A Solution to Valuation Challenges within Student-Managed Investment Funds

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ABSTRACT

*Students in student-managed investment fund classes are tasked with the job of valuing companies for the purposes of making "buy" or "sell" decisions. The approach usually includes at least one cashflow model, such as the dividend discount model. Using a cash flow model brings with it numerous challenges, including how and where to end the estimation timeline and invoke the constant growth form of the model, selection of a long-term growth rate, and defense of that growth rate as reasonable. The framework proposed in this paper relieves that burden. It then turns its attention to growth rate estimates, and finds that neither ROE*b nor historical growth rates would have provided students with reliable forecasts of the long-term growth rates for which the model calls.*

INTRODUCTION

Students in student-managed investment fund classes are tasked with the job of valuing companies for the purposes of making "buy" or "sell" decisions. Multiple valuation approaches are usually employed. These would normally include relative valuation models using price-to-earnings ratios, price-to-sales ratios, or enterprise value-based ratios. The approaches also include at least one cashflow-based model, with the dividend discount model often being the starting point for that analysis. Generally speaking, relative valuation models are less difficult for students to implement because they are based on historical (observable) ratios or multiples and a forecasted income statement which is part of the fabric of the course. These models can also be implemented using the historical data, along with earnings or sales estimates from systems such as FactSet or Bloomberg.

The challenges for students in using a cashflow model include the need to develop their own k with which to perform the discounting, as well as the need to forecast future cash flows. Using a cashflow model also brings with it the challenge of how and where to end the estimation timeline and invoke the perpetuity model (the constant growth form of the model) to summarize the remainder of the firm's future. The perpetuity component of the overall valuation is normally large, an issue and challenge that has been discussed in empirical studies. For example, Francis, Olson, and Oswald (2000) find that this component can contribute up to 65% of total intrinsic value as calculated with a dividend discount model (DDM). DeAngelo (1990) finds that

53% to 80% of a discounted cashflow (DCF) estimate is contained in the terminal value. More recently, Platt, Demirkan, and Platt (2009) observe that at least 90% of the intrinsic value estimate from a free cashflow (FCF) model is contained in the terminal component. That the valuation – and buy or sell recommendation – can be so disproportionately impacted by the growth rate assumed to prevail indefinitely into the future is something the students come to understand, and they can intimidated by the pressure of having to choose and defend that one growth rate estimate.

This paper lays out a framework within which students can implement a cashflow-based model without having to rely on one growth rate estimate. It basically establishes a scenario-analysis framework which helps the students find the growth rate that is priced into the value of the stock currently (the "fair value" rate), and provides a rationale for evaluating that growth rate within the context of possible future growth rates. It produces a range of growth rates which, if the future growth rate falls within that range, makes the stock worth buying (or not) at that point in time. In this way, the students do not have to defend one number, but only range of possible outcomes. The final analysis, however, does require an assessment of how likely it is that the future growth rate will fall within this range.

I explore that task referencing the dividend discount model (DDM). There are generally two ways to evaluate this: (1) compare the "fair value" growth rate produced by our framework to historical average annual growth rates, or (2) compare the "fair value" growth rate to the ROE*b (Return on Equity multiplied by the plowback ratio) calculation that represents a future sustainable growth rate within the framework of the constant growth form of the model, which some argue is the preferable metric for comparison. The framework of that model also assumes, however, that everything grows at the same ROE*b rate, which is a simplification of reality. Earnings and dividends, for example, do not grow at the same rate. This is demonstrated empirically in Gwilym, Seaton, Suddason, and Thomas (2006), in which their Table 1 shows average annual earnings growth rates for the U.S. and U.K. almost double the growth rate of dividends over 1965-2004. They also show 1973-2004 earnings growth for an equal and value-weighted index of seven countries (including the U.S., U.K., and Germany) of 3.94% and 2.72%, respectively, higher than dividend growth rates of 2.28% and 1.30%. The "why" behind dividends growing more slowly than earnings is ripe for a class discussion that can bridge to numerous related topics that include: market reactions to dividend cuts and firms' reluctance to put themselves in a position to have to make cuts, use of share repurchases to return cash to investors (Bagwell and Shoven, 1989; DeAngelo, DeAngelo, and Skinner, 2000; Jagannathan, Stephens, and Weisbach, 2000), and the decline in the number of dividend-paying firms first documented in Fama and French (2001).

I seek to take the companies of the S&P500 and evaluate the ROE*b metric as a gauge for future growth. For multiple years, we calculate the ROE*b measure and then compare it to the actual dividend growth rate that the firm experienced over the ensuing five and ten-year periods to determine if ROE*b would have been a good basis for comparison in our valuation framework had the company been under review by a student team at that point in time. I also calculate the historical growth rate of dividends in the period(s) preceding each analysis period. My goal is to provide evidence on the best metric to use within our valuation framework to determine if the future growth rate is likely to be above or below the "fair value" growth rate to assist students in making their buy or sell recommendations.

CASHFLOW MODEL FRAMEWORK

The constant growth form of the dividend discount model is well-known as:

$$\text{Estimate of intrinsic value(now, time 0)} = E[DPS_1]/(k-g)$$

The framework our program presents to the students begins as a typical discounted cashflow problem. They start with a forecast of dividends per share for the next upcoming year, $E[DPS_1]$ using their own earnings per share from their Income Statement forecast, along with a payout ratio assumption. We examine the resulting dividends per share estimate for reasonableness relative to the most recent year's actual dividend, and either proceed, or make the decision to override the payout ratio*$E[EPS_1]$ calculation. Sometimes this override is with a growth rate applied to the most recent year's actual dividend, or other times the estimate is obtained by observing a well-established pattern in a firm's dividend history and carrying it forward.

After $E[DPS_1]$ is determined, a near-term period of up to five years after "year 1" is forecasted. Normally, this is accomplished with a near-term growth rate assumption or assumptions, the latter case occurring if the firm's business plans (and the analyst team's expectations) suggest that different growth rate periods are appropriate within this near-term window.

Once these two pieces of the model are constructed, the students have a timeline with specific forecasted dividend cashflows for the next 5 or 6 years. Now comes the harder part, the point at which the constant growth form of the model is invoked to summarize the valuation for the remainder of the perpetual life of the firm. This presents challenges, starting with the need to forecast a long-term growth rate, and potentially ending with the need to finesse a situation where the k and the growth rate are close to each and create an inflated lump sum. It also requires care, because the lump sum present value calculated at this point on the timeline contributes a large proportion of the total present (intrinsic) value. This is where the framework we have developed for the students, especially undergraduates, can be of assistance. An example of this framework is presented below.

k =	0.105									
	2016	2017	2018	2019	2020	growth	E[DPS] 2021	est(IV 2020) of all post-2020 cashflows	PV at 2015	Total PV at 2015
E[DPS] --->	2.850	3.064	3.294	3.541	3.806	1%	3.844	40.465	24.562	$ 36.777
12.214	2.579	2.509	2.441	2.375	2.310	2%	3.882	45.673	27.724	$ 39.938
						3%	3.920	52.270	31.728	$ 43.942
						4%	3.958	60.897	36.965	$ 49.179
						5.00%	3.996	72.662	44.106	$ 56.320
						6.00%	4.034	89.654	54.420	$ 66.635
						6.35%	4.048	97.537	59.205	$ 71.419
						7.00%	4.073	116.358	70.629	$ 82.843
						8.00%	4.111	164.423	99.805	$ 112.019
						8.50%	4.130	206.480	125.333	$ 137.548
						9.00%	4.149	276.576	167.881	$ 180.096

Figure 1.

In this example, the intrinsic value is being estimated at year-end 2015. The required rate of return has been calculated to be 10.5% using either CAPM or the Fama-French model. Dividends per share for 2016 is estimated to be $2.85, based on an Income Statement earnings forecast of $8.55 and a payout ratio expectation of 1/3. Expected dividends for 2017 through 2020 are estimated with a near-term growth rate of 7.5%. The present value at 2015 of the 2016 to 2020 forecasted dividend cashflows is $12.214 as shown on the left-side of Figure 1.

The right half of Figure 1 displays the scenario analysis around the long-term growth rate and the deployment of the constant growth perpetuity model at year 2020. Various long-term growth rates are in column 1. Column 2 contains the estimated dividend per share for year 2021, calculated with $E[DPS_{2020}]$ of $3.806 and each respective long-term growth rate. Column 3 is the perpetuity model calculation using the 2021 dividend and representing the present value at 2020 of all dividend cashflows to come after 2020. Column 4 is the present value of column 3 back to 2015, and column 5 is, for each long-term growth rate scenario, the final intrinsic value estimate adding $12.214 to each perpetuity present value.

Now, suppose the current price of the stock for this company is $71.42. This model has been built to show that the market has priced in a long-term growth rate of 6.35%, which produces an intrinsic value of $71.42. That assumes, of course, that k really is 10.5% and the near-term 2016-to-2020 growth rate is close to correct at 7.5%, but all of that can be subjected to sensitivity analysis for reasonableness. How does this help the students? In this framework, now all that the students have to decide is if they expect the long-term growth rate to be above or below the market-priced rate of 6.35%. If they expect it to be higher, justified by their analysis of the business, its plans, and its place within the industry, then the conclusion is that the stock is worth buying. If they expect it to be lower, then it is not worth buying. They are not obligated to select and defend a specific growth rate estimate, only growth rate ranges – above or below the 6.35% -- and to put forth a business rationale for why they expect the actual future long-term growth rate to be in either of those ranges.

It is no small task, however, to assess growth prospects and determine if future growth is going to be above or below the "market capitalized growth rate" (in this case, 6.35%). Discussions among attendees and guests during semester-end stock recommendation presentations often focus on this determination, probing students to defend their conclusion. Some argue that this growth rate should be compared to ROE*b, which is the long-term sustainable growth rate as posited by the model, while others look at the recent historical growth rate performance. In the next section of this paper, we examine the viability of both.

DATA

I take the components of the S&P 500 (as they existed in summer 2014) and extract historical earnings and dividend information from FactSet, one of the tools in our Financial Information Lab which the SMIF teams use heavily. We extract Return on Equity, dividends per share, reported earnings per share, and adjusted earnings per share on a fiscal year basis from 1998 to 2014. Adjusted earnings are the majority or market-recognized earnings type, as flagged in the system, and can deviate from reported GAAP earnings. Dividends per share are inspected and manually-adjusted for special, one-time dividends to produce a normalized dividends time series for calculation of growth rates. Plowback ratios, or the "b" in formulations of the dividend discount model, are calculated using both earnings metrics, as are the theoretically-indicated future growth rates via ROE*b. Dividend growth rates are calculated in rolling 5-year and 10-year windows starting with 1998, resulting in twelve 5-year and seven 10-year windows. Observations in which a data element was missing, or where the starting year dividend was 0, were excluded from the analysis on a year-by-year basis.

RESULTS

Table 1 Panel A reports the percentage of S&P500 companies in a comparison of their ROE*b model-suggested future growth rates to their actual growth rates of dividends in the five years following the year in which ROE*b (b using as-reported EPS) is calculated. The differences between ROE*b and g (ROE*b – g) are grouped into eight buckets:

(1) ROE*b is negative but the actual growth rate from that year forward was positive
(2) ROE*b is positive but the actual growth rate from that year forward was negative
(3) ROE*b was at least 5% less than the actual growth over the ensuing 5 years
(4) ROE*b was between 5% and 2.5% less than the actual growth rate over the ensuing 5 years
(5) ROE*b was less than 2.5% lower than the actual growth rate over the ensuing 5 years
(6) ROE*b was between 0 and 2.5% higher than the actual growth rate over the ensuing 5 years
(7) ROE*b was between 2.5% and 5% higher than the actual growth rate over the ensuing 5 years
(8) ROE*b was more than 5% higher than the actual growth rate over the ensuing 5 years

Table 1 Panel B collects together some of the columns of Panel A.

There are many noteworthy findings in these tables. The percentage of observations in which ROE*b and the actual ensuing five-year growth rate had opposite signs spans from 15% of the sample in 2003 to 24.1% of the sample in 2004, and is 20% or more in seven of the twelve rolling period windows. The percentage of observations in which ROE*b was within 2.5% (+ or -) of the actual ensuing growth rate (column 3, Table 1, Panel B) hovers consistently between only 15% and 20%, from a low of 15.2% in 2009 to a high of 20.2% in 2005 and 2008. Finally, the percentage of observations in which ROE*b differed from the actual ensuing growth rate by 5% or more (column 4, Table 1, Panel B) is 43.8% in 2004, and as high as 52.3% in 2000.

Three aspects of these results raise warning signs about using the ROE*b construct dictated by the model as a gauge for assessing long-term growth rates within a cashflow valuation model. The first is that the proportion of cases in which the two rates are "close" (within +/- 2.5%) is roughly the same, sometimes lower, than the proportion of cases in which the signs were opposite. That is, there were just as many cases where ROE*b indicated future contraction of dividends and they actually grew, or ROE*b suggested future growth and dividends actually contracted, as cases where the ex-post dividend growth rate resembled the ROE*b "estimate". The second warning sign, of course, is that ROE*b differed significantly from the ex-post growth rate (by more than 5%) in almost half of the cases. Third, if cases in which ROE*b notably exceeded the observed actual growth rate are aggregated (column 5, Table 1, Panel B), this represents 45% or more of the sample in eight of the twelve rolling periods.

The implications of these results in a valuation model are striking. If students had used ROE*b as a measure of estimated future growth against which to assess the "fair value" growth rate they found in their model, then they would have overestimated growth (relative to what companies actually achieved) in half of the companies represented in this analysis (column 5, Table 1, Panel B). This overestimation may have led to "buy" recommendations for their student funds.

One last pattern of note in Table 1 (Panel A) is that either the (ROE*b – g) > 5% or (ROE*b – g) < 5% column is the largest grouping in every rolling period. What is interesting, though, is that the overestimate case is the largest group in 1998, 1999, 2000 and 2005 to 2008, while the underestimate case is the largest group in 2001, 2002, 2003, and 2009. They are approximately the same in 2004 (23.1% vs. 20.6%). The "overestimate years" generally coincide with strong stock market and economic periods, along with the transition year into downturns (2000 and 2008), while the "underestimate years" generally coincide with underperforming stock market and economic periods, along with the transition year into upswings (2003 and 2009). This provides the additional useful insight that ROE*b will be an overestimate of future growth during expansionary periods and an underestimate during periods of contraction or slow growth. This is likely due to the fact that ROE reflects earnings growth and earnings and dividends are empirically observed to not grow at the same rate. It is not surprising to observe earnings growth faster than dividend growth, on average, during expansionary periods, while also seeing earnings growth slower, on average, during economic slowdowns.

Historical Growth Rates

Next, I replace an ROE*b model estimate of future dividends growth with the actual historical average annual growth rates generated by firms in the sample. If ROE*b has been revealed not to be a reliable measure against which to evaluate a "fair-value" growth rate determined within a cashflow model, then perhaps a firm's own actual historical record (over the preceding five years) might do a better job.

Table 2 Panels A and B report this analysis. Surprisingly, the outcome is not much different than the prior ROE*b analysis. There is a healthy percentage of firms for which the historical five-year growth rate and the ensuing five-year growth rate were more than 5% apart (column 4, Panel B). And, aggregating columns 4 ((t-5,t) growth rate positive, (t,t+5) growth rate negative), 9 (2.5% to 5%), and 10 (> 5%) in Panel A together as a scenario in which the historical growth rate would have been a large overestimate of the actual growth rate then observed over the ensuing five years, the proportions in column 5 of Panel B are similar to the corresponding column in Table 1. They are lower for the 2003 to 2006 rolling period windows, and higher for the 2008 and 2009 rolling period windows.

Stock Returns Analysis

The analysis presented to this point raises concerns over two possible growth rate metrics to use in comparison with the "fair value" growth rate generated by a cashflow model in the student teams' evaluation of a stock recommendation. Using either ROE*b or the preceding period historical growth rate as a gauge, students would have overestimated actual future growth in 30% to 60% of the cases (column 5, Panel B in Tables 1 and 2) and possibly presented "buy" recommendations for their student funds. Aggregating the columns in which these metrics were more than 2.5% less than the actual observed growth rate over the ensuing periods (or where the metric was negative and the ensuing growth positive) further shows that students would have underestimated actual future growth in at least 25%, and in some rolling periods more than 50%, of the cases. This might have resulted in "sell" or "do not buy" recommendations.

The final component of this analysis is an inspection of stock returns for the companies in each of the metric vs. growth rate categories introduced in Tables 1 and 2, especially in light of the finding summarized in the preceding paragraph. We extract the three-year total returns from FactSet and average them across all companies in each category for each rolling period window. The average returns are reported in Table 3, where the column categories use ROE*b with as-reported EPS and the ensuing actual five-year growth rates.

The unmistakable finding in Table 3 is that the best performing stocks in the one-year and three-year periods following a hypothetical student-fund analysis are those for which:

- ROE*b was negative and the ensuing dividend growth rate turned out to be positive
- ROE*b was more than 5% less than the ensuing actual growth rate

In other words, the best performing stocks were generally those which the students might have avoided, where ROE*b falls far short of the subsequently observed actual growth. Of course, the piece of the analysis that we do not see is the "fair value" growth rates the students would have compared to the ROE*b metric to arrive at their recommendation. But, hypothetically, if we assume that the market had priced in the dividend growth rates that we now observe the firms to have actually achieved over the ensuing 5 years in each rolling period, then these would have been the numbers that the students' analysis produced as "fair value" growth rates. Comparison of these rates to ROE*b would have suggested to them to avoid the exact set of stocks which performed the best in Table 3.

The companies whose stock delivered the lowest three-year performance companies in Table 3, for 11 of the 12 rolling period samples, are those in the ROE*b positive, actual growth negative column 3. (As an aside, this is what we should see, as the stocks of firms which cut dividends can be expected, on average, to be penalized by investors.) Hypothetically, if the market's priced growth rate in any of these years had been the rate firms actually produced over the following 5 years, and students had compared ROE*b to these growth rates to determine valuation, then they might have offered a recommendation to buy these stocks, as the ROE*b metric would have been higher than the "fair value" growth rate. This, too, on average, would have produced suboptimal performance.

CONCLUSION

The foregoing exposition presents a cashflow model framework for student analyst teams in a student-managed investment fund class which removes the need to forecast one specific long-term growth rate to be used in the perpetuity component of the valuation. Rather, the framework tasks them with "backing out" the growth rate the market is currently pricing into a stock, and then evaluate whether they think the long-term growth rate is expected to be higher or lower than this "fair value" rate. I then examine two growth rate metrics to be compared against the "fair value" rate, and find that neither the ROE*b growth rate which is part of the model, nor a historical growth rate, would have been good indicators of actual growth of dividends over the ensuing five or ten years. Finally, we show that stock performance over the three-year periods subsequent to a hypothetical student team recommendation was highest for the stocks that an ROE*b-to-"fair rate" comparison might have signaled them to avoid, and lowest for the stocks that such a comparison might have directed them to recommend buying. Given these results, the task of further research is clear: uncover a metric the student teams can reliably use to compare with the "fair value" market-priced growth rate, in order that the cashflow valuation model is a value-added component, along with a relative valuation and financial ratio analysis, of their overall stock action evaluation project.

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Table 1 Panel A
Percentage of Companies in (ROE*b – actual growth) Difference Categories
Plowback Ratio, b, Calculated with As-Reported EPS

Differences between ROE*b calculation in each year, t, and the actual growth of dividends (average annual) rate over the ensuing five years (t, t+5) after the ROE*b calculation, for companies in the S&P500 index. "b", the plowback ratio in the Dividend Discount Model, is calculated using dividends per share and as-reported earnings per share.

	Total	ROE*b < 0, g > 0	ROE*b > 0, g < 0	< -5%	-5% to -2.5%	-2.5% to 0	0 to 2.5%	2.5% to 5%	> 5%
1998	**284**	**10.2%**	**13.0%**	**9.9%**	**3.5%**	**7.7%**	**9.2%**	**9.2%**	**37.3%**
1999	**283**	**4.9%**	**10.2%**	**14.1%**	**4.9%**	**7.4%**	**11.0%**	**13.1%**	**34.3%**
2000	**279**	**7.5%**	**7.9%**	**17.6%**	**5.0%**	**5.4%**	**11.5%**	**10.4%**	**34.8%**
2001	**283**	**16.3%**	**5.7%**	**27.9%**	**5.7%**	**6.4%**	**11.3%**	**5.3%**	**21.6%**
2002	**289**	**11.4%**	**5.2%**	**33.6%**	**7.3%**	**9.3%**	**9.3%**	**5.9%**	**18.0%**
2003	**301**	**9.6%**	**5.3%**	**33.6%**	**9.0%**	**11.0%**	**8.0%**	**8.3%**	**15.3%**
2004	**320**	**5.6%**	**18.4%**	**23.1%**	**8.4%**	**8.4%**	**8.4%**	**6.9%**	**20.6%**
2005	**331**	**3.0%**	**19.0%**	**18.4%**	**5.7%**	**7.9%**	**12.4%**	**7.3%**	**26.3%**
2006	**337**	**3.3%**	**17.8%**	**16.9%**	**4.2%**	**7.7%**	**11.0%**	**10.4%**	**28.8%**
2007	**350**	**4.6%**	**15.1%**	**14.9%**	**7.4%**	**6.3%**	**9.7%**	**9.7%**	**32.3%**
2008	**352**	**10.5%**	**8.2%**	**19.9%**	**4.8%**	**9.1%**	**11.1%**	**7.1%**	**29.3%**
2009	**348**	**17.8%**	**3.7%**	**30.7%**	**8.9%**	**8.0%**	**7.2%**	**6.0%**	**17.5%**

Table 1 Panel B
Summary of Results in Table 1 Panel A

Column 1 collects the percentage of companies for which the ROE*b calculation had a different sign than the direction of the ensuing five-year average annual growth rate of dividends per share (columns 3 and 4 in Panel A). Column 2 collects the percentage of companies for which the ROE*b calculation was within 2.5% (higher or lower) of the ensuing five-year annual growth rate of dividends per share (columns 7 and 8 in Panel A). Column 3 is the percentage of companies for which ROE*b was 5% higher or lower than the ensuing actual five-year annual growth rate of dividends per share (columns 5 and 10 in Panel A). Column 4 collects multiple scenarios in which ROE*b would have been an overestimate of the ensuing actual five-year annual growth rate in dividends per share (columns 4, 9, and 10 in Panel A).

	ROE*b and ensuing growth rate have different signs	ROE*b less than 2.5% different than ensuing growth rate Within 2.5% + or -	ROE*b more than 5% higher or lower than ensuing growth rate Beyond 5% + or –	ROE*b overestimate of ensuing growth rate ROE*b – g > +2.5%, ROE*b > 0, g < 0
1998	23.2%	16.9%	47.2%	59.5%
1999	15.2%	18.4%	48.4%	57.6%
2000	15.4%	16.8%	52.3%	53.0%
2001	21.9%	17.7%	49.5%	32.5%
2002	16.6%	18.7%	51.6%	29.1%
2003	15.0%	18.9%	48.8%	28.9%
2004	24.1%	16.9%	43.8%	45.9%
2005	22.1%	20.2%	44.7%	52.6%
2006	21.1%	18.7%	45.7%	57.0%
2007	19.7%	16.0%	47.1%	57.1%
2008	18.8%	20.2%	49.1%	44.6%
2009	21.6%	15.2%	48.3%	27.3%

Table 2 Panel A
Percentage of Companies in Historical vs. Actual Dividend Growth Rate Categories

Differences between historical backward-looking five-year average annual growth rate of dividends per share (t-5,t) and the actual growth of dividends (average annual) rate over the ensuing five years (t to t+5), for companies in the S&P500 index.

	Total	Growth rates (t-5,t) < 0, (t, t+5) > 0	Growth rates (t-5,t) > 0, (t, t+5) < 0	< -5%	-5% to -2.5%	-2.5% to 0	0 to 2.5%	2.5% to 5%	> 5%
2003	**276**	**12.0%**	**4.3%**	**37.7%**	**11.2%**	**11.6%**	**5.4%**	**8.0%**	**9.8%**
2004	**283**	**8.8%**	**18.4%**	**25.4%**	**8.5%**	**12.7%**	**7.4%**	**4.9%**	**13.8%**
2005	**285**	**9.1%**	**20.0%**	**18.2%**	**10.2%**	**11.2%**	**8.4%**	**7.7%**	**15.1%**
2006	**286**	**6.6%**	**19.2%**	**14.3%**	**6.6%**	**13.3%**	**9.8%**	**9.4%**	**20.6%**
2007	**293**	**6.5%**	**20.1%**	**13.3%**	**6.8%**	**8.5%**	**7.8%**	**8.9%**	**28.0%**
2008	**306**	**2.6%**	**18.3%**	**13.1%**	**4.2%**	**7.5%**	**8.5%**	**9.2%**	**36.6%**
2009	**313**	**14.7%**	**5.4%**	**18.2%**	**4.2%**	**10.9%**	**11.8%**	**6.7%**	**28.1%**

Table 2 Panel B
Summary of Results in Table 2 Panel A

Column 1 collects the percentage of companies for which the historical growth rate in dividends per share had a different sign than the direction of the ensuing five-year average annual growth rate of dividends per share. Column 2 collects the percentage of companies for which the historical growth rate was within 2.5% (higher or lower) of the ensuing five-year annual growth rate of dividends per share. Column 3 is the percentage of companies for which the historical growth rate was 5% higher or lower than the ensuing actual five-year annual growth rate of dividends per share. Column 4 collects multiple scenarios in which the historical growth rate would have been an overestimate of the ensuing actual five-year annual growth rate in dividends per share.

	Historical and ensuing growth rate have different signs	Historical growth less than 2.5% difference from ensuing growth rate	Historical growth more than 5% higher or lower than ensuing growth rate	Historical growth would have been overestimate of ensuing growth rate Hist g – g > +2.5%, Hist g > 0, g < 0
2003	16.3%	17.0%	47.5%	22.1%
2004	27.2%	20.1%	39.2%	37.1%
2005	29.1%	19.6%	33.3%	42.8%
2006	25.9%	23.1%	35.0%	49.3%
2007	26.6%	16.4%	41.3%	57.0%
2008	20.9%	16.0%	49.7%	64.1%
2009	20.1%	22.7%	46.3%	40.3%

Table 3
Three-year Stock Performance

Average of companies' three-year stock total returns in the three-year period after the difference between ROE*b and the ensuing five-year actual average annual growth of dividends is calculated. b, the plowback ratio, is calculated using as-reported earnings per share. Highest returns for each rolling period sample are highlighted in yellow, lowest returns are highlighted in grey.

	ROE*b < 0, g > 0	ROE*b > 0, g < 0	< -5%	-5% to -2.5%	-2.5% to 0	0 to 2.5%	2.5% to 5%	> 5%
1998	**69.28**	**9.00**	**39.89**	**33.17**	**48.85**	**32.88**	**27.90**	**18.12**
1999	**50.55**	**1.65**	**57.94**	**32.57**	**13.12**	**27.77**	**12.04**	**7.64**
2000	**62.72**	**-20.19**	**61.23**	**21.76**	**17.26**	**17.02**	**33.63**	**15.45**
2001	**66.72**	**25.06**	**72.44**	**34.17**	**41.15**	**44.28**	**50.08**	**28.19**
2002	**117.44**	**83.61**	**133.94**	**68.85**	**62.60**	**65.79**	**44.60**	**60.08**
2003	**124.49**	**45.11**	**82.95**	**55.98**	**56.69**	**45.35**	**53.89**	**58.32**
2004	**81.76**	**10.56**	**75.86**	**45.30**	**65.33**	**52.21**	**63.64**	**52.08**
2005	**41.04**	**-46.83**	**-1.23**	**3.02**	**12.09**	**-2.45**	**-4.32**	**-13.70**
2006	**-0.83**	**-41.02**	**12.72**	**9.39**	**1.94**	**8.87**	**-11.01**	**-3.81**
2007	**21.27**	**-23.17**	**20.76**	**10.61**	**0.45**	**6.68**	**11.10**	**-0.56**
2008	**112.53**	**47.54**	**95.01**	**158.62**	**72.95**	**58.36**	**53.00**	**61.31**
2009	**56.55**	**16.93**	**68.99**	**50.54**	**47.46**	**44.68**	**20.80**	**48.88**