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CORPORATE DEBT TIMEBOMB: IS THE MARKET CORRECTLY PRICING IT?

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CORPORATE DEBT

The corporate debt market size is at its all-time high: after a constant increase in its dimension, it has seen a steep acceleration in size in the years following the 2008 crisis, reaching \$15 trillion in 2018 for US non-financial companies. This is 50% more than the outstanding debt of ten years before, and this trend is still present, with corporate non-financial debt at 46% of US GDP, the highest it has ever been.

This incredible increase in volume, both in US and globally, is driven by two factors: the need of companies for capital to fund new investments during the recovery process from the 2008 financial crisis and the monetary policies that central banks are taking since the crisis, namely money easing. The growth in debt issues squeezed spreads and combined with extremely dovish monetary policies caused an incredible reduction of yields and a spike in credit securities prices. Despite the suboptimal situation, more capital continues to flow in credit rather than in equity, funding a market with over \$14 trillion of negative yield debt.

The general quality of the debt of non-financial businesses according to Standard & Poor's is the lowest over the last three expansions: the share of investment grade bonds is now at 78.4% of the whole market, well below the 90.4% of the recovery period after the 2001 crisis.

Low quality credit is a liability that can be made invisible in financial statements in a multitude of ways. In a hyper leveraged system, a small hit on default rates can spread financial tension and make it too expensive to re-finance the debt for net borrowers. Strong illiquidity leads to the disappearance of the inter-banking reserve market and the default of numerous weaker operators therefore creating uncertainty, inflation and recession.

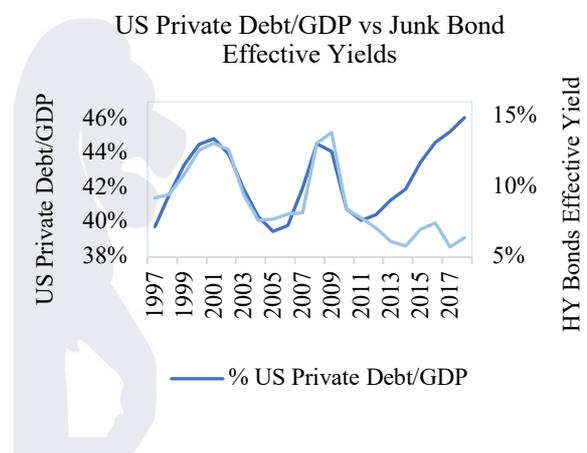
Tension signals appeared recently in the inter-banking reserve market during September, when US overnight repo rates exceeded 10%.

DEBT AND INTEREST RATES

Conventionally, bond yields have been a good proxy for debt risk and a good defense mechanism against dangerously high debt levels. There is a solid correlation between private-debt to GDP ratios and average interest rates, meaning that using debt as a source of funding becomes more expensive as the overall leverage, and its related risks, increases, forcing corporates to de-leverage and rely on equity to be profitable.

This system has shown a big weakness: central banks' monetary policies have recently squeezed, overthrowing the correlation between debt levels and debt costs. It is interesting to focus on High Yield/Junk Bonds (bonds considered "speculative assets" by rating agencies) because, having little to no collateral, they carry a bigger default risk.

Applying a regression analysis to 1997 to 2011 data it is possible to find a strong correlation between US Private Debt/GDP and HY effective average yields, measured with the BofAML US High Yield Master II Index, which tracks the performance of US dollar denominated below investment grade rated corporate debt publicly issued in the US domestic market, resulting in a β of 1.07 and a R^2 of 0.85. It is clear on the chart that from 2011, the overall private debt stopped influencing interest rates, therefore creating a huge gap of around 8% between our estimated yield and the effective average yield.



The deformation of the debt markets has noticeable symptoms such as the rise of negative rate bonds, both in corporate and sovereign markets.

Before 2012 negative rates were considered a contradiction, but now they are a solid reality so much that 2% of the European high yield/junk bonds paradoxically present a below 0% yield. The result is the massive increase in the now cheaper leverage.

THE MODEL

A modified version of the CAPM is a valuable tool to detect how the market reacted to the increase in debt financing and its sensibility in pricing corporate bonds beyond fluctuations in yields. In fact, the model rest on the assumption that the yield to maturity (YTM) is a poor estimator of the cost of debt when the probability of default and expected loss in such a hyper levered system are considered.

In particular, the CAPM is here used to price investment grade bonds against two spreads: the β spread between investment grade and high yield bonds and the spread of high yield debt over treasury notes.

$$r_{ig} = [(Spread_{HY} + 10yYTM) + (\beta_{ig} - \beta_{HY}) * equity\ risk\ premium]$$

Where:

- $(\beta_{ig} - \beta_{HY})$, and

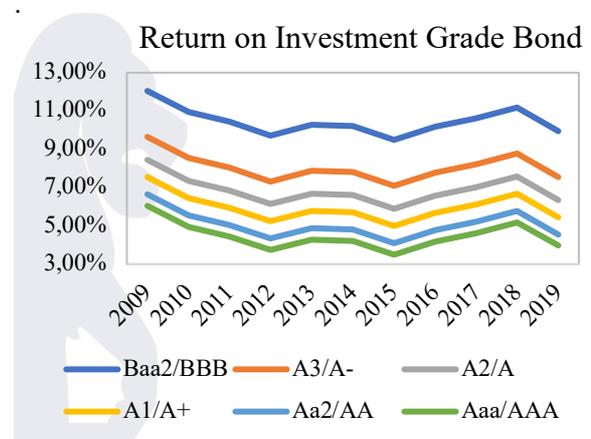
$$\beta_{Index} = \frac{\sigma(r_{S\&P}, r_{Index})}{\sigma^2(r_{Index})}$$

has been calculated from returns of two bonds index, namely the SP5IGBIT (for investment grade) and SP5HYBIT (for high yield).

- The $Spread_{HY}$ (as reported by S&P) used to price the BBB rated corporate bonds was the CCC one, the spread used to price A- bonds was the B- one and so on until AAA bonds for which we used BB+ rated bonds' spread over treasury.

Rating is	Spread over treasury
D2/D	19,38%
C2/C	14,54%
Ca2/CC	11,08%
Caa/CCC	9,00%
B3/B-	6,60%
B2/B	5,40%
B1/B+	4,50%
Ba2/BB	3,60%
Ba1/BB+	3,00%

The resulting returns for investment grade bonds can be summarized in the following chart:



From the chart above, the market started pricing at higher value the investment grade companies from 2012, with a momentary drop between 2014 and 2015.

The graph also denotes how quantitative easing policies pursued by FED since 2009 depressed the yields with a clearly steadily decreasing trend. Consequently, the price of investment grade bonds rises and in parallel, the volumes start to grow since 2009.

ANALYSIS OF RESULTS

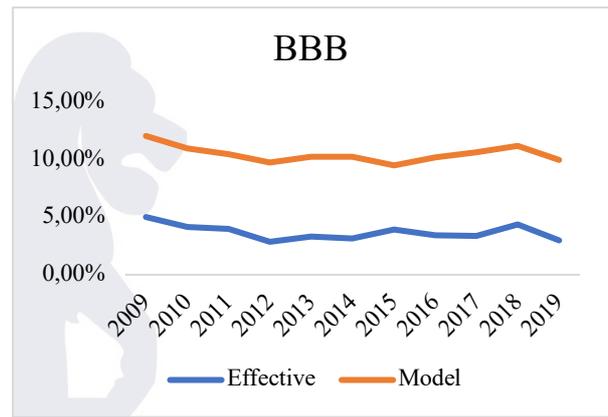
According to our analysis, the boom in the debt volume started to consistently affect debt price in 2012 with the exception of a small drop in 2015 in which a flight to quality took place due to an increase in beta spread. Nonetheless, a decrease in both High Yield and Investment Grade Betas due

to better economic conditions related to the US post-crisis economic expansion is evident. The decision of the FED to halt the quantitative easing led to a bit of uncertainty in the US credit market triggering a higher demand of highly rated bonds.

A possible explanation for the lower returns in 2019 shown in the graph, that contradict both our thesis and the market trend since 2015 is again US interest rates cuts. This interest rate dynamic has significantly affected the pricing in our model in two ways: reducing the size of the first component (SpreadHY+10yYTM) and affecting the returns of the two indices on corporate bonds, SP5HYBIT for high yields bonds and SP5IGBIT for investment grades ones, and consequently affecting the difference in betas. Moreover, the modified duration of the two indices significantly differs in fact for SP5HYBIT index is 5.76 and 7.71 for SP5IGBIT. Therefore, the downward trajectory could be also justified with a higher sensibility SP5IGBIT to interest rate fluctuations. Given the formula $\Delta B/B = -D^* * \Delta i$, it is immediate to understand that SP5IGBIT constituents will have increased more than SP5HYBIT in terms of price and the reverse is true in terms of yields.

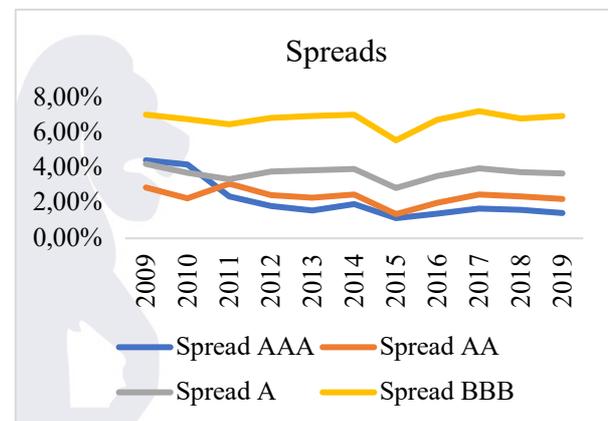
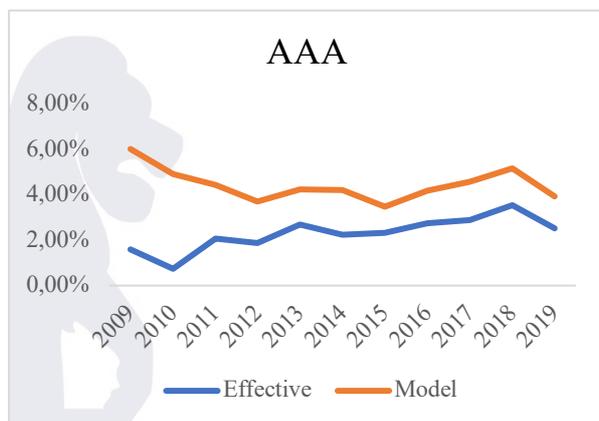
The second output displays the Bond Yield spread between the effective market returns and the one estimated by our model.

The results displayed below are incredibly constructive since they show a great synchronization in terms of trend between the market returns and the model's one and a relevant difference in term of spread.



The charts clearly show an upward trend since 2012 in the YTM priced from the market. Indeed, prices reflect the acknowledgment of an outstanding increase in debt financing due to the favorable monetary environment and have partially priced the risk of a credit boom in current and past yields. In addition, the effects of the new easing cycle of the FED are clear and considerable, since they have swiftly disrupted the six yearlong ascending trend.

Furthermore, since 2016 the yields on AA rated bonds have been slightly lower than AAA rated ones. This is significantly disturbing and it creates an alarming signal. In fact, in 2019, the spread between AAA rated and AA rated bonds has been 0.19% and the spread between BBB rated ones, the lowest rating in the investment grade spectrum, and AAA rated has been just 0.47%. These spreads are consistent with the dovish monetary policies undertaken in 2019 and seem to imply that the market has priced in further expansionary FED polices.





Our model is clearly more conservative in terms of valuation and, from the spreads below, it is evident how the market is currently underpricing the debt not reflecting the effective risk hidden behind the size of debt's volume that our model tries to catch.

CONCLUSIONS

In conclusion, looking at our model, it seems like that the market reacted to the increase in debt volume, perceiving investment grades bonds riskier throughout the last 5 years. However, comparing the results with the effective market yields it seems like the market is still not pricing part of the risk related to debt volume size, probably because of good economic conditions for US corporates in recent years and a newly procrastinated hypothesis of recession in the global economy.

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