

# The Life Cycle Theory of Dividends: Evidence from Egypt

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## Abstract

According to life cycle theory of dividends, dividends tend to be paid by mature firms while young ones face relatively abundant investment opportunities with limited resources so that retention dominates distribution. We test this theory in the Egyptian market using a sample of the most active 100 companies during the period 2005-2010. We use a random-effects panel data model after controlling for the firm's characteristics. We find that returned earnings to total equity ratio has highly significant and positive effect on dividend and that total equity to total asset ratio has no effect. Accordingly, the only part of the shareholder equity that affects dividend is the retained earnings indicating that earned capital not contributed is the main determinant of dividend. This provides evidence for the existence of the life cycle theory of dividends in Egypt. In addition, profitability has a significant positive effect on dividend, the higher the profitability of the company the higher the dividend distributed. Ownership structure has no effect on dividend except public companies and private holding which have a positive and significant effect on dividend.

**Keywords:** Dividends; earned equity; contributed capital, life cycle theory of dividends

## 1. Introduction

One of the ongoing challenges for financial theory is to understand why firms pay dividends and what influences the form of the cash distribution. Moreover, theoretical indecisiveness on the importance of dividend policy to determine a firm's value makes it one of the most debatable research topics (Afza and Mirza, 2010). More specifically, the relationship between dividend payout and the firm life cycle has been subject to considerable debate, both theoretically and in empirical research.

The majority of research done to test the theory that corporate payout policy corresponds to different stages of firm life cycle focused on developed and large emerging economies with institutions similar in many aspects. Lately, few researches have been done to tackle and enhance knowledge in that area within small emerging countries.

This stimulates an interest in performing a closer study on the Egyptian market as a small emerging market to examine whether there is support for the theory that corporate payout policy corresponds to different stages of firm life cycle (DeAngelo and DeAngelo, 2006 and DeAngelo et al., 2006) using the most active 100 companies listed in the Egyptian Stock Exchange index (EGX 100).

We collect the data from the annual reports published by the Egyptian Exchange (EGX) during the period from 2005 to 2010.

The life cycle theory of dividends is stated by DeAngelo et al (2006: 228) as follows:

“Dividends tend to be paid by mature, established firms, plausibly reflecting a financial life cycle in which young firms face relatively abundant investment opportunities with limited resources so that retention dominates distribution, whereas mature firms are better candidates to pay dividends because they have higher profitability and fewer attractive investment opportunities.”

The research will be divided into six sections. The introduction will be followed by section two which reviews the literature on the life cycle theory of dividends. Section three describes the data. Section four explains research methodology and design. Section five provides the empirical results and analysis. Section six concludes the discussion.

## **2. Literature Review**

Most of the literature on the life cycle theory of dividend focuses on developed and large emerging markets. Meanwhile, few of the literature on the life cycle theory of dividends are focused on small emerging markets such as Egypt.

The life-cycle theory has been advanced by Fama and French (2001), Grullon et al. (2002) and DeAngelo et al. (2006). The theory was found to agree with the findings of Miller and Modigliani (1961). They found that dividends policy has information content that dividends improve the ability of current earnings to predict future earnings (e.g. DeAngelo et al., 1992; Pandey, 2003).

Based on previous research, firms that increase their dividends experience a significant increase in their systematic risk. These firms do not increase their capital expenditure and in addition experience a fall in profitability in the years post the dividend change (e.g. Benartzi et al., 1997; Grullon et al., 2002).

Moreover, three characteristics were found to influence the decision to pay dividends which are profitability, investment opportunities, and size, confirming the life cycle theory. Relatively large and more profitable firms are more likely to pay dividends (e.g. Fama and French, 2001; De Angelo et al., 2006; Denis and Osobov, 2008; Afza and Mirza, 2010; Al-Ajmi and Abo Hussain, 2011).

Firms with current high-profitability and low-growth rates tend to pay dividends, while low profit with high-growth firms tend to retain profits (e.g. Fama and French, 2001; De Angelo et al., 2006; Denis and Osobov, 2008; Al-Ajmi and Abo Hussain, 2011).

The more tangible the firm's assets, the less it relies on retained earnings for its growth plans, having more cash to be distributed as dividends (e.g. Booth et al., 2001; Fargher and Weigand, 2006; Aivazian et al., 2006; Al-Ajmi and Abo Hussain, 2011).

Consistent with the life cycle hypothesis, Fargher and Weigand (2006) and Stacescu (2006) found that firms with low market to book ratio have larger profits, cash levels and capital expenditure and thus are more likely to pay dividends.

Moreover, a negative relation was found to exist between debt ratios and dividends payment. (e.g. Higgins, 1972; McCabe, 1979; Stacescu, 2006; Al-Ajmi and Abo Hussain, 2011).

Moreover, companies in which managerial and individual ownership are high, there exists high reluctance to pay dividends as compared to companies with low managerial and individual ownership (e.g. Afza and Mirza, 2010) which explains Stacescu (2006) findings that institutional investors were found to hold larger shares in dividend paying companies.

## **3. Data and Sample Construction**

We collect financial data for 100 companies which constitute the EGX100 (the Egyptian Stock Exchange index for the large, medium and small companies). These 100 companies are considered out of a total of 213 (as of December 2010) listed on the EGX during the period 2005-2010.

The data includes annual financial statements, daily stock prices and annual ownership structure data collected from Reuters and the EGX. Using the annual financial statements, financial ratios and indicators are calculated for each company.

#### 4. Research Methodology

We estimate a panel data model with unbalanced data after controlling for the firm's characteristics. We use Hausman (1978) test statistic to test whether a fixed or random effects model should be used. The test question is whether there is significant correlation between the unobserved country-specific random effects and the regressors. If there is no such correlation, then the random effects model may be more powerful and parsimonious.

Using the 100 most active companies listed in the Egyptian Stock Exchange during the period 2005 – 2010, we estimate the following equation:

$$Dividend_{it} = \beta_1 + \beta_2 (Retained\ Earnings / Total\ Equity)_{it} + \beta_3 Size_{it} + \beta_4 Profitability_{it} + \beta_5 (Total\ Equity / Total\ Assets)_{it} + \beta_6 (Cash / Total\ Assets)_{it} + \beta_7 Ownership\ Concentration_{it} + \sum_{i=1}^{11} \alpha_i Ownership\ Type_{it}$$

In this equation, we examine the effect of several variables on firm's dividend. The independent variables used are similar to the variables used by DeAngelo et al. (2006). The independent variable is firm maturity measured by the ratio of retained earnings to total equity (RE/TE). We also control for firm size measured as the natural logarithm of total assets and profitability measured by ratio of net income to total assets (ROA) and net income to total equity (ROE). We also use the ratios of total equity to total asset, and total cash to total assets. In addition, we add to DeAngelo et al. (2006) additional variables which are ownership types and ownership concentration measured as the percentage of equity ownership held by the largest three blockholders who own more than 5% in a company (e.g. Demsetz and Lehn, 1985; Demsetz and Villalonga, 2001).

#### 5. Empirical Results and Analysis

In this section, we report the summary statistics for all variables after dividing the data to two subsamples (Table 1). We then report the results from the panel data regression model (Table 2).

##### 5.1. Analysis of Summary Statistics

Table 1 provides the mean, median, t-test for difference in means and Wilcoxon test for the difference in medians between the two sub samples. The results in table 1 show that companies with high ratio of retained earnings to total equity (RE/TE) distribute higher dividends which align with Pandey (2003), Stacescu (2006), DeAngelo et al. (2006), Coulton and Ruddock (2009) findings.

Moreover companies with high RE/TE ratio have a significantly high profitability measured by return on asset (ROA) and return on equity (ROE) than companies with low RE/TE ratio. The median ROA of companies with RE/TE ratio less than 1% is 3% while this median for companies with RE/TE ratio more than 1% is 6%. As for the ROE, the median for companies with RE/TE ratio less than 1% is 6% while this median for companies with RE/TE ratio more than 1% is 13%. These results are consistent with DeAngelo et al. (1992), Fama & French (2001), Pandey (2003), Stacescu (2006), DeAngelo et al. (2006), Coulton and Ruddock (2009) and Afza and Mirza (2010).

Coulton and Ruddock (2009) asserts that young firms, being in their early stage of profitability have greater investment opportunities which require them to retain their earnings to fund growth. As firms mature they become more profitable, have declining investment opportunities and are able to internally generate cash in excess of their investment requirements. These findings confirm the life cycle theory of dividends in literature that suggests that the retention of earnings varies along the life of the firm.

Also companies with high RE/TE ratio have higher earnings per share (EPS). For example, the median of the EPS for companies with RE/TE ratio less than 1% is 0.3 while this ratio is 1.02 for companies with RE/TE ratio more than 1%. The growth of assets is remarkable higher in companies with RE/TE ratio more than 1%. The median of the growth of assets for companies with low RE/TE ratio is 3% while this median is 11% for companies with high RE/TE ratio. Similar results have been observed by DeAngelo et al. (2006) who reports a positive significant relationship between growth and mature firms with relatively high retained earnings to total equity ratio.

As for the growth of sales, it is much higher in companies with RE/TE ratio more than 1%. The median of the growth of sales for companies with low RE/TE ratio is 3% while this median is 12% for companies with high RE/TE ratio. The results also show that the mean of the payout ratio for companies with RE/TE ratio more than 1% is significantly higher than companies with an RE/TE ratio lower than 1%.

The results in Table 1 show that companies with RE/TE ratio more than 1% are relatively larger in size than a company with RE/TE ratio less than 1% which supports the findings of DeAngelo et al. (2006) and Al-Ajmi and Abo Hussain (2011).

We find that employee associations exist more in companies with large RE/TE ratio. Companies with high RE/TE ratio are more likely to issue GDRs. Also companies with high RE/TE ratio have higher ownership concentration than companies with low RE/TE ratio. The ownership ratio by private companies is higher in firms with high RE/TE ratio. On the contrary, public holdings ownership ratio is higher in companies with low RE/TE ratio. Moreover, top management ownership ratio is higher in companies with high RE/TE ratio.

The results in Table 1 also show that companies with RE/TE ratio more than 1% are relatively larger in size than a company with RE/TE ratio less than 1% which supports the findings of De Angelo et al. (2006) and Al-Ajmi and Abo Hussain (2011).

**Table 1:** Summary statistics for companies with low and high Retained Earnings to Total Equity Ratio

This table provides summary statistics for two subsamples: (1) companies with retained earnings to total equity ratio (RE/TE) less than 1%, (2) companies with RE/TE ratio more than 1% for a sample of 100 companies during the period 2005-2010 with a total number of observations of 424. The first six columns report the means, medians and number of observations for companies with low (less than 1%) and high (more than 1%) retained earnings to total equity ratio. Columns seven and eight test the hypothesis of no significant difference in means (T-statistics) and medians (Wilcoxon test) between low and high retained earnings to total equity ratio. All variables are defined in Appendix 1.

	Less than 1% RE/TE ratio			More than 1% RE/TE ratio		T-test for the difference in means	Wilcoxon test for the difference in medians	
	Mean	Median	No. of Obs.	Mean	Median	No. of Obs.	(With minus Without)	
Cash	0.15	0.09	118	0.12	0.08	311	-1.553	-0.716
DABook	0.47	0.09	118	0.46	0.08	311	-0.119	-0.575
DEBook	1.92	0.76	118	1.74	0.89	311	-0.582	0.434
Dividend	0.42	0.00	118	1.33	0.12	311	2.432**	2.588***
EPS	1.14	0.30	118	3.00	1.02	311	3.249***	4.466***
Growth of Assets	0.32	0.03	118	0.27	0.11	311	-0.451	2.578***
Growth of Sales	0.85	0.03	118	0.74	0.12	311	-0.225	2.188**
M/B Ratio	3.25	2.14	118	3.78	1.69	311	-0.494	-0.873
Payout Ratio	0.32	0.00	118	0.95	0.09	311	-2.012**	1.325
RE/TA	-0.04	0.00	118	0.11	0.08	311	13.008***	15.761***
RE/TE	-0.08	0.00	118	0.22	0.17	311	15.244***	16.001***
ROA	0.05	0.03	118	0.09	0.06	311	3.163***	4.481***
ROE	0.16	0.06	118	0.18	0.13	311	0.720	4.432***
Size	8.52	8.71	118	8.96	8.86	311	4.054***	3.585***
TE/TA	0.54	0.52	118	0.55	0.52	311	-0.274	-0.705

**Table 1:** Summary statistics for companies with low and high Retained Earnings to Total Equity Ratio - continued

Employees	0.01	0.00	118	0.01	0.00	311	-1.860*	1.914*
Free Float	0.45	0.38	118	0.40	0.36	311	-1.568	-1.222
GDR	0.01	0.00	118	0.04	0.00	311	1.954*	1.012
Individuals	0.04	0.00	118	0.04	0.00	311	0.380	0.334
Investment Funds	0.00	0.00	118	0.00	0.00	311	0.252	0.089
Ownership Concent	0.45	0.38	118	0.49	0.52	311	1.734*	1.852*
Private Bank	0.01	0.00	118	0.02	0.00	311	0.850	0.451
Private Company	0.14	0.00	118	0.18	0.06	311	1.483	2.331**
Private Holding	0.03	0.00	118	0.05	0.00	311	1.297	0.307
Private Insurance	0.00	0.00	118	0.00	0.00	311	-1.628	0.271
Public Bank	0.03	0.00	118	0.03	0.00	311	0.211	0.787
Public Companies	0.03	0.00	118	0.02	0.00	311	-0.342	0.955
Public Holding	0.11	0.00	118	0.06	0.00	311	-2.504**	0.854
Public Insurance	0.04	0.00	118	0.04	0.00	311	0.027	-1.212
Top Management	0.07	0.00	118	0.12	0.00	311	2.227**	3.560***

## 5.2. Regression Analysis

We analyze the results of the panel data regression model. The results are reported in Table 2, representing the regression of the dependent (measured by the dividend per share) on the independent variables which are the return on equity to total equity ratio, size, return on assets, total equity to total assets ratio, cash balances, ownership structure. The results from the random effect panel model in Table 2 find that returned earnings to total equity ratio has highly significant and positive effect on dividend which align with Pandey (2003), Stacescu (2006), DeAngelo et al. (2006), Coulton and Ruddock (2009) findings. Also total equity to total asset ratio has no effect on dividend which aligns with DeAngelo et al. (2006) findings. Accordingly, the only part of the shareholder equity that affects dividend is the retained earnings indicating that earned capital not contributed is the main determinant of dividend. This provides evidence for the existence of the life cycle theory of dividends in Egypt, thus the mix of earned/contributed capital is a significant determinant of dividend policy in Egyptian firms. Firms pay dividends when the most equity is earned rather than contributed; retained earnings represent a large portion of total equity and of total assets. Meanwhile, the probability of firms paying dividends falls to zero when most equity is contributed rather than earned.

Also the results show that profitability has significantly positive effect on dividend, same as observed by DeAngelo et al. (1992), Pandey (2003), Fama & French (2001), DeAngelo et al. (2006), Stacescu (2006), Afza and Mirza (2010) and Al-Ajmi and Abo Hussain (2011). The higher the profitability of the company the higher the dividends distributed.

The coefficient of size is not significant indicating that size has no effect on dividends payment consistent with Al-Ajmi and Abo Hussain (2011) findings. Cash to total asset ratio has no effect on dividends which is similar to the findings of Shin et al. (2010).

All variables of ownership structure have no effect on dividends except public companies and private holding. The results show that public companies ownership has a positive and significant effect on dividends. This result is similar to Renneboog and Szilagyi (2007) and Al-Ajmi and Abo Hussain (2011). Accordingly when public companies owns in a company it encourages this company to distribute dividends. The reason for this that most public companies put pressure on companies they own shares in to distribute dividends.

In addition, private holdings ownership was found to have a positive and significant effect on dividends similar to the findings of Afza and Mirza (2010). When private holdings owns in a company it encourages this company to distribute dividends. Meanwhile, ownership concentration has no effect on dividends supporting the findings of Stacescu (2006) who found that ownership concentration does not seem to affect the option to pay dividends.

**Table 2:** Estimates of the Random-Effects Panel Model

This table estimates our panel data Model using a sample of 100 companies for the period 2005-2010 with a total number of observations of 424. The results of the Hausman test (1978) reported at the end of the table shows that we need to use a random effect panel data model. The dependant variable is dividends and the main independent variable is the retained earnings to total equity ratio (RE/TE). All variables are defined in Appendix 1. Z-statistics are reported in parentheses

<b>Equation</b>	<b>Dividend</b>
RE/TE Ratio	1.416 (2.20)**
Size	0.170 (1.17)
ROA	5.805 (2.10)**
TE/TA Ratio	-0.2844 (-0.56)
Cash	-0.688 (-0.78)
Top Management	1.843 (0.94)
Individuals	3.032 (1.34)
Public Holding	2.945 (1.07)
Public Companies	6.545 1.93
Public Banks	8.189 (1.11)
Public Insurance	-0.244 (-1.28)
Private Holding	6.573 (1.85)
Private Companies	2.446 (1.15)
Private Banks	4.762 (1.46)
Private Insurance	-21.742 (-1.11)
Employees	-1.781 (-0.48)
Investment Funds	20.961 (1.40)
GDR	-0.115 (-0.13)
Free Float	-0.603 (-0.47)
Concentration	-3.547 (-1.01)
Constant	-0.519 (-0.38)
Industry	Controlled
Year	Controlled
No. Of Observations	424
No. Of Groups	90
R Square	0.38
Wald Chi Square	60.34
Hausman Test for Random Effect (Chi-Square)	31.55
Hausman Test for Random Effect (p-value)	(0.0854)

## 6. Conclusion

This research examines the life cycle theory of dividends in the Egyptian market and whether there is support for the theory that corporate dividends correspond to different stages of the firm life-cycle. The research sample comprises the 100 companies which constitute the EGX 100 index during the period 2005-2010. The analysis focuses on the dividend per share as the dependent variable. As for the independent variables, the research includes retained earnings as a proportion of total equity and of total assets, firm size, profitability, growth, ratio of total equity to total asset, cash balances, ownership type and ownership concentration.

Overall the results indicate that returned earnings to total equity ratio has highly significant and positive effect on dividends and that total equity to total asset ratio has no effect. This provides evidence for the existence of the life cycle theory of dividends in Egypt, thus the mix of earned/contributed capital is a significant determinant of dividend policy in Egyptian firms. In addition, profitability has a significant positive effect on dividends, the higher the profitability of the company the higher the dividends distributed. We find that ownership structure has no effect on dividends except public companies and private holding. The results show that public companies ownership and private holdings ownership have positive and significant effects on dividends. Finally, ownership concentration was found to have no effect on paying dividends.

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## Appendix I Description of Variables

Variables	Descriptions
Cash balances	Cash divided by total assets
DABOOK	Ratio of total debt to total assets (book value)
DEBOOK	Ratio of total debt to total equity (book value)
Dividend	Payments paid by a firm to its shareholders
Earned equity to total assets (RE/TA)	Retained earnings divided by total Assets
Earned to total common equity (RE/TE)	Retained earnings divided by total common equity
Earnings Per Share	Net income divided by number of shares
Employees	Percentage of equity ownership held by employees Association in a company
Free Float	Percentage of outstanding shares in a company
GDR	Percentage of equity ownership held by employees Association in a company
Growth	Growth of sales and total assets
Individuals	Percentage of equity ownership held by individuals in a company
Insurance	Percentage of equity ownership held by insurance companies in a company
Investment Funds	Percentage of equity ownership held by investment Funds in a company
M/B	Market price per share for common stock divided by book value per share of common stock
Pay out Ratio	Dividends divided by earnings per share (EPS)
Private Banks	Percentage of equity ownership held by private banks in a company
Private Companies	Percentage of equity ownership held by private companies in a company
Private Holdings	Percentage of equity ownership held by private holdings in a company
Public Banks	Percentage of equity ownership held by public banks in a company
Public Companies	Percentage of equity ownership held by public companies in a company
Public Holdings	Percentage of equity ownership held by public holdings in a company
Concentration	Percentage of equity ownership held by the largest three block holders (own more than 5%) in a company
Return on Assets (ROA)	Net income divided by total asset
Return on equity (ROE)	Net income divided by shareholders' equity
Size	Natural logarithm of total assets
Top Management	Percentage of equity ownership held by top management of a company
Total equity/Total assets (TE/TA)	Total equity divided by total assets