

Factors Matter, Size Doesn't

Dave Merkel posed a question last Friday in [Columnist Conversation](#) why we keep hearing the phrase four-year high. What was left unasked, and is seldom asked outside of the pension fund consulting community – you know, the crowd for whom \$10 billion is pocket change – is why we have so many indices and how do their performances differ. This is a real money question for *RealMoney* readers: When these elephants dance, the ground shakes.

In truth, no index fund manager or investor could disagree with the statement that performance is affected by the composition of the index involved. The most common dimensions on which indices are segmented from the entire population of stocks are capitalization, growth versus value and business composition. In homage to Heisenberg's famous Uncertainty Principle, we cannot subdivide a population along any single dimension without affecting the distribution of all other possible dimensions. Where you draw the line on classifying a stock as, say, middle or small-capitalization affects the resulting composition of the index along dimensions of, say, growth or exposure to the energy industry. As an aside, we should ask the question why the investment management community feels comfortable treating capitalization differences as critical and then has no problem whatsoever, as discussed here in [May](#), in lumping completely unrelated commodities together.

Big Differences In Small Stocks

Such has been the case with small stock benchmarks. Let's take two benchmark indices, the Russell 2000 (RTY) and the S&P 600 (SML). The former includes the smallest 2,000 stocks within the Russell 3000 index, the latter the smallest 600 stocks within the S&P 1500 index. The names alone would suggest different average sizes, and unless the distribution of other dimensions is uniform throughout the population and perfectly uncorrelated to the dimension of size, we know we will have indices with different performance.

Let's compare the total returns of the RTY and the SML through a set of time intervals ending July 29, 2005. To investigate the commonly held belief the SML benefits from its greater exposure to middle-capitalization issues, let's add the Russell 2500 (R2500) into the mix; these are stocks 501-3000 in the Russell universe.

Total Returns Of Selected Indices Through July 29, 2005

	April 30, 2005	Period December 31, 2004	July 31, 2004	Annualized May 9, 2003
S&P 600	16.72%	7.93%	27.27%	29.98%
Russell 2000	17.72%	5.05%	24.90%	27.66%
Russell 2500	15.60%	6.58%	25.49%	27.29%

Size And Performance

The SML outperformed the other indices during the first seven months of 2005, over the preceding year, and indeed on an annualized over the entire period since the end of formal hostilities in Iraq. In a triumph of the small, the RTY outperformed the SML which in turn outperformed the R2500 over the past three months. Are these performance differentials the result of size or are some other factors at work?

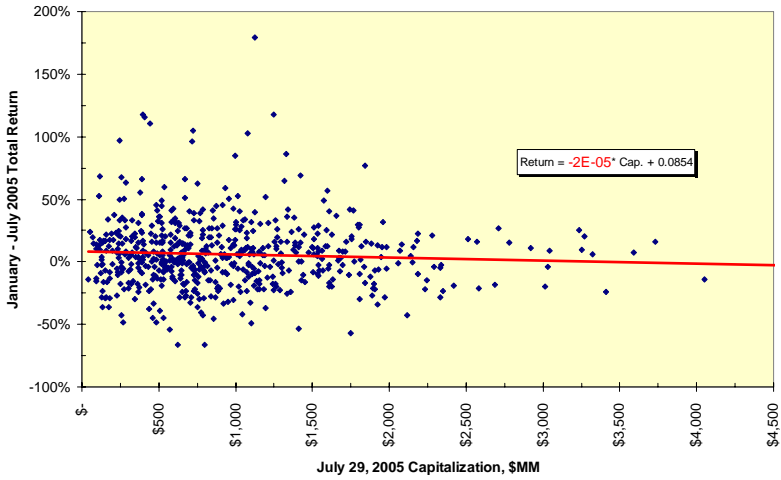
While the R2500 has the largest average capitalization, \$1,084.7 million, this is misleading. The SML has both a larger median capitalization than the R2500, \$785.6 million against \$759.7 million, and a much smaller standard deviation, \$686.7 million against \$1,172.6 million.

Index Capitalization, \$MM

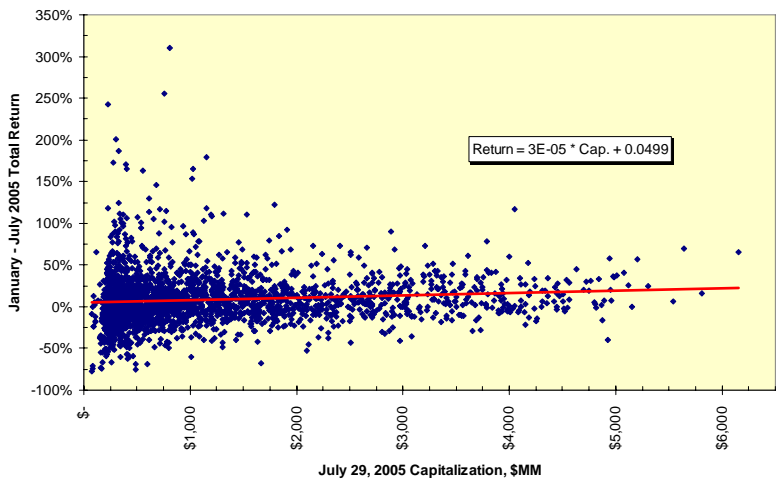
	Average	Median	Std. Dev.
S&P 600	953.8	785.6	686.7
Russell 2000	721.4	578.3	474.0
Russell 2500	1,084.7	759.7	1,172.6

Yet if size or even the distribution of size were an overriding factor in determining performance, we would be able to see a statistically non-zero relationship between returns over time and size. No such relationship is visible for any of the three indices under examination over the first half of 2005.

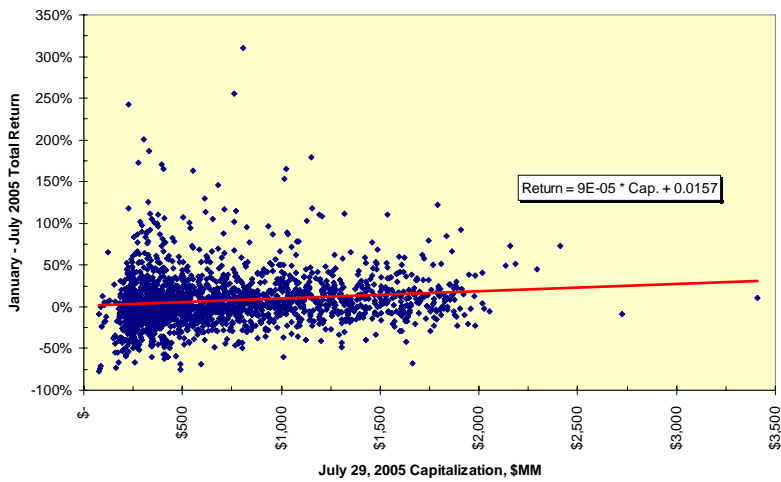
Capitalization - Return Relationship For S&P 600



Capitalization - Return Relationship For Russell 2500



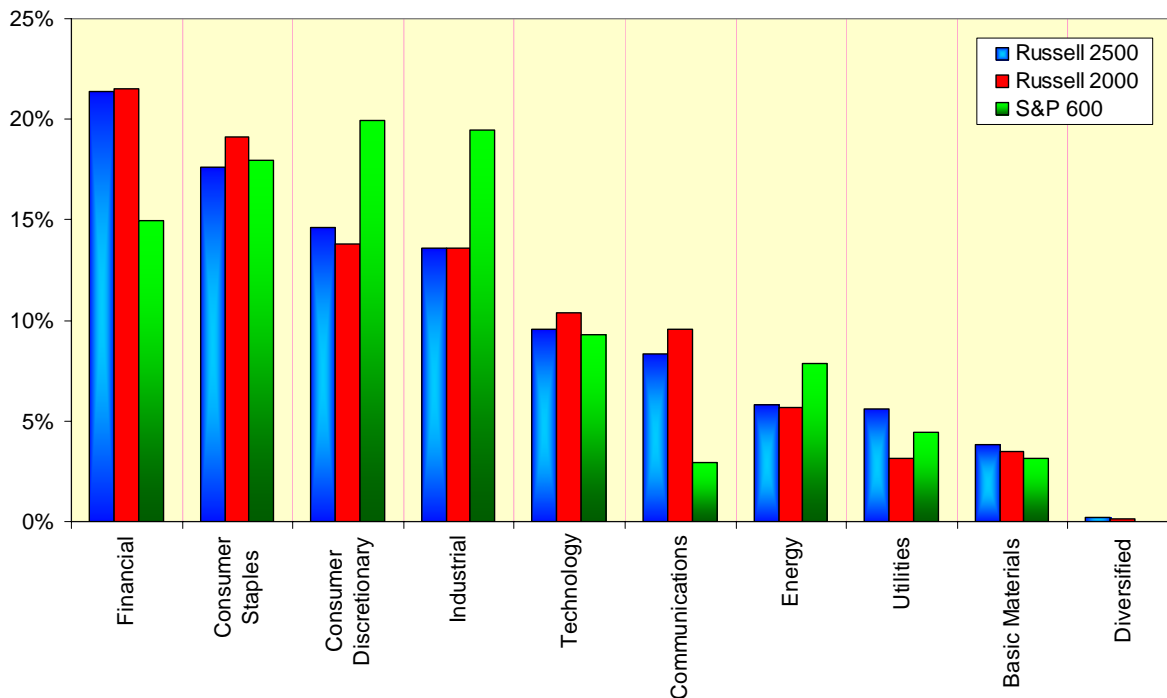
Capitalization - Return Relationship For Russell 2000



Economic Sectors

If size does not matter, and if all indices in question are inclusive of both value and growth styles, can we point to the accidental distribution of economic factor exposure as a cause of different performance? This appears to be the case. The chart below depicts the economic sector weightings of the three indices in question.

**Comparative Economic Sector Weightings:
Russell 2500 And Russell 2000 Vs. S&P 600**



The SML is underweighted in Financials and Communications and overweighted in Consumer Discretionary, Industrials and most important of all for 2005, in Energy. How have these weightings translated into return differentials?

Using a different industry group weighting available for the Russell indices but not for the SML, the answers become apparent quickly. The tables below list the differences in total return between each of the Russell industry groups versus the return on the entire SML. For example, during the seven months of 2005, the Russell 2500 Integrated Oil group's total return exceeded that of the entire SML by 28.5%.

Russell 2500 - S&P 600

	Aug 2004 - Jul 2005	Jan - Jul 2005	May - Jul 2005
Integrated Oil	18.8%	28.5%	27.9%
Other Energy	32.5%	27.9%	15.0%
Utilities	7.5%	9.7%	0.9%
Producer Durables	9.3%	3.9%	6.4%
Consumer Staples	-3.6%	2.7%	-3.5%
Other	-5.0%	-0.2%	-1.2%
Health Care	-2.6%	-1.4%	-1.5%
Consumer Discretionary	-3.4%	-2.0%	-0.7%
Materials & Processing	1.8%	-2.2%	-0.1%
Financial Services	-3.9%	-4.5%	-1.1%
Automobiles & Transportation	-10.0%	-7.5%	4.5%
Technology	-7.6%	-9.0%	4.7%

Russell 2000 - S&P 600

	Aug 2004 - Jul 2005	Jan - Jul 2005	May - Jul 2005
Integrated Oil	21.2%	31.3%	24.7%
Other Energy	34.9%	30.7%	11.8%
Utilities	9.9%	12.5%	-2.3%
Producer Durables	11.7%	6.7%	3.2%
Consumer Staples	-1.2%	5.6%	-6.7%
Other	-2.7%	2.6%	-4.4%
Health Care	-0.2%	1.4%	-4.7%
Consumer Discretionary	-1.0%	0.9%	-4.0%
Materials & Processing	4.2%	0.6%	-3.4%
Financial Services	-1.5%	-1.7%	-4.3%
Automobiles & Transportation	-7.6%	-4.7%	1.3%
Technology	-5.3%	-6.2%	1.5%

The strongest performing groups by industry in the first seven months of 2005 were Integrated Oil, Other Energy and Utilities. The Financial Services group was an underperformer during this period. The SML was overweighted in economic sectors which led the market and was underweighted in an economic sector, Financial Services, which underperformed. It was this happenstance, the relative distribution of economic sectors in the capitalization spectrum from which the SML was selected, that accounted for its outperformance over the periods in question.

Economic Factor Exposure

We can refine the above analysis one step further by taking the beta of each of the three indices against a group of primal market factors. This isolates the effect of each factor against the indices and eliminates the arbitrary decisions inherent in classifying stocks into economic sub-indices. The factors involved are:

Interest Rate

Two-Year Yield (TWO)
Ten-Year Yield (TEN)
Inflation Breakeven (TIP)

Financial Factor

Yield Curve (FRR)
Volatility (VIX)
Gold (GCA)

Industrial Commodity

Crude Oil (CLA)
Copper (HGA)
Natural Gas (NGA)

Currency

Euro (EUR)
Yen (JPY)
Can \$ (CAD)

A table of the betas of each index over the statistically significant sample extending back to May 2003 is presented below. For example, the SML has a beta of 0.145 against the Japanese yen; as the yen firms, we expect the SML to rise 14.5% as much, all else held equal.

	S&P 600	Russell 2000	Russell 2500
FRR	-0.591	-0.640	-0.530
VIX	-0.148	-0.086	-0.139
EUR	-0.090	-0.086	-0.060
CLA	-0.018	-0.027	-0.021
GCA	-0.002	0.010	0.015
NGA	0.013	0.013	0.011
TWO	0.042	0.048	0.037
TIP	0.056	0.068	0.050
TEN	0.081	0.092	0.067
CAD	0.088	0.100	0.104
HGA	0.027	0.112	0.103
JPY	0.145	0.168	0.169

Once again, the happenstance of factor selection worked in favor of the SML against the two Russell indices. Dominant economic trends of the past two years included the flattening of the yield curve and the surge in crude oil prices. The RTY has the most negative beta against both the shape of the yield curve and against crude oil prices.

These were unusual market trends unlikely to be repeated. No one could have predicted the odd combinations of market events we have seen over the past two years – even Alan Greenspan was reduced to calling it a “conundrum” – and even if you could forecast such events, that is not the role of the indexer.

What it does serve as, if one more reminder is necessary, that indexation is still an *ad hoc* set of anecdotes without an underlying predictive theory. Where, for example, was there a cry before the fact for indexers to abandon the established S&P 500 capitalization-weighted index and move to the equal-weighted index which, you guessed it, started banging out all-time highs of late? The implication of equal weighting is you devote more of your resources to the less-successful firms and less of your capital to the more-successful firms. When performance switches, there will be some other darling.

Peter Lynch always advised to invest in what you know. That includes index funds: Know their weights, know their sizes and know their philosophies. And know whether you simply are chasing after performance when you compare, as we did above, similar indices with different factor exposures.