Faculty Working Papers

ALLOCATIONS OF PERMANENT AND TRANSITORY EARNINGS BETWEEN RETAINED EARNINGS AND DIVIDEND PAYMENTS

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Summary

Based upon the permanent income hypothesis theory developed by Friedman, accounting earnings are decomposed into two components, i.e., the permanent component and the transitory component. It is shown that the allocation of earnings between retained earnings and dividends payments may be in accordance with either permanent earnings or current earnings. This theory is then used to test whether the dividend payments decision of the electric utility industry is in terms of the "information content" or the "partial adjustment" hypothesis.

Presentation

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I. Introduction

Earnings of a firm are allocated between retained earnings and dividends by a financial decision. Retained earnings are internal sources of funds which provide additional financial capital which may be used either for expansion or as a financial reserve against future contingencies; dividends are generally distributed to stockholders to satisfy their need for liquidity or for other uses according to their preference functions. It is well-known that earnings of a firm can be classified into either a permanent component or a transitory component. A firm's permanent earning power creates the permanent component and the transitory component is composed of income of temporary nature. Modigliani and Miller (1958, 1961, 1963, 1966) have argued that a firm's market value is determined by its expected (or permanent) earnings, not its transitory component of income.

The transitory component of a firm's earnings originates from a temporary change in market conditions, a temporary change in accounting method or any other non-permanent change which would cause earnings to fluctuate over time.

Several practical methods exist to determine a firm's dividend policy. [See Weston and Brigham (1978)]. Theoretically, finance scholars have attempted to explain a firm's dividend payment behavior in terms of three different hypotheses: (1) information content, (2) partial adjustment or (3) the residual theory. It is well known from the finance literature that dividend policy can affect a firm's internal source of funds and cost of capital.

In addition, the forecasting of dividends is of importance to the security analyst. Therefore, the allocations of earnings between retained earnings and dividend payments are generally a serious concern of financial managers.

The main purposes of this paper are (1) to develop some theories to explain how firms generally allocate permanent earnings and transitory earnings between dividends payments and retained earnings and (2) to develop a method for decomposing the current earnings into permanent and transitory components. The implications of each of these income components for a firm's dividend policy and payments decision are also developed.

The first section is the introduction. The second section modifies Friedman's (1957) permanent income hypothesis to describe the role of permanent earnings and transitory earnings in the dividend determination process. The relationship between accountings earnings and economic earnings are also discussed. The third section employs models to decompose the current earnings into permanent and transitory components defined according to the methods proposed by Darby (1972, 1974). The fourth section, uses disaggregated earnings and dividends data of the electric utility industry to determine whether permanent earnings or current earnings data should be used to describe dividend payment behavior in that business. The final section summarizes the results and provides some concluding remarks.

II. Theoretical Determination of Firm's Permanent and Transitory Earnings

In the development of the consumption function, which is one of the key concepts in Keynesian economics, several important theories were developed to explain how consumers adjust consumption expenditures to accommodate changes in their levels of income. One of these theories is the Permanent Income Hypothesis developed by Milton Friedman (1957).[1]

The Permanent Income Hypothesis explains that consumption is not a function of current income but a function of permanent income. Total income, Y, is composed of two components, $Y_p + Y_t$, where Y_p is permanent income and Y_t is transitory income. Transitory income is not fully anticipated and it may be positive or negative. That is, a prize would constitute a positive transitory income component while a loss of income from temporary illness or layoff would constitute a negative component of permanent income. Friedman explains that these transitory elements would not affect consumption expenditures.

The Permanent Income Hypothesis is readily adaptable to finance theory and a new theory of dividend payments by business can be developed. The income of interest here is the income of the business firm and dividends are analogous to consumer consumption expenditures.

The level of permanent income earned by a firm determines the permanent dividends it can pay out to stockholders. Permanent income is essentially an average of current, past, and future earnings of the firm. Current income is divided into two components:

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[1]When Friedman received the Nobel prize in economics, this work was cited as one of his major contributions.

$$Y = Y_p + Y_t$$

where: Y = current income of the firm
Y_p = permanent income of the firm
Y_t = transitory income of the firm

Transitory income may be postive or negative and current income will differ from permanent income by the amount of transitory income. A business earns transitory income, which is really unanticipated earnings, from windfall profits from any source. For example, oil companies are now earning transitory income from the increase price they receive from selling products made from crude oil produced domestically. Firms incur negative transitory income if they experience an uninsured catastrophic event such as the destruction of a plant by a disaster of any kind or an unexpected strike by employees. The transitory components of income, positive and negative, should cancel out over the permanent income time horizon. Transitory components, however, are always present during shorter time periods.

Professor Eisner (1967, 1978) has developed a permanent income theory for investment decision. If a firm investment essentially depends upon internal sources of funds, then the nature of retained earnings is an important factor affecting the decision to undertake long-term or short-term investment. Retained earnings can conceptually be decomposed into two components, i.e. permanent and transitory components.

Dividends can also be divided into two components: permanent dividends and transitory dividends:

$$D = D_p + D_t$$

where: D = current dividends paid by the firm.
D_p = permanent dividends paid by the firm.
D_t = transitory dividends paid by the firm.

Permanent dividends are only one component of dividends and total dividends may be larger than permanent dividends, depending upon the level of transitory dividends. Permanent dividends are dividends which the business firm systematically pays based on its permanent earnings.

All income is either paid out in dividends or retained by the business in the form of retained earnings.

$$Y = Y_p + Y_t$$

$$Y - (D_p + D_t) - E_R = 0$$

where: Y = current income of the firm.
Y_p = permanent income of the firm.
Y_t = transitory income of the firm.
D_p = permanent consumption of the firm.
D_t = transitory consumption of the firm.
E_R = retained earnings of the firm.

Y_t and D_t are "random" or "chance" variations in income and dividends.

The existence of transitory dividends will depend upon the financial manager's use of either (1) information content, (2) partial adjustment or (3) the residual theory to determine their firms' dividend payments over time. If either the "partial adjustment" or the "residual theory" is used to determine the dividend payment behavior then transitory dividends are not independent of transitory income. A transitory decline in income does generally cause transitory dividends to decline. Similarly, a transitory increase in income does cause dividend payments to increase. Retained earnings may also increase when unexpected changes in income take place. Windfall income would be paid out as dividends, or be kept as retained earnings.

If the "information content" is used to determine the dividend payment behavior, then most of transitory income will become retained earnings instead of dividends. In sum, whether current earnings or permanent earnings should be used to determine a firm's dividend behavior will depend upon whether or not a transitory dividend component exists. This issue will be empirically tested in the fifth section of this paper.

III. Models for Decomposing Current Earnings Into Permanent and Transitory Earnings Components

The models used to compute permanent income as proposed by Friedman (1957) can be classified into the traditional approach and Darby's (1974) modified unbiased method. The modified method can be defined as

$$(3.1) \qquad Y_{pt} = \beta Y_t + (1 - \beta)(1 + C)Y_{pt-1}$$

where Y_{pt} and Y_{pt-1} are permanent income in period t and t-1 respectively; Y_t is the current income in period t; β is the adjustment coefficient and C is the trend rate of income growth.

To estimate the permanent income series, we need β, C and Y_{po}. Darby (1974) has shown that the unbiased weight of current income in the determination of permanent income of about .10 on an annual basis and .025 on a quarterly basis. The initial value Y_{po} and trend rate C can be taken from estimating the income trend regression

$$(3.2) \qquad \log Y_t = a_1 + a_2 t + u_t$$

After a_1 and a_2 are estimated, the Y_{po} and C can be defined as

$$(3.3) \qquad Y_{po} = e^{\hat{a}_1} \text{ and}$$

$$c = \hat{a}_2$$

Note that this is only one of several methods to estimate C and Y_{po}. The estimated Y_{po} and C can be used in equation (3.1) to repeatedly estimate Y_{pt}. It should also be noted that estimated a_2 is the earnings growth rate estimate.

Both quarterly and annual earnings and dividend data from forty-two electric utility firms were used to do the empirical investigations.[2] The operating data covered the period of 1962-1978.

IV. Current Earnings, Permanent Earnings and Investment Analysis

Accounting earnings contain a transitory component which does not represent the true earning power of the firm. Hence, the transitory component of earnings should not be used to determine the business' future value.

Security analysists of Value Line have generally used only the permanent component of earnings to forecast the expected future market value of common stock. Modigliani and Miller (1958, 1961, 1963, 1966) [M&M] have shown that expected earnings should be used instead of current earnings to determine the value of a firm. In estimating the cost of capital for the utility industry, M&M (1966) used the instrumental variable approach to remove the transitory component associated with current earnings. One difficulty of using the instrumental variable

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[2] Seasonal components were removed by using X-11 multiplicate decomposing method which was developed by the Department of Commerce.

approach involves the selection of the appropriate explanatory variables for specifying the regression equation. A more desirable approach for determining the permanent component of earnings was previously set out in section III.

To estimate permanent income, we should estimate the initial value of permanent income and the trend rate of income growth. The exact procedures used to develop these estimations are described in equations (3.2) and (3.3). After these equations are estimated, they may be used to estimate either annual or quarterly permanent income. The weights used to estimate the annual and quarterly permanent earnings are .10 and .025, respectively as suggested by Darby (1974).

The growth rates of both annual and quarterly earnings for firms in the sample are presented in Table 1. The current and permanent earnings developed from quarterly data are shown in Table 2. This table indicates that the permanent earnings per share are always smaller than current earnings per share. The coefficients of variation for both current and permanent earnings were calculated to investigate the degree of fluctuation of current earnings per share compared with permanent earnings per share. These coefficients are presented in Table 3.

The results show that the coefficient of variation for permanent earnings is smaller than that statistic for current earnings in most of the cases. The coefficient of variation was also calculated to examine the variation of dividends per share. These results, presented in column 3 of Table 3, show that permanent earnings per share is generally less volatile than current earnings per share or dividends per share.

V. Current Earnings, Permanent Earnings and Dividend Payment Behavior

Dividend payment decision theory and practice is one of the most important topics for study by finance scholars.

Lintner (1956), Fama and Babiak (1968) and others have defined the dividend payment equation as:

$$(5.1) \qquad D_t - D_{t-1} = a_0 + a_1(D^*_{it} - D_{i,t-1}) + u_{it} \qquad (A)$$

and

$$D^*_{it} = r_i E_{it} \qquad (B)$$

where D_{it} and $D_{i,t-1}$ are dividend per share for i^{th} firm in t^{th} and $t-1^{th}$ period respectively; $D^*_{i,t}$ is the target dividends for i^{th} firm in period t and a_1 is the "partial adjustment coefficient." Substituting (4.1.B) into (4.1.A), we have

$$(5.2) \qquad D_{it} - D_{it-1} = b_0 + b_1 E_{it} - b_2 D_{i,t-1} + u_{it}$$

where $b_1 = a_1 r$, $b_2 = a_1$. If the earnings per share can be decomposed into permanent component and transitory component, then

$$(5.3) \qquad E_{i,t} = E^P_{i,t} + E^T_{i,t}$$

where $E^P_{i,t}$ and $E^T_{i,t}$ are permanent and transitory earnings per share respectively and $E^T_{i,t} = N(0,\sigma^2_T)$.

To test whether current earnings per share or permanent earnings per share should be used to describe a firm's dividend payment behavior, an alternative model for equation (5.2) can be defined as

$$(5.4) \qquad D_{it} - D_{it-1} = b_0' + b_1'E_{i,t}^p - b_2'D_{i,t-1} + U_{it}$$

This equation implies that $D_{it}^* = r_iE_{it}^p$ instead of $D_{it}^* = r_iE_{it}$ as defined in (5.1B). Equations (5.2) and (5.4) can be used to determine whether current earnings or permanent earnings per share should be used to describe a firm's dividend payment behavior. According to Cochran (1970), the adjusted coefficient of determination ($\bar{R}^2$) can be used to determine whether equation (5.2) or equation (5.4) should be used to forecast the dividend payment behavior of a firm.

Equations in the form of (5.2) and (5.4), were developed using annual and the quarterly data for the 42 electric utility firms in the sample. The results are presented in Tables 5 and 6. As discussed below, examination of the $\bar{R}^2$'s in the tables, reveals that current rather than permanent income more accurately describes the dividend payment behavior of firms in the electric utility industry.

It is well known in finance theory that "partial adjustment" and "information content" are two important theories explaining the dividend payment behavior of firms. If the "partial adjustment" approach is used by the financial manager for determining the dividend payment, current instead of permanent earnings will be used in the calculation; if "information content" is the principle used by the manager for determining the dividend payment, then permanent earnings should be used to determine the dividend payment. Therefore, the models developed in this section provide an appealing method for testing whether "partial adjustment" or "information content" is used by a firm to determine its dividend payment. Ang (1975) used spectral analysis to decide this issue and concluded that the identification power of his technique is relatively weak and called for further research to deal with this problem. The method developed here is a very satisfactory approach to answering the need raised by Ang (1975).

Tables 4 and 5 present the empirical results for equations (5.2) and (5.4): Table 4 presents the results using annual data and Table 5 presents the results of the regressions using quarterly data. In each table, (i) and (ii) represents the results for equations (5.2) and (5.4) respectively. To test whether the current earnings or permanent earnings should be used to explain a firm's dividend payment behavior, the adjusted $\overline{R}^2$'s of equation (5.2) are compared with those of equation (5.4). The results show that when annual data are used, only 16 out of 42 firms have higher $\overline{R}^2$ if permanent earnings are used instead of current earnings for determining the dividend payment behavior; only 17 of 42 have higher $\overline{R}^2$ for permanent income with quarterly data.

These results imply that current earnings are generally used to determine dividend payment behavior. In other words, for firms in this sample, either the partial adjustment or the residual theory hypothesis provides a more suitable explanation of dividend payment behavior than the information content hypothesis. It is well-known and accepted that utility stocks are income instead of growth securities. The EPS growth rate estimates for the 42 firms in the sample can be found in Table 1. Table 1 indicates that the estimated growth rates for EPS are below 4%. A manager of a utility firm may be inclined to use transitory components of earnings (mentioned in Section II) to pay a transitory type of dividend to make his firm's dividend payment comparable to similar firms in the industry. These results may not necessarily apply to firms in growth industries.

VI. Summary and Concluding Remarks

Milton Friedman (1957) presented a Permanent Income Hypothesis. This study uses Friedman's basic concepts of current earnings, permanent earnings and transitory earnings and examines how well they explain dividend payment behavior of the 42 electric utility firms in the sample. Earnings per share data (both annual and quarterly) were used in the analysis. The procedure employed to decompose the current earnings into transitory and permanent components was suggested by Darby (1972, 1974).

The possible implications of the permanent component of earnings on security analysis were examined; then, the effect of the permanent earnings component on the dividend payment behavior of firms in the sample was tested. The results show that current rather than permanent income tends to describe more accurately the dividend payment behavior of firms in the sample. This unexpected result was possibly caused by the fact that the sample consisted of utility firms, which are high dividend payout firms and not growth firms. The results may be different for firms from another industry.

The results also show that the technique employed here provides a very satisfactory approach to testing whether "partial adjustment," "residual theory," or "information content" is used by a firm to determine its dividend payout policy.

In estimating the cost of capital for the electric utility industry, M&M (1966, 356-358) have used the some kinds of moving average methods to remove the transitory components of accounting reported earnings. However, they are unable to obtain satisfactory results. The permanent earnings estimation method developed in this paper may well be used to improve the quality of M&M's cost of capital estimates.

TABLE 1

Growth Rate of EPS

Company	Quarterly Growth Rate	Annualized Quarterly Growth Rate	Annual Growth Rate
1	.006	.024	.026
2	.003	.012	.015
3	.0003	.001	.001
4	.005	.020	.020
5	-.002	-.008	-.007
6	.004	.016	.018
7	.004	.016	.016
8	.01	.04	.040
9	.007	.028	.029
10	.005	.020	.024
11	-.001	-.004	.003
12	.004	.016	.018
13	.001	.004	.007
14	.007	.028	.032
15	.008	.032	.034
16	.009	.036	.037
17	.012	.048	.050
18	-.005	-.020	-.018
19	.010	.040	.041
20	.0005	.002	.002
21	-.001	-.004	-.004
22	.012	.048	.055
23	.007	.028	.029
24	.001	.004	.005
25	.003	.012	.011
26	-.005	-.020	-.020
27	.004	.016	.017
28	.003	.012	.016
29	.0003	.001	-.0002
30	.004	.016	.021
31	.005	.020	.023
32	.005	.020	.028
33	.005	.020	.027
34	-.005	-.020	-.022
35	.009	.036	.039
36	.004	.016	.013
37	.001	.004	.005
38	.006	.024	.024
39	.016	.064	.069
40	.005	.020	.024
41	.007	.028	.029
42	.002	.008	.009

TABLE 2

Average Current and Permanent Earnings and Dividends per Share
(quarterly data)

$\overline{X}$

	Current Earnings per share	Dividends per share	Permanent Earnings per share
1	0.49387	0.34785	0.43275
2	0.57737	0.38310	0.52548
3	0.55196	0.36656	0.54472
4	0.73413	0.50118	0.65330
5	0.68269	0.46851	0.70102
6	0.83226	0.39450	0.75140
7	0.518110	0.38384	0.47446
8	0.70331	0.33084	0.55592
9	0.55421	0.38637	0.47309
10	0.54139	0.34991	0.48056
11	0.58463	0.38919	0.58446
12	0.44675	0.27628	0.40365
13	0.57422	0.36162	0.54018
14	0.40681	0.29201	0.34557
15	0.59650	0.40290	0.50057
16	0.70400	0.49206	0.58056
17	0.48178	0.26100	0.37258
18	0.48343	0.34241	0.53174
19	0.62257	0.40685	0.50654
20	0.41722	0.31919	0.40787
21	0.47922	0.29879	0.48704
22	0.49196	0.28194	0.36920
23	0.55596	0.36897	0.47802
24	0.38419	0.27865	0.36947
25	0.52712	0.35841	0.48114
26	0.45216	0.30726	0.49576
27	0.60113	0.47099	0.54541
28	0.39019	0.31472	0.36071
29	0.55260	0.37997	0.53562
30	0.63310	0.43019	0.56303
31	0.51221	0.33619	0.45031
32	0.56134	0.37757	0.49605
33	0.58912	0.40109	0.51827
34	0.46776	0.32874	0.51417
35	0.59575	0.42453	0.48795
36	0.42866	0.27529	0.39001
37	0.54956	0.29300	0.52751
38	0.34457	0.21019	0.29855
39	0.31047	0.18746	0.21757
40	0.52268	0.36900	0.45562
41	0.61053	0.39150	0.50654
42	0.46838	0.30557	0.43672

TABLE 3

Coefficients of Variation of Current and Permanent Earnings and Dividends Per Share

$\sigma/\overline{X}$

	Current Earnings/Share	Dividend/Share	Permanent Earnings/Share
1	0.20837	0.12698	0.08268
2	0.24379	0.42785	0.04217
3	0.22456	0.22763	0.05028
4	0.23473	0.22178	0.07594
5	0.26996	0.16693	0.03747
6	0.26162	0.20441	0.07328
7	0.12681	0.11119	0.04974
8	0.33624	0.28482	0.11428
9	0.26291	0.18335	0.09785
10	0.22895	0.18765	0.77776
11	0.27180	0.18718	0.02448
12	0.22209	0.19274	0.04692
13	0.29440	0.20663	0.02860
14	0.21135	0.21486	0.09584
15	0.20491	0.11000	0.10302
16	0.23041	0.20117	0.13351
17	0.30325	0.28870	0.16396
18	0.22847	0.16889	0.05772
19	0.22078	0.50178	0.14366
20	0.19527	0.14913	0.01493
21	0.17451	0.08431	0.01511
22	0.34602	0.23118	0.16639
23	0.21102	0.17191	0.08918
24	0.21945	0.18216	0.02712
25	0.25065	0.19966	0.04493
26	0.22437	0.54133	0.64985
27	0.18357	0.19784	0.06375
28	0.16154	0.11003	0.05134
29	0.25670	0.17109	0.02584
30	0.22180	0.47388	0.05174
31	0.21042	0.44064	0.06631
32	0.22854	0.24811	0.09711
33	0.22289	0.45057	0.09233
34	0.29389	0.24661	0.08464
35	0.22041	0.17681	0.12009
36	0.23049	0.40089	0.06731
37	0.17858	0.46164	0.02753
38	0.24547	0.18649	0.06615
39	0.36097	0.31708	0.22903
40	0.31074	0.21260	0.06233
41	0.30408	0.23451	0.08481
42	0.29038	0.19001	0.35263

TABLE 4

Empirical Results for Equations (5.2) and (5.4)
(Annual Data)

Company		b_0, b_0'	b_1, b_1'	b_2, b_2'	Adj R^2	DW
Atlantic City	(i)	0.14718	0.24358	-0.44622	0.3384	1.538
Electric		(0.798)	(3.071)**	(-2.452)*		
	(ii)	-0.27607	0.68376	-0.65174	0.3051	1.635
		(-1.195)	(2.890)*	(-2.666)*		
Carolina Power	(i)	0.93647	0.59704	-1.50640	0.6353	2.085
& Light		(2.434)*	(3.039)**	(-5.290)**		
	(ii)	-2.79640	2.30572	-1.36862	0.5796	1.874
		(-1.606)	(2.508)*	(-4.757)**		
Central &	(i)	-0.01839	0.61186	0.90862	0.9026	0.914
Southwest Corp		(-0.210)	(10.835)**	(-11.365)**		
	(ii)	1.98571	-0.86103	-0.05667	0.1635	1.855
		(1.801)	(-1.480)	(-0.279)		
Cleveland	(i)	-0.17933	0.48863	-0.62296	0.6886	1.333
Electric Illum		(-0.821)	(5.513)**	(-5.188)**		
	(ii)	-0.46878	0.48305	-0.40792	0.000	0.725
		(-0.301)	(0.572)	(-1.031)		
Columbus & So.	(i)	0.28056	0.10459	-0.29866	0.0510	1.351
Ohio		(0.711)	(1.122)	(-1.488)		
	(ii)	2.18420	-0.64407	-0.20046	0.0812	1.889
		(1.603)	(-1.314)	(-1.036)		
Florida Power	(i)	0.32212	0.27172	-0.76830	0.4429	1.294
& Light		(1.255)	(3.118)**	(-3.620)**		
	(ii)	0.70896	-0.06344	-0.29981	0.0298	1.328
		(0.896)	(-0.223)	(-1.335)		
General Public	(i)	0.12021	0.09087	-0.18038	0.2789	1.818
Utilities		(1.456)	(1.603)	(-2.733)*		
	(ii)	-0.07335	0.24504	-0.23639	0.2556	1.557
		(-0.371)	(1.443)	(-2.292)*		
Houston	(i)	0.06836	0.35221	-0.79344	0.7443	1.557
Industries		(0.560)	(6.711)**	(-5.591)**		
	(ii)	-1.43803	1.18937	-0.97669	0.7984	0.713
		(-6.319)**	(7.784)**	(-6.861)**		
Indianapolis	(i)	-0.01259	0.08403	-0.08496	0.0102	1.795
Power & Light		(-0.094)	(1.462)	(-0.790)		
	(ii)	-0.57442	0.73224	-0.52000	0.2311	1.262
		(-2.180)*	(2.546)*	(-2.345)*		

Company		b_0, b_0'	b_1, b_1'	b_2, b_2'	Adj R^2	DW
Kansas Gas & Electric	(i)	-0.05200	0.06949	-0.04040	0.000	1.534
		(-0.495)	(1.108)	(-0.441)		
	(ii)	-0.55517	0.55189	-0.34085	0.0549	1.093
		(-1.566)	(1.628)	(-1.443)		
Kentucky Utilities	(i)	-0.01991	0.19640	-0.27233	0.1278	1.168
		(-0.053)	(1.617)	(-1.47)		
	(ii)	-4.17654	2.32258	-0.73138	0.2418	0.697
		(-2.030)	(2.228)*	(-2.590)*		
Middle South Utilities	(i)	0.00515	0.43082	-0.69951	0.6223	1.284
		(0.036)	(4.915)**	(-4.357)**		
	(ii)	-1.55803	1.44680	-0.70600	0.1961	1.470
		(-1.784)	(2.112)	(-2.346)		
Minnesota Power & Light	(i)	0.06892	0.35088	-0.60541	0.4963	1.636
		(0.401)	(3.782)**	(-3.779)**		
	(ii)	1.20555	-0.50879	-0.07031	0.000	1.341
		(0.604)	(-0.479)	(-0.251)		
Oklahoma Gas & Electric	(i)	-0.14478	0.70933	-0.85885	0.8262	1.339
		(-1.600)	(8.332)**	(-7.714)**		
	(ii)	-1.13522	1.67471	-1.02827	0.6047	0.199
		(-3.802)**	(4.820)**	(-4.832)**		
Pennsylvania Power & Light	(i)	0.16581	0.10737	-0.24425	0.7059	2.213
		(4.076)**	(6.164)**	(-5.393)**		
	(ii)	0.06942	0.39650	-0.52495	0.4343	1.865
		(1.411)	(3.676)**	(-3.593)**		
Public Service Co. of Indiana	(i)	0.24956	0.30549	-0.55299	0.2613	1.670
		(1.262)	(2.195)*	(-2.679)*		
	(ii)	-0.38134	-0.04035	-0.04035	0.000	1.530
		(1.147)	(-0.162)	(-0.588)		
Public Service Co. of New Mexico	(i)	-0.10396	0.01689	0.13289	0.4899	1.979
		(-2.420)*	(0.485)	(1.925)		
	(ii)	-0.18537	0.16389	-0.00175	0.5309	1.866
		(-2.209)*	(1.180)	(-0.012)		
Southern Company	(i)	0.25131	0.35008	-0.67704	0.4924	1.568
		(0.930)	(3.155)**	(-3.557)**		
	(ii)	0.74846	-0.07073	-0.43937	0.1054	1.847
		(0.814)	(-0.150)	(-1.733)		
Toledo Edison Co.	(i)	-0.15387	0.57669	-0.76781	0.2195	2.684
		(-0.287)	(1.603)	(-2.341)*		
	(ii)	-1.58698	1.77835	-1.24526	0.5368	2.170
		(-2.505)*	(3.638)**	(-4.358)**		

Company		b_0, b_0'	b_1, b_1'	b_2, b_2'	Adj R^2	DW
Union Electric	(i)	0.63968	0.27227	-0.87323	0.7868	0.7779
		(3.156)**	(2.652)*	(-7.461)**		
	(ii)	2.08078	-0.70073	-0.75968	0.6797	0.376
		(1.118)	(-0.578)	(-4.432)**		
Virginia Electric & Power	(i)	0.48854	0.21120	-0.75203	0.5327	1.118
		(1.514)	(1.928)	(-3.803)**		
	(ii)	1.66025	-0.41659	-0.71723	0.4168	1.046
		(1.368)	(-0.630)	(-3.008)**		
Arizona Public Service Co.	(i)	-0.01374	0.11515	-0.14685	0.3439	2.132
		(-0.176)	(2.071)	(-0.966)		
	(ii)	-0.20923	0.71108	-0.73986	0.5598	1.779
		(-3.310)**	(3.573)**	(-2.939)*		
Central Hudson Gas & Electric	(i)	0.02414	0.04293	-0.04536	0.000	1.317
		(0.316)	(1.001)	(-0.647)		
	(ii)	-0.41060	0.53072	-0.38809	0.2423	1.241
		(-2.200)*	(2.605)*	(-2.482)*		
Central Illinois Public Service	(i)	-0.35901	0.50655	-0.36772	0.4564	1.527
		(-1.667)	(3.544)**	(-2.655)*		
	(ii)	-4.71264	3.86849	-0.98761	0.3690	0.568
		(-2.862)*	(3.003)**	(-3.276)**		
Cincinnati Gas & Elec.	(i)	-0.20511	0.29504	-0.27274	0.1846	0.843
		(-0.882)	(2.268)*	(1.718)		
	(ii)	-3.33704	2.09805	-0.54990	0.1148	0.344
		(-1.853)	(1.926)	(1.926)		
Del Marva Power & Light	(i)	0.10935	0.61686	-0.98908	0.5783	1.857
		(0.449)	(3.672)**	(-4.672)**		
	(ii)	-0.12543	0.44269	-0.60517	0.1880	1.158
		(-0.141)	(0.870)	(-2.309)*		
Illinois Power Co.	(i)	-0.27485	0.29615	-0.21066	0.3022	2.505
		(-1.380)	(2.789)*	(-2.437)*		
	(ii)	-1.84924	1.29883	-0.52893	0.1128	1.181
		(-1.672)	(1.829)	(-1.965)		
Interstate Power Co.	(i)	0.05734	0.11399	-0.16670	0.3485	2.455
		(1.103)	(2.145)	(-3.125)**		
	(ii)	-0.39783	0.71653	-0.48919	0.5136	2.357
		(-2.415)*	(3.252)**	(-3.763)**		
Iowa Illinois Gas & Elec.	(i)	0.38695	0.28887	-0.68313	0.1962	1.579
		(1.355)	(1.734	(-2.377)*		
	(ii)	2.28177	-0.93029	-0.14974	0.1392	1.863
		(1.703)	(-1.395)	(-0.671)		

Company		b_0, b_0'	b_1, b_1'	b_2, b_2'	Adj R^2	DW
Iowa Power & Light	(i)	1.09078	0.85847	-1.92025	0.7999	2.016
		(3.342)**	(4.769)**	(-7.743)**		
	(ii)	-2.14387	2.21840	-1.71043	0.7400	1.946
		(1.974)	(3.810)**	(-6.625)**		
Long Island Lighting	(i)	-0.09439	0.74468	-1.06153	0.6836	1.686
		(-0.533)	(5.369)**	(-5.692)**		
	(ii)	-1.48599	1.40953	-0.82154	0.3888	1.011
		(-2.232)*	(2.941)*	(-3.343)**		
Louisville Gas & Electric	(i)	0.12258	0.03250	-0.08522	0.6230	0.795
		(4.323)**	(1.843)	(-4.659)**		
	(ii)	0.44456	-0.24873	0.08091	0.6604	0.833
		(3.540)**	(-2.281)*	(1.280)		
Montana Power Co.	(i)	0.21066	0.05067	-0.17859	0.1377	1.502
		(2.089)	(0.944)	(-1.960)		
	(ii)	0.16332	0.08137	-0.17883	0.1012	1.660
		(1.043)	(0.572)	(-1.399)		
Niagra Mohawk Power	(i)	0.11531	0.59780	-0.94373	0.6653	2.153
		(0.942)	(4.765)**	(-5.638)**		
	(ii)	0.75206	-0.29468	-0.13442	0.1319	1.585
		(1.396)	(-0.877)	(-0.681)		
Northern States Power	(i)	0.49346	0.41998	-0.87523	0.3655	2.480
		(2.211)**	(2.857)**	(-3.262)**		
	(ii)	0.00911	0.79841	-0.92190	0.3977	2.103
		(0.036)	(3.049)**	(3.450)**		
Public Service Co of Colo.	(i)	0.36820	0.32198	-0.82923	0.2671	1.895
		(0.928)	(1.410)	(-2.713)*		
	(ii)	-1.73234	1.87563	-1.19547	0.4817	1.706
		(-1.933)	(2.862)*	(-3.964)**		
Rochester Gas & Electric	(i)	-0.26109	0.14128	-0.02883	0.1580	1.699
		(-1.508)	(2.147)	(-0.223)		
	(ii)	-3.00923	1.74874	-0.63107	0.3522	1.098
		(-3.167)**	(3.145)**	(-2.592)*		
Sierra Pacific Power Co.	(i)	-0.02472	0.35113	-0.54244	0.7189	2.681
		(-0.276)	(6.288)**	(-4.271)**		
	(ii)	-0.89541	1.18153	-0.62486	0.3919	1.631
		(-2.784)*	(3.361)**	(-2.828)*		
Tucson Gas & Electric	(i)	-0.06986	-0.01691	0.20611	0.4567	1.866
		(-1.987)	(-0.250)	(1.426)		
	(ii)	-0.08724	0.17213	-0.01779	0.4791	1.554
		(-2.106)	(0.790)	(0.073)		

Company		b_0, b_0'	b_1, b_1'	b_2, b_2'	Adj R^2	DW
Washington Water Power	(i)	0.23648	0.37334	-0.70077	0.7125	2.306
		(1.584)	(5.573)**	(5.633)**		
	(ii)	-1.12299	1.04221	-0.54064	0.3910	1.694
		(-1.912)	(2.792)*	(-3.153)**		
Wisconsin Electric Power	(i)	0.05044	0.43419	-0.70348	0.5128	1.087
		(0.293)	(4.137)**	(-3.820)**		
	(ii)	-1.96150	1.56294	-0.82728	0.6364	0.260
		(-4.556)**	(5.229)**	(-4.877)**		
Wisconsin Public Service	(i)	0.21006	0.41973	-0.81197	0.5693	0.653
		(1.521)	(4.481)**	(-4.359)**		
	(ii)	0.63600	-0.29979	-0.08169	0.0000	1.188
		(0.661)	(-0.476)	(-0.356)		

(i) represents coefficients for regression equations using current earnings (Equation 5.2).

(ii) represents coefficients for regression equations using permanent earnings (Equation 5.4).

* denotes significance at 5% level.

** denotes significance at 1% level.

TABLE 5

Empirical Results for Equation (5.2) and (5.4)
(Quarterly Data)

Company		b_0, b_0'	b_1, b_1'	b_2, b_2'	Adj R^2	DW
Atlantic City Electric	(i)	0.01602	0.04688	-0.10878	0.0370	2.084
		(1.038)	(1.959)	(-1.896)		
	(ii)	-0.02427	0.19072	-0.16412	0.0466	1.994
		(-1.023)	(2.127)*	(2.212)*		
Carolina Power & Light	(i)	0.31472	0.51354	-1.60342	0.8057	1.830
		(4.525)**	(4.709)**	(-16.452)**		
	(ii)	-0.61575	2.31855	-1.58416	0.7716	1.814
		(1.556)	(3.051)**	(-14.982)**		
Central & Southwest Corp	(i)	0.00196	0.41342	-0.62635	0.5580	1.644
		(0.162)	(8.841)**	(-9.098)**		
	(ii)	0.17066	-0.27285	-0.05668	0.0707	2.119
		(2.275)*	(-1.902)	(1.206)		
Cleveland Electric Illum	(i)	0.00310	0.17135	-0.25740	0.2618	1.878
		(0.152)	(4.754)**	(-4.615)**		
	(ii)	0.05649	-0.05115	-0.04700	0.0029	2.235
		(0.743)	(-0.345)	(-0.715)		
Columbus & So. Ohio	(i)	0.02990	0.05794	-0.14607	0.0911	1.880
		(1.080)	(2.320)*	(-2.460)*		
	(ii)	0.21216	-0.23317	-0.10204	0.0429	2.032
		(1.735)	(-1.376)	(-1.733)		
Florida Power & Light	(i)	0.03348	0.09233	-0.27282	0.1785	1.856
		(1.614)	(3.550)**	(-3.848)**		
	(ii)	0.07202	-0.04223	-0.09343	0.0208	2.143
		(1.161)	(-0.508)	(-1.629)		
General Public Utilities	(i)	0.01042	0.00123	-0.02304	0.0002	2.330
		(1.656)	(0.098)	(-1.188)		
	(ii)	-0.00926	0.06968	-0.05640	0.0204	2.299
		(-0.508)	(1.154)	(-1.679)		
Houston Industries	(i)	0.01633	0.14020	-0.34370	0.2608	1.771
		(1.229)	(4.948)**	(-4.671)**		
	(ii)	-0.09082	0.27820	-0.18931	0.0764	1.802
		(-2.129)*	(2.610)*	(-2.578)*		
Indianapolis Power & Light	(i)	0.01540	0.06580	-0.13292	0.0919	1.209
		(0.845)	(2.591)*	(-2.517)*		
	(ii)	-0.13636	0.86939	-0.58427	0.4087	0.660
		(-5.358)**	(6.678)**	(-6.780)**		

Company		b_0, b_0'	b_1, b_1'	b_2, b_2'	Adj R^2	DW
Kansas Gas & Electric	(i)	0.00958	0.05934	-0.11753	0.0592	1.030
		(0.543)	(2.105)*	(-2.180)*		
	(ii)	-0.26637	0.96619	-0.56808	0.3773	0.452
		(-5.560)**	(6.276)**	(-6.363)**		
Kentucky Utilities	(i)	0.00968	0.02202	-0.05612	0.0076	1.961
		(0.541)	(1.143)	(-1.327)		
	(ii)	0.12029	-0.18892	-0.02359	0.0	2.064
		(0.872)	(-0.745)	(-0.467)		
Middle South Utilities	(i)	0.00735	0.11770	-0.21256	0.1481	1.960
		(0.590)	(3.500)**	(-3.311)**		
	(ii)	-0.02662	0.12416	-0.07991	0.0	2.080
		(-0.417)	(0.664)	(-1.189)		
Minnesota Power & Light	(i)	0.02331	0.07926	-0.19022	0.1313	2.234
		(1.322)	(3.032)**	(-3.167)**		
	(ii)	0.16633	-0.27111	-0.53969	0.0216	2.372
		(1.194)	(-0.994)	(-0.950)		
Oklahoma Gas & Electric	(i)	-0.00265	0.18317	-0.2487	0.1983	1.835
		(-0.246)	(4.168)**	(-3.988)*		
	(ii)	-0.07641	0.41012	-0.22261	0.1075	2.048
		(-2.476)*	(3.016)**	(3.071)**		
Pennsylvania Power & Light	(i)	0.01407	0.03133	-0.07600	0.1510	2.487
		(2.203)*	(3.677)**	(-3.194)**		
	(ii)	-0.001658	0.17075	-0.20329	0.0963	2.077
		(-0.255)	(2.971)**	(-2.998)**		
Public Service Co. of Ind	(i)	0.03246	0.26944	-0.45225	0.3899	0.994
		(1.587)	(6.258)**	(-6.407)**		
	(ii)	-0.00532	0.16251	-0.18217	0.0609	1.201
		(-0.139)	(1.738)	(-2.504)*		
Public Service Co. of New Mexico	(i)	-0.00472	0.00794	0.01823	0.0604	2.458
		(-1.329)	(0.855)	(0.981)		
	(ii)	-0.02425	0.12433	-0.07105	0.1123	2.351
		(-2.390)*	(2.125)*	(-1.449)		
Southern Company	(i)	0.02674	0.11349	-0.23800	0.1699	1.799
		(1.373)	(3.297)**	(3.616)**		
	(ii)	0.09110	-0.10149	-0.10841	0.0409	2.033
		(-1.514)	(-0.894)	(-1.807)		
Toledo Edison Co.	(i)	-0.07008	1.15032	-1.59972	0.7007	1.995
		(-0.710)	(6.013)**	(-12.335)**		
	(ii)	-0.54136	2.31767	-1.56250	0.7646	2.137
		(-4.111)**	(7.958)**	(-14.708)**		

Company		b_0, b_0'	b_1, b_1'	b_2, b_2'	Adj R^2	DW
Union Electric	(i)	0.04181	0.21484	-0.41449	0.3655	1.671
		(2.267)*	(5.164)**	(-5.999)**		
	(ii)	0.35596	-0.74297	-0.16974	0.1266	2.133
		(1.656)	(-2.427)*	(-1.366)		
Virginia Electric & Power	(i)	0.05803	0.06424	-0.29850	0.1996	1.947
		(2.747)**	(2.870)**	(-3.999)**		
	(ii)	0.19350	-0.27783	-0.19618	0.1117	2.058
		(1.564)	(-1.045)	(-2.511)*		
Arizona Public Service Co.	(i)	-0.00456	0.01466	0.00413	0.0646	2.101
		(-0.903)	(1.406)	(0.144)		
	(ii)	-0.03619	0.30231	-0.25740	0.1804	1.845
		(-3.626)**	(3.361)**	(-2.895)**		
Central Hudson Gas & Elec.	(i)	0.00286	0.00254	-0.00229	0.0	1.994
		(0.668)	(0.339)	(-0.163)		
	(ii)	-0.03293	0.15267	-0.10004	0.0651	1.982
		(-2.252)*	(2.567)*	(-2.463)*		
Central Illinois Public Service	(i)	0.09047	0.17258	-0.57167	0.4719	0.658
		(3.319)**	(3.151)**	(-7.564)**		
	(ii)	-0.90822	3.15609	-0.93920	0.7264	0.144
		(-7.588)**	(8.871)**	(-13.310)**'		
Cincinnati Gas & Electric	(i)	-0.00025	0.08705	-0.12224	0.1352	2.030
		(-0.015)	(3.352)**	(-2.506)*		
	(ii)	-0.23083	0.64173	-0.21399	0.0569	1.885
		(-2.052)*	(2.233)*	(2.429)*		
Del Marva Power & Light	(i)	0.19334	0.41275	-1.24981	0.6155	2.443
		(2.228)*	(2.074)*	(-10.126)**		
	(ii)	0.15893	0.39631	-0.17608	0.5917	2.383
		(0.536)	(0.656)	(-9.703)**		
Illinois Power Co.	(i)	-0.00787	0.09725	-0.10580	0.0827	1.370
		(-0.355)	(2.536)*	(-2.353)*		
	(ii)	-0.42133	1.15849	-0.44820	0.2503	0.741
		(-4.397)**	(4.710)**	(-4.874)**		
Interstate Power Co.	(i)	0.00925	0.00361	-0.02741	0.0187	2.251
		(2.101)*	(0.421)	(-1.728)		
	(ii)	-0.03347	0.21732	-0.13678	0.1118	2.229
		(-1.980)	(2.627)*	(-3.050)**		
Iowa-Illinois Gas & Elec.	(i)	0.02898	0.03890	-0.13206	0.0371	1.822
		(1.404)	(1.372)	(-2.110)*		
	(ii)	0.19578	-0.31504	-0.07033	0.0324	1.968
		(1.486)	(-1.249)	(-1.280)		

Company		b_0, b_0'	b_1, b_1'	b_2, b_2'	Adj R^2	DW
Iowa Power & Light	(i)	0.48120	0.33329	-1.60289	0.7758	2.247
		(4.745)**	(2.240)*	(-15.059)**		
	(ii)	-0.83939	2.77906	-1.67717	0.8032	2.305
		(-2.092)*	(3.810)**	(-16.340)**		
Long Island Lighting	(i)	0.10361	0.88290	-1.66656	0.7821	1.850
		(1.592)	(6.316)**	(-15.318)**		
	(ii)	-0.61427	2.52449	-1.56577	0.7280	1.668
		(-2.513)*	(4.409)**	(-13.220)**		
Louisville Gas & Elec.	(i)	0.00846	0.00525	-0.1869	0.3415	1.552
		(7.192)**	(2.245)*	(-5.841)**		
	(ii)	0.02649	-0.05336	0.01177	0.3992	1.691
		(5.335)*	(-3.417)**	(1.458)		
Montana Power Co.	(i)	0.44922	0.25537	-1.50737	0.6962	2.131
		(4.182)**	(1.633)	(-12.157)**		
	(ii)	-0.07322	1.32833	-1.54697	0.7313	2.253
		(-0.366)	(3.352)**	(-13.374)**		
Niagra Mohawk Power	(i)	0.01702	0.12669	-0.23521	0.1800	1.834
		(1.330)	(3.588)**	(-3.977)**		
	(ii)	0.06086	-0.09146	-0.04617	0.0309	2.057
		(1.514)	(-1.025)	(-0.967)		
Northern States Power	(i)	0.13861	0.29022	-0.73035	0.3591	2.398
		(3.674)**	(4.339)**	(-6.240)**		
	(ii)	-0.3968	0.87488	-0.90947	0.4410	2.037
		(0.779)	(5.564)**	(7.353)**		
Public Service Co. of Colorado	(i)	0.14889	0.51933	-1.35131	0.6988	1.662
		(2.177)*	(3.352)**	(-12.370)**		
	(ii)	-0.46475	2.21632	-1.47094	0.7491	1.850
		(-2.870)**	(5.128)**	(-14.097)**		
Rochester Gas & Electric	(i)	0.44272	0.07723	-1.67034	0.8176	1.919
		(5.555)**	(0.538)	(-17.103)**		
	(ii)	-0.96072	2.76164	-1.71040	0.8444	2.160
		(-2.237)*	(3.367)**	(-18.971)**		
Sierra Pacific Power Co.	(i)	0.00231	0.08869	-0.15120	0.1506	2.060
		(0.262)	(3.667)**	(-2.777)**		
	(ii)	-0.04478	0.22580	-0.10245	0.0271	1.710
		(-1.591)	(1.902)	(-1.664)		
Tucson Gas & Electric	(i)	-0.00024	0.06588	-0.09083	0.2165	2.126
		(0.085)	(4.225)**	(-2.962)**		
	(ii)	-0.01684	0.26570	-0.20351	0.1331	2.084
		(-2.846)**	(3.157)**	(-2.776)**		

Company		b_0, b_0'	b_1, b_1'	b_2, b_2'	Adj R^2	DW
Washington Water	(i)	0.02290	0.10788	-0.21538	0.2178	2.043
		(1.359)	(4.128)**	(-3.903)**		
	(ii)	-0.06740	0.25160	-0.12870	0.0479	1.983
		(-1.061)	(1.605)	(-2.244)*		
Wisconsin Electric Power	(i)	0.01430	0.10775	-0.20184	0.1779	1.858
		(0.936)	(3.921)**	(-3.544)**		
	(ii)	-0.12923	0.40463	-0.19191	0.0924	1.913
		(-2.394)*	(2.810)**	(2.806)**		
Wisconsin Public Service	(i)	0.02708	0.08202	-0.21199	0.1118	2.353
		(1.685)	(2.801)**	(-3.039)**		
	(ii)	0.10711	-0.19629	-0.06724	0.0163	2.272
		(1.204)	(-0.932)	(-1.185)		

(i) represents coefficients for regression equations using current earnings.

(ii) represents coefficients for regression equations using permanent earnings.

* denotes significance at 5% level.

** denotes significance at 1% level.

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