



PROFESSIONAL INSIGHT

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THE 'RISKY' RISK-FREE RATE: DOES THE DOWNGRADE OF US SOVEREIGN DEBT CHANGE COMMONLY-USED VALUATION APPROACHES?

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The 'risky' risk-free rate: does the downgrade of US sovereign debt change commonly-used valuation approaches?

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The downgrade of the US long-term sovereign credit rating by Standard & Poor's (S&P) sent shockwaves through the global financial markets. Despite some telegraphing by the ratings agency, the actual downgrade was followed by substantial devaluations in global financial assets (ironically, Treasury securities appreciated in value). While that devaluation may be easy to observe by reading various market indices, there are many layers to this issue.

It may be more difficult to assess the long term impact to our financial markets and knock-on effects not only on global asset values but also on the practice of valuation and finance in general. The US sovereign bond has been treated as the quintessential risk-free asset in the world of finance for 70 years. The downgrade calls into question whether long-term US sovereign bonds are actually close enough to risk-free to make them useful in approximating the true risk-free rate. If not, what alternatives are there for the concept of a risk-free asset in widely-used financial models?

The risk-free rate reflects inflation expectations plus an investment return on what is essentially guaranteed principal. The increase in perceived risk in long-term US Treasury securities reflected in the S&P downgrade from an 'AAA' rating to an 'AA+' rating calls into question the idea of 'guaranteed principal' for these securities.

While there is evidence suggesting that increasing budget deficits and political uncertainty have increased the credit risk of the US over the past several months, market participants have always understood that the credit risk of the US is not zero. In the past, US Treasury securities were used as direct proxies for the risk-free rate, despite the credit risk, because it was assumed that that risk was minimal. The question in a non-'AAA' rated world is whether that credit risk has become material enough to adjust Treasury rates for this factor.

If US sovereign debt is not 'close enough' to risk-free, then questions arise regarding a key input to valuation and finance models. Are there alternative low-risk assets that could be used as a benchmark for the analysis of US-centric risky assets? What are the shortcomings of using

such alternative assets? Can 'risky' US Treasury yields be converted into hypothetical risk-free yields?

One possible alternative risk-free asset is the 'AAA'-rated (or equivalent) sovereign debt of other countries. However, this alternative is problematic as the expected future inflation rates of the other sovereigns' currencies may be different from that of the US. In addition, the markets for these other assets are much smaller and less liquid than those for US sovereign debt. Therefore, there are significant complications in utilising these sovereign yields directly in approximating a risk-free rate for a US-centric risky asset. Another alternative might be to use 'AAA'-rated US corporate bonds as risk-free benchmarks, but market size and liquidity issues (as well as the problem that corporations cannot print money to avoid default and the idea that US sovereign credit woes would likely affect US corporate borrowers anyway, thus affirming the relative safety of US Treasury securities over corporate bonds) would suggest that this is inappropriate. In addition, corporations typically do not issue debt with a long enough term to be useful in many contexts.

Perhaps risky US Treasury yields could be adjusted by removing the portion of yield attributable to credit risk to derive a risk-free rate. Credit risk may be measured from several sources, including credit default swap (CDS) markets, and this approach would produce a yield that is theoretically free from credit risk. While this approach is appealing and has been suggested by several market participants, the disparate relative liquidity of the Treasury and CDS markets may cloud the estimation, and re-measuring other relevant inputs may be hampered by a lack of historical data in the CDS markets. It is interesting to note that US CDS spreads increased in the week leading up to the debt ceiling compromise and then fell immediately after the ratification of the bill. Further, CDS markets did not move materially in response to the downgrade by S&P.

Another potential adjustment to remove credit risk from US Treasury yields is to estimate the additional required return for a non-'AAA' ►►

rated security compared to an 'AAA' rated security. This could be done by looking at the yield differentials in the corporate, municipal, and other bond markets. However, these observed differentials may need to be adjusted to reflect differences between sovereign obligations and corporate or municipal markets.

The risk-free rate is a key component of the capital asset pricing model (CAPM), one of the most widely used models for estimating a company's cost of equity capital. CAPM uses the concept of a risk-free asset as the base return upon which additional risk is layered (specifically, non-diversifiable risk). The non-diversifiable risk captured in the CAPM is represented by the equity risk premium (ERP), which is the additional return required by investors over and above the risk-free rate for an investment in the market as a whole. For decades, US Treasury yields have served as the de facto risk-free rate in the CAPM for the valuation of US companies and securities. Countless academics have tried to find ways to estimate the ERP using the US Treasury rate as an approximation for the risk-free rate. If the risk-free rate were changed, then the ERP would need to be measured against this alternative rate rather than simply against US Treasury rates (for example, in many models that use ex-post data to estimate the ERP).

The risk-free rate is a key input to many derivatives valuation models (including the widely used Black-Scholes option pricing model), which are formulated on the assumption of a risk-neutral investor. Due to the

use of other key variables (such as volatility) in these types of models, the use of a slightly risky risk-free rate may not significantly impact the results from these models.

Financial models are built upon assumptions and as such, are only as good as the inputs. The current situation presents issues that have yet to be researched in earnest making the use of financial models today more challenging. It is important to keep in mind that the concept of a risk-free rate is a relative measure rather than an absolute measure. With this in mind, the search for an appropriate risk-free rate is really more a search for a rate with the least amount of risk in a given marketplace. The real question today is how the credit risk has changed in US Treasury securities. That question can only truly be answered in hindsight using complex analysis of market data after there is a large enough sample size to provide statistically significant conclusions. At this point, US Treasury securities may still be the best proxies for risk-free assets. Almost forgotten in the news of the downgrade is that two out of the three major ratings agencies are maintaining a 'AAA'-equivalent rating on long-term US sovereign debt and S&P's short-term US T-Bill rating is still 'A-1+', the highest rating class available. At times like these practicality is paramount in the use of financial models and the interpretation of their output, which is a practice in both science and art. Suffice it to say that the 'art' portion has become relatively more important. ■

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