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Corporate Finance
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Dividend Theory

1. Dividend policy comprises two aspects:
   - From the point of view of the management
     (a) How much cash to retain
     (b) How much to invest in the firm
     (c) Therefore, this is a decision as to the *amount* of the dividend.
   - From the shareholder viewpoint (also that of the academic economist)
     (a) Cash dividend
     (b) Share repurchase
     (c) This is a decision as to the *form* of the dividend.

2. Some stylized facts about dividends:
   - Ratio of dividends to profits after tax $\approx 50\%$. [Dividend payout ratio]
   - Dividends to earnings tend to be high in low earnings years, and low in high earning years $\Longrightarrow$ dividends are smooth. Smoothing is undertaken actively by managers.
   - Repurchases are almost as much as dividends since the mid 1980s.
   - Dividend yield ratio: $(\frac{\text{div per share}}{\text{earnings per share}}) \approx 2 - 3\%$.
   - Maximum marginal tax rates $= \begin{cases} \text{dividends} & = 39.6\% \\ \text{capital gains} & = 28.0\% \end{cases}$.

3. Dividends are intimately related to cashflows of a firm. Cashflows are used for several purposes, only one of which is dividends:
   - investment
   - repayment of debt and interest
   - repurchasing stock

- dividends.

4. **Modigliani-Miller (1961) Theorem:**

   - Assumptions:
     (a) No personal taxes
     (b) No transactions costs
     (c) Financing and investment choices of the firm remain fixed.
     (d) No asymmetric information between the firm and investors.
   - Theorem: If the assumptions hold, investors will be indifferent to whether the firm pays dividends or repurchases stock.
   - Proof: The essential idea is that if the total cashflows (not their form) is the same at the end of the period, then the price of the stock today remains unaffected.

5. Examples: we examine 4 cases in which it is clear that the shareholder is indifferent as to the form of the dividend. Let the number of shares, $N = 100$, and the value of equity and retained earnings end of year is 10,000.

   - Case (a): no dividend. The shareholder value at the end of the year is 100 per share.
   - Case (b): pure cash dividend of 2,000. Shareholder value at the end of the year is dividends plus share value. This is per share:

$$\begin{aligned} V &= D + P \\ &= \frac{2000}{100} + \frac{8000}{100} = 20 + 80 = 100 \end{aligned}$$

   - Case (c): Stock repurchase of 20 shares. End of yr SH value per share is

$$\begin{aligned} V &= P \text{ after Repurchase} \\ &= \frac{8000}{80} = 100 \end{aligned}$$

- Case (d): Raise equity and pay a dividend. Issue 25 shares @ 80 each, and pay old SHs a dividend of 2000. The old SHs receive per share

$$\begin{aligned} V &= D + P \\ &= \frac{2000}{100} + \frac{10000}{125} = 20 + 80 = 100 \end{aligned}$$

- Therefore, in all 4 cases, the old SHs get exactly \$100 in value. Hence they will be indifferent with regards to the form of the payout policy.

6. Optimal payout policy:

   - Same four assumptions as before.
   - Pay out a dividend if no positive NPV projects exist.
   - If positive NPV projects exists, by investing in them, the firm immediately captures extra value for the shareholders.
   - This analysis ignores the need to provide for future opportunities, which in the presence of transactions costs, makes it costly to pay dividends and then raise financing later.

7. Effect of taxes on dividend policy.

   - If personal taxes exist, it usually does not justify dividends, as it loses the greatest value of the firm to the government.
   - Consider the following example.
     (a) Let dividends = D.
     (b) Assume there are M shares in the firm altogether.
     (c) The personal tax rate is T.
     (d) Thus, the total personal taxes paid is TD.
   - If instead, stock repurchase is used:
     (a) Repurchase $N < M$ shares, where $N = D/P$.
     (b) Assume that the original purchase price is P_0.
     (c) Capital gains taxes are $T(P - P_0)N = T\left(\frac{D}{N} - P_0\right)N$.

(d) Therefore, savings in personal taxes compared to cash dividends is TP_0N.

(e) Further savings accrue if dividends are taxed at higher rates (T_D) than capital gains (T_G).

- However, paying dividends reduces the basis for computing future capital gains, and may ameliorate the tax bill over time in a dynamic setting. To see this, lets ignore the time value of money.

  (a) Instead of a dividend of D, we pay $\frac{D}{2}$ today in cash, and after a year, do a stock repurchase for $\frac{D}{2}$.

  (b) Assume no change in firm value over the year.

  (c) The total taxes are

$$\begin{aligned}
\text{Taxes} &= T\frac{D}{2} + T(P' - P_0)N' \\
P' &= \frac{MP - D/2}{M} \\
N' &= \frac{D/2}{P'}
\end{aligned}$$

  (d) The total tax bill now is

$$\begin{aligned}
\text{Taxes} &= T\frac{D}{2} + T(\frac{MP - D/2}{M} - P_0)\frac{D/2}{P'} \\
&= T\frac{D}{2} + T(\frac{MP - D/2}{M} - P_0)\frac{D/2}{P'} \\
&= TD - TP_0\left\{\frac{D}{2}.\frac{M}{MP - D/2}\right\}
\end{aligned}$$

  Therefore the tax bill is less than that of the pure dividend case if $\left\{\frac{D}{2}.\frac{M}{MP-D/2}\right\} < N$. Simplification results in requiring $D \leq MP$, which always holds, and at best with equality when the entire firm is paid out.

8. Example.

- $M = 100, P = 40$.
- Therefore, firm value is 4,000.

- The dividend amount is $D = 1,000$.
- Tax rate is 30%.
- Let the purchase price of old shares be $P_0 = 25$.
- Tax bill when dividends are paid $= TD = 300$.
- Tax bill for a repurchase $= T(P - P_0)N = 0.3(40-25)\frac{1000}{40} = 112.5$.
- If half dividends and then half repurchase.
  (a) $P' = \frac{MP - D/2}{M} = \frac{100(40)-1000/2}{100} = 35$.
  (b) Taxes paid $= \frac{TD}{2} + T(P' - P_0)N' = 0.3(500) + 0.3(10)\frac{500}{35} \simeq 193$.

9. Miller and Scholes (1978): Unwind the dividend tax.
   - Buy tax deferred annuities.
   - Borrow to make the purchase.
   - The interest cost of borrowing should be exactly such that it offsets the dividend received. This nullifies the tax liability.
   - The earnings on the annuities are tax-free resulting in an arbitrage, making personal taxes on dividends irrelevant.

10. Tax clienteles:
    - Tax-exempt institutions - university endowments and pensions funds.
    - Low tax entities - corporations are only taxed on 30% of intercorporate dividends, but on all capital gains. They much prefer cash dividends.
    - Beneficiaries of a trust prefer dividends as they need income flow.
    - Senior citizens prefer dividends.
    - There is empirical evidence of tax clienteles - investors in low tax brackets choose stocks with high dividend yields; vice versa for investors in high tax brackets.
    - Regression analysis:(time series)[Damodaran]

      $$D_t = 4.22 - 2.145\beta_t + 3.131 Age_t - 3.726 Income_t - 2.849 TaxDiff_t + \varepsilon_t$$

11. Ex-dividend day price behavior

    - Define purchase price to be P_0, price before ex-dividend day to be P, price after ex-dividend day to be P', and the capital gains and ordinary income tax rates are T_G, T_D respectively.
    - Assume an investor holds stock prior to ex-dividend day at a cost of P_0.
    - If he sells before ex-div day, the net after tax cashflow is

      $$P - (P - P_0)T_G$$

    - If he sells after ex-div day, he gets the dividend cashflows also net of taxes:

      $$P' - (P' - P_0)T_G + D(1 - T_D)$$

    - For the average investor to be indifferent, we must have

      $$P - (P - P_0)T_G = P' - (P' - P_0)T_G + D(1 - T_D)$$

      which also implies that

      $$\text{Ex-div day price drop (as \% of div):}\Lambda = \frac{P - P'}{D} = \frac{1 - T_D}{1 - T_G}$$

    - Therefore

      $$\begin{cases} \Lambda < 1 & \Longrightarrow T_D > T_G \\ \Lambda = 1 & \Longrightarrow T_D = T_G \\ \Lambda > 1 & \Longrightarrow T_D < T_G \end{cases}$$

12. Dividend Policy and Expected Stock Returns.

    - If D increases, then since it has a tax disadvantage, we should expect higher stock returns $E(R)$ to compensate, i.e. higher dividend yields. [Note - the IRS may tax repurchases anyway at regular rates if it deems repurchases to be excessive].

- Elton and Gruber (1970) tested this proposition by examining the price reaction of stocks around ex-dividend dates, which are usually a week or two before dividend payment date. The stock price reduction on the ex-dividend date should reflect the price adjustment for the tax disadvantage. For example, if the stock price is 30 and the dividend paid is 2, then the stock price may drop by only 1.50. This represents a clientele tax rate of 25%, which makes investors indifferent between buying before or after the ex-div date. If you buy before, then you effectively pay 28.50 for the stock (pay30, receive 2, tax 0.50). Buy after and the price is also 28.50.
- EG70 found on average the price drop was 77.7%, i.e. a tax rate of 22.3%. However, for high dividend yield stocks the price drop was 90%, effective tax rate 10%, implying that low tax bracket people bought high div yield stocks. Likewise, low div yield stocks dropped by 50%, indicating a high tax bracket clientele buys low dividend yield stocks. EG present this evidence as strong support for the clientele effect.
- Avner Kalay (1982): suggests that the clientele effect is actually a transaction cost effect. The argument goes as follows. There is always an easy arbitrage if price drops less than the dividend. Here is how - buy the stock at 30, receive a dividend of 2, price drops only by 1.50, so sell at 28.50. Net a gain of 0.50 before taxes. Since the capital loss offsets the dividend, the gain is also achieved after taxes. However, suppose there are transactions costs of 0.20. Then if $D = 2.0$, then the price drop needs to be at least 1.80 to preclude arbitrage (a price drop of 90%). However, if $D = 0.5$, the price drop needs to be only 0.30 to preclude arbitrage (a price drop of 60%). Therefore, percentage price drop declines (effective tax rate increases) with decreasing dividend yields. This story appears more plausible, and seems to be the case in international settings, where the tax laws would not give rise to EG type clienteles.
- One argument why dividends exist is that there is a clientele that believes that firms manage risk and uncertainty better than investors, and so high payout clienteles exist despite the tax disadvantage.
- Therefore, holding investment and financing policies constant (i.e.

future cashflows do not depend on dividends), we should see $E(R)$ increase with D. Blume (1980) found that actually as D/P increased, $E(R)$ first falls, and only rises later. The firms that pay almost no dividends are actually high risk, and need to have high $E(R)$.

- Brennan (1970) tested the following (cross-sectional) specification:

$$R_j = \alpha + \gamma_1 \beta_j + \gamma_2 D_j + e_j$$
$$H_0 : \gamma_1 > 0, \gamma_2 > 0.$$

  He found both (γ_1, γ_2) to have the right sign, confirming the relationship of returns and dividends.

- However, these tests do not control for the type of firm; low D and high D firms are usually quite different and hence need very different $E(R)$ relationships.

13. Impact of dividends on financing and investment decisions.

    - The capital structure decision involves the choice between debt and equity.
    - However, equity can be raised either by internal sources or external equity issues. This affects dividend choice.
    - The co-mingling of these two issues gives rise to the "pecking" order theory. First, use retained earnings, then issue debt, and finally opt for an equity issuance.
    - The investment decision simply involves checking the NPV of the firm's investment opportunities against alternative investments on an after tax basis. Leaving money in the firm postpones the tax bill. Hence if personal taxes are high, it is usually beneficial to reinvest in the firm, as the hurdle rate is effectively lower.
    - If a firm has excess cash should it always do a repurchase? No, if it needs funds soon, the transaction costs of equity issuance can be prohibitive, especially for a small issue. Issuance costs of equity are also higher than that for debt.

14. The information content of dividends and stock repurchases.

- Empirical facts: dividend increases are usually accompanied by about 2% increases in the stock price (Aharony and Swary 1980). This effect is even stronger when no dividend has been issued for a while, i.e. 4% for initiations (Asquith and Mullins 1983, Healy and Palepu 1988). When dividends fall, the average stock price drop is 9% for omissions (Healy and Palepu, 1988).
- An increase in dividends may be interpreted informationally in two ways
  (a) A positive, credible signal since firms are signalling their ability to sustain an increased dividend with known prospects for higher future cashflow, or
  (b) A negative signal in that it indicates a lack of good investment opportunities.
- A stock repurchase also signals the same information as a dividend, though it may take on two forms -
  (a) A tender offer (usually for large repurchases, in terms of percentage of o/s stock repurchased)
  (b) An open market purchase (for smaller repurchases).
- A secondary matter - a dividend modification usually also means that management is happy to have the firm undergo scrutiny, no matter whether the dividend signal is a positive or negative one.

15. Types of dividends

- Regular (taxed at usual rates)
- Extra/special dividend
- Stock dividends $\equiv$ stock splits (no taxes)
- Repurchases (taxed at capital gains rates).
- Spin-offs.