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Mauboussin on STRATEGY

Michael J. Mauboussin

mmauboussin @ lmcm.com

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ROIC Patterns and Shareholder Returns
Sorting Fundamentals and Expectations

We draw two morals for our readers:
1. Obvious prospects for physical growth in a business do not translate into obvious profits for investors.
2. The experts do not have dependable ways of selecting and concentrating on the most promising companies in the most promising industries.

Benjamin Graham
The Intelligent Investor [1]

From Modeling to Making Money

Our recent piece, "Death, Taxes, and Reversion to the Mean" [2], aimed to provide context for analysts building financial models by documenting return on invested capital (ROIC) patterns for a large sample of companies. But the report was silent on the question most relevant for investors: Does an understanding of ROIC patterns help with stock picking? This piece addresses that question.

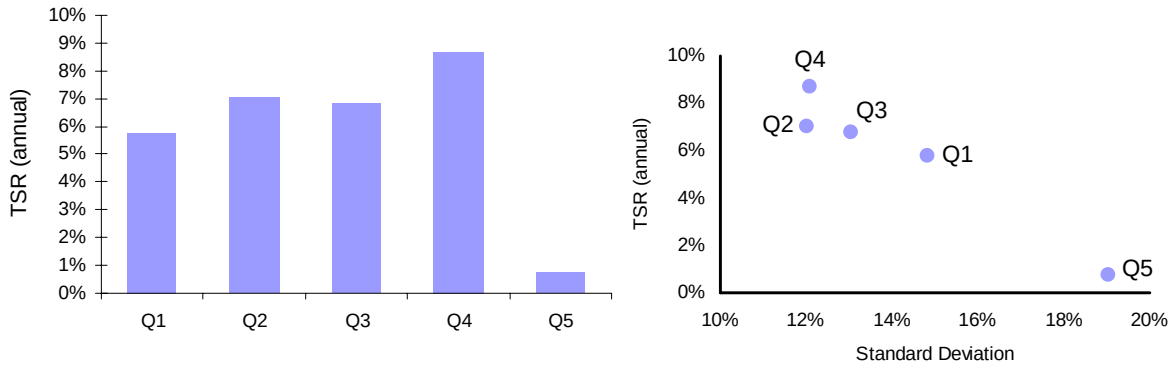
Three main points emerged from the analysis of ROIC patterns. First, analysts need to consider the lessons of history when modeling rather than approaching each model as unique. Analysts should view the experience of a large sample of companies as a rich reference class. Second, the empirical evidence shows ROICs tend to revert to the mean, a level similar to the cost of capital. Randomness plays an important role in the mean-reversion process. Finally, some companies do deliver persistently high or low results beyond what chance would dictate. Unfortunately, pinpointing the causes of persistence is a challenge.

In an efficient market, stock prices are an unbiased estimate of value. Market efficiency does not say that stock prices are always right; it only asserts that prices are not wrong in a systematic way. For this analysis, we combined our data on ROIC patterns with total shareholder returns to see whether there is a consistent way to generate excess returns.

Buy the Best, Sell the Rest

Investment pros often recommend buying good businesses. So we started our total shareholder return investigation by analyzing the returns from equal-weighted portfolios based on 1997 ROIC quintiles (our data are from 1997 through 2006). The first quintile represents the 20 percent of the companies with the highest ROICs, while the fifth quintile comprises the worst-ROIC companies. Exhibit 1 shows the annual total shareholder returns (TSR) and the combination of returns and standard deviations for each portfolio from 1997 through 2006. Appendix A provides the full distributions. To provide some context, the 1,000-plus companies in this sample came from the Russell 3000, which provided an 8.6 percent return during this period. Appendix B reconciles the index's returns with those from our sample.

Exhibit 1: Returns (1997-2006) by Quintile Based on 1997 ROIC Ranking



Source: FactSet Research Systems Inc. and LMCM analysis.

The results show that buying the best business as measured by beginning-year ROIC rank would have yielded undistinguished returns. In fact, portfolios of the middle-quintile companies delivered higher returns with lower standard deviations. Only the lowest-quintile portfolio generated markedly substandard TSRs, and did so with the highest standard deviations to boot.

These figures are broadly consistent with the notion of market efficiency. The market equilibrates shareholder returns by placing high valuations on good businesses and low valuations (although, apparently not low enough) on bad businesses. [3] The market is generally decent at recognizing and pricing businesses consistent with their prospects.

What if we had some sense of whether companies would realize improved, sustained, or worsened ROICs through the measurement period? Exhibit 2 analyzes the returns based on the combination of where companies start (1997 rank) and end (2006 rank). For example, Q1-Q1 represents the group of companies that were in the highest ROIC quintile both in 1997 and 2006.

Exhibit 2: Returns for All 1997 to 2006 Quintile Combinations

		2006 Quintile									
		Q1		Q2		Q3		Q4		Q5	
		Mean	St Dev	Mean	St Dev	Mean	St Dev	Mean	St Dev	Mean	St Dev
1997 Quintile	Q1	13.0%	10.2%	9.5%	10.1%	7.5%	9.5%	3.8%	10.7%	-12.5%	16.4%
	Q2	12.0%	7.1%	11.0%	7.3%	7.7%	6.1%	2.6%	8.7%	-12.8%	20.5%
	Q3	16.0%	12.8%	13.1%	8.5%	9.2%	6.5%	3.7%	9.2%	-10.7%	17.1%
	Q4	17.2%	12.8%	17.8%	6.0%	10.6%	8.6%	8.8%	6.1%	-2.7%	19.0%
	Q5	12.2%	15.0%	9.3%	11.1%	8.8%	9.8%	1.0%	17.7%	-9.8%	20.6%

Source: FactSet Research Systems Inc. and LMCM analysis.

The results are somewhat intuitive. The market rewards improvement. For instance, the companies that started in Q4 and Q5 (lowest returns) and ended in Q1 and Q2 (highest returns) generated TSRs in excess of 14 percent annually. You can re-create this result by studying the bottom-left corner of Exhibit 2. Symmetrically, the market punishes worsening ROICs. Those companies that started in Q1 and Q2 but fell to Q4 and Q5—represented in the upper-right corner—had TSRs of -4.7 percent.

Companies that defy the powerful force of mean reversion and sustain either good or poor performance also deliver noteworthy TSRs. To illustrate, the companies that started and ended in Q1 and Q2 enjoyed TSRs of 11.4 percent. Those companies that were in Q4 and Q5 at both the beginning and the end of the period suffered TSRs of -0.7 percent.

Finally, there are clear TSR implications for companies that sustain unusually good or poor ROIC performance. The small sample that remained in Q1 throughout the decade, which was less than four percent of the total population, delivered TSRs of 15.7 percent, close to twice the index

average. In contrast, the 27 companies lodged in Q5 throughout the period badly lagged the index, suffering TSRs of -17.6 percent.

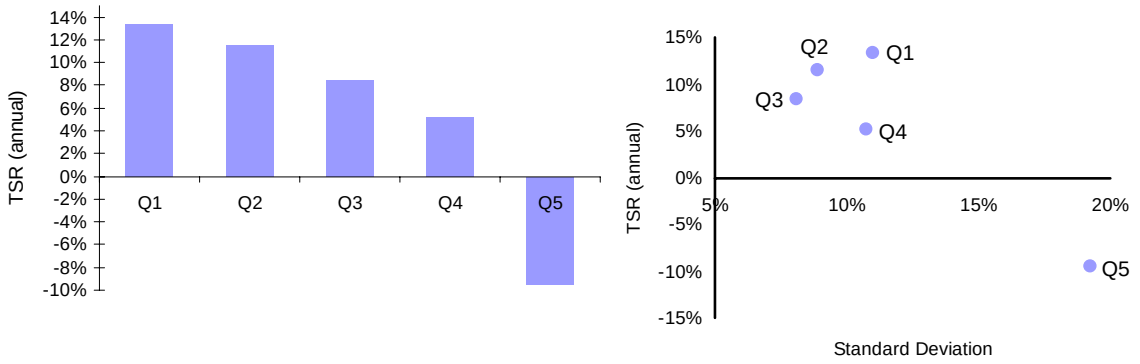
This analysis suggests a simple commonality in extreme returns: expectations for future ROICs were mispriced. Central to exploiting this opportunity is an ability to correctly anticipate a company's future competitive position that is better or worse than what today's price implies. Unfortunately, there is little evidence to show investors can do this in a systematic fashion. But the ROIC analysis underscores the significance of competitive strategy analysis for long-term shareholders. [4]

Investing with a Crystal Ball

We saw that simply buying the companies with the highest ROICs in 1997 did not lead to remarkable TSRs. But what if we had been able to know, way back in 1997, which companies would end up in each of the quintiles in 2006? This crystal-ball knowledge would have been as lucrative as it was implausible. [5]

Exhibit 3 shows the figures: TSRs follow the ROIC quintiles right down the line. Appendix A shows the TSR distributions for each of the quintiles. The most straightforward interpretation of this result is the market expects the ROIC for any individual company to mean-revert, so it is surprised (versus initial expectations) if companies do much better or worse than average.

Exhibit 3: The Returns on Foresight Is Great—and Implausible



Source: FactSet Research Systems Inc. and LMCM analysis.

As the prior report stressed, ROIC outcomes over time combine skill and luck. Really good results combine good skill and good luck, while really bad results reflect the opposite. As luck is randomly distributed, results tend to mean-revert as competitive forces undermine corporate skill and good luck dissipates. So an ability to anticipate which companies end up in each quintile requires understanding competitive dynamics and reckoning for luck's substantial role.

Growth: What Is It Good For?

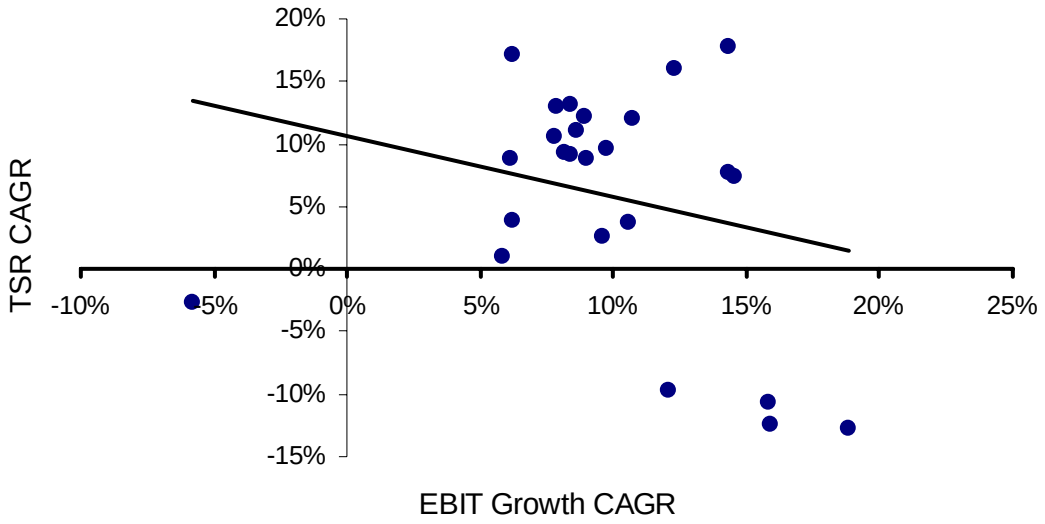
Earnings-per-share growth remains the focal point of corporate financial disclosure. [6] This persists in spite of the loose relationship between earnings growth and value creation as well as the long-standing admonishment from leading investors. Consider Warren Buffett's comments from his 1979 letter to shareholders: [7]

> The primary test of managerial economic performance is the achievement of a high earnings rate on equity capital employed and not the achievement of consistent gains in earnings per share. In our view, many businesses would be better understood by their shareholder owners, as well as the general public, if managements and financial analysts modified the primary emphasis they place upon earnings per share, and upon yearly changes in that figure.

Earnings growth only creates shareholder value if a company generates returns in excess of the cost of capital. So companies can grow earnings while destroying value for shareholders. Indeed, an alarming percentage of executives readily concede they are willing to trade off higher earnings for lower shareholder value when the two come into conflict. [8]

Exhibit 4 combines the earnings growth of each of the beginning/ending ROIC quintiles with TSRs. The exhibit shows the correlation is not only weak, but actually negative (i.e., more rapid growth is associated with lower TSRs). So earnings growth in isolation of sufficient value-creating returns is not shareholder enriching.

Exhibit 4: Growth and Shareholder Returns Don't Always Go Together



Source: FactSet Research Systems Inc. and LMCM analysis.

Finally, academic research shows there is very low predictability for long-term earnings growth. [9] So even in cases where an analyst successfully anticipates future ROIC levels—itself difficult to predict beyond chance—the likelihood of being able to combine returns and growth at a reasonable price is low.

Business Model: High Margins and Shareholder Returns

One important metric of competitive advantage is sustained ROIC that is above average and in excess of the cost of capital. There are two generic strategies for achieving competitive advantage: differentiation and low-cost production. Differentiation is often associated with high operating income margins, while low-cost production is linked to high invested capital turnover.

To test these generic strategies, we selected the companies that fell in the top quintiles over the full decade based on these measures, and analyzed their TSRs. Based on this sample, sustaining high margins is more value-creating than rapid invested capital turnover. The high-margin group enjoyed an 11.6 percent TSR, about 300 basis points higher than the index average, while the high-turnover group failed to match the index, earning a 7.7 percent TSR. Not surprising, the companies that intersected both quintiles earned 13.8 percent returns, handily beating the index.

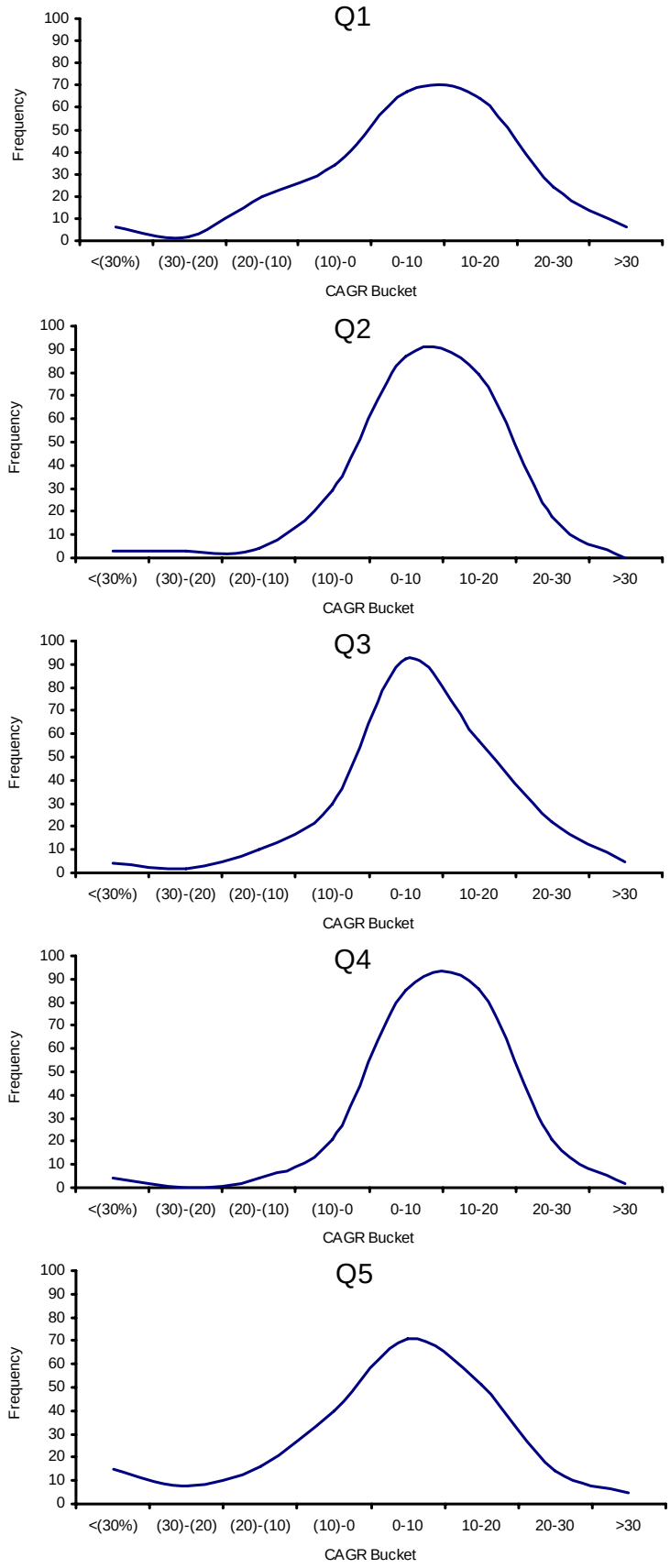
Summary

Taken together, the prior report on ROIC patterns and this analysis of ROIC and TSRs underscore how difficult it is for companies to achieve long-term superior financial performance as well as how hard it is to benefit from changing ROIC patterns. Here are some of the main conclusions from this analysis:

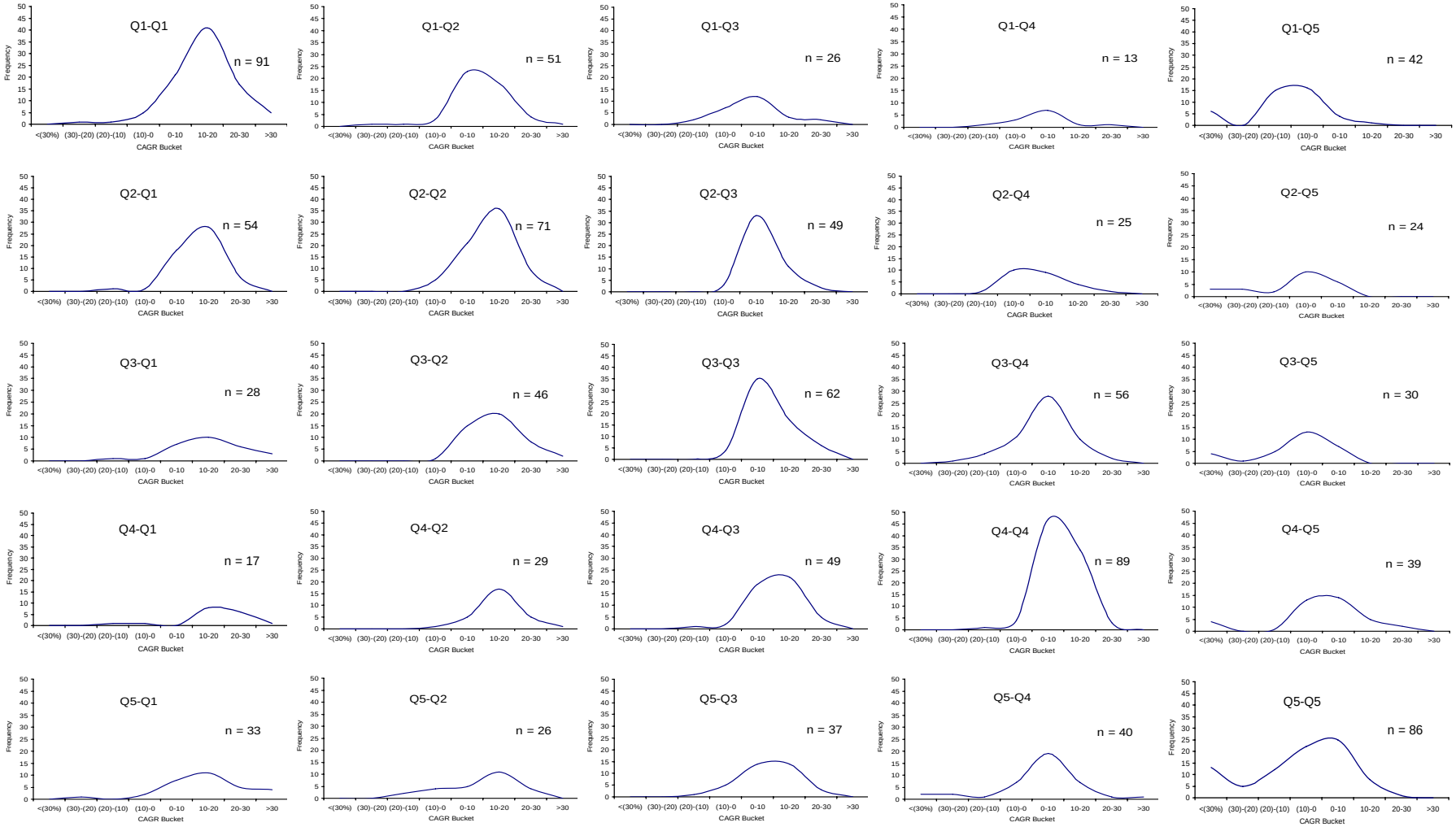
- Simply buying a portfolio of good, or bad, businesses is not a prescription for excess shareholder returns.
- There is a huge payoff for correctly anticipating changes in ROIC. Unfortunately, there appears to be no simple, systematic way to predict future, unanticipated ROICs.
- Growth by itself does not correlate with value creation. Companies must combine growth and sufficient ROICs in order to create shareholder value.
- Companies that sustain high operating profit margins do deliver excess returns over time. In contrast, maintaining high invested capital turnover ratios does not appear to be linked to above-average returns.
- The markets do a reasonable job equilibrating returns by placing higher valuations on good businesses than on bad businesses (as measured by ROIC). Still, deciphering the difference between fundamentals and expectations is an investor's prime task.

Appendix A: Distributions of Returns

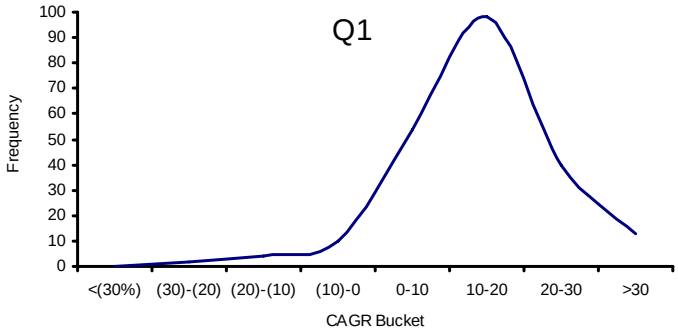
Return distributions: Q1-Q5 based on 1997 ranking (Source: FactSet Research Systems Inc. and LMCM analysis.)

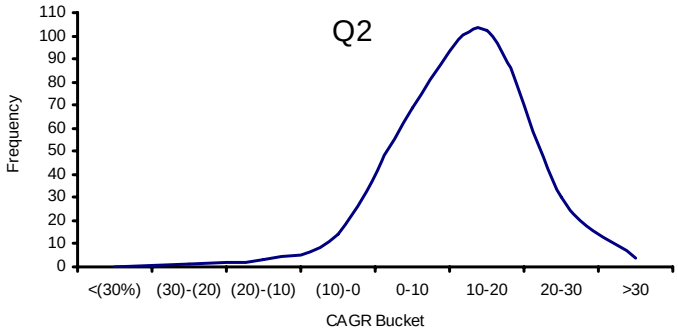


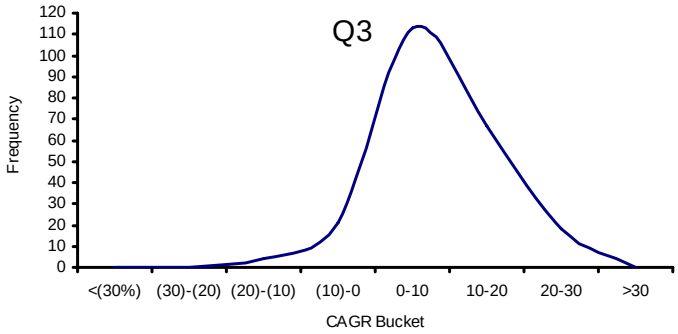
Return Distributions for All Quintile to Quintile Pairings (Source: FactSet Research Systems Inc. and LMCM analysis.)

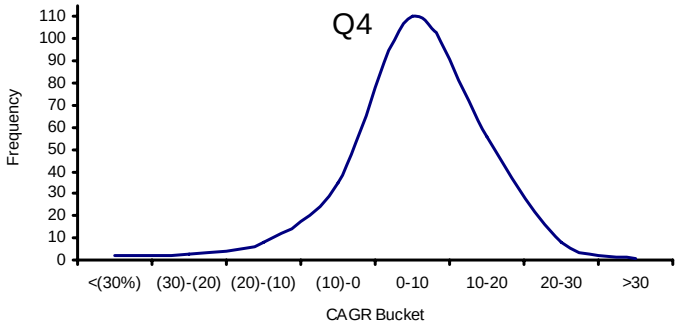


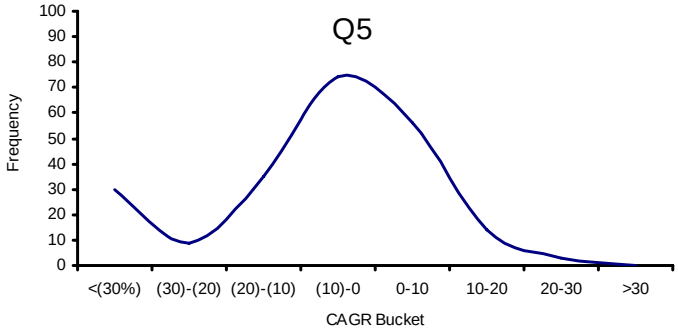
Return distributions: Q1-Q5 based on 2006 ranking (Source: FactSet Research Systems Inc. and LMCM analysis.)











Appendix B: Explaining the Difference in Returns Between Our Sample and the Russell 3000

The disparity in returns between the Russell 3000 and our sample likely stems from three factors: [10]

1. **Sample members/constituency**

The Russell 3000 is market-cap-weighted, whereas our portfolios (the quintiles) are equal-weighted. The Russell 3000 is the largest 3000 companies from the Russell 3000E, a broad U.S. index containing the largest 4,000 companies incorporated in the U.S. and its territories. Therefore, companies that continue to grow in size are likely to remain in the Russell 3000, while companies that shrink could be dropped (if they fall below the 3000 threshold). These companies are not removed from our sample (a static 1,115 companies). Our continued inclusion of these laggards might explain some of the underperformance of our sample.

2. Survivorship bias

Other primary vehicle changes in the index are acquisition/mergers, delistings, and spin-offs. Because we limited our list of companies to those that existed for the full sample period, by nature our sample would not have included companies that were acquired/merged, delisted, or spun-off.

That the Russell 3000 is revised periodically to incorporate these changes could explain some of the disparity in returns. For instance, survivorship bias could actually have biased our returns upward, as our sample excluded failed companies. On the other hand, excluding companies that were acquired (usually bought with a premium) may have negatively biased our returns.

3. Financial services sector

Our report does not include the financial sector, which greatly outperformed the rest of the index during the sample period.

Total return CAGR 12/31/96-12/31/06:

Russell 3000 (RAY):	8.6%
Russell 3000 Financial Services (R3FINL):	13.1%

The Russell 3000 Index has a market cap of $16.7 trillion and the Financial Services component has a market cap of $3.1 trillion, or approximately 19 percent of the total index (as of 1/3/08).

Endnotes

[1] Benjamin Graham, *The Intelligent Investor, 4th Revised Edition* (New York: Harper & Row, 1973), xiv-xv.
[2] Michael J. Mauboussin, "Death, Taxes, and Reversion to the Mean," *Mauboussin on Strategy*, December 14, 2007. See http://www.lmcm.com/pdf/DeathTaxesandReversionToTheMean.pdf.
[3] For a similar analysis conducted nearly thirty years ago, see William E. Fruhan, Jr., *Financial Strategy: Studies in the Creation, Transfer, and Destruction of Shareholder Value* (Homewood, IL: Richard D. Irwin, 1979), 52-53.
[4] Alfred Rappaport and Michael J. Mauboussin, *Expectations Investing: Reading Stock Prices for Better Returns* (Boston, MA: Harvard Business School Press, 2001), 51-66.
[5] Correctly anticipating future earnings also yields attractive TSRs. See Robert L. Hagin, *Investment Management: Portfolio Diversification, Risk, and Timing—Fact and Fiction* (New York: John Wiley & Sons, 2004), 75-80.
[6] John R. Graham, Campbell R. Harvey, and Shiva Rajgopal, "Value Destruction and Financial Reporting Decisions," *Financial Analysts Journal*, November/December 2006, 27-39.
[7] Warren E. Buffett, *Berkshire Hathaway Annual Report Letter to Shareholders*, 1979. See www.berkshirehathaway.com.
[8] Graham, Harvey, and Rajgopal.
[9] Louis K. C. Chan, Jason Karceski, and Josef Lakonishok, "The Level and Persistence of Growth Rates," *Journal of Finance*, Vol. 58, 2, April 2003, 643-684.
[10] Russell Investments, *Russell U.S. Equity Indexes Construction and Methodology*, December 2007.