

## **Chapter 14. The Firm Life Cycle Theory of Dividends**

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### **ABSTRACT**

The firm life cycle theory of dividends contends that the optimal dividend policy of a firm depends on the firm's stage in its life cycle. The underlying premise is that firms generally follow a life-cycle trajectory from origin to maturity that is associated with a shrinking investment

opportunity set, declining growth rate, and decreasing cost of raising external capital. The optimal dividend policy, derived from a trade-off between the costs and benefits of raising capital for new investments, evolves with these life-cycle-related changes. As the firm becomes more mature the optimal payout ratio increases. The empirical evidence generally supports the theory, in that dividend payment propensity is related to life-cycle characteristics – dividend payers are mature firms, with a high ratio of earned to contributed capital, while young, high-growth firms do not pay dividends.

## **INTRODUCTION**

The firm life cycle theory of dividends is based on the notion that as a firm becomes mature, its ability to generate cash overtakes its ability to find profitable investment opportunities. Eventually, it becomes optimal for the firm to distribute its free cash flow to shareholders in the form of dividends.

According to the firm life cycle theory of dividends, a young firm faces a relatively large investment opportunity set, but is not sufficiently profitable to be able to meet all its financing needs through internally-generated cash. In addition, it faces substantial hurdles in raising capital from external sources. As a result, the firm will conserve cash by forgoing dividend payments to shareholders. Over time, after a period of growth, the firm reaches a stage of maturity in its life cycle. At this point, the firm's investment opportunity set is diminished, its growth and profitability have flattened, systematic risk has declined, and the firm generates more cash internally than it can profitably invest. Eventually, the firm begins dividend payments in order to distribute its earnings to shareholders. The extent to which a mature firm distributes earnings to shareholders instead of investing them internally will be a function of the extent to which the interests of its managers are aligned with those of its shareholders.

The life cycle theory of dividends predicts that a firm will begin paying dividends when its growth rate and profitability are expected to decline in the future. This is in sharp contrast to the

signaling theory of dividends, which predicts that a firm will pay dividends in order to signal to the market that its growth and profitability prospects have improved, i.e., that dividend initiations and increases convey “good news.”

The empirical evidence on dividend initiations and changes generally supports the life cycle theory of dividends but is contrary to the signaling theory. Benartzi, Michaely and Thaler (1997) find that dividend increases are not followed by an increase in the earnings growth rate, while dividend reductions are associated with an improvement in the growth rate. Grullon, Michaely and Swaminathan (2002) find that firm profitability declines following a dividend increase, and increases following a dividend decrease.

Bulan, Subramanian and Tanlu (2007) find that firms initiate dividends after reaching maturity in their life cycles. Initiators are firms that have grown larger, are more profitable, have greater cash reserves, and have fewer growth opportunities compared to non-initiators at the same stage in their life cycles. They also find that no significant improvement in profitability or growth occurs around the initiation. DeAngelo, DeAngelo and Stulz (2006) find that the probability that a firm pays dividends is significantly related to the mix of (internally-) earned capital and (externally-) contributed capital in its capital structure. Firms with a greater proportion of earned capital are more likely to be dividend payers. The evidence on the change in systematic risk around dividend changes is ambiguous. While Grullon et al. (2002) find that firms that increase dividends experience a decline in systematic risk, Bulan et al. (2007) find that systematic risk does not decline after dividend initiations.

The remainder of the chapter provides a discussion of the theory and empirical evidence in greater detail. The chapter begins with a brief overview of the theory of the firm’s life cycle and how dividends fit in the life cycle followed by the empirical evidence on dividend policy as it relates to the life cycle theory. The chapter concludes with an assessment of the theory vis-à-vis the evidence and provides a discussion of avenues for future research.

## **THE LIFE CYCLE THEORY OF THE FIRM**

Mueller (1972) proposed a formal theory that a firm has a relatively well-defined life cycle, which is fundamental to the firm life cycle theory of dividends. His main focus is on the agency problem within the firm, namely the question of whether the managers of a firm maximize shareholder value, or pursue growth for its own sake and “over invest” in assets contrary to shareholder interests. However, he clearly recognizes the implications of the analysis for dividend policy and discusses the empirical evidence on shareholder preference for dividends in this context. Thus, studying the life cycle theory of the firm as proposed by Mueller is meaningful.

Drawing on the work of Knight (1921) and Schumpeter (1934), Mueller (1972) posits that a firm originates in an attempt to exploit an “innovation involving a new product, process, marketing or organizational technique.” In its initial stages, the firm invests all available resources in developing the innovation and improving its profitability. The firm’s growth is likely to be slow until it has successfully sorted out “teething issues” and establishes a foothold in the market. Thereafter, the enterprise will grow rapidly, as it enters new markets and expands its customer base before any major competition can arise. The agency problem is either absent or not significant at these initial stages for three reasons. First, the firm faces so many opportunities for profitable investment that the pursuit of growth is also consistent with the pursuit of profits. Second, unable to meet all its financing needs through internal cash generation, the firm is forced to tap external capital markets, and is therefore subject to market monitoring and discipline. Third, the entrepreneur/manager still retains a sufficiently high fraction of the firm’s shares for his/her interests to be well aligned with those of the other suppliers of capital.

After a while, competitors begin to enter the market, adopting and improving upon the pioneering firm’s innovations. As existing markets become saturated and new markets are harder to find, the growth of the firm begins to slow down. To maintain growth and profitability,

the firm needs to generate innovations. However, as the firm grows as an organization, its ability to process information deteriorates, and the risk-taking incentives of the average manager diminish. These factors place a limit on the ability of a large firm to grow through innovations. As a result, the firm eventually reaches a point where it lacks profitable investment opportunities for the cash generated from its existing operations. At this “mature stage,” a shareholder value-maximizing firm would begin distributing its earnings to its shareholders. Eventually, when all the existing operations of the firm are on the verge of becoming unprofitable, a value-maximizing firm would liquidate all assets and distribute the proceeds to its shareholders. However, when the managers of a firm do not pursue strict value-maximization, but are rather interested in expanding the size of the firm in order to reap perks and other rewards, the distribution of earnings to shareholders will deviate from the optimal policy.

In summary, under the life cycle theory proposed by Mueller (1972), the typical firm will display an S-shaped growth pattern, with a period of slow growth at start-up leading to a period of rapid growth and eventually to maturity and stagnation or slow growth. The next section discusses corporate dividend policy in this framework.

## **DIVIDENDS IN THE FIRM’S LIFE CYCLE**

Mueller (1972) also traces the implications of the life cycle theory of the firm to dividend policy. As discussed above, the optimal dividend policy at a value-maximizing firm in his framework is to retain all earnings in the rapid growth phase and payout 100% of the earnings at maturity. Using a static discounted cash flow model of equity valuation provides one means of understanding this optimal dividend policy.

### **A Simple Static Model of Optimal Dividend Policy**

Consider a highly simplified constant growth model of a firm, of the type found in many valuation textbooks such as Bodie, Kane and Marcus (2005). The firm is infinitely lived and is fully equity financed. The number of shares outstanding is normalized to one for ease of

exposition. The firm's return on assets in place is equal to its return on equity, which is denoted by ROE. In every period, the firm has access to a set of fresh investment opportunities with expected return equal to ROE. In order to focus on the payout decision, we abstract from external financing issues by assuming that the firm does not access external capital.

Let  $E_0$  denote the equity base at the end of year 0. In year 1, the firm earns an amount  $e_1$  given by  $(ROE)(E_0)$ . Assuming a constant payout ratio of  $d$ , the dividend amount for year 1, denoted by  $D_1$ , is  $de_1$ , and the amount of retained earnings for the period is  $(e_1 - D_1)$ .

The firm invests the retained earnings in new assets that provide a rate of return of ROE. Hence, total earnings for year 2 are  $e_2 = ROE(E_0 + e_1 - D_1) = e_1 + ROE(1 - d)e_1 = (1 + g)e_1$ , where  $g$  is the growth rate of earnings, given by

$$g = (e_2 - e_1) / e_1 = ROE(1 - d). \quad (1)$$

Extending this logic, the earnings of the firm in year  $t$  are  $e_t = e_1(1+g)^{(t-1)}$ , and the dividend amount paid in year  $t$  is  $D_t = de_1(1+g)^{(t-1)}$ . The value of the firm at time 0, given by the present value of future dividends, is therefore equal to  $V_0 = \sum D_t / (1+k)^t = \sum de_1(1+g)^{(t-1)} / (1+k)^t$ , where the summation is from  $t=1$  to infinity.

Assuming for a moment that  $g < k$ , and substituting for  $g$  from equation (1), the value of the firm is given by

$$V_0 = de_1 / (k - g) = de_1 / (k - ROE(1-d)). \quad (2)$$

Equation (2) relates the value of the firm to its dividend policy. Based on equation 2, when ROE is greater than  $k$ , the value of the firm increases as the payout ratio  $d$  decreases. (However, to be consistent with the assumption that  $g < k$ , this applies only for  $d > 1 - k/ROE$ .) When ROE is less than  $k$ , the value of the firm increases with the payout ratio. Thus, the optimal dividend policy is to maintain a 0% payout ratio when  $ROE > k$  and a 100% payout ratio when  $ROE < k$ .

The intuition for this optimal policy is exactly the same as that underlying Mueller's (1972) argument that a value-maximizing firm should maintain a zero payout ratio at the initial stages and increase the payout to 100% upon reaching maturity. Essentially, when the firm's

investments promise a rate of return (ROE) higher than the firm's cost of capital ( $k$ ), it makes economic sense for the firm to reinvest all of its earnings in new assets. This is likely to be true for young firms which are in the process of expanding the market for their innovations. But when the expected return on the firm's investments is less than the firm's cost of capital ( $k$ ), the optimal policy for the firm is to pay out all of its earnings to shareholders. This is likely to be true for firms that have exploited all profitable opportunities for their innovations and reached maturity in their life cycles.

The model of the firm described, though static and highly simplified, is useful in understanding the differences in dividend policy between young firms and mature firms. When combined with a description of the factors driving the changes in the investment opportunity set, i.e., ROE or marginal return on investment, and the cost of capital as a firm matures, the model will provide a complete life cycle based explanation of dividends.

In the context of Mueller's (1972) life cycle theory of the firm, one explanation for the decline in the marginal return on investment as a firm grows larger, is based on the hypothesis that the ability of an organization to process information and maintain risk-taking incentives declines as the firm matures. The change in cost of capital as a firm grows requires a more detailed analysis, which follows in the next section.

### **Cost of Capital over the Firm's Life Cycle**

The cost of capital faced by a firm will vary over its life cycle due to changes in risk, information asymmetry, and the extent of the agency problem.

#### **Risk**

Grullon, Michaely and Swaminathan (2002) propose and present evidence in support of the hypothesis that the systematic risk of firms declines around dividend increases. They explain the decline as being caused by a decline in the number of growth options, including compound options, held by the firm. This is, of course, a joint explanation for a reduction in both

the cost of capital and the return on investment with maturity. Therefore, it does not, by itself, explain why firm maturity should shift dividend policy in the direction of higher payouts. To better understand the link between maturity and payout policy requires a consideration of the changes in the level of information asymmetry and the extent of the agency problem over the firm's life cycle.

### Information Asymmetry

When a firm is young and relatively unknown, substantial information asymmetry exists between its insiders and outside investors. As a result, raising capital from external sources is costly.<sup>1</sup> At the same time, the firm's investment needs are likely to exceed the cash flow from its operations, which implies that its financing comes from external sources at the margin. As a result, the firm faces a high cost of capital. As the firm becomes more established and well-known, investors gain better knowledge about its assets and its management, and the level of information asymmetry decreases. Correspondingly, the firm's cost of external capital decreases. In the context of dividend policy, this implies that as a firm becomes more mature, its management has less need to conserve cash for potential future projects, and is therefore in a better position to make dividend payments.

### The Agency Problem

The assumption that a firm derives its dividend policy from the objective of shareholder value-maximization may be appropriate for a small entrepreneur-managed firm where the manager holds a substantial fraction of the firm's shares and the suppliers of capital are able to monitor the manager closely and take steps to prevent value-destroying activities. However, the

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<sup>1</sup> Myers and Majluf (1984) build a "pecking order theory" of capital structure based on information asymmetry. See DeAngelo, DeAngelo and Stulz (2006) for a critique of the pecking order theory in the context of dividend policy.

professional managers who are employed at large corporations typically do not hold large fractions of the company's stock. In addition, the diffused nature of shareholding at a large corporation implies that the average shareholder may not have the power to control the management effectively. Mueller (1972) notes that this "separation of ownership and control" in large corporations implies that managers of these firms may have lower incentives to maximize shareholder value than the entrepreneur-manager. He hypothesizes that managers of large corporations will consequently aim to maximize firm size and growth rather than market value, and will therefore invest more and pay lower dividends than a shareholder value-maximizing management.<sup>2</sup>

Mueller (1972, p. 208) links dividend policy to the firm's life cycle, stating that the "freedom to pursue growth, and the management-stockholder conflict that accompanies it, appear only over time as the firm expands and matures." On a similar note, Jensen (1986) notes that the shareholder-manager conflict is particularly severe in firms with large free cash flow, i.e., cash flow in excess of investment opportunities, coining the phrase "agency cost of free cash flow" to denote this problem.<sup>3</sup> The management of a firm with a large free cash flow may be tempted to waste the cash by awarding itself excessive perks and benefits. Another potential problem with high levels of free cash flow is "tunneling" – at firms that are part of a business group controlled by one main shareholder, the controlling shareholder may be tempted to divert cash flow from firms in which he/she has low cash flow rights to firms in which he/she has high cash flow rights. DeAngelo and DeAngelo (2006) and DeAngelo, DeAngelo and Stulz (2006) characterize the agency cost of free cash flow as a cost associated with retention, which

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<sup>2</sup> A detailed treatment of the agency problem within a firm is beyond the scope of this chapter. The interested reader may refer to Jensen and Meckling (1976) for such an analysis.

<sup>3</sup> Jensen (1986) develops a theory of the "bonding role of debt" and explains how debt can act as a mechanism that forces the management to payout earnings to investors.

becomes progressively more severe as the firm becomes mature.<sup>4</sup> Our view is that the agency cost of free cash flow is more usefully considered a part of the cost of capital of the firm. In an efficient market, investors will incorporate the possibility that the management might “waste” a portion of the returns on the firm’s investments (whether the wastage occurs through perks consumption by the management or diversion of profits through tunneling) and demand a correspondingly higher expected return or yield on the firm’s securities when the agency cost is higher. Whether the agency cost is viewed as a cost of retention or an element of the cost of capital, the implication for the life cycle theory of dividends is the same – as a firm matures, it generates more cash than can profitably be invested, and the optimal dividend policy becomes one of investing less and paying out more to shareholders.

Finally, the exact point at which a firm may shift from being a non-dividend-payer to a dividend payer may depend on various factors including the severity of the agency problem, its corporate governance, and the market for corporate control. DeAngelo, DeAngelo and Stulz (2006) emphasize this, and in support, present evidence that there is no cut off or trigger point based on the ratio of retained earnings to total assets beyond which a firm would necessarily start paying dividends.

The next section provides a discussion of the empirical evidence in support of the life cycle theory of dividends.

## **EMPIRICAL EVIDENCE**

Early empirical studies on dividend policy in the life cycle context attempt to compare the rates of return on dividends and retained earnings at young and mature companies and

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<sup>4</sup> Grullon, Michaely and Swaminathan (2002) also recognize that the agency problem becomes important in the mature stage of a firm’s life cycle.

industries. According to Mueller (1972), the shareholder preference for dividends over retained earnings (especially in mature industries), documented in many studies, indicates that shareholders tend to believe that firms “over invest” for the sake of growth and maintain dividend levels below optimum. Grabowski and Mueller (1975) take a similar static approach, focusing on a comparison of the market valuation of retained earnings and dividend payments in mature companies against “non-mature” companies. These studies do not address the question of whether firms delay initiating dividends beyond the optimal point, and only indirectly deal with the question of whether firms pay lower dividends than optimal after initiation. As discussed below, subsequent studies address these questions more directly by examining the market reaction to dividend initiations and dividend changes.

### **Life Cycle Factors and the Propensity to Pay Dividends**

Until recently, few studies directly tested the firm life cycle theory of dividends. Most studies focused on other theories of dividend policy such as the signaling and clientele hypotheses, with most of the evidence being contrary to the predictions of those theories. The recent interest in the life cycle theory of dividends may perhaps be traced to Fama and French’s (2001) study of the dividend payment behavior of publicly-traded U.S. firms. They investigate the patterns and determinants of payout policy over the period 1926-1999. Their results point to life cycle factors playing a major role in the decision to pay cash dividends. In particular, their findings show that dividend-paying firms are large and highly profitable. These firms have retained earnings that are sufficient to cover their capital investments. On the other hand, firms that have never paid dividends are small and not as profitable as dividend-paying firms. These firms have many investment opportunities that require external financing because their capital spending is far greater than their earnings. Thus, dividend-paying firms have the characteristics of mature firms while firms that have never paid dividends have the characteristics of young, fast-growing firms. Furthermore, Fama and French find that dividend payment propensity

decreased in the latter decades of their sample and they attribute this, in part, to the post-1978 increase in firms listed on the NASDAQ<sup>5</sup> stock market, these firms typically being in the early high-growth phase of their life cycles. In sum, this study shows a significant relation between the overall patterns of dividend payment and firm characteristics that determine a firm's life cycle stage.

De Angelo, De Angelo and Stulz (2006) attempt to explicitly test the life cycle theory of dividends by analyzing the relation between dividend payment propensity and the mix of earned and contributed capital. They measure the earned/contributed capital mix by the ratio of retained earnings to total equity or total assets of the firm. They assert that this ratio is a good proxy for a firm's life cycle stage since it captures the extent to which a firm relies on internally-generated and external capital. When firms are in their high-growth phase, they rely heavily on external sources to finance their investments since their earnings capacity is low. Therefore, this ratio will be low for young high-growth firms. In contrast, firms in their mature stage will have high cash flows and few investment opportunities, and will largely be self-financing. Hence, for mature firms, this ratio will be high. The authors test the firm life cycle theory of dividends by relating dividend payment propensity to the mix of retained earnings-to-contributed capital.

Using a sample of publicly-traded U.S. firms in the period 1972-2002, De Angelo et al. (2006) find support for the theory. They document a positive relation between the proportion of dividend-paying firms and the ratio of retained earnings to total equity and total assets, after controlling for firm characteristics such as profitability, growth, firm size, leverage, cash balances and dividend history. Thus, a firm is more likely to be a dividend payer when its main source of financing is internally generated earnings. They also find similar results for dividend initiations and omissions.

Denis and Osobov (2008) extend the evidence to five other countries, namely, Canada, United Kingdom, Germany, France, and Japan. In those five countries as well as in the United

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<sup>5</sup> National Association of Securities Dealers Automated Quotations.

States, they find that the propensity to pay dividends is strongly associated with the ratio of retained earnings to total equity. However, Megginson and von Eije (2008) report no such association between the ratio of retained earnings to total equity and the propensity to pay dividends in their study of dividends and repurchases at firms listed in fifteen European Union countries. But they do find that firm age, size, and past profitability are positively related to the propensity to pay dividends as predicted by the life cycle theory.

Skinner (2007) studies corporate payout policy including dividends and repurchases, and finds that repurchases are increasingly being used in place of dividends to payout cash flow. The author finds that for a large group of firms that payout earnings through dividends and repurchases, the level of repurchases is driven by earnings over two or three year windows, which is supportive of the life cycle theory. However, the annual relationship is weaker, leading the author to suggest that managers time repurchases within those windows based on other considerations such as taking advantage of a low stock price, offsetting dilution associated with employee stock options, managing reported earnings, and distributing excess cash.

### **Life Cycle Factors and Dividend Changes**

Grullon, Michaely and Swaminathan (2002) propose that firm maturity and the accompanying decline in systematic risk has important implications for dividend policy. Echoing the arguments discussed in the previous sections, they state that firm maturity is associated with high cash flows but fewer investment opportunities. At the same time, there is a decline in the systematic risk of the firm, since the number of growth options, including compound options, held by the firm have decreased. Consequently, as a firm matures, its earnings growth would slow down and systematic risk and profitability (return on assets) decline. This, in turn, brings about a reduction in the reinvestment rate (the reinvestment of retained earnings) of the firm, and an increase in dividend payout. Thus, an increase in dividend payout signals the transition of the firm from a high-growth phase to a low-growth phase, or the mature phase, in its life

cycle. The announcement effect of dividend changes, specifically the positive stock price reaction to dividend increases, is then explained by the change in systematic risk rather than profitability.

To test their maturity hypothesis, or what is essentially the firm life cycle theory of dividends, Grullon, Michaely and Swaminathan (2002) use a sample of New York (NYSE) and American (AMEX) stock exchange-listed firms that increased or decreased their dividends in the period 1967-1993. One of their main findings is the existence of a relation between dividend changes and changes in risk. They show that systematic risk declines for dividend-increasing firms while it increases for dividend-decreasing firms. In addition, they find a significant relation between the positive announcement effect associated with dividend increases and the decline in the firm's systematic risk. In terms of profitability, they find that the return on assets of dividend-increasing firms declines after the dividend increase. In sum, their evidence supports the theory. Dividend increases signal a decline in risk and profitability as the firm has reached a more mature stage in its life cycle.

### **Life Cycle Factors and Dividend Initiations**

Empirical tests of the traditional signaling theories of dividends rely on the information content of a change in dividend policy. If, indeed, dividend increases or decreases represent significant changes in firm characteristics, then there should be even more significant changes in firm characteristics around dividend initiations since initiations, by definition, occur only once in the firm's life cycle. This is the premise behind Bulan, Subramanian and Tanlu's (2007) analysis of the timing of dividend initiations in a firm's life cycle. They study how firm characteristics evolve over time as a firm moves toward dividend initiation. They estimate a firm's propensity to initiate a dividend as a function of firm characteristics relative to other firms that are at the same stage in their life cycles but that have never paid dividends. Their data cover publicly-traded U.S. corporations during the period 1963-2001.

Bulan, Subramanian and Tanlu (2007) find evidence supportive of the firm life cycle theory of dividends. Dividend initiators are firms that are larger, more profitable, have higher cash balances but fewer growth opportunities compared to firms in the same life cycle stage that have never paid dividends. Thus, dividend initiators are mature firms. They find further evidence of firm maturity in the type of payout policy that firms adopt. Prior work shows that firms use stock repurchases to pay out volatile cash flows but use regular cash dividends to pay out permanent cash flows.<sup>6</sup> Their evidence shows a positive relation between repurchasing activity and the probability of initiating a dividend, i.e. repeated repurchases indicate that a firm is moving towards maturity as its cash flows stabilize. The firm ultimately pays out its excess cash flows in the form of cash dividends.

Contrary to Grullon et al.'s (2002) evidence for dividend increases, Bulan et al. (2007) do not find evidence fully supporting the risk-signaling aspect of the life cycle theory of dividends. While firms that initiate dividends are mature firms, they show that the event of dividend initiation itself does not signal a change in the firm's life cycle characteristics. They find that there is no significant difference in sales growth or risk in the pre- and post-initiation periods. In addition, they report no evidence that life cycle factors account for the positive market reaction to dividend initiation announcements. Instead, their findings indicate that firms choose an opportune time to initiate a dividend upon reaching maturity.<sup>7</sup>

### **Dividend Initiation in the Life Cycle of a Firm: The Case of Microsoft**

Microsoft Corp.'s announcement of its first cash dividend on January 16, 2003, illustrates the maturation of the firm and the timing of its dividend initiation. Microsoft had its initial public offering

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<sup>6</sup> See Jagannathan, Stephens and Weisbach (2000) and Guay and Harford (2000).

<sup>7</sup> This opportune time to initiate a dividend depends on the market sentiment for dividend-paying stocks measured by Baker and Wurgler's (2004) dividend premium.

(IPO) in 1986 and initiated dividends 17 years after its IPO. Figure 1 depicts the change in some key variables for the company over the period, specifically, the growth rate of sales, return on assets (profitability), ratio of cash to assets and ratio of capital expenditures to assets. Each variable is industry-adjusted, i.e. for each variable, we calculate the mean industry value and subtract it from the firm value. We use Microsoft's major industry group, which is Business Services (two-digit SIC code 73), in this adjustment.

As the figure shows, Microsoft grew faster than the industry average in the period until 1993. However, since then, it has been growing slower than the average. The company's profitability has been volatile in the first half of this period, and appears to have stabilized after 1995. While the company was spending more on capital expenditures (relative to assets) than the industry average until the mid-1990s, it has since then been spending less than the average firm in the industry. Finally, the company has held a much higher level of cash than the industry average. All these indicators point to maturation of the company. Since 1995, the company has grown slower and spent less on capital expenditures than the industry average, while its profitability has stabilized and its cash holdings remain above the industry average. Thus, Microsoft had the characteristics of a dividend payer but it did not declare a dividend for another eight years. Consistent with the empirical evidence, Microsoft initiated a dividend when it was already mature. However, the event of maturation did not coincide with its dividend initiation.

(Insert Figure 1 about here)

One possible explanation for the timing of Microsoft's initiation is the reduction in the tax rate on dividends. At that time, investors anticipated the tax cut, though not yet passed into law. Another possibility is the market sentiment for dividend-paying stocks measured by Baker and Wurgler's (2004) dividend premium. In the years 2001 and 2002, with the stock market downturn, there was a sharp rise in the dividend premium, with the premium being positive in 2002. Following this change in sentiment, the company initiated dividends in January 2003.

## SYNTHESIS AND CONCLUSION

The firm life cycle theory of dividends relates the optimal dividend policy of a firm to where a firm is in its life cycle. The basic model presented in this chapter encapsulates the essence of the theory. Optimal dividend policy is determined by the relation between the firm's ROE and its cost of capital ( $k$ ), which, in turn, is determined by the firm's life cycle stage. A young firm in its high-growth stage has many profitable investment opportunities but low cash flows: the firm's  $ROE > k$  and the optimal payout ratio is zero. A mature firm has high cash flows but far fewer investment opportunities: the firm's  $ROE < k$  and the optimal payout ratio is 100%. Thus, the theory predicts that the trade-off between the costs and benefits of raising new capital in relation to its investment opportunity set determine changes in dividend policy. More specifically, the theory predicts that a firm will begin paying dividends when it transitions from a high-growth phase to a mature (slower-growth) phase in its life cycle. A decline in the firm's growth rate, profitability and risk usually indicates this transition. Hence, a change in dividend policy signals a life cycle change within the firm.

Overall, the empirical evidence favors the firm life cycle theory of dividends in terms of dividend payment propensity and life cycle characteristics. Firms in the early stages of their life cycles rarely pay dividends while firms in the mature stage are likely to be dividend payers. Moreover, the decision to pay the first ever regular cash dividend is usually made contingent on having reached maturity. Other factors not predicted by this theory seem to determine the exact timing of the dividend initiation. The evidence is more ambiguous on the signaling aspect of the theory that changes in dividend policy signal that a firm has transitioned from one life cycle stage to another.

Thus, there is much room for future work. How can we reconcile the evidence that dividend initiation does not signal life cycle changes but dividend increases (and decreases) do? In our view, dividend initiation represents a much more important change in dividend policy compared to the increase or decrease of an existing dividend rate. Hence, precisely how

different are they in a life cycle context? How can we characterize this difference? The evidence presented above on dividend initiations also suggests that other factors and other theories outside of a life cycle explanation account for the positive announcement effect of dividend initiations. Might these same factors also be present for dividend increases/decreases after controlling for the firm's life cycle? For example, in related work, DeAngelo, DeAngelo, and Stulz (2008) find that the decision by firms to issue seasoned equity reflects both market timing and life cycle motives. Perhaps a richer, more unified (and of course more complex) theory of dividend policy with the life-cycle framework as its backbone can generate more of the empirical regularities that we observe in the literature.

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**Figure 1. The Case of Microsoft**

This figures presents (clockwise from top left) sales growth, return on assets (ROA), capital expenditures to assets, cash to assets for Microsoft Corporation from 1986-2002. All measures are industry-adjusted using Microsoft's industry group (SIC code 73).

