After the Revolution

Forty years ago, the Modigliani-Miller propositions started a new era in corporate finance. How does M&M hold up today?

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I have a simple explanation [for the first Modigliani-Miller proposition]. It's after the ball game, and the pizza man comes up to Yogi Berra and he says, 'Yogi, how do you want me to cut this pizza, into quarters?' Yogi says, 'No, cut it into eight pieces, I'm feeling hungry tonight.' Now when I tell that story the usual reaction is, 'And you mean to say that they gave you a [Nobel] prize for that?'"

--Merton H. Miller, from his testimony in Glendale Federal Bank's lawsuit against the U.S. government, December 1997

It has been 40 years since Franco Modigliani and Merton Miller first proposed that a company's value is independent of its capital structure--no matter how you slice it. Published in the June 1958 issue of The American Economic Review, "The Cost of Capital, Corporate Finance, and the Theory of Investment" laid out a set of ideas that came to be known at different times as the "bombshell assertions," the "irrelevance propositions," or simply M&M. In 30-odd pages, the authors expounded radically new ways of thinking about capital structures and markets-- ways that helped win Nobel prizes in economics for Modigliani, a professor at Massachusetts Institute of Technology, and Miller, a professor at University of Chicago Graduate School of Business.

In effect, M&M says don't try to make your shareholders wealthy by adjusting debt levels, because--at least in the somewhat idealized world in which economists operate, and sometimes in practice--it won't work. Instead, M&M argues, the company's best capital structure is one that supports the operations and investments of the business.

"An investment banker has a recap proposal for your company and he dumps on your desk a book with 100 pages of projections about earnings- per-share impact, return on assets, and all kinds of accounting numbers," explains Jeremy Stein, who teaches corporate finance at MIT's Sloan School of Management. "So you are thinking, 'Which of these [numbers] is relevant?'" What M&M tells you, says Stein, is to disregard the numbers and focus instead on how the recap would change your operating behavior.

Controversial from the beginning, at age 40 the irrelevance propositions are proving to be anything but irrelevant, still raising hackles in academic circles. Not surprisingly, critics question M&M's otherworldly assumptions--that companies don't have to pay corporate taxes, don't have to pay investment bankers to raise capital, don't have to pay lawyers when in bankruptcy, and don't withhold information from capital markets. (Such simplifying assumptions are, of course, standard practice in economic model making.)

Indeed, an entire generation of academics has been hard at work bringing M&M down from the "frictionless" world of theory to the roll- up-your-sleeves world of empirical research. What impact, these researchers have asked, do things like managerial self-interest (agency costs), insider's knowledge (information asymmetries), and the possibility of bankruptcy (financial distress) have on the value of a company? How much attention should each be given in the design of capital structure?

Tax Critiques

The first major assault on M&M came soon after the propositions were published. The authors, critics said, clearly underestimated the tax benefits of debt, which exist thanks to the tax-deductibility of interest payments. This so-called corporate tax shield means that, for any number of companies, using more debt means paying less taxes and hence increases the value of the company. Modigliani and Miller conceded the point in a correction paper published in 1963, and brought their estimates back in line.

"We made a big mistake on the matter of how firm value is affected by interest deductibility under the corporate income tax," Miller says. "In the correction paper, we worked out the argument a little more rigorously and showed that you could create value with debt, and we came up with an estimate of how much value you could create-- though it didn't turn out to be a very high number."

To this day, however, exactly how valuable the tax shield is for investors remains a bone of contention between Modigliani and Miller: "The whole issue of taxes is a divisive one," says Modigliani. "Miller still seems to think--something that I disagree with--that taxes make no difference. I believe that is wrong."

Where does the CFO come down on this debate?

"The availability of the tax deduction is a primary consideration when making a decision about whether you issue equity or debt," says Hank Wolf, executive vice president of finance at Norfolk Southern Corp., the railroad and

transportation giant based in Norfolk, Virginia. "The tax benefit, for example, may influence the decision of how you are going to finance an acquisition or capital investment. But I think there are more important considerations, such as companywide strategic issues and overall shareholder value, that come into play." Case in point: Norfolk Southern's commitment to low debt levels proved indispensable when it needed to raise cash for its successful Conrail Inc. bid, in 1996.

The Agency-Cost Debate

Another significant challenge to M&M orthodoxy stems from an acquisition technique that came of age in the 1980s--the leveraged buyout. Some experts say the use of debt capital in an LBO to create value for shareholders proves that capital structure matters after all.

"In the '70s, people invented hostile takeovers as a way to recapture the approximately 50 percent of the value of American corporations that was being destroyed by its managers with nonoptimal operating policies," asserts Harvard Business School professor Michael Jensen. Jensen, together with the late University of Rochester professor William Meckling, published extensive research purporting to show the positive effect that debt can have on company value. Jensen's main point: A company's operating and investment decisions, and therefore its cash flows, are not independent of its debt-equity ratio.

Of all the real-world reasons that capital structure matters, Jensen's agency-cost argument seems to have taken the firmest hold on the corporate consciousness: witness the rise of stock options to keep managers focused on shareholder value.

"I think Mike Jensen's premise that there are agency costs is fundamentally right, and that debt has governance value that would not be there if the debt were not there," says Carl Ferenbach, managing director at Berkshire Partners LLC in Boston, a private-equity company that has done more than 50 leveraged transactions since 1984. "We have time and time again taken managers who were in a private-company context, privatized the businesses they ran, provided equity incentives, levered the company, and had tremendous investment outcomes. What was the driver? Was it the equity incentives or the debt? I don't have a clear answer for that, except to say that it was probably both."

Miller, however, remains unconvinced.

"Jensen's point that cash cows will lever up so that management will not use the money, because they will have to pay it in interest-- that is an interesting thought," concedes Miller. "But the big increase in value at these companies had nothing to do with leverage, in my view. It was the entrepreneur-- they had better managers and management focus."

What does Wall Street make of the debate around agency costs? "If you listen to the dialogue between investment bankers and CFOs and chief executive officers, you won't hear highbrow theories such as agency and information issues being directly discussed," says John Moon, vice president in the investment banking division of Goldman, Sachs & Co. and a PhD in business economics. "Nevertheless, if one is familiar with the concepts and uses them to step back and examine situations, one can see how they are very relevant to the real world."

Information Problems and Bankruptcy Costs

Moon points to another reason that capital structure matters in the real world: information asymmetries. This awkward-sounding term is used to describe the rather pedestrian notion that investors can be somewhat suspicious of equity offerings--managers may not be willing or able to tell all they know-- and drive down a company's stock price.

This "insider's advantage" has been cited in much of the post-M&M literature as one of the reasons that decisions to issue debt or equity can affect the value of a company.

While investor suspicion can affect the value of a company's securities, so can another "information problem": many investors just don't have the resources to get to know small companies. As a result, these companies have to pay a higher price for financing.

Take the case of Albuquerque-based Cobre Mining Co., purchased earlier this year by Phelps Dodge Corp., a mining company in Phoenix. When Cobre pitched an equity offering to institutional investors in 1997, it ultimately raised the funds it sought, but not without a good deal more difficulty than it anticipated, according to former Cobre CFO John F. Combs. Says Combs: "You can run all of the projections you like and be flexible about where you are going to price the equity, and still find the realities of the marketplace are that you just can't generate enough interest to get deals done with the kind of ease you would expect."

Another marketplace reality that, like information problems, can hurt the value of a firm is bankruptcy. M&M critics mean by that not bankruptcy per se--a worthless company is a worthless company--but the additional costs to shareholders of paying lawyers, accountants, and brokers as a company moves through bankruptcy. The risk of incurring these costs, say critics, is a significant factor in financing decisions.

"Early on, people realized that there were costs of going through bankruptcy," says Stewart C. Myers, professor of

finance at MIT and co-author, with Richard Brealey, of the best-selling financial textbook Principles of Corporate Finance. "There is an argument over how big these costs are, but it is clear that there are some, and that is a reason not to go to extremely high debt ratios. The risk of bankruptcy also explains why companies with a lot of intangible assets and growth opportunities tend not to use debt." Myers says putting such companies through financial distress is like "putting a wedding cake through a car wash. There's not a lot left at the end."

Relevance Retained

Although everyone seems to have a favorite bone to pick with M&M, there seems to be little disagreement about one thing: while well-designed capital structures might create some value, most value comes from the decision making done by managers.

"The M&M propositions remind us that it is corporate strategy that produces value," says Cheryl Francis, CFO of R.R. Donnelley & Sons Co., a Chicago-based commercial printer. "The challenge on the right-hand side of the balance sheet is to find the capital structure that can support the business strategy. What M&M does is help you cut through the smoke and mirrors, the marketing pitches, and find the true value-creating opportunity."

In a slow-growth business like printing, one might expect a conservative balance sheet. But what about a fast-growing company?

"Right now the dominant and overwhelming consideration is making sure that our capital structure and the amount of cash on the balance sheet are sufficient to provide us with the operating and strategic flexibility at this very important time in Internet commerce," says Joy Covey, CFO of virtual bookseller Amazon.com, in Seattle. "How many market-share points we have at the end of the day and how many customers we have--and how happy those customers are with our service and our product offerings--are by far the most significant drivers of shareholder value for us."

How about high-tech businesses? Same story.

"I would very much agree with the premise as it is stated: total firm value is independent of the capital structure," says Bill Daniher, CFO of a division of AMP Inc., an electronic- connector firm in Santa Clara, California. Daniher, 36, remembers studying the propositions in business school. "The value of the firm is much more dependent on the value of its products and services, its underlying technology, and its market position--all of the things on the left-hand side of the balance sheet," he says. "That's where I'd look for firm value, as opposed to how it is financed."

Such beliefs were echoed in a 1989 study done by J. Michael Pinegar, a professor at the Marriott School of Management at Brigham Young University. Pinegar asked the Fortune 500 CFOs to rank the most important variables that influenced their capital-structure decisions.

"The things that are emphasized in some of the post-M&M financial literature, such as the tax deductibility of interest expense and bankruptcy costs, did not come up big for the managers who responded to our survey," Pinegar says. "The things that turned out to be more important were the connections between the financing and the asset that needed to be financed, the risk of the cash flows that the asset would generate, and the expected return on the cash flows."

Which is music to the ears of one Merton Miller.

"What I draw from the debate is actually the robustness of the original propositions," he says. "Sure, they are not literally true, and there can be little nits here and there." But, he adds, the experience of the last 40 years has convinced him "there is not much easy systematic gain from leverage, other than taxes--which we don't know too much about."

-- -------------------------------- **Three Propositions That Changed Finance**

Modigliani and Miller were able to say the surprising things they did about debt and equity because they took the corporate balance sheet out of the hurly-burly of the marketplace and brought it into the economist's laboratory. In this somewhat sterile setting--where there were no taxes or transaction costs, such as bankers' and lawyers' fees, and where managers didn't behave differently under different balance- sheet scenarios--things looked a little bit different.

The original M&M propositions consisted of three closely related points:

Proposition I. The value of a company is dictated first by the earning power and riskiness of its assets, not by how those assets are financed. In their paper, the authors gave the following analogy: No matter how hard he tries, a dairy farmer can't increase the value of his milk by selling the cream on the top separately from the milk on the bottom. What he gains in price when selling the cream, he'll lose in price when selling the milk.

Proposition II. The cost of equity capital is an increasing function of leverage. That means you can't lower your total cost of capital by issuing "cheaper" debt. Why not? Although debt may cost less, it also, in the market's eyes, increases the riskiness of your stock and hence your cost of equity. In short, there is no such thing as a free lunch. In

M&M's words: "The gains from being able to tap cheap, borrowed funds are more than offset for stockholders by the market's discounting of the stock for the added leverage assumed."

Proposition III. In the authors' words, "[T]he type of instrument used to finance an investment is irrelevant to the question of whether or not the investment is worthwhile." Having shown capital structure to be irrelevant for the company as a whole, M&M then extends irrelevance to the individual investment. In M&M's ideal world, issuing debt to finance a new plant won't make it a more profitable investment than issuing equity.

The Dividend Propositions

As if these propositions were not enough, Modigliani and Miller stirred the pot again three years later. Their paper "Dividend Policy, Growth, and the Valuation of Shares" spelled out what have come to be known as the dividend propositions. In a perfect market, once they have chosen their investment policy, managers cannot increase the value of their firm by paying out a higher dividend. This is because if they pay out a dollar more in dividends, the firm is worth a dollar less, or it has to raise a dollar with more securities. As one observer put it, this insight put the authors on the "radical left" at the time, since it implied that firms need not dole out more dividends to institutional shareholders.

To the financial practitioner, these ideas may sound somewhat unrealistic, but, as Modigliani and Miller said in their original paper, the ideas were meant to create a framework for discussion rather than be statements of absolute fact. "These and other drastic simplifications have been necessary in order to come to grips with the problem at all," they wrote. "Having served their purpose, they can now be relaxed in the direction of greater realism and relevance, a task in which we hope others interested in this area will wish to share."

And share they have.

-- ---------------------------------- **M&M's Legacy**

What will be the legacy of the work of Modigliani and Miller? One implication that has almost gone unnoticed is the modern obsession with shareholder value. While academics have been busily proving that capital structure can affect shareholder value, few have questioned that shareholder- value creation itself is the goal of the corporation.

"The view which existed until the time our paper came out was that management was supposed to maximize profits," says Modigliani. "We replaced that concept with another one, maximizing the market value of the firm--you should do those things that the market likes. This concept has been very broadly used, and there is now a broad discussion that the goal of management is the maximization of market value."

Concurs Stewart C. Myers, co-author of Principles of Corporate Finance: "M&M sort of woke the field up and set a standard. If you are going to work in the field it is going to have be serious economics, and it has to take into account that there is a capital market out there. You can't spin theories about corporate finance without making it consistent with what is going on in capital markets."

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