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Dividend Payout and Future Earnings Growth

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Because dividends reduce the funds available for investment, many market observers and investors associate high dividend payout with weak future earnings growth. Tests using aggregate market data, however, provided evidence that contradicts that view. Because aggregate results may not apply at the company level, we conducted a company-by-company analysis of the relationship between payout and future earnings growth. Our tests also show that high-dividend-payout companies tend to experience strong, not weak, future earnings growth. These results are robust to alternative measures of payout and earnings, sample composition, mean reversion in earnings, the effects of particular industries, time periods, and share repurchases.

Market observers often view low dividend payout as a signal for high future earnings growth. The rationale is that companies pay fewer dividends or retain more earnings when growth opportunities are ample, so low payout indicates strong future earnings growth. For example, the Gordon (1962) constant dividend growth model shows that with constant expected return, high dividend payout should be offset by either a high P/E or low expected earnings growth. The intertemporal extension of the Miller and Modigliani (1961) dividend irrelevance theorem predicts that with unaltered investments and constant expected return, higher dividend payout will be followed by lower growth (Ibbotson and Chen 2003).[1] Moreover, from the perspective of capital structure, "pecking order theory" (Myers 1984) hypothesizes that companies with great growth opportunities will prefer internally generated cash flows to external sources of funds. This hypothesis suggests that companies with plentiful growth opportunities will have low dividend payouts (or high earnings-retention rates). Empirical studies on the determinants of dividend payout generally support the idea that dividend payout is inversely correlated with investment opportunities (Fama and French 2002; Rozeff 1982).

In an intriguing approach, Arnott and Asness (2003) investigated the relationship between payout and future earnings growth by focusing on the market portfolio, proxied by the S&P 500 Index. The results of that study, which incorporated 130 years of data and a variety of tests, are in sharp contrast with conventional wisdom. Arnott and Asness found that future earnings growth is associated with high rather than low dividend payout. This finding proved robust to various subperiods, to extensive controls for the mean reversion of earnings growth, and to a host of micro and macro variables. The authors noted that their findings "offer a challenge to market observers who see the low dividend payouts . . . as a sign of strong future earnings to come" (p. 70).

The Arnott–Asness analysis has direct and important implications for the valuation of the overall equity market. Does the high dividend–high growth relationship also exist at the company level? Although this question is of utmost importance for valuing individual stocks, the answer is not obvious because aggregate results may not apply at the company level.

One reason for differences between aggregate and company-level results is that the S&P 500 composite is capitalization weighted, so the dividend policies and performance of a few large companies in the index may dominate the aggregate results. Company-level analyses, however, treat all companies equally, thereby reducing the possibility that a handful of giant companies dominate results. Two recent studies illustrate this idea clearly. Fama and French (2001) reported that the percentage of U.S. public companies that pay dividends has decreased sharply since 1978. Thus, on the company level, companies are paying fewer dividends than before. In a more recent study, however, DeAngelo, DeAngelo, and Skinner (2004) showed that aggregate dividends have increased since 1978 because dividends are now more concentrated in a few very large corporations.

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A second reason for caution in extending the Arnott–Asness aggregate result to individual companies is that companies in the S&P 500 tend to be large, well-established businesses. Whether the findings apply to a more diverse sample of companies is an empirical question. This issue has become particularly important in recent years because newly listed companies tend to be smaller, less profitable, and more growth oriented than before (Fama and French 2001). As a result, the differences in characteristics between S&P 500 companies and other public companies have become more important in recent years.

Study Design

Following Arnott and Asness, we measured earnings growth as the compounded annual growth rate. We tested for the relationship between payout and future earnings growth by using the following multivariate regression:

$$EG_{0,t} = \alpha_0 + \beta_1 Payout + \beta_2 Size + \beta_3 ROA + \beta_4 E/P + \beta_5 LEV + \beta_6 PEG_{-t,0} + \beta_7 AG_{0,t} + e, \quad (1)$$

where

$EG_{0,t}$ = earnings growth, measured as compounded annual earnings for common shareholders (Compustat #237) growth from Year 0 to year t; growth was calculated over one-, three-, and five-year periods—that is, $t = 1, 3,$ or 5

Payout = dividend payout, measured as Year 0 dividends (Compustat #21) divided by Year 0 earnings (Compustat #237)

Size = natural logarithm of market value of equity (Compustat #25 × Compustat #199) at the end of Year 0

ROA = return on assets, measured as earnings (Compustat #237) for Year 0 divided by total assets (Compustat #6) at the end of Year 0

LEV = leverage, measured as the book value of debt (Compustat #6 – Compustat #60) to total assets (Compustat #6),[2] with all measurements at the end of Year 0

E/P = earnings yield, measured as earnings (Compustat #237) for Year 0 divided by the end-of-year market value of equity (Compustat #25 × Compustat #199)

$PEG_{-t,0}$ = past earnings growth, measured as compounded annual earnings (Compustat #237) growth from year $-t$ to Year 0, with $t = 1, 3,$ or 5 (the basic procedure was the same as for the *EG* variable)

$AG_{0,t}$ = compounded annual growth in total assets (Compustat #6) from Year 0 to year t with $t = 1, 3,$ or 5 with period t designations as for *EG*

A notable difference between our study and that of Arnott and Asness relates to the time horizon. Whereas Arnott and Asness focused on 5-year-ahead and 10-year-ahead long-term earnings growth, we studied earnings growth over short (1-year-ahead), intermediate (3-year-ahead), and long (5-year-ahead) horizons. We examined relatively short horizons for two reasons. One is that, although investors and analysts are clearly interested in long-term earnings growth, they are also interested in short- and intermediate-horizon growth. Second, long-term growth measures require a large number of observations, a requirement that increases survivor bias as the observation period increases.

Our key independent variable is *Payout*. A negative coefficient on *Payout* would support the conventional wisdom that low earnings growth follows high payout. A positive coefficient on *Payout* would be consistent with the results presented in Arnott and Asness.

We controlled for size because large companies are more established and mature than small companies and thus less likely to exhibit stronger growth. Consequently, we expected to observe an inverse relationship between company size and future earnings growth. We controlled for return on assets because when profitability is already high (other factors being equal), companies should find it difficult to demonstrate strong earnings growth. Thus, we expected *ROA* also to be negatively associated with earnings growth.

The leverage control was based on the expectation that companies with high leverage will tend to have large investments, as suggested by Fama and French (2002), and thus higher earnings growth. Hence, we predicted a positive relationship between leverage and earnings growth.

Following Arnott and Asness, we also controlled for earnings yield and past earnings growth. Under the assumption that the market is reasonably efficient, we expected investors to pay more for a dollar of current earnings if future earnings growth is high (i.e., higher P/E). Thus, we predicted that *E/P* (the inverse of P/E) would be negatively related to future earnings growth.[3]

We considered the possibility of mean reversion in earnings growth by including past earnings growth in our regression. Our tests used the same observation period for past and future earnings growth. For example, we controlled for five-year past growth when examining five-year future growth rates. We expected a negative relationship

between past earnings growth and future earnings growth. However, because these controls may not have adequately addressed the possibility of mean reversion, we report later on additional controls for the mean reversion effect.

Finally, we controlled for future asset growth. Other factors being equal, we expected large companies to report higher earnings than small companies. Also, we expected that when companies grew, we would observe growth in earnings. We expected to observe a positive coefficient for the asset growth variable.

Data

We obtained our data from the 2004 Compustat annual files. The sample includes both "active" and "inactive" companies. The sample period is 1950 through 2003. Because our tests required data for past and future earnings growth, the sample size was a decreasing function of the growth horizon.[4] We began with all domestic companies listed on the NYSE, Amex, and NASDAQ that paid dividends on common shares for Year 0. In addition, we required companies with

- positive earnings for Year 0,[5]
- book value of equity greater than $250,000 or total assets greater than $500,000, and
- membership in industries other than financial services (SIC codes 6000–6999) and utilities (SIC codes 4000–4949).

To control for the effects of outliers, for all variables except *Size* and *Payout* (as defined in the previous section), we removed the top and bottom 1 percent of observations. Following the literature, we removed small companies on the basis of the study's requirement for minimum book value of equity or total assets (as in Fama and French 2002). With respect to *Payout*, we removed only the top 1 percent of the observations rather than truncate observations at both the top and bottom ends of the distribution.[6] We used this procedure because the minimum payout would be 0 and about 44 percent of Compustat companies do not pay dividends.

The sample necessarily includes only companies that paid dividends and reported positive earnings in the year under examination. In the interest of maximizing the sample size and generality of results, we did include companies that missed dividends or reported losses in particular years when the dividend and earnings criteria were met in Year 0. Therefore, the study covers the population of Compustat companies insofar as possible. The sample used to test Equation 1 is quite large—40,968 company-years for Year 0 in the case of the one-year growth. Although the number of company-years used in tests of the five-year growth measure decreases to 27,925, our sample continues to be large and comprehensive.

Table 1 reports descriptive statistics for the sample. Note that the medians of earnings growth observations, *EG*, range from 12.6 percent (one-year growth measure) to 9.7 percent (five-year growth measure). Table 1 also shows that the median dividend payout of 33.2 percent is subject to considerable variation among companies. *Payout* at the 75th percentile is more than twice *Payout* for the 25th percentile. With respect to the other variables, the characteristics of the sample companies are similar to those of dividend-paying companies as reported by Fama and French (2001).

Table 1. Descriptive Statistics

Variable	Mean	Standard Deviation	25th Percentile	Median	75th Percentile
A. Dependent variables					
EG(0,1)	0.215	0.732	–0.074	0.126	0.324
EG(0,3)	0.113	0.256	–0.022	0.102	0.224
EG(0,5)	0.099	0.170	0.006	0.097	0.187
B. Independent variables					
Payout	0.398	0.314	0.197	0.332	0.506
Size	5.058	2.026	3.558	4.906	6.413
ROA	0.074	0.042	0.044	0.067	0.096
Leverage	0.465	0.174	0.340	0.468	0.588
E/P	0.105	0.068	0.059	0.087	0.132
PEG(–1,0)	0.260	0.851	–0.059	0.134	0.341
PEG(–3,0)	0.142	0.276	–0.006	0.115	0.244
PEG(–5,0)	0.123	0.179	0.021	0.110	0.206

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Results

We first examine the univariate association between current payout and past and future earnings growth. Then, we analyze the relationship between payout and future earnings growth by using multivariate regressions.

Univariate Analysis. For the univariate association between current payout and past and future earnings growth, the cross-correlation matrix in **Table 2** shows Pearson product-moment correlation coefficients between current payout and past and future earnings growth over one-, three-, and five-year observation periods.

Table 2 shows a negative correlation between past and future earnings growth, indicating mean reversion in the growth of earnings. Note also the strong, positive association between current payout and one-, three-, and five-year-ahead earnings growth. The data reveal an even stronger negative correlation, however, between payout and past earnings growth.

Overall, the data suggest that companies with high current dividend payouts tend to have high future earnings growth but relatively low past earnings growth. Because earnings growth tends to revert to the mean, the positive relationship between payout and future earnings growth may be explained by the low past earnings growth of high-payout companies. We controlled for this possibility in our multivariate analysis.

Multivariate Analysis. Regression results for the multivariate analysis for each of the three earnings-growth observation periods are in **Table 3**. Using the Fama and MacBeth (1973) procedure, we estimated regression coefficients for each year to control for cross-sectional dependence. Thus, all reported coefficients are averages of yearly regressions. Note that the coefficients on *Payout* are all positive and highly significant for all three measurement periods.

In Table 3, the control variables are generally highly significant and exhibit the expected relationships with future earnings growth. On the one

Table 2. Correlations between Dividend Payout, Past Earnings Growth, and Future Earnings Growth

	Payout	*PEG*(–5,0)	*PEG*(–3,0)	*PEG*(–1,0)	*EG*(0,1)	*EG*(0,3)	*EG*(0,5)
Payout	1.000	–0.495	–0.457	–0.209	0.248	0.214	0.162
PEG(–5,0)		1.000	0.554	0.144	–0.218	–0.190	–0.164
PEG(–3,0)			1.000	0.228	–0.199	–0.190	–0.155
PEG(–1,0)				1.000	–0.052	–0.072	–0.061
EG(0,1)					1.000	0.509	0.383
EG(0,3)						1.000	0.646
EG(0,5)							1.000

Note: All correlation coefficients are significant at the 1 percent level.

Table 3. Future Earnings Growth as a Function of Dividend Payout

	One-Year *EG*		Three-Year *EG*		Five-Year *EG*	
Variable	Coefficient	*t*-Statistic	Coefficient	*t*-Statistic	Coefficient	*t*-Statistic
Intercept	0.283	6.79***	0.103	6.63***	0.061	7.15***
Payout	0.537	12.45***	0.167	12.96***	0.083	10.31***
Size	–0.029	–7.48***	–0.012	–9.92***	–0.007	–7.90***
ROA	–2.388	–10.54***	–0.974	–11.71***	–0.646	–11.30***
E/P	–1.537	–9.41***	–0.695	–11.97***	–0.468	–11.16***
Leverage	0.077	2.22**	0.065	5.35***	0.058	9.12***
PEG	0.012	0.089	–0.083	–5.90***	–0.118	–10.12***
AG	0.873	14.13***	0.996	29.67***	1.011	39.61***
Adjusted R^2		19.96%		31.59%		36.41%

Note: The reported *t*-statistics and adjusted R^2s are based on the Fama–MacBeth procedure.

*Significant at the 10 percent level in a two-tailed test.
**Significant at the 5 percent level in a two-tailed test.
***Significant at the 1 percent level in a two-tailed test.

hand, large companies, companies with higher current profitability, and companies with higher earnings yields tend to have lower future earnings growth. On the other hand, leverage and asset growth are positively associated with future earnings growth. The past earnings growth variable is negative and highly significant for the three- and five-year growth measures. To the extent that our control variables capture the determinants of earnings growth, Table 3 shows that, after consideration of possible mean reversion and other factors, companies with high current payouts tend to realize high future earnings growth.

Earlier, we noted that because the results of time-series studies that use long observation periods can be influenced by the effects of survivorship, these results may not apply to Compustat companies in general. Although our examination of five-year growth with provision for past earnings growth required 11 annual observations, the data show that the tenor of results is essentially the same as for the one-year growth measure. Therefore, the results do not appear to be materially influenced by survivorship considerations.

We provided for the effects of mean reversion by including a past earnings growth variable, as Arnott and Asness did. Our basic procedure used the same observation period for past and future earnings growth. For example, in the examination of five-year future growth rates, the variable for past earnings growth also represented five years. But growth cycles need not be symmetrical. For example, earnings may decrease for one year or three years, then increase for five years. To examine the effects of nonuniform earnings cycles, we repeated the tests and controlled for all three *PEG* measures. For example, for the three-year-ahead growth regression, in addition to the three-year *PEG* measure, we included *PEG* measures for one and five years. The results of our tests (not reported) were essentially the same as those reported here.

The Fama–MacBeth approach we used entails estimating the regression separately for each year and reporting the average of the annual coefficients. The statistical significance of the average coefficient is based on the assumption that the annual coefficients are normally distributed. If the normality assumption is violated, the validity of the statistical significance reported is subject to question. Therefore, we used the Shapiro–Wilk test to determine whether the annual coefficients on *Payout*, the key independent variable, were normally distributed. We found that we could not reject the null hypothesis that the annual coefficients on *Payout* were normally distributed in any of the three (one-year, three-year, and five-year) regressions.[7]

We tested for potential nonlinearity in the relationship between dividend payout and future earnings growth by conducting a rank regression (nonparametric) test of Equation 1. For each year, we first sorted all dependent and independent variables into deciles. Then, we fitted the annual regressions by using decile ranks rather than numerical values of the continuous variables.

We found the coefficients (not reported) on *Payout* in our three rank regressions to be positive and statistically significant at the 1 percent level.[8] Thus, our rank regressions support our basic finding that payout is positively associated with future earnings growth.

The positive association between current dividend payout and future earnings growth is consistent with the aggregate results reported by Arnott and Asness. The data clearly show that on an individual-company level and after controlling for other influences, future earnings growth increases with payout.

Sensitivity Tests

Given the importance of these findings, we conducted a variety of sensitivity tests of the results. We considered alternative measures of earnings, small companies, regulated industries, an additional control for mean reversion in earnings, specific time periods, industry membership, and share repurchases.

Alternative Measures of Earnings. Because our payout measure included only common dividends, we also measured earnings as net income before extraordinary items and available to common shareholders (Compustat #237). Other common earnings measures that we considered are operating income before depreciation (Compustat #13) and income excluding extraordinary items (Compustat #18). We tested whether our results were sensitive to these alternative measures of earnings and found the results (not reported) to be essentially the same with all three measures.

Small Companies and Regulated Industries. Following Fama and French (2002), we originally omitted company-years from the sample in which the book value of equity was less than $250,000 or total assets were less than $500,000. We also omitted financial firms and utilities, which may have payout-to-earnings relationships different from those of other companies. When we relaxed these filters, we found almost no difference in results (not reported).

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Additional Control for Mean Reversion in Earnings. Previously, we discussed the possibility that mean reversion in earnings growth could be contributing to our results. Although we controlled for mean reversion in earnings growth in Equation 1, we carried out additional tests for the role of mean reversion.

The first test focused on the subsample of companies for which mean reversion in earnings growth was not likely to explain our results. We sorted companies into four groups on the basis of past earnings growth and payout. With respect to earnings growth, we sorted observations according to low and high past earnings growth based on median values in Year 0. For *Payout*, we sorted observations into low and high current payout groups based on the Year 0 median payout. All sorts were done annually. The four groups are shown in **Exhibit 1**.

Exhibit 1. The Four Groups

1. Low Payout. Low Past Earnings Growth.	2. High Payout. Low Past Earnings Growth.
3. Low Payout. High Past Earnings Growth.	4. High Payout. High Past Earnings Growth.

If mean reversion is responsible for the results reported in Table 3, the association between payout and future earnings growth should be *negative* rather than positive for observations in Groups 1 and 4. For example, for Group 1, mean reversion in earnings growth would suggest that low-payout companies have high future earnings growth because past earnings growth is low. By the same reasoning, mean reversion in earnings growth would suggest that high-payout companies (Group 4) would have low future earnings growth. We fitted Equation 1 for companies in Groups 1 and 4 and found that the regression results (not reported) remained qualitatively unchanged.

We then conducted a second test that addressed the joint effects of past earnings growth/current payout on the payout–future growth relationship. For this test, we created two dummy variables to capture the effects of high or low past earnings growth and high or low current payout. The variable D^{PEG} was set to 1 if the company's past earnings growth (one-year, three-year, five-year) in year t was above the median past earnings growth of the same horizon in year t. Otherwise, the value was 0. Similarly, we set a variable D^{Payout} to 1 if the company's payout in year t was above the median payout in year t and set it to 0 otherwise. We then had the two dummy variables interact with all the independent variables in our main model. The expanded model is

$$EG_{0,t} = \alpha_0 + \sum \beta_i \mathbf{X} + \phi_0 D^{PEG} + \sum \phi_i D^{PEG} \mathbf{X} + \gamma_0 D^{Payout} + \sum \gamma_i D^{Payout} \mathbf{X} + e, \quad (2)$$

where **X** is the vector of the independent variables in Equation 1 (that is, *Payout*, *Size*, *ROA*, *LEV*, *E/P*, *PEG*, and *AG*) and β_1, ϕ_1, and γ_1 are the coefficients for, respectively, *Payout*, $D^{PEG} \times$ *Payout*, and $D^{Payout} \times$ *Payout*.

The relationship between payout and future earnings growth is captured by $\beta_1 + \phi_1 D^{PEG} + \gamma_1 D^{Payout}$. This expression permitted us to examine the joint relationship between payout and future earnings growth for each of the four classifications of companies. For example, for companies with low past earnings growth and low payout, Group 1 in Exhibit 1, the relationship is captured by β_1 because both D^{PEG} and D^{Payout} equal 0. Similarly, for companies with high past earnings growth and low payout, Group 3 in Exhibit 1, the relationship is captured by $\beta_1 + \phi_1$ because $D^{PEG} = 1$ and $D^{Payout} = 0$.

Table 4 shows a positive relationship between payout and future earnings growth for nearly all groups and for all of the three growth measures. With the exception of observations in the low past earnings growth and low payout group (Group 1), these relationships tend to be highly significant.

Table 4. Extended Analysis of the Impact of Mean Reversion in Earnings Growth on the Relationship between Future Earnings Growth and Dividend Payout

	One-Year *EG*		Three-Year *EG*		Five-Year *EG*	
Classification	Coefficient	*t*-Statistic	Coefficient	*t*-Statistic	Coefficient	*t*-Statistic
Group 1: Low payout and low *PEG* (β_1)	0.056	0.82	0.037	1.12	0.036	1.43
Group 2: High payout and low *PEG* ($\beta_1 + \gamma_1$)	0.551	8.78***	0.140	8.08***	0.071	6.33***
Group 3: Low payout and high *PEG* ($\beta_1 + \phi_1$)	–0.058	–1.01	0.072	2.61**	0.050	2.38**
Group 4: High payout and high *PEG* ($\beta_1 + \phi_1 + \gamma_1$)	0.437	7.79***	0.175	8.30***	0.086	6.78***

Notes: The regression is Equation 2. The coefficients and *t*-statistics reported are based on the Fama and MacBeth procedure.

*Significant at the 10 percent level in a two-tailed test.
**Significant at the 5 percent level in a two-tailed test.
***Significant at the 1 percent level in a two-tailed test.

Note also that, given past earnings growth (low or high), the relationship between payout and future earnings growth is generally more positive for high-payout companies. In addition, these results suggest that mean reversion in earnings growth is not the driving force behind our finding. Mean reversion in earnings growth would suggest that the coefficients for Group 3 would be generally smaller than those for Group 1. Similarly, the coefficients for Group 2 should be higher than those for Group 4, but Table 4 shows that, with the exception of one regression, the relationships are the opposite.

Specific Time Periods. We considered to what extent a single time period might be responsible for the results and whether the relationship between payout and future growth has changed over time. To address these issues, we used two approaches. First, we fitted Equation 1 for each of the five 10-year time periods in our sample beginning with the 1950s. Year 0 determined the classification by decade. The requirement of data for past earnings growth reduced the number of years included for the 1950s, and with respect to more recent years, we included data from 2000 to 2003 in the 1990s category.

Panel A of **Table 5** shows coefficients and *t*-statistics for *Payout* for each 10-year subperiod. Note that the relationships between earnings growth and payout are positive and generally significant. Thus, we have no reason to suspect that the results are attributable to any particular time period.

A second way to examine the temporal change in the relationship between payout and future earnings growth is to incorporate dummy variables for decades in Equation 1. Specifically, we created four

Table 5. Future Earnings Growth as a Function of Dividend Payout: Analysis by Decade

	One-Year *EG*		Three-Year *EG*		Five-Year *EG*	
Variable	Coefficient	*t*-Statistic	Coefficient	*t*-Statistic	Coefficient	*t*-Statistic
A. Regressions for each decade						
Before 1960	0.287	1.87*	0.082	4.90***	0.058	1.85
1960–69	0.444	7.93***	0.109	3.68***	0.047	3.46***
1970–79	0.639	9.30***	0.231	10.10***	0.095	10.86***
1980–89	0.706	9.42***	0.219	9.27***	0.122	5.77***
After 1990	0.576	7.30***	0.166	9.63***	0.081	8.18***
B. Pooled regressions with time dummy variables						
Intercept	0.253	10.59***	0.111	12.78***	0.063	0.79***
Payout	0.727	28.87***	0.214	23.15***	0.116	18.62***
Size	–0.026	–12.99***	–0.013	–17.07***	–0.007	–14.29***
ROA	–2.370	–21.98***	–1.090	–26.69***	–0.761	–27.23***
E/P	–0.626	–9.91***	–0.358	–15.70***	–0.302	–19.98***
Leverage	–0.029	–1.09	0.025	2.55**	0.033	5.01***
PEG	0.023	4.40***	–0.089	–13.98***	–0.096	–14.85***
AG	0.798	41.78***	1.011	84.57***	0.984	98.82***
D50	–0.095	–2.14**	–0.042	–2.62***	–0.012	–1.11
D60	–0.054	–2.46**	–0.039	–4.95***	–0.021	–3.95***
D70	0.073	4.22***	0.015	2.45**	0.036	8.61***
D80	–0.025	–1.41	–0.008	–1.22	–0.004	–0.94
D50 × Payout	–0.280	–3.52***	–0.087	–3.02***	–0.035	–1.84*
D60 × Payout	–0.353	–8.36***	–0.079	–5.20***	–0.013	–1.28
D70 × Payout	–0.217	–6.14***	0.027	2.12**	–0.021	–2.43**
D80 × Payout	–0.006	–0.18	–0.016	–1.27	–0.005	–0.62
Adjusted R^2		17.05%		32.00%		35.62%

Notes: The regression for Panel A is Equation 1. All coefficients, *t*-statistics, and adjusted R^2s reported in Panel A are based on the Fama–MacBeth procedure. The regression for Panel B is Equation 3. All coefficients, *t*-statistics, and adjusted R^2s reported in Panel B are based on pooled ordinary least-squares estimations.

*Significant at the 10 percent level in a two-tailed test.
**Significant at the 5 percent level in a two-tailed test.
***Significant at the 1 percent level in a two-tailed test.

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decade dummy variables: *D50*, *D60*, *D70*, and *D80*. The decade variable was coded 1 if the observation was in that decade and was coded 0 otherwise. We then had the four decade dummies interact with *Payout*. The expanded regression was

$$EG_{0,t} = \alpha_0 + \beta_1 Payout + \beta_2 Size + \beta_3 ROA + \beta_4 E/P + \beta_5 LEV + \beta_6 PEG_{-t,0} + \beta_7 AG_{0,t} + \beta_8 D50 + \beta_9 D60 + \beta_{10} D70 + \beta_{11} D80 + \beta_{12} D50 \times Payout + \beta_{13} D60 \times Payout + \beta_{14} D70 \times Payout + \beta_{15} D80 \times Payout + e. \quad (3)$$

Panel B of Table 5 summarizes the results, two of which are particularly interesting. First, we found that earnings growth, on average, was weaker in the 1950s and 1960s than in the 1990s (including 2000–2003) but was stronger in the 1970s, as evidenced by the significantly negative coefficients on *D50* and *D60* and positive coefficient on *D70*. Second, and more importantly, we found generally negative interaction terms between decade dummies and *Payout* (except for the 1980s). Consistent with the results reported in Panel A of Table 5, these data reveal that the positive relationship between payout and future earnings growth has strengthened in recent years.

Industry Effects. Our results may be merely reflecting industry effects. If so, then after controlling for industry membership, if companies with high dividend payouts tend to concentrate in industries that experience higher earnings growth, we should not find a positive relationship between payout and high earnings growth. To examine this possibility, we applied two tests.

For the first test, we substituted industry-adjusted dividend payout for dividend payout in Equation 1. We calculated industry-adjusted payout as Adjusted payout = Payout – Median industry payout, where median industry payout is the median payout of dividend-paying companies with the same two-digit SIC code in a particular year.

Panel A in **Table 6** shows results of this analysis that are similar to those in Table 3. In fact,

Table 6. Future Earnings Growth as a Function of Dividend Payout with Control for Industry Effects

	One-Year *EG*		Three-Year *EG*		Five-Year *EG*	
Variable	Coefficient	*t*-Statistic	Coefficient	*t*-Statistic	Coefficient	*t*-Statistic
A. Industry-adjusted payout						
Intercept	0.488	11.00***	0.165	11.16***	0.093	11.21***
Adjusted *Payout*	0.544	13.10***	0.158	13.44***	0.077	10.82***
Size	–0.026	–6.95***	–0.011	–9.22***	–0.006	–7.29***
ROA	–2.531	–11.11***	–1.018	–11.78***	–0.664	–11.35***
E/P	–1.592	–9.65***	–0.706	–12.43***	–0.473	–11.04***
Leverage	0.050	1.40	0.057	4.75***	0.054	8.49***
PEG	0.011	0.89	–0.092	–6.51***	–0.127	–11.12***
AG	0.859	13.95***	0.987	29.47***	1.006	38.90***
Adjusted R^2		19.91%		31.31%		36.24%
B. Industry dummy variables						
Intercept	0.248	4.92***	0.087	4.78***	0.045	3.51***
Payout	0.543	12.05***	0.165	13.25***	0.084	10.29***
Size	–0.030	–8.91***	–0.012	–10.45***	–0.007	–8.95***
ROA	–2.312	–10.90***	–0.925	–11.92***	–0.611	–11.05***
E/P	–1.711	–11.14***	–0.750	–13.83***	–0.500	–12.26***
Leverage	0.104	3.14***	0.076	6.42***	0.064	11.24***
PEG	0.010	0.79	–0.079	–5.71***	–0.114	–9.64***
AG	0.817	14.24***	0.960	30.07***	0.983	42.81***
Adjusted R^2		24.39%		36.30%		41.10%

Notes: The regression for Panel A is Equation 1, where *Payout* is "adjusted payout" (that is, Payout – Median industry payout). The regression for Panel B is Equation 4. Industry indicators have been omitted because with one for each industry, they are too numerous to show here and the specific industry relationships are not central to our analysis. All coefficients, *t*-statistics, and adjusted R^2s reported are based on the Fama–MacBeth procedure.

*Significant at the 10 percent level in a two-tailed test.
**Significant at the 5 percent level in a two-tailed test.
***Significant at the 1 percent level in a two-tailed test.

the Panel A significance levels for *Payout* are somewhat higher with the industry-adjusted payout variable included.

The second test of industry effects was to include dummy variables for industry membership in the regression. To avoid singularity, we created dummy variables for all but one industry. The expanded regression was

$$EG_{0,t} = \alpha_0 + \beta_1 Payout + \beta_2 Size + \beta_3 ROA + \beta_4\, E/P + \beta_5 LEV + \beta_6 PEG_{-t,0} + \beta_7 AG_{0,t} + \sum \phi_i IND_i + e, \quad (4)$$

where IND_i is a dummy variable that equaled 1 if the company belonged to industry i (defined by a two-digit SIC code) and equaled 0 otherwise.

The results, given in Panel B of Table 6, are similar to those reported in Panel A. Specifically, the coefficients on *Payout* remain strong and significant for all three growth measures. Therefore, our primary results do not seem to be driven by industry effects.

Share Repurchases. Share repurchases have become a popular and important way to distribute cash since the 1980s. For example, Allen and Michaely (2003) reported that in 1979, the aggregate payout through share repurchases was only about 4 percent of earnings but the percentage increased to more than 48 percent in 1998. Because of the dramatic increases in both the magnitude and frequency of share repurchases in recent years, Allen and Michaely, among others, emphasized the desirability of considering repurchases in tests that relate to corporate dividend payouts. We considered the sensitivity of our results to repurchases by examining the relationships between earnings growth and three measures of payout—dividend payout (as previously defined), repurchase payout, and total payout.

Repurchase payout is defined as the ratio of common stock repurchases to earnings. Total payout is the sum of dividend payout and repurchase payout. Following Grullon and Michaely (2002), we measured the dollar amount of a company's common stock repurchases as the dollar amount of its total stock repurchases (Compustat #115) minus the change in redemption value of the preferred shares outstanding (Compustat #56). Because share repurchases were not common until the 1980s, our tests incorporated observations beginning in 1980. To separate the effects of dividend payouts and share repurchases, the sample of dividend-paying companies in this test included only companies that paid dividends and did *not* repurchase shares in Year 0. Similarly, only companies that repurchased shares and did *not* pay regular dividends in Year 0 were included in the repurchase sample.

The results of this analysis are presented in **Table 7**. We found that the payout–future growth relationship continues to be strong after explicit consideration of share repurchases. Specifically, total payout is positively related to future earnings growth in all three regressions. For the companies that paid dividends and did not repurchase shares, dividend payout is strongly and positively associated with future earnings growth for all three growth measurement periods. Repurchase payout is also positively related to future earnings growth, but the significance levels, although high, are somewhat lower than for the other payout measures. Collectively, Table 7 indicates that (1) total current payout is positively related to future earnings growth and (2) the relationship is stronger for dividends than for share repurchases.

Table 7. Future Earnings Growth as a Function of Dividend Payout: Alternative Measures of Payout

	One-Year *EG*		Three-Year *EG*		Five-Year *EG*	
Variable	Coefficient	*t*-Statistic	Coefficient	*t*-Statistic	Coefficient	*t*-Statistic
Total payout	0.246	9.35***	0.060	8.96***	0.035	6.06***
Dividend payout	0.600	8.75***	0.183	10.43***	0.090	5.60***
Repurchase payout	0.149	6.22***	0.030	4.58***	0.009	1.96*

Notes: The regression is Equation 1 with *Payout* measured as total payout, dividend payout, and repurchase payment. Only the coefficients for the alternative measures of *Payout* are shown. All coefficients, *t*-statistics, and adjusted R^2s reported are based on the Fama–MacBeth procedure.

*Significant at the 10 percent level in a two-tailed test.
**Significant at the 5 percent level in a two-tailed test.
***Significant at the 1 percent level in a two-tailed test.

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Potential Explanation: Free Cash Flow Theory

What explains the positive relationship between current payout and future earnings growth? Arnott and Asness suggested that the positive current payout–future growth relationship is consistent with free cash flow theory. As described by Jensen (1986) and others, free cash flow theory suggests that the managers of companies with abundant free cash flows have incentives to overinvest. Thus, the low dividend–low growth relationship may be a result of overinvestment on the part of low-payout companies.

In one test of the free cash flow theory, Lang and Litzenberger (1989) examined stock returns associated with announcements of dividend changes. They found, after they held the magnitudes of dividend increases constant, that companies with limited growth opportunities experience larger share price increases. Lang and Litzenberger interpreted these results as consistent with free cash flow theory; that is, the stronger market reactions for the low-growth companies indicate that the reduction in agency costs through dividend increases is larger for companies with limited growth opportunities.

To test for the operation of free cash flow theory in this context, we followed Fama and French (2002) and adopted as a proxy for growth opportunities the ratio of the company's market value of equity and book value of debt to the book value of its assets, *V/A*. The variable *V/A* is a rough proxy for Tobin's *q* that has been used in numerous studies, including Lang and Litzenberger. Higher *V/A* indicates greater growth opportunities and hence fewer free cash flow problems. If the positive relationship between dividend payout and future earnings growth is a result, at least in part, of the reduction of agency costs through dividend payout, this relationship should be stronger for companies with limited growth opportunities because those companies have higher agency costs associated with abundant free cash flows.

Our main interest was with the interaction between *V/A* and *Payout*—that is, *V/A* × *Payout*. If free cash flow theory is operative, we would expect the coefficient on *V/A* × *Payout* to be negative. A negative coefficient on the interaction term would suggest that when growth opportunities are limited, the positive relationship between payout and future earnings growth is more prominent than when growth opportunities are plentiful. The revised model is

$$EG_{0,t} = \alpha_0 + \beta_1 Payout + \beta_2 Size + \beta_3 ROA + \beta_4\, E/P + \beta_5 LEV + \beta_6 PEG_{-t,0} + \beta_7 AG + \beta_8\, V/A \times Payout + e, \quad (5)$$

where *V* is the market value of equity (Compustat #25 × Compustat #199) plus the book value of debt (Compustat #181 – Compustat #35) plus preferred stock (Compustat #10) and *A* represents book value of total assets (Compustat #6).

Table 8 reports the results of this analysis. The relationship between payout and future earnings growth continues to be strong despite the introduction of the *V/A* and *V/A* × *Payout* variables. As expected, *V/A*, the proxy for growth opportunities, is positively associated with future earnings growth. More importantly, *V/A* × *Payout* has the predicted negative coefficient for the one- and three-year growth measures. These results indicate that when growth potential is low, the association between payout and earnings growth is strong, a relationship that is consistent with free cash flow theory.

Conclusion

We reported on the relationship between current dividend payout and future growth in earnings at the individual-company level. Our study was motivated by the Arnott–Asness analysis of the market-wide relationship between current dividend payout and future growth in earnings. Arnott and Asness found that high aggregate current payout is associated with high, rather than low, aggregate future earnings growth.[9]

We examined a large sample of companies over a 50-year time period. Our tests included controls for mean reversion in earnings and other variables that have been posited to explain earnings growth. We found a strong, positive association between current dividend payout and future earnings growth. These results are robust to (1) alternative measures of earnings, (2) additional controls for mean reversion in earnings, (3) various subperiods, (4) consideration of industry effects, and (5) the influence of share repurchases. We also found that, consistent with free cash flow theory, the positive relationship between dividend payout and future earnings growth is more prominent for companies with limited growth opportunities or a tendency toward overinvestment.

Our company-level analysis complements the aggregate-level analysis of Arnott and Asness. Both studies found that high payout is related to high future earnings growth and thereby challenge conventional wisdom. The Arnott–Asness results bear on the valuation of the overall market, and our results shed light on the valuation of individual stocks.

Table 8. Future Earnings Growth as a Function of Dividend Payout with Control for the Influence of Growth Opportunities

	One-Year *EG*		Three-Year *EG*		Five-Year *EG*	
Variable	Coefficient	*t*-Statistic	Coefficient	*t*-Statistic	Coefficient	*t*-Statistic
Intercept	0.117	2.33**	0.068	4.06***	0.050	5.14***
Payout	0.791	10.28***	0.220	10.72***	0.089	6.84***
Size	–0.034	–9.46***	–0.014	–11.79***	–0.008	–9.23***
ROA	–4.474	–13.83***	–1.650	–14.80***	–1.121	–14.76***
E/P	–0.368	–2.79***	–0.328	–5.03***	–0.219	–4.67***
Leverage	–0.035	–1.07	0.028	2.22**	0.033	4.52***
PEG	–0.002	–0.15	–0.093	–6.53***	–0.126	–9.99***
AG	0.802	12.93***	0.949	28.74***	0.972	39.83***
V/A	0.211	11.30***	0.059	11.45***	0.0.29	7.37***
V/A × *Payout*	–0.188	–5.39***	–0.042	–4.92***	–0.005	–0.88
Adjusted R^2		22.10%		32.90%		37.49%

Notes: The regression is Equation 5. All coefficients, *t*-statistics, and adjusted R^2s reported are based on the Fama–MacBeth procedure.

*Significant at the 10 percent level in a two-tailed test.
**Significant at the 5 percent level in a two-tailed test.
***Significant at the 1 percent level in a two-tailed test.

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This article qualifies for 1 PD credit.

Notes

1. Arnott and Asness (2003) provided a numerical example for this argument (pp. 70–71). They also pointed out that the intertemporal argument is, in fact, an extrapolation of Miller and Modigliani's theorem.
2. Compustat does not provide book value of equity (Compustat #60) for most companies before 1960. For those companies, we measured leverage as total liability (Compustat #181) divided by total assets (Compustat #6).
3. Interestingly, Arnott and Asness showed that after controlling for dividend payout, aggregate earnings yield was at best weakly negatively related to aggregate future earnings growth. Nevertheless, we included *E/P* in our regression because the negative association between *E/P* and future earnings growth is strongly motivated by theory.
4. For example, when we examined five-year-ahead earnings growth, the first year we examined was 1955 and the last year we examined was 1998 because we needed data to calculate earnings growth for the past and future five years surrounding the event year. In contrast, when we examined one-year-ahead earnings growth, the first year we examined was 1951 and the last year was 2002 because we needed data only for the years immediately before and after the event year.
5. Negative dividend payout has no clear economic meaning. This requirement only slightly reduced the number of sample companies because only about 1 percent of companies that pay dividends in a particular year also report losses.
6. Removing companies in the top 2 percent or top 0.5 percent of the dividend-payout distribution did not qualitatively alter our results. Also, our results held when we removed companies with the lowest 1 percent of positive dividend payout.
7. The Shapiro–Wilk *W* statistic equaled 0.992, 0.980, and 0.988, respectively, for the one-year, three-year, and five-year regressions, with respective *p*-values of 0.97, 0.57, and 0.91.
8. The coefficients on *Payout*, which are all significant at the 1 percent level, are 0.073, 0.064, and 0.041 for, respectively, the one-, three-, and five-year growth periods.
9. We also considered whether high payout is associated with high future growth in sales. Rozeff found that companies with strong *expected* sales growth tend to have lower dividend payouts. We are not aware of any empirical evidence on the relationship between dividend payout and *actual* sales growth. To examine this issue, we substituted sales growth (both past and future) for earnings growth in Equation 1 and found no significant association between payout and future sales growth. Thus, the results suggest that companies pay lower dividends in expectation of higher sales growth but do not necessarily enjoy higher actual sales growth.

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