

ARE DIVIDENDS DISAPPEARING AND IS THE LIFE-CYCLE THEORY OF DIVIDENDS RELEVANT TO CANADIAN STOCK MARKET?

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Abstract

We investigated the dividend payout policy of the companies listed in the Canadian stock market to establish the relevancy of life-cycle theory of dividends among the sample stocks. While investigating whether dividend is disappearing in the Canadian stock market, we analyzed the proportion of firms paying cash dividends as in Fama and French (2001) and the aggregate real dividends paid by industrial firms as in DeAngelo, DeAngelo and Skinner (2004). Our sample ranges from 182 firm-years data in 1997 and to 999 firm-years in 2007. For the life-cycle theory of dividends, we also estimate a firm's stage in its financial life cycle by the amount of its retained earnings as in DeAngelo, DeAngelo and Stulz (2006). Our findings indicate that proportion of dividend paying firms to total firms is on a decline but the aggregate real dividends of dividends payers is increasing. Our findings support the view provided by DeAngelo et. al. (2004) that dividends in Canadian listed firms are not disappearing. In addition, we report a positive and statistically significant relationship between the probability that a firm pays dividends and its earned/contributed capital mix, thus supporting the life-cycle theory of dividends.

Keywords: Dividend Policy, Life-cycle Theory, Investments, Retained Earnings

JEL Classification: G11, G15

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Introduction

Being one of the most widely researched topics in finance, dividend payout policy has attracted many scholars who have either reported mixed findings and/or explanations. Fama and French (2001), Grullon, Michaely, and Swaminathan (2002), and DeAngelo, DeAngelo and Stulz (2006) have supported the life-cycle theory on dividends. Their studies suggest that mature and established firms prefer to pay dividend to shareholders because they have higher profitability and less attractive investment opportunities as opposed to young and new firms which generally have lower and limited profit, and more investment opportunities.

Retention of profits seems to be the preference for young and new firms while the mature firms prefer to distribute them to shareholders. The life-cycle theory also explains a trade-off between profits accumulation and loss of investment opportunities. Distribution of dividends to shareholders may also

indicate maturity of firms as shown by many blue-chips and large multinational companies.

Fama and French (2001) found that firms which pay dividends share similar characteristics of high-profitability and low-growth rates. DeAngelo et.al. (2006) employ the life-cycle theory and test whether the probability a firm pays dividends is related to its mix of earned and contributed capital. They found that the earned/contributed capital mix is a logical measure to estimate whether the firm is self-finance or reliance on external capital. If the firm has high earned/contributed capital mix, it suggests that the firm is self-finance and tend to pay dividends. If the firm has low earned/contributed capital mix, it suggests that the firm is still in the capital infusion stage. In this instance, the firm is more likely to retain its earnings rather than distributing it in terms of dividends to shareholders.

Most of the studies on life-cycle theory of dividends are being done using data for the U.S. and European stock markets. This study on the listed companies on Canadian stock market may be suitably

compared with previous studies of similar issues on the U.S. market and other European markets, as they shared the same developed nation status while the trading and demographic characteristics are quite similar. This study will examine whether dividends are disappearing or only appearing among few firms in Canadian stock market, and further on establish whether the life-cycle theory is still relevant in Canadian stock market.

This paper is organised as follows. Section 2 reviews the literature on dividend payout policy and the life-cycle theory of dividends. Section 3 explains the data and methodology used in this study. Section 4 presents the empirical results and section 5 provides the conclusions of this study.

Literature Review

Dividend payout policy has been examined by researchers for over the last 50 years and have proposed many well-known theories that have a tendency to explain the dividend payout policy, such as, tax disadvantage hypothesis, clientele theory (Miller and Modigliani, 1961), signalling hypothesis (Miller and Rock, 1985), agency cost theory (Jensen, 1986), catering theory (Baker and Wurgler, 2004) and the life-cycle theory (DeAngelo, DeAngelo and Stulz, 2006). Fama and French (2001) showed that the proportion of firms paying cash dividends falls from 66.5% in 1978 to 20.8% in 1999 in the U.S. stock market. DeAngelo, DeAngelo and Skinner (2004) use the same data sample as Fama and French's, and conclude the number of dividend payers decreased by over 50%, but the aggregate real dividends paid by industrial firms increased over the period of study. Fama and French (2001) argued that the dividends are disappearing, because the young and small firms like to invest to keep strong growth instead of paying dividends. On the other hand, DeAngelo et. al. (2004) argued that the increasing of real dividends by top and propensity dividends payers swamp the decreasing of real dividends by so many small dividend payers. Thus, DeAngelo et. al (2004) report that dividends are not disappearing but rather concentrated on the top dividends payers.

In another study, DeAngelo, DeAngelo and Stulz (2006) suggest that the life-cycle theory have a tendency to explain the dividend payout policy. The basic idea of the life-cycle theory of dividends is that firms with relatively high retained earnings as a proportion of total equity (RE/TE) are more likely to pay dividends. On the other hand, the proportion of firms that pay dividends is low when the ratio of RE/TE falls that firms are unable to retain their earnings. They also argued that young firms with a low ratio of RE/TE do not pay dividends in the capital infusion stage because of lower profitability. When firms become more mature with high ratio of RE/TE, they tend to pay dividends to evade agency cost

problem. This stage is called the distribution stage or the mature stage.

To support the life-cycle theories, Denis and Osobov (2008) published a study of dividends payout policy which focuses on the stock markets in the US, Canada, UK, Germany, France and Japan. They found that the propensity to pay dividends is higher among larger and more profitable firms and for those where retained earnings comprise a larger fraction of total equity. They also found that the propensity to pay dividends in most of the sample countries have declined, while aggregate dividends have not declined and are concentrated among the largest, most profitable firms. As a result the extent literature on dividends payout policy provides mixed results, but the life-cycle theory has gained the support in the recent literature.

Data and Methodology

To be consistent with Fama and French (2001) and DeAngelo et. al. (2006), we have excluded nonfinancial and nonutility firms in our sample data for the Canadian stock market. Therefore, we excluded firms with Standard Industrial Classification (SIC) codes outside the intervals 4900-4949 and 6000-6999. Our sample covers a period of 11 years of data ranging from 1997 to 2007. Throughout this period, the number of firms analyzed has grown by more than five times from 182 firms in 1997 to 999 firms in 2007. We have also excluded firms that had missing values for total assets (TA), total common equity (TE), retained earnings (RE), return on assets (ROA), sales growth rate (SGR), market capitalization and net income.

To investigate whether dividends is disappearing in Canadian stock market, we analyzed the proportion of firms paying cash dividends as in Fama and French (2001) and the aggregate real dividends paid by industrial firms as in DeAngelo et. al. (2004). We then compared our results with the findings of Fama and French (2001) and DeAngelo et. al. (2004) to establish whether dividends are indeed disappearing in the Canadian stock market.

For the life-cycle theory of dividends, we have estimated a firm's stage in its financial life cycle by the amount of its retained earnings testing as in DeAngelo et. al. (2006). The RE/TE is regarded as the key determinant of the decision to pay dividends. The RE/TA is interpreted as the complement of total leverage when preferred stock is a fixed charge obligation. The ROA is used as a measure of profitability. The growth is measured by the sales growth rate (SGR), asset growth rate (AGR), and market-to-book ratio (M/B). To measure the size of the firms, we use the asset and equity value percentiles. The fraction of total assets is presented by cash plus marketable securities.

Results and Findings

Table 1 below shows that the number of firms, the number of dividends non-payers and the number of dividends payers all increased over the 11 year period from 1997 to 2007. However, the rate of change in the number of firms, the number of dividends non-payers and the number of dividends payers differ significantly from each other. There are 817 new industry firms listed on the Canadian stock exchange over the period from 1997 to 2007. However, the number of firms that do not pay dividends have

increased by 630 firms, while the number of dividends payers only increased by 187 firms over the sample period. Our results indicate that the increasing speed of dividend payers is far slower than dividend non-payers.

Our results show that there is a significant decline in the percentage of dividend paying firms to total firms from 47.3% in 1997 to 27.3% in 2007. On the other hand, the percentage of non-dividend paying firms to total firms increased from 52.7% in 1997 to 72.7% in 2007.

Table 1. Number of firms, dividend non-paying firms and dividend paying firms between 1997 to 2007

Year	Number of Firms	Number of Non-Payers	Number of Payers	Percentage of Payers
1997	182	96	86	47.3%
1998	211	122	89	42.2%
1999	358	256	102	28.5%
2000	465	353	112	24.1%
2001	532	413	119	22.4%
2002	587	466	121	20.6%
2003	671	507	164	24.4%
2004	785	589	196	25.0%
2005	871	633	238	27.3%
2006	955	689	266	27.9%
2007	999	726	273	27.3%
Absolute Change Over 1997 to 2007	817	630	187	-19.9%
Percent Change Over 1997 to 2007	448.9%	656.3%	217.4%	-42.2%

Table 2 reports the value of the dividends paid in more detail. The values of the aggregate nominal dividends and the aggregate real dividends have increased significantly over the period from 1997 to 2007. The aggregate nominal dividends increased from C\$3.29 billion in 1997 to C\$22.04 billion in 2007 and the aggregate real dividends rose significantly from C\$3.05 billion in 1997 to C\$16.62 billion in 2007. The absolute changes of both dividends payment are over 4 times during the sample period. Moreover, the mean real dividend paid increased from C\$35.51 million in 1997 to C\$60.87 million in 2007, with a value of absolute change of

71.4%. The median real dividend paid increased from C\$6.63 million in 1997 to C\$14.58 million in 2007, with a value of absolute change of 120%.

Over the period 1997 to 2007, both the aggregate real dividends and number of firms are trending upwards while the percentage of payers is trending downwards. These conflicting trends show that the propensity of dividends payers is reducing, while the aggregate real dividends paid by Canadian public listed firms are increasing. These results are consistent with the findings of DeAngelo, et. al. (2004).

Table 2. Aggregate real dividends are calculated by adjusting aggregate nominal dividends for the growth in prices, the value of price indexes are gathered from Thomson One Banker Analytics

Year	1997	2007	Absolute (%) Change
Aggregate Nominal Dividends in Billions	3.29	22.04	570.64%
Aggregate Real Dividends in Billions	3.05	16.62	444.22%
Mean Real Dividends in Millions, per dividend-paying firm	35.51	60.87	71.44%
Median Real Dividends in Millions, per dividend-paying firm	6.63	14.58	120.00%

Table 3. Concentration of aggregate real dividends paid by industrial firms in 1997 and 2007.

Firms are ranked from the largest to the smallest value of aggregate real dividends paid in each year. There are only 86 firms which paid dividends in 1997, so the second group of firms is end of 86.

	Aggregate Real Dividends in Billion		Percentage of Aggregate Real Dividends		Absolute % Change
	1997	2007	1997	2007	
Year					
Top 50 Firms	2.96	12.60	96.94%	75.85%	-21.09%
51 - 86 Firms	0.09	2.03	3.06%	12.20%	9.14%
Other Firms	0.00	1.99	0.00%	11.96%	11.96%
Number of Firms	86	273	86	273	217.44%
Total	3.05	16.62			

Table 3 reports the dividends paid by three groups of firms which are ranked from the largest to the smallest value of aggregate real dividends paid in 1997 and 2007. The first two columns show the aggregate real dividends, the middle two columns present the percentage of aggregate real dividends, and the last column is the value of absolute percentage change. The top 50 firms in terms of aggregate real dividends represent 97% out of the total real dividends in 1997. The distribution is slightly better in 2007. The top 50 firms in terms of aggregate real dividends represent 76% out of the total real dividends in 2007. Nevertheless, despite the decline in proportion of dividends paid by top 50 firms, it is not a strong argument to conclude that the dividends are less concentrated among the top 50 dividends payers. This is because the number of firms in 2007 is more than five times higher than those in 1997, but the proportion of dividends paid by top 50 firms only drops by 21 percentage points.

Lintner (1956) and DeAngelo et. al. (2004) argues that high earnings concentration may cause high dividend concentration. Table 4 reports the relationship between earnings concentration and dividend concentration. The first two columns present the earnings of dividends payers in 1997 and in 2007. The last two columns show the percentage of earnings for three different groups of firms. Overall, the evidence strongly supports the findings of previous studies. For the top 50 dividends paying firms, the earnings of dividends payers increased significantly from C\$22.29 billion in 1997 to C\$100.44 billion in 2007. Moreover, the earnings of top 50 dividends paying firms accounted for 93% of all dividends paying firms' earnings in 1997. The proportion decreases to 75% in 2007, but again, it is still highly concentrated considering the fact that the number of firms in 2007 is more than five times higher than those in 1997.

Table 4. Concentration of earnings of firms that paid dividends in 1997 and 2007.

Firms are ranked from the largest to the smallest value of aggregate real dividends paid in each year. There are only 86 firms which paid dividends in 1997, so the second group of firms is end of 86.

	Earnings in Billion		Percentage of Earnings	
	1997	2007	1997	2007
Year				
Top 50 Firms	22.29	100.44	93.85%	75.11%
51 - 86 Firms	1.46	14.65	6.15%	10.96%
Other Firms	0.00	18.64	0.00%	13.94%
Number of Firms	86	273		
Total	23.75	133.74		

Results in Table 4 uniformly and strongly indicate that the number of dividend paying firms have decreased, while the aggregate real dividends paid by industrial firms increased in Canadian stock market over the period from 1997 to 2007. These findings are consistent with DeAngelo et. al. (2004) and thus, we suggest that dividends are not disappearing in Canadian stock market. In addition, the dividends payment is concentrated among top

dividends payers which suggests high earnings concentration.

According to DeAngelo et. al. (2006) life-cycle theory of dividends, the fraction of publicly traded industrial firms that pay dividends is high when the ratio of retained earnings over total equity (RE/TE) is larger and falls near to zero when the ratio becomes smaller. There is a highly significant relation between the decision to pay dividends and the earned/contributed capital mix (RE/TE).

Table 5. Median measures of earned equity versus contributed capital and related descriptive statistics for industrial firms in Canadian stock market from 1997 to 2007.

I first calculate the median value for dividend payers and non-payers in each year then calculate the median value over 1997 to 2007

	Median Value	
	Dividend Payers	Nonpayers
Earned equity to total common equity (RE/TE)	0.46	-0.42
Earned equity to total assets (RE/TA)	0.19	-0.30
Total common equity to total assets (TE/TA)	0.50	0.66
Profitability (ROA)	6.96	-4.68
Sales growth rate (SGR)	9.34	0.00
Asset growth rate (AGR)	7.56	17.35
Market-to-book ratio (M/B)	1.87	2.07
Asset percentile (NYA)	0.00	0.00
Equity value percentile (NYE)	0.00	0.00
Cash to total assets (Cash/TA)	0.02	0.10
Number of firms	121	466

Results reported in Table 5 indicate that the median value of most variables of dividend payer firms is greater than dividend non-payer firms. The condition typically is clearness and distinctness in the variables of earned equity relative to contributed capital. For example, the median value of dividend payer firms' earnings is 46% of total common equity, but the ratio is -42% for the median dividend non-payer firms. If the earned equity is measured as the percentage of the total assets, the results show that the median value of the dividend payer firms is 19% and the -30% for the dividend non-payer firms.

However, on the ratio of total common equity to total assets, it is 50% for dividend payer firms and 66% for dividend non-payer firms. These results show that the decision of dividend distribution is highly positively correlated with RE/TE and RE/TA, but it is not correlated with TE/TA. The rest of table 5 show that the results are consistent with Fama and French (2001). With higher ROA and sales growth rate, the dividend payer firms exhibit higher profitability and sales growth as compared to dividend non-payer firms. However, dividend non-payer firms have greater market-to-book ratio and asset growth rate, which means that the firms have better opportunity to become large and mature in the future. The results also show that the cash ratio of dividend payer firms is lower than the cash ratio of dividend non-payer firms, suggesting that not all firms with high cash balance tend to pay dividends.

Table 6 shows that firms which pay dividends are highly related with their earned/contributed capital max, as measured by RE/TE and RE/TA, while there

is no significant relationship with the cash balance (TE/TA). The values in three different panels are the medians of the annual percentages over 1997 to 2007. The panel A presents the changes of RE/TE. The results show that only 11.1% of firms that pay dividends have negative value of RE/TE, but the number of firms that pay dividends increase when the value of RE/TE increasing. When the firm's earning is over 40% and below 50% of total common equity, 50% of firms are likely to pay dividends. The proportion of dividend payer firms reaches 90.9% when the ratio of TE/TA is more than 0.9.

Panel B has similar situation as panel A when RE/TA is used instead of RE/TE except for one difference. The proportion of dividend payer firms is zero when the ratio is more than 0.9, indicating there is no firm that stay in between. However, the results show a different scenario in panel C. Firms is unlikely to pay dividends if they have either low TE/TA ratio or high TE/TA ratio. According to DeAngelo et. al. (2006), low TE/TA ratio is often a sign of financial distress firms as these firms are having low level of total equity in relation to their total liabilities. On the other hand, DeAngelo et. al. (2006) also argued that firms with high ratio of TE/TA also tend to not paying dividends as these firms have high contribution relative to earned equity. Our results show that only 1.7% of firms that have high ratio of TE/TA distribute dividends to their shareholders. As such, this study supports DeAngelo et. al. (2006) that the decision of dividends distribution is strongly related with RE/TE and RE/TA.

Table 6. The percentages of industrial firms pay dividends as a function of earned and total equity from 1997 and 2007

Panel A reports RE/TE, Panel B reports RE/TA and Panel C reports TE/TA

Relative weight (RE/TE, RE/TA, and TE/TA)											
	<0	0-0.1	0.1-0.2	0.2-0.3	0.3-0.4	0.4-0.5	0.5-0.6	0.6-0.7	0.7-0.8	0.8-0.9	>0.9
A: Earned equity as a fraction of total common equity (RE/TE)											
Proportion of dividend payers	11.11%	23.33%	32.26%	34.48%	33.33%	50.00%	58.62%	64.00%	66.67%	78.95%	90.91%
Total number of firms	338	30	30	33	34	29	25	23	24	17	14
B: Earned equity as a fraction of total assets (RE/TA)											
Proportion of dividend payers	11.11%	31.88%	38.57%	53.23%	60.00%	71.43%	61.54%	77.78%	100.00%	100.00%	0.00%
Total number of firms	338	68	71	54	24	21	11	7	3	1	0
C: Total equity capital as a fraction of total assets (TE/TA)											
Proportion of dividend payers	0.00%	22.22%	30.77%	41.18%	44.62%	44.44%	36.57%	31.52%	22.00%	13.21%	1.67%
Total number of firms	0	9	19	38	61	76	82	73	58	67	98

Furthermore, we ran the logit model to test the probability that a firm pays dividends depends on their earned/contributed capital mix, RE/TE and TE/TA. The dependent variable is the decision whether firms pay dividend. The independent variables are RE/TA, TE/TA, ROA, Growth as measured by AGR, and Size as measured by NYE. Table 7 presents the average coefficient of each variables. The first regression includes all variables except the TE/TA. The results show that there is a positive and significant relationship between the probability that a firm pays dividends and its

earned/contributed capital mix. In addition, size is also positively correlated with the decision to pay dividends, which is consistent with Fama and French (2001). In the second regression, we include TE/TA in the list of independent variables. The coefficient of RE/TE still presents positive and significant relationship, but the coefficient of TE/TA is negative and insignificant. Moreover, the intercept of second regression is also insignificant. As such, our findings show that TE/TA is not one of key determinants on firms' decision to pay dividends.

Table 7. Logit analysis of the decision pays dividends as a function of the ratio of RE/TE, TE/TA, and other variables from 1997 to 2007

The average coefficient is the mean value of the fitted coefficients for 10 Logit regressions of each year.

Average coefficient		
Regress	(1)	(2)
RE/TE	0.92	0.93
TE/TA		-1.25
ROA	1.97	1.98
Growth	-0.44	-0.44
Size	1.39	1.30
Intercept	-0.73	-0.07
R ²	0.33	0.40

Conclusions

This study investigated the dividend payout policy of listed companies in the Canadian stock market to establish whether dividends are disappearing throughout the period of 11 years from 1997 to 2007. In addition, we also investigated the relevancy of life-cycle theory of dividends in the Canadian stock market.

Our results show that despite the obvious decline in percentage of dividend payer firms throughout the sample period, the aggregate real dividends of dividends payer firm increased significantly from \$3.05 billion in 1997 to \$16.62 billion. In addition, we found that the dividends are still concentrated within top dividends payers only. Our results support the view provided by DeAngelo et. al. (2004) that dividends are not disappearing in the Canadian stock market.

In establishing the relevancy of life-cycle theory of dividends, our results show that both retained earnings to total common equity (RE/TE) and retained earnings to total asset (RE/TA) are highly correlated with the decision of firms to pay dividends, but there is no significant relationship between the decision to pay dividend and total common equity to total asset (TE/TA). Our results show that the measure of RE/TE is a powerful variable to explain the decision to pay dividends. In addition, the Logit regression shows that there is a positive and significant relationship between the probability that a firm pay dividends and its earned/contributed capital mix. These findings support the life-cycle theory of dividends for Canadian stock market over the period of study.

This study may be further extended to investigate the impact of stock repurchase on the life-cycle theory of dividends as in Skinner (2008). The

conclusion on dividend payout policy is still far from unison, and it seems that the dividend puzzle will continue to attract debate and conflicting findings in years to come.

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