in Figure 7. Not surprisingly, over 90% of U.S. merger deals have occurred in stocks with market caps less than \$5bn.

Elevated levels of corporate activity tend to drive misunderstanding and mispricing in public markets (e.g., companies undergoing corporate change may engender complex situations), and when combined with the generally reduced informational flow for small caps, may lead to opportunities to extract an analytical advantage. Furthermore, the higher incidence of catalysts in this space (evidenced by the high transaction count) can allow this potential analytical edge to be exploited to a greater degree.



Figure 7: Announced M&A Transactions (count)

Source: Capital IQ, Investcorp

Section Six It Pays More to "Get It Right" in Small Caps

With more events happening in small caps and less quality research available for this market cap, the reward for "getting it right" has the potential to be greater. Strategists at RBC Capital Markets recently published a study called "The Value of Perfect Foresight." In that report, they measured the return of perfect foresight on company earnings, revenue or margins for two sets of companies. The authors used the S&P 600 as a proxy for the small-cap universe and the S&P 500 for the large-cap universe. Both universes are broken into quintiles based on earnings revisions during the month. At the beginning of each month, the strategy is long the top quintile and short the bottom quintile in each respective universe. The results are then compounded over five years and reported in a table reproduced as Figure 8.

If an investor had the luxury of applying this strategy on earnings revisions for small caps, he or she would have earned +64.6% of excess return compared to +34.7% by following the same methodology for large caps. Part of this difference can be attributed to the higher volatility of small-cap equities; however, the results strongly indicate how much less efficient the small-cap equity market appears to be. We view quality fundamental research as a middle ground between perfect foresight and no insight. In an environment with limited coverage of small caps, investment managers who can conduct quality research may be able to generate higher returns by investing in small-cap equities instead of their large-cap counterparts.



Figure 8: Annualized Excess Return from Properly Identifying Revisions of the Upcoming Month; 5-year average

Source: RBC

Section Seven Idiosyncratic Factors Matter More for Small Caps

The two charts below were recently produced by Deutsche Bank's quantitative strategy team and further highlight the increased opportunity set that exists within small-cap stocks relative to large-caps. Equity returns are driven by a multitude of factors, including broad market-wide effects that can be determined by macroeconomic variables, industry-wide effects, pervasive "style" biases (e.g., preference for "value" over "growth" characteristics) and finally idiosyncratic stock-specific factors. Between 2000 and 2008, the balance between stockspecific drivers and a more top-down approach and industry drivers was relatively even. However, the advent of aggressive global Central Bank policy action after the financial crisis resulted in macroeconomic influences playing a much greater role in determining the opportunity set for stocks, while the influence of stock-specific drivers were diminished.

Figures 9 and 10 deconstruct the opportunity set available to investors into more top-down factors, such as industry and style factors (growth, value, momentum, etc.), and the residual stock-specific elements. Both large-cap and small-cap top-down factors played a far more dominant role between 2009 and 2012, than in the preceding ten years. However, this effect has abated somewhat over the past three years, and stock-specific factors have increased, returning to 2004-2007 levels.

This effect is much more pronounced in the small-cap opportunity set than that of large-caps. Stock-specific influences drive approximately 80% of the small-cap opportunity set as opposed to approximately 60% for large caps.



Figure 9: Small-Cap Opportunity Set

80% of returns in small caps are stock-specific vs. 60% in large caps



Figure 10: Large-Cap Opportunity Set

Source: "Quantitative Strategy, The Quant View" – Deutsche Bank Markets Research, 4 March 2015

Section Eight Conclusion

Since 2002, hedge fund alpha has become more elusive. Strategies with lower barriers to entry such as long/short equities have experienced the steepest decay in alpha generation. Within this strategy, however, small-cap equities remain a more fertile ground for differentiated stock picking due a number of structural inefficiencies.

Relative to large-cap, smaller-cap equity is covered by few analysts. Additionally, fewer publications feature small-cap stocks and a higher dispersion of earnings estimates exists for these companies. The largest hedge funds, particularly in the event driven space, gravitate to large-cap stocks; yet, most mergers and acquisitions occur in small and mid-cap companies (less than \$5 billion of market capitalization). Finally, returns for "getting it right" are substantially greater for small-cap equities than for large caps.

As of result of these structural inefficiencies, we believe that alpha-focused investors can be rewarded by allocating to U.S. small-cap long/short equity strategies.

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Appendix 1

We compare time series of rolling three-year total alpha of the Investcorp Hedge Equities Global index versus our small-cap focused Hedge Equity funds universe.

Methodology Description:

First, a customized benchmark index is defined as a basket of traditional beta (MSCI World Index) and alternative beta factors (Investcorp size factor, value factor, quality factor and momentum factor).

Second, monthly returns history of a selected universe (either the Investcorp Hedge Equities Global Index or the Hedged Equities Small Cap Index) are modelled against the benchmark using a dynamic Kalman filter to capture their dynamic exposure to those factors. The residual is defined as "security selection alpha". The static portion of the fitted value is defined as the "passive beta risk premia", and the dynamic portion of the fitted value is defined as "beta timing alpha".

Finally, monthly total alpha is defined as the sum of security selection alpha and beta timing alpha. Rolling 3-year sums of monthly alpha are charted for both the Investcorp Hedge Equities Global index and the Investcorp customized small-cap focused Hedge Equity index.

The Investcorp Hedge Equity Global Index is defined as equal weighted average of four regional Hedge Equity Indices

Index Name	Strategy
Morningstar MSCI Security Selection North America	HE - US
Morningstar MSCI Security Selection Europe	HE - Europe
Eurekahedge Japan Long Short Equities Hedge Fund Index	HE - Japan
Eurekahedge Asia incl. Japan Long Short Equities Hedge Fund Index	HE - Asia

Investcorp customized small-cap focused Hedge Equity index consists of 15 funds selected by Investcorp with equal weightings.

Appendix 2

Market Capitalization of the various indices referenced in the article.

		Market Cap (\$mm)			
Indices	Description	Average	Median	Max	Min
S&P 500	The S&P 500 is based on the market capitalizations of 500 companies having common stock listed on the NYSE or NASDAQ	\$39,418	\$19,120	\$729,957	\$2,796
S&P Small Cap 600	The S&P Small Cap 600 measures the small-cap segment of the U.S. equity market. The index is designed to track companies that meet specific inclusion criteria to ensure that they are liquid and financially viable.	\$1,300	\$1,112	\$13,839	\$87
Russell 3000	The Russell 3000 measures the performance of the largest 3,000 U.S. companies representing approximately 98% of the investable U.S. equity market.	\$8,332	\$1,583	\$729,957	\$5
Russell 1000	The large-cap index of the top 1,000 stocks in the Russell 3000 Index.	\$22,286	\$8,418	\$729,957	\$196
Russell 2000	The small-cap benchmark index of the bottom 2,000 stocks in the Russell 3000 Index.	\$1,136	\$755	\$15,923	\$5

Market Cap data as of April 2, 2014

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