

Miller-Modigliani Theory and Why They Are Relevant to Global Shareholder Yield

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Miller-Modigliani Theory and Shareholder Yield

The Miller-Modigliani Theory (1958) has provided the foundation of modern corporate finance for almost 50 years. The idea behind M&M is essentially a framework that allows management to determine the proper discount rate for making corporate financial decisions. These decisions include capital budgeting choices, tax planning, and dividend payout policy options. In principle, decisions are made when the management deems the net present value of the choice is favorable to shareholder value creation.

However, shareholder value is a capital market concept. To enhance shareholder value, the cash flow from any corporate decision must be discounted at a rate adjusted to the *risk* of the underlying project, not simply the opportunity cost or financing cost in the narrow sense. Since a firm is essentially a structure employing production processes and financing techniques in order to generate profits from engaging in uncertain business activities, it can be viewed as a stream of projects generating cash flows of uncertain magnitudes. The enterprise valuation of a firm is thus the net present value of its free cash flows discounted at the cost of capital, or more appropriately, the required rate of return on investment in the risk class to which the firm belongs.

The original M&M theory postulates that, in the absence of arbitrage, the value of a firm is independent of corporate financial decisions, i.e., whether the objective of maximizing shareholder value can be achieved is irrelevant to what capital structure the firm needs to employ to achieve that goal. Thus M&M is sometimes referred in academic circles as the “irrelevant theorem.”

The original formulation goes as follows:

- (1) Two firms generate the same perpetual stochastic free cash flow;
- (2) Two firms belong to the same risk class have identical risk and the discount rates for their stochastic free cash flows are the same;
- (3) There are no transaction costs in trading corporate stocks and bonds;
- (4) All debt is risk-free irrespective of the debt level incurred by the firm or the individuals. The cost of debt is thus the risk-free rate;
- (5) There are no taxes for firms or individuals.

Under these assumptions, M&M theory concludes that capital structure does not determine the firm value by utilizing the arbitrage argument. Suppose there are two firms V_L and V_U in the same risk class, generating the same free cash flow, one is leveraged with debt D_L and the other is pure equity. The firm value should be the expected future free cash flow discounted at the cost of capital, which should be equal:

$$V_L = E_L + D_L = V_U = E_U = \frac{E[FCF_t]}{\rho}$$

If the leveraged firm has a higher market value than the unlevered firm, then an investor can sell short the equity E_L of the leveraged firm, borrow D_L at risk-free rate r_f to finance the firm debt, and use the sales proceed to buy the unlevered firm at V_U . Since all debt is risk-free in this example, the firm's free cash flow and the interest payment should cancel one another out. Thus with no arbitrage option available, the two firms must have the same value despite different capital structures. Similar reasoning applies when the unlevered firm is overvalued relative to the leveraged firm. The following table summarizes the M&M no-arbitrage reasoning:

| <i>Cash Flow</i> | <i>Period 0</i> | <i>Period 1</i> |
|------------------|--------------------------------------|-------------------------------------|
| If $V_L > V_U$ | | |
| Borrow D_L | D_L | $-D_L(1 + r_f)$ |
| Short E_L | E_L | $-E[FCF]/\rho + D_L - E[FCF] + r_f$ |
| Long V_U | $-V_U$ | $E[FCF]/\rho + E[FCF]$ |
| Net | $V_L - V_U > 0$ | 0 |
| If $V_L < V_U$ | | |
| Short V_U | V_U | $-E[FCF]/\rho - E[FCF]$ |
| Long E_L | $-E_L$ | $E[FCF]/\rho - D_L + E[FCF] - r_f$ |
| Lend D_L | $-D_L$ | $D_L(1 + r_f)$ |
| Net | $V_L - V_U < 0$ | 0 |

The most important point of this elegant argument is that an individual can neutralize the corporate financial decisions by incurring or retiring the debt. If the firm can increase shareholder value by taking on more leverage, then shrewd investors can seize arbitrage profit. It then follows that the cost of capital should be the weighted average of its cost of debt K_D and cost of equity K_E , which equals to

$$K_E = \rho + (\rho - K_D) \frac{D}{E}$$

The above equation seems to suggest that corporate management can produce higher net income by increasing use of leverage, thus achieving higher return on equity and shareholder value. This proposition is correct only because accounting formula says it is. While higher leverage does increase return to the equity holder, the shareholder also bears higher risk, and the capital market will react to this by increasing the discount rate attached to the firm, offsetting the seemingly higher returns.

The fallacy of this proposition is even more pronounced in the later refinement of the M&M theory. In the presence of tax and bankruptcy costs, there exists an optimal debt level a firm can incur so as to maximize shareholder value. Because investors care about the after-tax returns in the real world, the true value of a firm should depend on the free cash flow it generates and its distribution policy and investment strategy with respect to its cash flow.

The proper discount rate should be determined by the risk of the incremental capital project instead of the cost of financing. Whenever the management tries to change the leverage level, the capital market will trade the firm's stock, bond, or related financial instruments so as to undo such financial decision, i.e., make them "irrelevant." If we recall the history of Drexel and junk bonds, it is clear that when a firm borrows too much, the firm's bond behaves like its stock, and its stock trades like junk, with shareholder value distilled into thin air.

This understanding has a profound implication on the investment philosophy at Epoch Investment Partners. In the Epoch Core Model, an evolving proprietary research framework utilized to rank investment options, we recognize that there are only five options available to a firm's management with regard to the use of free cash flow designed to maximize shareholder value:

- (1) Pay a cash dividend;
- (2) Repurchase outstanding shares;
- (3) Reduce outstanding debt;
- (4) Engage in a merger or an acquisition;
- (5) Reinvest in internal projects with favorable risk-adjusted returns.

We define the first three options as *Shareholder Yield* and have built a strategy to invest in firms around the globe that offer an attractive shareholder yield in addition to a modest free cash flow growth rate. Our Global Shareholder Yield strategy is one application of our investment philosophy.

The reason why we view debt reduction as a form of shareholder value creation merits further discussion. For firms operating away from their optimal leverage level, re-optimizing capital structure should provide "yield" via incremental capital appreciation on the firm's equity as the market anticipates greater flexibility afforded by the management for pursuing favorable strategic options in the future. If the firm is underleveraged, raising debt mounts tax shield for retaining higher cash; if overleveraged, reducing debt allows more cash accrued to equity holders as long as the firm's free cash flow generation speed remains constant or accelerates. In both cases, the decision to move towards optimal gearing ratio is cash-accretive to the shareholders, creates greater optionality for asset utilization, and the management will be compensated by the capital market as the price of the firm's securities appreciates. If the market failed to appreciate such shareholder friendly actions, then great investment opportunity has emerged.

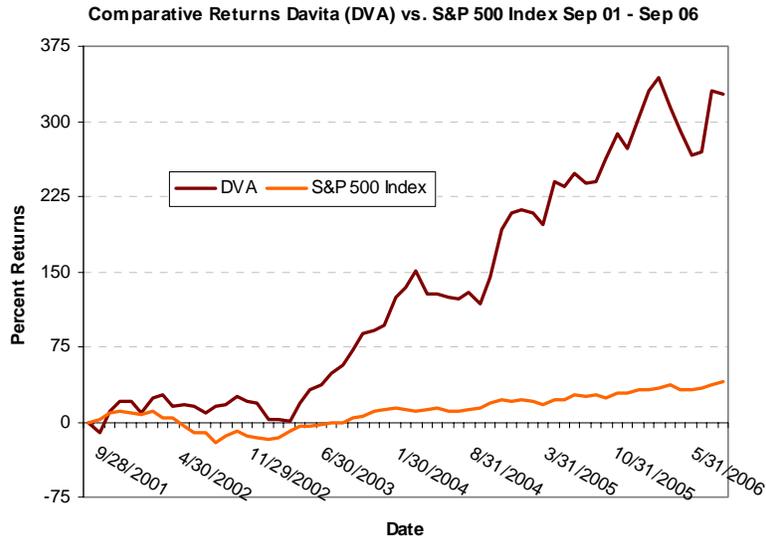
Let us review one company we currently own to illustrate this point. The company is **Davita** (NYSE: DVA), a provider of dialysis services in the U.S. for patients suffering from chronic kidney failure, also known as end stage renal disease. Davita operates kidney centers and provides related medical services in dialysis centers and contracted hospitals across the country.

Many investors avoided purchasing Davita stock because of the company's business characteristics. Davita displays slow unit growth, which is more or less in line with the incidence of disease, combined with a great deal of industry regulation. In addition, the prices the company is able to charge its customers are subject to statutory regulation and insurance company reimbursement policies, which results in price increases that are small and infrequent in nature. Despite these potential hindrances to profitability, Davita has shown itself to be a very good operator; the company's management team has been able to grow operating cash flow at a faster rate than revenues for several years.

Most encouragingly, between 2001 and 2005, management used most of its free cash flow to buy back stock, reducing the shares outstanding from almost 150 million in 2001 to just over 103 million in 2006. On a per share basis, it is easy to see how Davita's stock price has been positively impacted by rising cash flow per share. As investors, we were happy to see that this increase in share price was the direct result of the application of a Shareholder Yield-oriented strategy.

But the story continues. In 2005, Davita purchased a similar business, GAMBRO. The acquisition was largely debt-financed. Because Davita has already shown itself to be a subscriber to the Shareholder Yield philosophy, we anticipated that a large amount of the company's free cash flow will now be directed toward debt paydown. This decision should result in a shift of value from the debt holder to the equity owner.

The following figure provides evidence that Davita's focus on Shareholder Yield has already paid off. Over the past four years, the company's shareholders have benefited from owning shares in a business that does not appear attractive on the surface, but is greatly strengthened by its underlying commitment to effective free cash flow generation and deployment.



Through share buybacks and debt reduction, combined with sustainable free cash flow growth, Davita is a prime example of a company that understands that value of the Shareholder Yield philosophy.

In the era of increasing financial innovation, Global Shareholder Yield strategy is yet a new form of securitization and more— the securitization of a set of shareholder-friendly capital allocation factors in the global economy, with robust value investing philosophy. The key is to find good management. We believe that a good management team must know how to identify business opportunities, be skilled at managing business risks in order to generate free cash flow and then make intelligent applications of those cash flows to maximize shareholder value, and the market will reward them – and the intelligent investors who find them, with long run success.



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