

Extreme Stock Market Performers, Part III: What are their Observable Characteristics?

Hendrik Bessembinder*

July 2020

Summary

Firms with the best decade-horizon shareholder outcomes differ substantially on average from other firms in terms of characteristics that can be observed and objectively measured during the same decade. Most notably, top-performing firms have rapid asset growth, and in particular have strong cash accumulation. Top-performing firms are more profitable on average, despite higher R&D spending. Top performing firms in terms of accumulated rates of return tend to be younger and have more volatile returns as compared to more ordinary firms, while top performing firms in terms of dollar shareholder wealth creation tend to be older and do not have particularly volatile returns. The skewness of monthly returns does not have significant explanatory power for which firms have extremely strong decade-horizon outcomes.

* Professor of Finance, W.P. Carey School of Business, Arizona State University. E-mail: hb@asu.edu. Baillie Gifford and Company provided financial support for this project.

Extreme Stock Market Performers Part III: What are their Observable Characteristics?

1. Introduction

Investments in publicly-traded U.S. stocks improved the wealth of shareholders by over \$47 trillion dollars between 1926 and 2019, as compared to a benchmark where investors instead earned Treasury-bill returns.¹ However, this extraordinary improvement in shareholder wealth was concentrated in relatively few stocks. Just eighty-three firms (0.32% of total) accounted for half, and five firms (0.02% of the total) accounted for 11.9%, of net shareholder wealth improvement during this 94-year period. This note is the third in a series intended to shed light on the characteristics of the firms that generated extreme positive (and extreme negative) shareholder outcomes in the each of the seven decades since 1950.²

In particular, this note reports how certain firm characteristics differ on average across the firms that deliver the best performance and those that deliver the worst performance, as compared to more typical firms, within each decade. I focus on characteristics that can be objectively measured based on accounting data and/or stock market outcomes, and focus in this study on characteristics that are measured during the same decade as stock performance. While this analysis cannot be interpreted as identifying *predictive* characteristics, it helps to identify

¹ See Bessembinder (2020). Wealth creation for each stock is computed based on expression (3) in Bessembinder (2018), relying on monthly data from the Center for Research in Security Prices (CRSP) database, and is measured as of December 31, 2019. Wealth creation aggregated across companies is similar to a value-weighted return, except that it is measured in dollar terms and explicitly allows for cash flows to or from investors in aggregate, including new share issuances, share repurchases, and the fact that dividends are not (in aggregate) reinvested in the stock market.

²This series begins with data from the 1950s, because the accounting data required to define several firm characteristics is most often not available for earlier periods. Some firms (e.g. Alphabet) issued multiple classes of common stock. For these firms I compute wealth creation for each class of common stock, and then sum the resulting wealth creation figures across classes within the firm. In all cases, wealth creation is measured as of December 31, 2019.

those objectively measurable characteristics that are more or less prevalent on average at firms with extremely strong or extremely weak stock market performance. The study includes 26,285 firm/decades, beginning from 1950. To be included in the study, I require that stock return data is available in the CRSP database for at least twelve months within the decade, and that key accounting data such as sales, assets, and net income is available from Compustat.³

I develop several measures of firm characteristics, including accounting-based growth measures, accounting-based outcome measures, and market return distribution measures. Each characteristic is measured for each firm by decade.⁴ The accounting-based growth measures include:

- Total Asset Growth,
- Asset Growth Excluding Net Equity Issuance,⁵
- Asset Growth Excluding Assets obtained through Acquisitions (“Organic” growth)⁶,
- Cash Growth,
- Current Asset Growth,
- Fixed Asset Growth,
- Other Asset Growth,
- Sales Growth,
- Sales-to-Asset Ratio Growth,

³ I exclude observations with extreme annual data reported in Compustat, including observations with negative shareholder equity, or total assets less than \$2 million, or annual sales less than \$1 million, or net income less than -100% of total assets.

⁴ All accounting-based measures are winsorized at the 1% and 99% levels to mitigate the effect of extreme outliers.

⁵ Net equity issuance is inferred for each stock on an annual basis by comparing the actual end-of-year market capitalization for the stock to the product of the prior-year market capitalization and one plus the return (excluding dividends) for the stock, as reported by CRSP.

⁶ Assets obtained through acquisitions are identified based on the Compustat-reported assets of the acquired firm and the CRSP “accomp” variable that identifies the PERMCO of the acquiring firm.

- Dividend-to-Asset Ratio Growth,
- Income-to-Asset Ratio Growth.

Each growth variable is stated as a percent per year, and is measured based on the change from the first to the last annual observation for the firm within the decade.⁷ Each asset growth measure is scaled by total assets as of the first observation of the decade, so that component asset growth sums to total asset growth.⁸

The accounting-based outcome measures include:

- Mean dividend-to-assets ratio,
- Mean net income-to-assets ratio,
- Mean new equity issuances-to-assets ratio,
- Mean research-and-development (R&D) expense-to-assets ratio,
- Total debt-to-assets ratio,
- Market-to-book (equity) ratio.

The dividend-to-assets, income-to-assets, new equity issue-to-assets, and R&D-to-assets ratios are each computed on an annual basis, and then averaged across years within the decade.⁹

The debt-to-assets and market-to-book ratio are measured at the end of the decade.

The return-based measures are:

⁷ More specifically, growth is measured as (final annual observation – first annual observation)/(first annual observation x number of years with available data). The number of years with data within the decade is often less than ten, as new firms appear and others are delisted within the decade.

⁸ For example, if total assets = current assets + fixed assets + other assets then the computed growth rates for current assets, fixed assets, and other assets will sum to the growth rate for total assets. I do not report results for intangible assets, as the data was available for only a small fraction of the firm/years.

⁹ I do not measure capital expenditures, as the data was available for only a minority of the firm/years.

- Maximum drawdown (largest negative accumulated return, peak to trough, within the decade),
- Standard deviation of the firm's monthly returns within the decade, and
- Skewness of the firm's monthly returns within the decade.

I focus in particular on the Top 200 and Bottom 200 outcomes by decade, when performance is measured both by shareholder wealth creation within the decade and by the annualized compound return (inclusive of reinvested dividends, an in excess of the Treasury bill return) within the decade.¹⁰ Since I study seven decades, each set of Top and Bottom performers contains 1,400 outcomes. I take as the baseline for comparison the set of firm/decades that are not included among the top or bottom performers by either method. I refer to these more ordinary outcomes as the “Non-200” firm/decades.

2. Mean Characteristics for “Top 200” and “Bottom 200” Firm/Decades

The left column of Table 1 reports on average (across firms and decades) firm characteristics for firm/decade observations that are not included among the Top or Bottom 200 observations in terms of either shareholder wealth creation or annualized compound returns in a decade. These establish a baseline against which to compare average characteristics for high and low performing firms. The annualized return (in excess of one-month Treasury bills) for “Non-200” firm/decades is 4.38% per year, while shareholder wealth creation averages \$343 million per firm/decade for “Non-200” observations.

¹⁰ Compound returns describe the experience of a hypothetical investor who makes no trades other than to reinvest dividends, and are stated in percent. Shareholder wealth creation considers a hypothetical aggregate investor who participates in all share issues and share repurchases, and who (like shareholders in aggregate) does not reinvest dividends, and is stated as a dollar amount measured at December 2019.

It can be noted that the mean asset growth rate for “Non-200” firms is 24.7% per year, while the mean sales growth rate is 32.9% per year. These high average growth rates reflect positive skewness, and a few very large outcomes, in the cross-sectional distribution of growth rates. By comparison, the cross-sectional median annual asset growth is 10.5% and the cross-sectional median annual sales growth is 11.6%.¹¹

The data in the left column of Table 1 also reveals that, while total asset growth averaged 24.7% for “Non-200” firms, the majority was funded by new equity issuances, as asset growth excluding equity issuances averaged 5.5% per year. The average Income-to-Asset growth rate is -1.4% per year, implying that net income did not grow as rapidly as assets for “Non-200” firms. Despite the fact that many firms report zero R&D expense, the mean R&D expense is a substantial 3.7% of assets for “Non-200” firm/decades. The cross-sectional average of the maximum drawdown for “Non-200” observations is 70.1%, indicating that large share price declines are the norm, despite the positive mean return overall. The mean standard deviation of monthly returns is 17.5%. While monthly returns are positively skewed on average, the cross-sectional mean skewness of 0.85 is modest.¹²

2.1 Characteristics of Firms with “Top 200” and “Bottom 200” Returns

The remaining columns of Table 1 report on mean characteristics for firms that are in the Top 200 in terms of shareholder returns within each decade, and also for firms that are in the

¹¹ Since extremely high growth rates are likely to be more common for smaller firms, this data is suggestive that examination of the characteristics of firms with extreme shareholder returns (which are not directly affected by firm size) may be more informative than examination of the characteristics of firms with extreme dollar shareholder wealth creation (which is affected by firm size).

¹² The large skewness in long horizon returns is primarily induced by the compounding of the shorter horizon returns. See for example, Farago and Hjalmarsson (2019).

Bottom 200. Also reported is the deviation of Top 200 and Bottom 200 outcomes from “Non-200” outcomes, stated as a percentage of the average “Non-200” observation.

Focusing first on the “Top 200” return outcomes, it can be observed that the mean compound return among the “Top 200” within each decade is a remarkable 368% per year. Shareholder wealth creation for these high return observations averaged \$12.0 billion per firm/decade. It can also be observed that the firms with the highest annualized shareholder returns within each decade were characterized by:

- Much higher asset growth and sales growth. The mean annual asset growth for “Top 200” return firms was 88.7% per year, while mean annual sales growth was 95.3% per year. Much of the asset growth was funded by new equity issuances, as asset growth excluding equity issuance averaged a more modest (but still rapid) 24.1% per year. Acquisitions were not a major driver of asset growth, as “organic growth” (which excludes assets obtained through acquisitions) was nearly as rapid as total asset growth. It can be observed that each component of total assets, including Cash (18.3% per year), Current Assets (23.7% per year), Fixed Assets (20.7% per year), and Other Assets (32.6% per year growth) all grew more rapidly for Top-200 return firms as compared to “Non-200” firms.
- Income growth that exceeds even the rapid asset growth, and higher average income. In particular, the Income-to-Asset ratio grew by 1.5% per year for firms in the Top-200 returns, as compared to a decline of 1.4% per year for “Non-200” firms. The average income-to-asset ratio for Top 200 firms was 3.6%, compared to -2.2% for “Non-200” firms.

- Higher R&D spending. The mean R&D expense-to-asset ratio for “Top-200” firms was 5.2%, compared to 3.7% for “Non-200” firms.
- Lower leverage and higher market-to-book ratios as of decade end. Top 200 return firms on average have a lower debt-to-asset ratio (0.47, vs 0.53) as compared to Non-200 firms. Top 200 firms also have a much higher ratio of market equity value to book equity (9.7, vs 3.2) at decade end as compared to “Non-200” firms.¹³
- Smaller drawdowns, higher volatility, and more skewness. While, not surprisingly, average drawdowns within a decade of high cumulative returns are not as severe as for other firms, shareholders in Top-200 firm/decades do endure substantive drawdowns that average 50.2%, even *within* the decade of high cumulative returns. Top-200 firms have almost identical (17.7% vs. 17.5%) return volatility as compared to “Non-200” firms, which implies that even the most successful longer-term stock investments do not tend to deliver smooth or regular returns. Finally, despite the fact that Top-200 firms have extreme positive returns for the decade, their monthly returns exhibit almost identical skewness (0.85 vs. 0.83) as compared to “Non-200” firms. This implies that the high decade returns for the extreme performers tend to be spread out at random through the decade, as opposed to being concentrated in a few extremely large monthly returns.

The rightmost columns of Table 1 present results for “Bottom 200” firm/decades, based on annualized returns to shareholders. The mean compound return among the “Bottom 200” firm/decade observations was a dismal -76.7% per year. Shareholder wealth creation for these

¹³ It is, however, important to recall that leverage and market-to-book ratios are each measured at the end of the successful decade. Causation likely runs from extreme performance to high end-of-decade market-to-book ratios.

low return observations averaged -\$370 million per firm/decade. It can also be observed that firm/decades with the lowest annualized shareholder returns were characterized by:

- Asset growth that was lower (16.4% vs. 24.7% per year) on average as compared to “Non-200” firms, and asset shrinkage (-9.9% per year) when excluding the effects of new equity issues.
- Shrinkage (-0.6% per year) in cash balances, and slower growth in current and fixed assets relative to “Non-200” firms.
- Sales growth that, while lower on average than “Non-200” firms was, at 20.5% per year, still quite rapid.
- Lower dividend payments relative to assets (0.03% vs. 0.74% at “Non-200” firms), shrinkage of income relative to assets (-8.3% per year), and abysmal average income relative to assets (-18.7%).
- Large quantities of new equity issues (29.6% of assets on average, as compared to 10.3% at “Non-200” firms).
- Higher leverage and lower market-to-book equity ratios at decade end, and extreme drawdowns averaging 94.8%. Of course, these outcomes are to some extent hardwired by the definition of Bottom 200 outcomes.
- High monthly return volatility, with an average return standard deviation of 37.9%.
This last result implies the existence of some large positive monthly returns even for those firms with the worst decade horizon return performance.

2.2 Characteristics of Firms with “Top 200” and “Bottom 200” Wealth Creation Outcomes

Table 2 reports on average characteristics for firm/decades in the Top 200 and Bottom 200 outcomes based on shareholder wealth created within each decade. The Table also reproduces average characteristics for “Non-200” observations for comparison. It can be observed that Top 200 firms in terms of shareholder wealth creation by decade generated annualized shareholder excess returns that averaged 151.0% per year, while those in the Bottom 200 had mean excess returns of -13.6% per year. Firm/decades in the Top 200 averaged \$42.4 billion in shareholder wealth creation while firm/decades in the Bottom 200 had an average of \$13.0 billion in shareholder wealth destruction.

In general, to enter either the Top 200 or Bottom 200 list in terms of shareholder wealth creation requires both that the firm had a large (in absolute value) return for the decade, and that the firm had a substantial market capitalization; very small firms would be unlikely to generate sufficient changes in shareholder wealth to be included, even if returns were extreme. As a consequence, differences in means for Top and Bottom 200 firms on Table 2 as compared to “Non-200” firms are attributable in part to differences in firm size and in part due to return performance.

With that caveat in mind, the following results can be observed on Table 2.

- Firm/decades in the Top 200 in terms of shareholder wealth creation are generally characterized by rapid total asset growth (averaging 42.6% per year) as well as rapid growth in cash and fixed assets. Firm/decades in the Bottom 200 in terms of shareholder wealth creation had average total asset growth that was almost

- indistinguishable (24.65% vs. 24.66%) from “Non-200” firm/decades, but had organic asset growth, cash growth, and current asset growth that was somewhat lower, while fixed asset growth was somewhat higher as compared to “Non-200” firm/decades.
- Firm/decades in the Top 200 in terms of shareholder wealth creation generally had more rapid dividend and income growth relative to “Non-200” observations, while firm/decades in the Bottom 200 in terms of shareholder wealth creation in general had negative dividend growth. However, both firms in the Top 200 and in the Bottom 200 in terms of shareholder wealth creation had higher average dividend yields as compared to “Non-200” observations (likely reflecting that they are larger firms), though Top 200 firms had higher dividend yields (2.4% of assets on average) than Bottom 200 firms (1.1% of assets on average).
 - Firm/decades in the Top 200 in terms of shareholder wealth creation has much higher rates of profitability (7.5% of assets annually, on average) compared to Non-200 firms (-2.2% of assets) and Bottom 200 firm/decades (-0.2% of assets).
 - Firm/decades in the Top 200 in terms of shareholder wealth creation had lower rates of new equity issuances (4.1% of assets per year on average) compared to Non-200 firms (10.3% of assets) and Bottom 200 firm/decades (10.1% of assets).
 - Firm/decades in both the Top 200 (2.2% of assets) and Bottom 200 (2.1% of assets) both had lower R&D expenditures as compared to Non-200 firms (3.7% of assets).
 - Firm/decades in the Top 200 in terms of shareholder wealth creation had higher asset turnover (1.03x on average) as compared to firm/decades in the Bottom 200 (0.87x on average), but lower than “Non-200” observations (1.20x) on average.

- The Maximum drawdown within the decade was smaller for “Top 200” observations (mean of 40.9%) than for “Non-200” observations (mean of 70.1%) and for “Bottom 200 observations (mean of 80.8%).
- Both “Top 200” and “Bottom 200” firm/decades were characterized by less volatile and less skewed returns as compared to “Non-200” observations, with the differential greater for “Top 200” observations, likely reflecting that these are larger firms. In particular, the standard deviation of monthly returns for “Top 200” observations averaged 9.0% per year, compared to 14.9% for Bottom 200 observations and 17.5% for “Non-200” observations.

The results reported in this section show that firm/decades with extreme positive or negative performance, measured either in terms of cumulative shareholder returns or dollar shareholder wealth creation differ significantly on average from the more ordinary “Non-200” observations in terms of many observable firm characteristics. However, a number of these characteristics are correlated with each other. I next turn to the question of which characteristics have statistically significant explanatory power when numerous characteristics are considered simultaneously.

3. Multivariate Analysis of Firm Characteristics and Firm/Decade Performance.

In Tables 3 and 4, I report the results of multivariate regressions estimated across the 26,285 firm/decades. In Table 3, the dependent variable for the first regression is an indicator variable that equals one if the firm outcome is among the Top 200 in terms of annualized excess return to shareholders during the decade and zero otherwise, while the dependent variable for the second is an indicator variable that equals one if the firm outcome is among the Bottom 200 in terms of annualized excess return to shareholders during the decade, and zero otherwise. Table 4

focuses instead on outcomes when the dependent variables are defined in terms of shareholder wealth creation rather than returns. Explanatory variables are generally the same as those described on Table 1, except that (i) I exclude the market-to-book equity ratio and debt-to-equity ratio measured at the end of the decade, and (ii) I include three new variables, firm market capitalization at the first observation of the decade, the debt-to-asset ratio at the first observation of the decade, and firm age measured at the first observation of the decade.¹⁴ The intent of the multivariate analysis is to identify those variables that have significant explanatory power for whether firm/decades are among the best or worst 200 outcomes, while allowing for the fact that explanatory variables may be correlated with each other.

3.1 Multivariate Analysis of Firms with “Top 200” and “Bottom 200” Returns

Focusing first on the regression results reported in Table 3 that explain outcomes among the Top 200 returns by decade, it can be observed that the rate of growth in cash is the most important variable statistically. While total asset growth, current asset growth, and fixed asset growth all have positive coefficient estimates, the coefficient estimate on cash growth is several times larger, as is the associated t-statistic of 15.4. That is, while growth in total assets and each of its components tends to be larger for “Top-200” return firms, the growth in the cash balance is the most important explanatory variable among these.

Perhaps not surprisingly, firm/decades that rank in the Top 200 in terms of shareholder returns are characterized by smaller maximum drawdowns within the same decade (t-statistic = -23.2). These observations are also characterized by higher return standard deviations (t-statistic = 12.0), verifying that the largest cumulative returns are also characterized by large month-to-

¹⁴ The firm age variable measures elapsed time since the firm was founded, and is described by Fink, Fink, Grullon and Weston (2010). I thank Jason Fink for providing an updated version of the data used in that study.

month shocks. The best performing 200 firm/decades in terms of shareholder returns also tend to be characterized by higher dividend growth, higher leverage, higher average income relative to assets, higher R&D spending relative to assets, and tend to be somewhat younger on average.

The skewness of monthly returns is not a significant explanatory variable (t-statistic = -1.2) for whether firms are among the Top 200 in terms of accumulated returns during the decade. That is, while the fact that some firms earn exceptionally high returns over long periods can be attributed to *cross-sectional* skewness in *compound returns*, skewness in the time series of individual returns does not explain which firms end up doing well.

It should be noted that while the t-statistics on most of the explanatory variables used for the regression indicate statistical significance, the regression adjusted R^2 statistic is only 0.076. That is, even though the firm characteristics employed in the regression are measured during the same decade as firm performance, and thus are shown to have explanatory rather than predictive power, more than ninety percent of the variation in whether firms enter the Top 200 return list by decade remains unexplained by the objectively measured characteristics used in the regressions. The remaining variation in performance is attributable to unmeasured characteristics as well as purely random outcomes.

Turning to the regression specification that explains outcomes among the Bottom 200 firm/decades in terms of shareholder returns, it can be observed that neither total asset growth or cash growth has significant explanatory power. These low-return firms are characterized by lower average income relative to assets (t-statistic = -6.5), lower income growth (t-statistic = -6.4), and lower R&D spending (t-statistic = -5.9), and tend to be more levered as of the first observation of the decade (t-statistic = 4.6). These low-performing firms also tend to have higher return standard deviations (t-statistic = 23.1), indicating that high volatility accompanied

their poor cumulative returns, though the coefficient estimate of 0.134 is not meaningfully different from the coefficient when explaining the firm/decades that appear among the Top 200 outcomes. That is, both extreme positive and extreme negative decade-horizon return performers tend to be volatile on a month-to-month basis. Finally, while the skewness of firms' monthly returns within the decade had no significant explanatory power for whether a firm ended the decade among the Top 200 outcomes, skewness in monthly returns is strongly *negatively* related to outcomes among the Bottom 200 (t-statistic = -17.6).

3.2 Multivariate Analysis of Firms with “Top 200” and “Bottom 200” Wealth Creation

On Table 4 I report results that parallel those on Table 3, except that the indicator variables identify firms that appear among the Top 200 and Bottom 200 in terms of shareholder wealth creation within each decade. In light of the observation that firm size is a determinant of shareholder wealth creation outcomes, I include in this regression specification firm market capitalization measured as of the first month of the decade. As anticipated, firm size has very significant explanatory power both for firm/decades that appear among the Top 200 in terms of shareholder wealth creation (t-statistic = 31.4) and those that appear among the Bottom 200 (t-statistic = 33.4). Since firm size is included as an explanatory variable, the statistical significance of other variables in the regression cannot be attributed to a simple linear correlation with firm size.

It can be observed on Table 4 that cash growth (t-statistic = 5.7) and fixed asset growth (t-statistic = 6.2) both have significant explanatory power for the appearance of firm/decades among the Top 200 in terms of wealth creation. Average dividend payouts (t-statistic = 11.8), dividend growth (t-statistic = 5.6), and mean R&D spending (t-statistic = 3.9) also have positive

explanatory power. Perhaps surprisingly, sales growth does not have significant explanatory power (t-statistic = 1.5), though growth in asset turnover (the Sales-to-Asset ratio) does (t-statistic = 3.4). Firm age has statistically strong explanatory power (t-statistic = 20.4) implying that older firms are more likely to generate large dollar amounts of shareholder wealth, perhaps due to relations between firm age and size that are not captured by the inclusion of firm size as an explanatory variable. While return volatility had strong positive explanatory power for whether a firm appears among the Top 200 in terms of shareholder returns (t-statistic = 12.0 on Table 3), the effect on whether a firm is among the Top 200 in terms of shareholder wealth creation is more muted (t-statistic = 2.8).

The Bottom 200 firm/decades in terms of shareholder wealth creation tend to be characterized by lower dividend growth (t-statistic = -7.2), lower asset turnover (t-statistic = -11.2) and lower R&D expenditures (t-statistic = -4.3). More surprisingly, these firms tend to have higher dividend payouts as compared to other firms (t-statistic = 4.2) and to be more profitable on average (t-statistic = 5.03). Also surprising is the fact that firm/decades that end among the Bottom 200 in terms of shareholder wealth creation tend to be characterized by lower (t-statistic = -8.7) rather than higher return volatility during the decade.

4. Summary

Firms with the best decade-horizon shareholder outcomes differ substantially on average from other firms in terms of characteristics that can be observed and objectively measured during the same decade. Most notably, top performing firms have rapid asset growth, and in particular have rapid accumulations of cash. Top performing firms are also more profitable on average, despite higher R&D spending. Top performing firms in terms of accumulated rates of return tend to be younger and have more volatile returns as compared to more ordinary firms, while top

performing firms in terms of dollar shareholder wealth creation tend to be older and do not have particularly volatile returns. Although the extreme positive decade-horizon outcomes reflect skewness in the cross-section of compound returns, the skewness of monthly returns does not have explanatory power for which firms will have extremely strong decade-horizon outcomes.

References

Bessembinder, H., 2020, “Wealth Creation in the U.S. Public Stock Markets 1926 to 2019” available for download at <https://ssrn.com/abstract=3537838>.

Bessembinder, Hendrik, 2018, “Do Stocks Outperform Treasury Bills?” *Journal of Financial Economics*, 129, 440-457. The pre-publication document can be downloaded at <https://ssrn.com/abstract=2900447>.

Farago, A., Hjalmarsson, E., 2019, Compound returns, Working paper, Department of Economics, University of Gothenburg. Available for download at <https://ssrn.com/abstract=3398501>.

Fink, J., Fink K., Grullon G., Weston J., 2010. What drove the increase in idiosyncratic volatility during the internet boom? *Journal of Financial and Quantitative Analysis* 45, 1253–1278.

Table 1: Firm Characteristics and Shareholder Excess Returns, Measured During Same Decade

	Mean for "Non-200" Firms	Top 200 Firms, Annualized Return		Bottom 200 Firms, Annualized Return	
		Mean for "Top 200" Firms	Differential to "Non- 200" Firms (%)	Mean for "Bottom 200" Firms	Differential to "Non- 200" Firms (%)
Excess Return, Annualized (%)	4.38%	367.96%	8304.23%	-76.66%	-1850.84%
Shareholder Wealth Created (\$ Millions)	342.51	11,972.16	3395.39%	-370.08	-208.05%
Asset Growth (%)	24.66%	95.28%	286.41%	16.35%	-33.68%
Asset Growth Excluding Equity Issuance (%)	5.53%	24.14%	336.87%	-9.94%	-279.80%
Organic Asset Growth (%)	22.95%	89.80%	291.24%	15.41%	-32.86%
Cash Growth (%)	2.14%	18.31%	754.62%	-0.56%	-125.91%
Current Asset Growth (%)	7.53%	23.66%	214.09%	2.66%	-64.64%
Fixed Asset Growth (%)	6.99%	20.70%	196.03%	4.57%	-34.62%
Other Asset Growth (%)	7.99%	32.61%	308.15%	9.67%	21.06%
Sales Growth (%)	32.87%	101.56%	209.03%	20.50%	-37.63%
Sales to Asset Ratio Growth (%)	0.57%	-1.76%	-410.46%	0.13%	-77.93%
Dividend to Asset Growth (%)	0.00%	0.06%	2072.15%	-0.03%	-1148.18%
Income to Asset Growth (%)	-1.39%	1.52%	-209.46%	-8.33%	499.15%
Mean Dividend to Asset Ratio (%)	0.74%	0.77%	4.26%	0.03%	-96.34%
Mean Income to Asset Ratio (%)	-2.15%	3.58%	-266.79%	-18.71%	772.13%
Mean New Equity Issues to Assets (%)	10.33%	19.66%	90.20%	29.62%	186.67%
Mean R&D to Assets (%)	3.68%	5.18%	40.71%	4.03%	9.41%
Mean Sales to Assets Ratio	1.20	1.22	2.24%	0.95	-20.37%
Debt to Asset Ratio (end of decade)	0.53	0.47	-11.07%	0.61	15.19%
Market to Book ratio (end of decade)	3.22	9.66	199.73%	1.10	-65.86%
Maximum Drawdown (%)	70.07%	50.15%	-28.44%	94.75%	35.21%
Standard Deviation of Returns (%)	17.45%	17.72%	1.50%	37.86%	116.94%
Skewness of Returns	0.83	0.85	2.69%	0.48	-42.29%

Table 2: Firm Characteristics and Shareholder Wealth Creation, Measured During Same Decade

	Mean for "Non-200" Firms	Top 200 Firms, Dollar Wealth Created		Bottom 200 Firms, Dollar Wealth Created	
		Mean for "Top 200" Firms	Differential to "Non-200" Firms (%)	Mean for "Bottom 200" Firms	Differential to "Non- 200" Firms (%)
Excess Return, Annualized (%)	4.38%	151.03%	3349.57%	-13.55%	-409.38%
Shareholder Wealth Created (\$ Millions)	342.51	42,379.76	12273.18%	-12,962.33	-3884.48%
Asset Growth (%)	24.66%	42.60%	72.74%	24.65%	-0.05%
Asset Growth Excluding Equity Issuance (%)	5.53%	22.10%	299.85%	3.40%	-38.56%
Organic Asset Growth (%)	22.95%	38.70%	68.62%	18.46%	-19.58%
Cash Growth (%)	2.14%	6.67%	211.15%	1.63%	-23.80%
Current Asset Growth (%)	7.53%	9.97%	32.34%	5.67%	-24.75%
Fixed Asset Growth (%)	6.99%	12.81%	83.18%	7.92%	13.20%
Other Asset Growth (%)	7.99%	13.15%	64.58%	9.43%	18.02%
Sales Growth (%)	32.87%	44.49%	35.37%	27.98%	-14.85%
Sales to Asset Ratio Growth (%)	0.57%	-0.79%	-238.53%	-0.37%	-165.42%
Dividend to Asset Growth (%)	0.00%	0.06%	2111.37%	-0.05%	-1871.81%
Income to Asset Growth (%)	-1.39%	0.36%	-125.91%	-1.67%	20.02%
Mean Dividend to Asset Ratio (%)	0.74%	2.36%	218.96%	1.10%	48.29%
Mean Income to Asset Ratio (%)	-2.15%	7.49%	-449.21%	-0.22%	-89.53%
Mean New Equity Issues to Assets (%)	10.33%	4.06%	-60.73%	10.09%	-2.38%
Mean R&D to Assets (%)	3.68%	2.20%	-40.17%	2.12%	-42.55%
Mean Sales to Assets Ratio	1.20	1.03	-13.53%	0.87	-27.45%
Debt to Asset Ratio (end of decade)	0.53	0.57	9.30%	0.60	14.85%
Market to Book ratio (end of decade)	3.22	7.16	122.20%	2.33	-27.62%
Maximum Drawdown (%)	70.07%	40.92%	-41.61%	80.78%	15.28%
Standard Deviation of Returns (%)	17.45%	8.95%	-48.72%	14.93%	-14.45%
Skewness of Returns	0.83	0.25	-69.34%	0.48	-42.22%

Table 3: Multiple Regression Results, Explaining High and Low Annualized Excess Returns with Contemporaneous Characteristics

Explanatory Variable	Firm Ranks in Top 200 by Cumulative Return		Firm Ranks in Bottom 200 by Cumulative Return	
	Coefficient	T-statistic	Coefficient	T-statistic
Intercept	0.0593	12.83	-0.0103	-4.86
Asset Growth (%)	0.0169	3.95	0.0002	0.08
Asset Growth Net of New Equity Issuances (%)	-0.0029	-1.11	0.0038	3.18
Cash Growth (%)	0.1589	15.36	0.0038	0.80
Current Asset Growth (%)	0.0262	2.84	-0.0034	-0.81
Fixed Asset Growth (%)	0.0219	2.70	-0.0052	-1.41
Dividend to Asset Growth (%)	2.2593	4.94	-0.1757	-0.84
Firm Age (BOD)	-0.0001	-4.28	0.0000	1.20
Debt to Asset Ratio (BOD)	0.0152	3.47	0.0093	4.61
Market Capitalization (BOD)	-0.0002	-2.22	0.0000	-0.43
Income to Asset Growth (%)	0.0044	0.29	-0.0441	-6.35
Maxium Drawdown (%)	-0.1182	-23.24	-0.0067	-2.87
Mean Dividend to Asset Ratio (%)	-0.1859	-2.73	0.0669	2.14
Mean Income to Asset Ratio (%)	0.0394	4.13	-0.0284	-6.49
Mean R&D to Asset Ratio (%)	0.0966	6.96	-0.0378	-5.93
Mean Sales to Asset Ratio	0.0029	2.34	-0.0011	-1.90
Sales Growth (%)	0.0035	2.17	-0.0007	-0.88
Sales to Assets Growth	0.0217	2.84	-0.0056	-1.60
Standard Deviation of Returns	0.1518	12.00	0.1343	23.12
Skewness of Returns	-0.0012	-1.16	-0.0082	-17.61
Regression Adjusted R2	0.076		0.037	
Regression F-statistic	114.370		52.400	
F-statistic p-value	0.000		0.000	
Number of Observations	26,285		26,285	

Table 4: Multiple Regression Results, Explaining High and Low Shareholder Wealth Creation with Contemporaneous Characteristics

Explanatory Variable	Firm Ranks in Top 200 by Value Creation		Firm Ranks in Bottom 200 by Value Creation	
	Coefficient	T-statistic	Coefficient	T-statistic
Intercept	0.0563	10.95	-0.05	-10.14
Asset Growth (%)	-0.0013	-0.27	0.01	2.90
Asset Growth Net of New Equity Issuances (%)	-0.0005	-0.18	-0.01	-4.96
Cash Growth (%)	0.0641	5.57	-0.02	-1.99
Current Asset Growth (%)	0.0174	1.70	-0.01	-1.29
Fixed Asset Growth (%)	0.0556	6.18	0.00	0.24
Dividend to Asset Growth (%)	2.8631	5.63	-3.68	-7.19
Firm Age (BOD)	0.0007	20.37	0.00	10.75
Debt to Asset Ratio (BOD)	0.0239	4.91	0.02	3.70
Market Capitalization (BOD)	0.0035	31.37	0.00	33.43
Income to Asset Growth (%)	-0.0670	-3.98	0.01	0.82
Maxium Drawdown (%)	-0.1026	-18.13	0.15	25.98
Mean Dividend to Asset Ratio (%)	0.8956	11.83	0.32	4.22
Mean Income to Asset Ratio (%)	0.0024	0.23	0.05	5.03
Mean R&D to Asset Ratio (%)	0.0602	3.90	-0.07	-4.32
Mean Sales to Asset Ratio	-0.0072	-5.20	-0.02	-11.24
Sales Growth (%)	0.0027	1.49	0.00	-1.04
Sales to Assets Growth	0.0287	3.37	0.00	0.07
Standard Deviation of Returns	0.0388	2.76	-0.12	-8.73
Skewness of Returns	-0.0043	-3.87	0.00	-2.00
Regression Adjusted R2	0.122		0.081	
Regression F-statistic	192.630		122.100	
F-statistic p-value	0.000		0.000	
Number of Observations	26,285		26,285	