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Ere Your Credit Advance

'Twere wise to retreat from the wars of finance
Lest its value decline ere your credit advance.
Ambrose Bierce, *The Devil's Dictionary*

I've been thinking a lot about the nature of credit lately. One interesting question that I find strong disagreement on is what rate should you discount a cash flow stream you owe to another entity? Everyone accepts that if a counterparty owes you money, if the cash flow stream is an asset, you discount it at the risk-free rate plus the counterparty's credit spread. If a company's one-year, zero-coupon bonds sell at an annualized yield of 5 per cent, and it owes you $1,000 to be paid in one year, that's worth $1,000/1.05 = $952 today.

Now consider the problem from the company's perspective, when the cash flow stream is a liability. The first answer that occurs to most people is it must have the same value, $952. That is, you discount liability cash flow streams, money you owe other entities, at your own credit spread. This is the answer assumed in capital budgeting when the pretax cost of debt capital is set equal to the yield on a company's bonds.

The answer has some nice properties. The value of the liability to the debtor is equal to the cost of buying it back. When you borrow money at a market rate, there is no change to your net asset value.

It has some less nice properties as well. You make money when your credit rating declines. There is an apocryphal story at my former employer about an explosively negative reaction of Warren Buffet when a Salomon Brothers executive advanced the idea that the firm had benefited from its credit downgrade. Even if we are willing to accept that the fastest way to get rich is to become a deadbeat, this fact is certainly not made clear to creditors. If this is our theory of credit, it better be a secret theory, or we won't get any credit.

The fastest way to get rich is to become a deadbeat? The specter of bankruptcy raises interesting situations in credit scenarios.

This theory also neglects to account for bankruptcy costs. Borrowing money creates a risk of insolvency, which can destroy a significant fraction of the asset value of a debtor. This cost must be borne between the creditor and the debtor, so the cost of the liability to the debtor must exceed the value of the asset to the creditor. The difference is significant, at least for companies rated BBB and below. We could hypothesize some tax or discipline or other effect that offsets the cost of bankruptcy, but it's not clear the effect should be accounted for by adjusting the discount rate on the liabilities. Even if we do take that approach, the debtor will equate the marginal, not total, costs and benefits of borrowing. Therefore it might be true that the last dollar borrowed should be discounted at the borrower's credit spread, but there's no reason to assume it's true for every dollar borrowed.

Some people argue the first approach has a logical flaw. When we compute a present value, we need to do it from a fixed perspective. The debtor should not factor in value beyond bankruptcy. At that point the assets and liabilities are handed over to creditors, and nothing that happens afterward will affect the borrower. In this view, it makes sense to discount liabilities at the risk-free rate because the borrower must either make the payment or cease to exist. Under this

view, if management of a public company is discounting liabilities at a rate above the risk-free rate, it is considering its future employment as debtor-in-possession rather than maximizing shareholder wealth.

This takes care of the objections above, but it raises the question of why anyone borrows money. The debtor's liability is greater than the creditor's asset. To make this theory consistent we have to assume some additional advantages of having debt, say tax advantages or reduced agency costs, that offset the present value loss but are not properly computed by changing the liability discount rate (for example, because they are not proportional to the amount of debt or don't compound over time).

A third view is to discount the liability cash flows at the creditor's credit spread. This seems silly at first, why do we care about the creditworthiness of people who lend us money? But suppose I owe $1,000 to a company I think is likely to go bankrupt. If the market shares my view, I can buy my creditor's debt at a steep discount. Suppose I can buy a $1,000 face zero-coupon bond that matures on the same day as my liability for $300. If the creditor doesn't go bankrupt, it pays me the $1,000 on this bond, which I use to pay off my debt. If the creditor does go bankrupt, I match up the debt and the bond and ask the bankruptcy court to offset them. Either way, I've discharged my $1,000 liability for $300, which is for its present value under the creditor's credit spread.

The biggest objection to this approach is it seems to allow arbitrage. Entities with good credit can borrow money from entities with poor credit on terms that profit both of them. For example, suppose SolidCo pays 4 per cent for one-year money and RiskyCo pays 10 per cent. SolidCo borrows $1,000 from RiskyCo and promises to repay $1,069 in one year. RiskyCo pays SolidCo $1,000, and gets a claim it can sell in the market for $1,028. Meanwhile, SolidCo can buy a RiskyCo $1,069 one-year zero-coupon claim for $972. It can use this to defease its debt whether RiskyCo defaults or not; and SolidCo can bank $28 profit. Each company make $28.

Alert readers will have noticed a flaw. If RiskyCo sells its SolidCo claim to a third party, that destroys SolidCo's arbitrage. If RiskyCo is restricted from transferring the claim, it is better off repurchasing $1,069 of debt for $972 today, rather than paying SolidCo $1,000 today for the same effect. The $28 "arbitrage" profit to SolidCo came from RiskyCo's overpayment for its own debt.

So discounting at the creditor's credit spread does not allow arbitrage. In this model, every borrowing is zero sum (except for bankruptcy costs) between the two parties, but unless the interest rate is set by the creditor's credit spread, one party will make money and the other party will lose. This is fine mathematically, but it flies in the face of conventional financial wisdom to use the creditor's credit spread instead of the debtor's.

Some people are reluctant to address these issues forthrightly because credit retains a moral aspect. For most of human history, failure to repay a debt was a crime and lending money was discouraged

Obviously the answer depends in part on bankruptcy law. The last approach relies on the ability to offset assets and liabilities in bankruptcy. Attitude toward this practice varies by jurisdiction. In the US, it is covered by section 553 of Title 11 of the federal bankruptcy code. The letter of the law is that offset is allowed if the creditor's asset was acquired directly from the debtor or more than 90 days before bankruptcy, and the creditor's liability was acquired for some reason other than obtaining offset of the asset or more than 90 days before bankruptcy.

Other countries are generally less friendly to offset. Consider an extreme legal regime that allowed no offset at all. Anyone who owed money to a bankrupt entity would have to pay in full, then all proceeds would be divided among the creditors. In that case it would make sense to discount liability cash flow streams using the debtor's credit spread, not the creditor's. Another extreme regime is to forbid limited liability. If this is strictly enforced, debtors should discount at the risk-free rate. Under unlimited offset, discounting at the creditor's borrowing rate is correct.

Consideration of legal recovery is essential for practical valuation of credit-dependent assets and liabilities, but financial theory should be simple and consistent. We will have to adjust valuations for bankruptcy jurisdiction, just as we do for taxes, bankruptcy costs and other factors. But theoretical clarity is necessary for rigorous analysis. Without that, it's easy to overlook or double-count factors.

Finance can also serve to change the law. The International Swaps and Derivatives Association have already done this with respect to over-the-counter derivative settlements in bankruptcy. For business purposes, it's generally more important that the law be simple and clear, than that it meet some abstract standard of fairness. If everyone knows the rules, prices will be adjusted accordingly, and no one will be surprised. It doesn't matter if people drive on the right or the left side of the road, as long as everyone knows the correct side.

Some people are reluctant to address these issues forthrightly because credit retains a moral aspect. For most of human history, failure to repay a debt was a crime and lending money was discouraged. Discounting liabilities using your own credit spread means taking value from the possibility you will not keep your promises to creditors. Discounting at the risk-free rate is honorable, but is almost equivalent to refusing to

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borrow at all. Discounting liabilities using your creditor's credit spread seems like gaming the legal system in order to extract profit from failing companies and their more straightforward creditors. The thick gray line between prudent financial management and dishonesty discourages clear thinking. Only through mental inconsistency can anyone be an honorable profit maximizer. A thin bright line would be easier on everyone.

The only simple practical rule is unlimited offset, before and after the bankruptcy filing. Completely eliminating offset is impossible to define and leads to capricious results and pointless arguments. Allowing some offset means what you get depends on your skill at playing the bankruptcy game, and inversely on your straightforward honesty (like self-computed income taxes). Eliminating bankruptcy in favor of debtor's prison and selling insolvent people and their families and shareholders into slavery has an authoritarian appeal, but is against the current of modern thought.

Under unlimited right of offset, bankruptcies play out differently. If an entity's credit erodes, it will find much of its future expected revenue stream dedicated to paying down its debt. This will be an automatic process, beyond the control of the entity. The entity's debtors will buy claims from its creditors, and its creditors will offer to pay future bills for its debtors in return for cash today. The creditors effectively will carve out a portion of the entity's future expected revenue stream sufficient to pay off the debt. The transaction will be at arms-length market prices, without intervention of lawyers or the entity's management.

If the future expected revenue stream is worth more than the par amount of the debt, the price of the entity's debt will revert to par and things will go on normally. If the future expected revenue stream is worth less than the par amount of the debt, the market value of the debt should drop to equal the market value of the future expected revenue stream. If this happens in an orderly way, the entity can continue as a debt-free going concern, with profits going to the former creditors who did not cash out. There may be a lot of price ups and downs along the way, but one of these two outcomes should result.

If creditors mismanage the process, it could fail. Disagreements about value or stubborn strategies could force the entity to bankruptcy. But the liquid market in claims and future expected revenue should allow all parties to manage their positions so the bankruptcy is less contentious and inflicts less harm.

While this process is clearly preferable for financial claimants, it is unlikely to be popular among claimants who get priority today: lawyers, the government and employees for examples. Instead of a bankruptcy filing and protection from creditors, a failing company will start receiving its debt back instead of revenue. If the company is worth more dead than alive, it will not be able to raise capital to pay employees or suppliers. It will liquidate, as economic theory dictates it should, but it will not be able to pay court expenses for an orderly liquidation, or taxes or wages. The solution here is to require companies that issue public debt to maintain a liquidation reserve, like burial money, in some kind of bankruptcy-proof escrow. A consequence of this is some valuable companies might fail when access to the liquidation reserve could have saved them, but that is the price we pay for tender treatment of non-financial claimants.

This is not intended to be a serious proposal for reforming bankruptcy law, that's too complicated and dull an issue for me. Instead, I want to suggest a clear and simple financial model for discounting credit dependent instruments that is consistent with respect to assets and liabilities. To the extent the world differs from the model, we will need to make adjustments. But we should implement these as separate steps at the end of the process rather than steeping the analysis in hidden assumptions.