INVESTOR GROWTH EXPECTATIONS

Summer 2004

A study done by Vander Weide and Carleton in 1988¹ suggests that consensus analysts' forecast of future growth is superior to historically oriented growth measures in stock valuation process for domestic companies. We worked with one of the original authors of the study, Dr. James H. Vander Weide, and closely followed his suggestions and methodology to investigate whether the results still hold in more recent times (2001-2003).

We used the following equation to determine which estimate of future growth (g) best predicts the firm's P/E ratio when combined with the dividend payout ratio, D/E, and risk variables, B, Cov, Stb, and Sa.

 $P/E = a_0(D/E) + a_1g(Growth) + a_2B(Beta) + a_3Cov(Interest Coverage Ratio) + a_4Stb(Stability) + a_5Sa(Std Dev) + e$

Data Description

IBES consensus analyst estimate of the firm's earnings for the unreported Earnings Per Share:

year.

Price/Earnings Ratio: Closing stock price for the year divided by the consensus analyst earnings

per share for the forthcoming year.

Dividends: Ratio of common dividends per share to the consensus analyst earnings

forecast for the forthcoming fiscal year (D/E).

Historical Growth measures

EPS Growth Rate: Determined by a log-linear least squares regression for the latest year,

two years, three years, ..., and ten years.

Dividend per Share

Determined by a log-linear least squares regression for the latest year,

Growth Rate: two years, three years, ..., and ten years.

Book Value per Share Common equity divided by the common shares outstanding.

Growth Rate: Determined by a log-linear least squares regression for the latest year,

two years, three years, ..., and ten years.

Cash Flow per Share Ratio of gross cash flow to common shares outstanding.

Growth Rate: Determined by a log-linear least squares regression for the latest year,

two years, three years, ..., and ten years.

Plowback Growth: Firm's retention ratio for the current year times the firm's latest annual

return on equity.

3yr Plowback Growth: Firm's three-year average retention ratio times the firm's three-year

average return on equity.

Consensus Analysts' Forecasts

Five-Year Earnings Per Share Growth: Mean analysts' forecast compiled by IBES.

¹ Vander Weide, J. H., and W. T. Carleton. "Investor Growth Expectations: Analysts vs. History." The Journal of Portfolio Management, Spring 1988, pp. 78-82.

Risk Variables

B: Beta, the firm's beta versus NYSE from Value Line.

Cov: The firm's pretax interest coverage ratio from Compustat.

Stb: Five-year historical earnings per share stability. Average absolute percentage difference between actual reported EPS and a 5yr historical EPS growth trend line from IBES.

Sa: The standard deviation of earnings per share estimate for the fiscal year from IBES.

We set five restrictions on the companies included in the study in order to be consistent with the original study and to obtain more meaningful results.

- Excluded all firms that IBES did not follow.
- Eliminated companies with:
 - Negative EPS during any of the years 1991-2003.
 - No dividend during any one of the years 1991-2003.
 - P/E ratio greater than 60 in years 2001-2003.
 - Less than five years of operating history.

The final universe consisted of 411 US firms, fifty-nine of which are utility companies.

Results

The study was performed in two stages.

Stage 1

In order to determine which historically oriented growth measure is most highly correlated with each firm's end-of-year P/E ratio, we computed spearman (rank) correlations between all forty-two historically oriented future growth measures and P/E.

The result of the stage 1 study is displayed in Table 1. Three-year plowback ratio has the highest correlation with P/E in 2001 and 2002, and five-year EPS growth rate has the highest correlation with P/E in 2003.

Table 1
Stage1 Results for Utility and Non-Utility Companies Combined
Correlations between Historically Based Growth Estimates by Year with P/F

Correlations between Historically Based Growth Estimates by Year with P/E												
Curre	ent Year	y1	y2	у3	y4	у5	y6	у7	y8	у9	y10	
2001	EPS	0.232	0.210	0.145	0.122	0.059	0.034	-0.007	-0.076	-0.117	-0.154	
	DPS	-0.243	-0.297	-0.296	-0.293	-0.313	-0.316	-0.336	-0.334	-0.329	-0.333	
	BVPS	0.059	-0.017	-0.098	-0.138	-0.150	-0.182	-0.219	-0.259	-0.271	-0.273	
	CFPS	0.092	0.092	0.087	0.042	-0.063	-0.102	-0.141	-0.193	-0.237	-0.262	
	plowback	0.203										
	plowback3	0.308										
	EPS	-0.007	0.147	0.076	0.080	0.083	0.050	0.030	-0.018	-0.060	-0.089	
	DPS	-0.126	-0.202	-0.251	-0.224	-0.215	-0.239	-0.232	-0.233	-0.211	-0.198	
2002	BVPS	-0.036	-0.036	-0.078	-0.115	-0.114	-0.127	-0.152	-0.162	-0.175	-0.171	
2002	CFPS	0.056	0.045	0.017	0.021	0.030	-0.024	-0.050	-0.080	-0.125	-0.162	
	plowback	0.093										
	plowback3	0.180										
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	EPS	0.073	0.084	0.214	0.231	0.244	0.228	0.182	0.158	0.104	0.049	
	DPS	0.120	0.054	-0.001	-0.078	-0.090	-0.126	-0.152	-0.165	-0.183	-0.185	
2003	BVPS	0.097	0.076	0.067	0.036	-0.045	-0.062	-0.063	-0.083	-0.105	-0.131	
2003	CFPS	0.146	0.196	0.243	0.239	0.206	0.178	0.107	0.089	0.039	-0.022	
	plowback	-0.017										
	plowback3	0.038										

We also independently examined utility and non-utility firms. Table 2 shows the result for the fifty-nine utility firms. Two-year growth in EPS has the highest correlation with P/E in 2001, four-year EPS has the highest correlation in 2002, and six-year EPS has the highest correlation in 2003.

Table 3 exhibits the result for the remaining non-utility firms. EPS one-year growth, two-year growth, and five-year growth has the highest correlation with P/E in 2001, 2002, and 2003, respectively.

Table 2
Stage1 Results for Utility Companies

	Correlations between Historically Based Growth Estimates by Year with P/E										
Curre	ent Year	y1	y2	у3	y4	y5	y6	у7	y8	y9	y10
	EPS	0.305	0.330	0.305	0.319	0.238	0.157	0.129	0.107	0.079	0.048
	DPS	-0.215	-0.321	-0.302	-0.294	-0.316	-0.281	-0.332	-0.414	-0.435	-0.429
0004	BVPS	0.164	0.137	0.147	-0.027	-0.072	-0.135	-0.117	-0.104	-0.106	-0.140
2001	CFPS	0.194	0.135	0.020	-0.018	-0.122	-0.157	-0.135	-0.134	-0.103	-0.219
	plowback	-0.143									
	plowback3	-0.027									
	EPS	-0.065	0.044	0.069	0.119	0.071	0.004	-0.038	-0.069	-0.061	-0.070
	DPS	-0.333	-0.327	-0.278	-0.313	-0.280	-0.321	-0.277	-0.226	-0.203	-0.210
2002	BVPS	-0.325	-0.239	-0.182	-0.177	-0.230	-0.237	-0.250	-0.247	-0.235	-0.235
2002	CFPS	-0.205	-0.132	-0.172	-0.166	-0.216	-0.289	-0.285	-0.265	-0.227	-0.218
	plowback	-0.151									
	plowback3	-0.133									
	EPS	0.010	0.136	0.186	0.263	0.365	0.367	0.344	0.343	0.309	0.302
	DPS	0.151	-0.029	-0.014	-0.022	-0.054	-0.117	-0.142	-0.137	-0.105	-0.092
2003	BVPS	0.212	0.060	0.047	0.019	0.003	0.040	0.022	0.005	0.003	-0.002
2003	CFPS	0.222	-0.046	0.173	0.115	0.165	0.100	0.017	0.077	0.057	0.077
	plowback	-0.365									
	plowback3	-0.403									

Table 3
Stage1 Results for Non-Utility Companies

Correlations between Historically Based Growth Estimates by Year with P/E												
y9 y1	10											
-0.0194 -0.	.0412											
-0.2046 -0.	.1975											
-0.1866 -0.	.1823											
-0.1186 -0.	.1325											
-0.0011 -0.	.0254											
-0.1394 -0.	.1226											
-0.1118 -0.	.1061											
-0.0458 -0.	.0821											
0.1559 0.	.1090											
-0.0930 -0.	.0952											
-0.0416 -0.	.0636											
0.0892 0.	.0388											
	0.0194 -0 0.2046 -0 0.1866 -0 0.1186 -0 0.11394 -0 0.1118 -0 0.0458 -0 0.1559 0 0.0930 -0 0.0416 -0											

Stage 2

We compared the multiple regression model of historical growth rate with the highest correlation to the P/E ratio from stage 1 to the five-year earnings per share growth forecast.

$$P/E = a_0(D/E) + a_1g + a_2B + a_3Cov + a_4Stb + a_5Sa + e$$

The regression results are displayed in table 4. The results show that the consensus analysts' forecast of future growth better approximates the firm's P/E ratio, which is consistent with the results found by Vander Weide and Carleton. In both regressions, R² in the regression with the consensus analysts' forecast is higher than the R² in the regression with the historical growth.

Table 4
Stage2 Results for Utility and Non-Utility Companies Combined

Multiple Regression Results

P/E = a0 + a1 D/E + a2 g + a3 B + a4 Cov + a5 Stb + a6 Sa Historical

HISTORICAL												
	a0	a1	a2	а3	a4	а5	a6	Rsq	F Ratio			
2001	10.43	8.46	10.79	6.79	0.02	-0.03	-18.83	0.20	13.90			
	4.73	5.53	2.93	3.54	3.05	-3.06	-3.32					
2002	12.36	7.60	6.66	1.01	0.00	0.01	-32.48	0.15	9.46			
	7.21	6.18	2.61	0.66	1.57	1.48	-4.04					
2003	13.34	5.96	9.87	5.27	0.01	-0.01	-20.46	0.24	17.61			
	7.29	4.04	2.95	3.39	3.62	-1.31	-4.25					

Analysts' Forecasts	š
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	a0	a1	a2	a3	a4	a5	a6	Rsa	F Ratio
2001	-1.26	16.14	144.75	-0.64	0.01	-0.03	-10.76	0.47	48.00
	-0.62	11.63	13.22	-0.38	3.07	-4.04	-2.29		
2002	3.37	13.37	106.07	-3.60	0.00	0.01	-21.85	0.35	29.73
	1.93	10.97	10.59	-2.57	1.25	1.50	-3.06		
2003	4.77	12.76	61.93	4.38	0.01	0.00	-19.41	0.33	26.38
	2.65	9.48	7.25	3.01	2.45	-0.81	-4.33		

^{*}T-stats below the coefficients in smaller font

For utility companies shown in table 5, consensus analysts' forecast of future growth is superior to historically oriented growth in 2002 and 2003. R² is lower in the regression with the consensus analysts' forecast in 2001. For non-utility companies, we found that consensus analysts' forecast of future growth is superior to the alternative in all three years (table 6).

Table 5
Stage2 Results for Utility Companies

Multiple Regression Results

P/E = a0 + a1 **D/E** + a2 **g** + a3 **B** + a4 **Cov** + a5 **Stb** + a6 **Sa**

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	a0	a1	a2	a3	a4	а5	а6	Rsq	F Ratio
2001	7.90	11.07	-11.19	-3.00	0.29	0.00	-9.37	0.44	6.38
	2.16	4.80	-5.71	-0.86	0.88	0.64	-1.51		
2002	13.87	7.00	-3.80	-6.89	0.56	0.00	-29.89	0.38	5.11
	4.02	3.54	-0.66	-2.01	1.48	0.42	-2.70		
2003	11.29	7.74	-1.65	-1.40	0.32	0.00	-5.69	0.25	2.68
	3.22	3.30	-0.23	-0.43	1.05	-0.73	-0.75		

Analysts' Forecasts

	a0	a1	a2	a3	a4	а5	а6	Rsq	F Ratio
2001	9.61	9.20	66.61	-7.92	0.50	-0.01	-12.83	0.27	2.95
	2.31	3.45	3.66	-1.86	1.31	-1.33	-1.76		
2002	12.43	7.86	50.74	-9.61	0.50	0.00	-24.94	0.48	7.56
	3.89	5.29	3.10	-2.94	1.50	0.17	-2.41		
2003	5.81	11.06	101.12	-1.69	-0.19	0.00	-4.75	0.50	7.81
	1.89	6.32	4.80	-0.58	-0.74	-0.22	-0.74		

^{*}T-stats below the coefficients in smaller font

Table 6
Stage2 Results for Non-Utility Companies

Multiple Regression Results

P/E = a0 + a1 D/E + a2 g + a3 B + a4 Cov + a5 Stb + a6 Sa

Historical

	a0	a1	a2	a3	a4	a5	a6	Rsq	F Ratio
2001	15.90	8.39	2.82	3.53	0.02	-0.03	-21.05	0.21	12.45
	6.57	4.13	1.96	1.68	2.97	-2.14	-3.40		
2002	17.76	8.46	6.02	-3.06	0.00	0.02	-36.97	0.27	16.78
	9.39	5.19	3.28	-1.88	1.37	2.52	-4.31		
2003	14.24	9.86	8.85	3.46	0.01	0.00	-19.00	0.30	19.89
	7.49	5.89	2.49	2.11	3.23	-0.15	-3.73		

Analysts' Forecasts

	a0	a1	a2	a3	a4	а5	a6	Rsq	F Ratio
2001	-0.51	17.28	140.84	-1.06	0.01	-0.03	-8.63	0.44	36.00
	-0.22	11.21	10.73	-0.59	2.88	-2.62	-1.63		
2002	5.05	15.67	91.22	-4.06	0.00	0.02	-22.93	0.38	27.65
	2.48	11.23	7.66	-2.74	1.18	2.33	-2.87		
2003	7.25	14.47	45.60	3.47	0.01	0.00	-19.09	0.33	22.30
	3.56	9.42	4.68	2.20	2.36	-0.12	-3.89		

^{*}T-stats below the coefficients in smaller font

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