

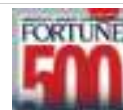
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# How Corporate Finance Got Smart THE MODIGLIANI-MILLER THEOREM TURNS 40

By Matt Siegel  
May 25, 1998

(FORTUNE Magazine) – Chief Financial Officers should take a day off with pay, and investment bankers and futures traders should at least observe a moment of silence: Next month is the 40th birthday of the Modigliani-Miller theorem, the idea that ushered in the era of modern finance.

The theorem states that a company's shareholders, under ideal conditions, should be indifferent to its debt-to-equity ratio and equally indifferent to how much of its earnings the company pays out in dividends. At first this seemed heretical, but the basic insight is simple. The point, says theorem co-author Merton Miller, now an emeritus professor at the University of Chicago, is that "the value of a firm...depends only on the earning power and risk of the underlying assets," such as factories, patents, and personnel. (The other co-author, Franco Modigliani, is an emeritus professor at the Massachusetts Institute of Technology.)

One of the theorem's main accomplishments was to introduce rigorous economic thinking into the rule-of-thumb world of 1950s corporate finance. For instance, Modigliani-Miller was an early example of an "arbitrage argument"--one based on the idea that two bundles of securities that pay their owners the same cash flows must be priced equally by the market.

Years later, another pair of academics--Fischer Black and Myron Scholes--used such an argument to construct the Black-Scholes option-pricing formula, which revolutionized the options and futures markets, making possible the entire derivatives industry.

Oddly, the most direct applications of the Modigliani-Miller theorem--applications that later helped both authors win Nobel Prizes--stem from what the theorem fails to explain in the real world. For instance, a firm that issues equity to pay off existing debt typically sees its stock price drop, since the move is taken as a signal that managers consider the stock overvalued. (The market figures the managers are trying to raise capital on the cheap.) Modigliani and Miller say the price should be unchanged. Their reasoning is subtle. Say the firm has issued \$100 worth of new equity to pay off debt. If they wanted to, the shareholders could simply borrow \$100 from a bank and use it to buy up all the new equity. If they did that, they would see the exact same cash flows as they did before the firm issued the new equity. According to the theorem, if shareholders can thus undo the firm's financial maneuverings, they must be indifferent to them. As Miller put it recently when he testified in a high-stakes S&L trial, "The firm is like some gigantic pizza, represented by its underlying earning power. You can't increase the value of that pizza by cutting it up into different slices--in this case, of debt and equity securities."

The real-world market, however, is a messy pizza parlor. The theorem assumes that capital markets are perfectly efficient, which they're not, and it ignores such realities as corporate tax write-offs for interest payments and the costs of bankruptcy. Indeed, a big part of the controversy in the S&L case focused on precisely these "imperfections" in the market.

Much of the research in corporate finance in the past 40 years has focused on explaining such imperfections--that is, explaining how the real world deviates from Modigliani and Miller's pristine

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assumptions. And that, say economists, is precisely the value of the theorem: When we observe that a firm's debt-to-equity ratio or dividend policy does change its value, Modigliani-Miller tells us where to look to figure out why.

--Matt Siegel

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