

Time is like money in the bank



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## Debt is good for you

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### Or so the theorists say

EVER since Franco Modigliani and Merton Miller published their famous papers on the relative merits of debt and equity financing, the central question in corporate finance has been about the optimal balance between the two. Remember that Messrs Modigliani and Miller argued that, given certain assumptions, the proportions of debt and equity capital were irrelevant to the value of a firm; the only difference they made was to the distribution of the spoils between creditors and shareholders. This was because the more debt a firm issued for a given level of equity, the riskier that firm became. Leverage increases the expected return to shareholders, but it also increases their risks. In an efficient stockmarket, the two should cancel each other out.

But a later, modified version of the Modigliani-Miller theory said something rather different. It allowed for the fact that the original assumptions, particularly on taxation, might not apply. In America, dividends are paid out of companies' net-of-tax income, and are then taxed again in the hands of the recipients. Interest payments on debt, on the other hand, are tax-deductible. This means that a firm's overall value should increase as it substitutes debt for equity, and suggests that many firms in the 1950s and 1960s had too much equity and not enough debt. However, it is clear that over the past couple of decades they have been trying to rectify that.

But not, perhaps, as vigorously as might be expected. As Mr Miller cheerfully conceded, his and his colleague's proposition implied that firms should be financed almost entirely with debt. Yet many big companies still think that their weighted average cost of capital—the total mix of debt and equity—would be cheaper in the long term if they maintained a solid credit rating.

Clearly, piling up more debt benefits shareholders only up to a point. That point, roughly speaking, is reached when bondholders are so worried about the company defaulting that the cost of its debt rises to unsustainable levels. To go on borrowing beyond that point may even lead to bankruptcy—though note that bankruptcy in America is rather less onerous to shareholders than it is in many other big economies. Moreover, inflation, both in America and elsewhere, is much less of a problem than it was in the 1970s and early 1980s, so interest rates are lower and companies can afford to borrow more. Some commentators, notably Stern Stewart, a consultancy that does a lot of work in this area, maintain that many firms still have too little debt. Mature, profitable firms, with the least need to borrow, probably benefit most from doing so. Bond markets are a harsh task-master: that interest has to be paid.



### A matter of degree

Two other theories try to explain why firms are still reluctant to incur debt, or at least do not borrow as much as implied by the Modigliani-Miller theory. The first, called the trade-off theory, says that the amount of debt a firm is willing to take on depends, among other things, on the business it is in. Profitable companies with stable cashflows and safe, tangible assets can afford more debt; unprofitable, risky ones with intangible assets, rather

less. So dot.com companies, to take a formerly fashionable sector, would be ill-advised to shoulder any debt at all. Firms in highly cyclical industries, such as car making, should probably be wary of taking on too much. By contrast, utilities, whose business tends to be more predictable, can afford much greater leverage.

Managers prefer this kind of theory to the Modigliani-Miller one because it does not imply categorically that they are doing the wrong thing. But does it give them much guidance on what, in fact, they should be doing? Some would argue that in a way it does; that firms “target” a credit rating they are happy with—according to the business they are in—and stick to it. Rick Escherich, an analyst at J.P. Morgan, has looked at a sample of 50 companies taken from *Fortune* magazine’s list of “most admired companies”, and found that only four of them have been downgraded by more than one notch over the past ten years. Most of them have the same rating now as they did a decade ago.

But Stephen Kealhofer of KMV says that, according to his firm’s research, firms do not target credit ratings, indeed quite the opposite: “We find that firms engage in anti-targeting behaviour.” Generally, they are more interested in their business plans than in what the rating agencies say. If they get into trouble, they increase their liabilities to enable them to carry out these plans, as the telecoms firms have done. “Only when they get close to default do they reduce them,” he points out.

Mr Kealhofer prefers a third explanation of firms’ behaviour, dubbed “the pecking-order theory”. The central plank of this theory, first propounded by Stewart Myers in 1984, is that outside investors in a firm know less about the health of a firm than its managers do. That can be a problem when the company wants to issue equity: investors may believe, rightly or wrongly, that the company is doing this because it thinks its shares are overpriced, and may respond by selling them. Issuing debt generally has a much less dramatic effect, but external finance is still costly. That is why the vast majority of new capital raised by firms comes from retained profits.

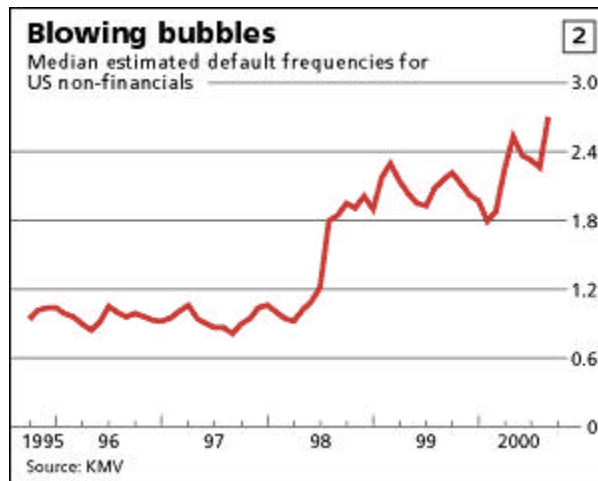
The pecking-order theory might help to explain why many big firms hold large cash reserves. If they find that these are insufficient, they often take another route: to delay paying their bills. In effect, when they need to borrow, the first place they look to is their trade creditors. Only when that route becomes difficult do they turn to external lenders—ie, banks or the bond market—and only as a last resort to the equity markets. That helps to explain why companies with stable profits often borrow a lot less than unprofitable ones.

Yet none of these theories gives much of a clue to whether, at any particular point, firms’ debts are too high or too low. To put it another way, they do not tell you what the market thinks of a firm’s default risk. For that, turn to another theory, which despite its less-than-snappy title has lately proved remarkably powerful: contingent claims analysis. This was first developed by Robert Merton, an economist who in 1997 won a Nobel prize with Myron Scholes for his work on developing mathematical models to price options (a third collaborator, Fischer Black, had already died). It uses option theory to analyse the differing claims that debtholders and shareholders have on a firm. The theory says that shareholders essentially own a call option on the firm (the right but not the obligation to buy). Shareholders get all the upside; their downside, thanks to limited liability, is restricted to the firm going bankrupt. The position of bondholders, by contrast, is that of someone having sold a put option (the right to sell) to shareholders, conferring on them the right to bankrupt the firm. The bondholders’ main upside is the fee they receive for that option, ie, the interest on the loans they make to the firm.

## Making money by default

The theory is helpful in analysing the market’s view of a company’s creditworthiness: the more likely it thinks a firm is to default, the greater the fee—ie, the higher the interest—it will charge. KMV has built a business applying this theory to estimate the likelihood of a firm defaulting. Some investment banks are increasingly turning to it. Even Moody’s has developed its own version.

KMV’s model has three main elements: how much a firm owes; how valuable the business is (using the equity price as an indicator); and the volatility of that business (which can also be deduced from the equity price). Surprisingly, although the equity market did splendidly in 1999 and early last year, its median estimated default frequencies (EDFs, a measure of the likelihood of default) for the 10,000 North American companies tracked by the consultancy carried on rising (see chart 2). In recent months, they have risen still further, and some firms have done worse than others.



If that seems odd, consider a slightly more refined way of looking at the put option that debt holders have sold to shareholders. It is, in fact, a put option whose strike price is a long way below the current price of a firm's equity. As a firm's shares fall to a level where the equity price, and by extension the net assets of the firm, get close to a firm's liabilities, the firm is in increasing danger of becoming insolvent. That makes the put option worth a lot more, so the yield on the company's debts rises.

The share prices of most firms, particularly those with an investment grade, are nowhere near this level. But this is where a key feature of option pricing comes in. Option markets do not guess the direction that an asset's price is heading in; instead, they look at its volatility. The more volatile an asset, the greater the chance that an option written on it will be exercised. Put another way, the more volatile a share, the less happy bond investors will be to lend to it. If the firm's shares become so volatile that insolvency is at least possible, the yield demanded by debt holders will rise, perhaps dramatically.

There is a further wrinkle. When the bondholder sells the put option to a firm's shareholders, the strike price—at which the option can be exercised—is not set in stone; it is variable. That is, the managers of the firm could reduce debt (which is helpful for bondholders because, in effect, it reduces the strike price at which a company becomes insolvent); it could increase debt (the opposite); it could sell shares (good); or it could buy them back (bad). The point to note is that bondholders sell managers not only the right to bankrupt the firm, but also the right to alter the firm's capital structure. Arcane as all this might sound, it helps in understanding what has been happening in the corporate-bond market this past year or so.