

Introduction to Finance
Quiz on Corporate Debt

1. The US Treasury announces that it will auction a specific face amount of a new security roughly one week in advance. These securities and their issuance are highly standardized. The auction is a sealed-bid single price auction.

By contrast most US companies individually go to the capital markets infrequently. It is almost always the case that corporate debt offerings are “underwritten” by investment banks. Investment banks go through a “book building” process which replaces the auction used by the Treasury. They buy the issue from the issuer at a discount and sell the instrument to clients at the gross price. Given the size of many corporate issues is not much smaller than Treasury auctions, and that many of the companies, such as Verizon, are as large and as well known as their investment bankers, I think companies should move to a Treasury-like auction process.

2. The auction is much cheaper. There are no middlemen or fees collected by the middlemen for Treasury auctions as the NY Fed conducts the auction on the Treasury’s behalf free of charge. Underwriter fees on large debt issues often average around 50 basis points. For a \$20 billion offering 50 basis points is \$100 million.
3. (a) NOC’s debt ytm is 4.55% (bond-equivalent basis), its credit spread is 193 basis points, so the Treasury’s bond-equivalent ytm is: $.0455 - .0193 = 2.62\%$.
- (b) Our rule of thumb based on long data series of defaults and spreads is that the hazard rate characterizing default accounts for roughly half of the credit spread and a risk premium accounts for the other half. So here the hazard rate is around $\frac{193}{2}$ or 96.5 basis points. Traditionally we use continuous time to compute survival probabilities, so the “survival probability” after 10 years is $e^{-.00965 \cdot 10} = 90.8\%$. Therefore, the probability of NOC going bankrupt over the next 10 years is around 9.2%.
- (c) The credit spread is increasing in the hazard rate describing default. Since NOC has a higher credit spread than 3M the market

believes that its default probability is higher than 3M's. We can infer 3M's hazard rate as roughly $\frac{.0334-.0262}{2}$, which is 36 basis points. 3M's bond rating should be higher than NOC's to explain this difference. It is. NOC's credit rating is BBB. The credit rating reflects the analysts' assessment that the company's future cash flows will be sufficient to cover the interest and principal payments of its outstanding debt. In terms of financial statements and financial ratios, a higher cash flow-to-interest cost ratio means that the default hazard rate is lower. Lower debt in the capital structure means that the default hazard rate is lower. A stable and defensible market position means that the default hazard rate is lower.

Let me add a note here. A higher credit rating means a lower credit spread and a lower default hazard, but that is not necessarily *better*. McKenzie & Associates was advising companies from the 60s through the 90s that too high of a bond rating was a bad thing. Their reasoning is that debt is a cheaper form of capital than equity, especially when we remember that interest cost is a tax deductible expense, (as that means that governments subsidize our capital acquisition). McKenzie and others argued that a high rating means that the company has "left money on the table" – that it could lower its weighted average costs of capital by borrowing more. There are counterarguments, mainly having to do with access to commercial paper and maintaining flexibility and competitive advantages in times of financial crisis. ("Keeping powder dry.")

4. Credit spreads are highly cyclical. Companies are more likely to default on debt (go bankrupt) when the economy is in bad shape. This is why and how the credit spreads are different from the spreads on Cat Bonds—which are unresponsive to the business cycle since the occurrence of hurricanes and earthquakes is unrelated to the state of the economy. And this is why corporate bonds must pay a risk premium, whereas Cat bonds do not. We think that there are two major components to corporate credit spreads: a default hazard rate and a risk premium. It makes sense that when the market expects the economy to worsen and to adversely affect companies' cash flows both of these compo-

nents would increase. This also suggests that we might look to the credit spread as a leading indicator of economic activity. The graph shows that it did start to increase one or two quarters before the 2008 recession and a year or two prior to the 2001 recession. Its level today suggests that there are few worries about faltering economic growth in the economy.