

Innovations in SME private debt markets

The combination of new Artificial Intelligence and Deep Learning critical support decision systems and Portfolio Tail Risk Management can potentially expand the Investment Grade rated credits and portfolios in SME private debt markets.

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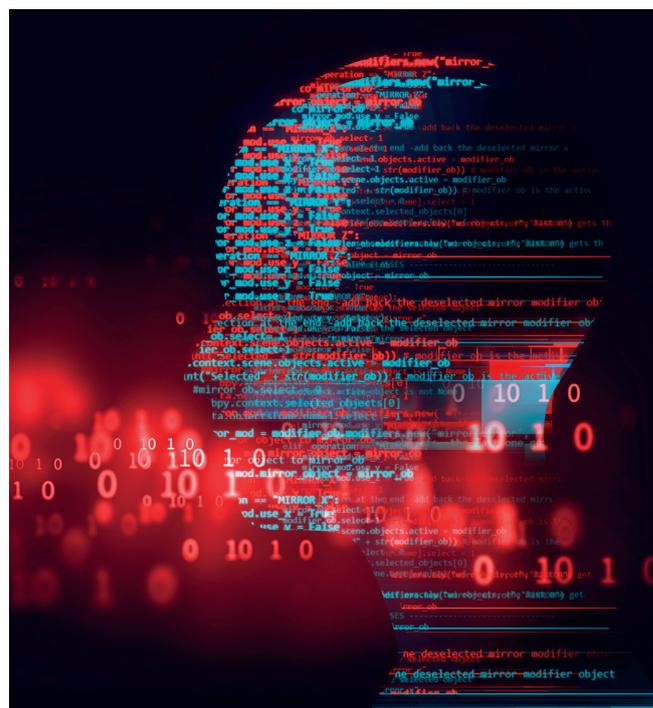
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The SME private debt market is widely perceived and defined as sub-Investment Grade, or High Yield, and this is true when we analyze single unrated transactions such as a club loan, a leveraged loan, a unitranche, a mezzanine or a junior debt.

In our view, there is a material value creation if (1) we build a very well diversified and granular SME portfolio formed by at least 100+ First Liens/Senior Secured assets, and if (2) we adopt within the investment process SME AI/Deep Learning critical decision support tools.

The value creation originated by option 1 is a material risk reduction at portfolio level, in terms of unexpected loss and expected shortfall (Tail Risk Management), while the value creation originated by option 2 is a material reduction in terms of expected loss.



Under certain conditions, the contemporary reduction of the expected loss, of the unexpected loss and of the expected shortfall can generate a level of principal protection in the region of the Investment Grade equivalent risk.

As a rule of thumb, we think that a credit portfolio formed by at least 100 names, First Lien Senior Secured, each having a BB/BB+ rating, could generate an annual cash return able to cover at least 10x defaults per year. This kind of buffer should be sufficient to qualify the overall portfolio as Investment Grade-equivalent.

Tail risk minimization

Let us assume that we want to securitize portfolio A, having a size of € 1.000 and formed by one leverage loan with 5% gross return, or portfolio B, having the same size of € 1.000 and formed by 200 leverage loans (€ 5 each).

If we compare portfolio A with portfolio B, we can see that the Gross Return in portfolio A and in portfolio B is identical. However, the unexpected loss and the expected shortfall in portfolio B is much lower than in portfolio A. It is well-known in the credit risk literature that the tail distribution of

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the number of defaults (for example expected loss in the tail of the portfolio distribution) is determined by the default probability of each position alongside the default correlation across names.

In a nutshell, the value creation process shifting from portfolio A to portfolio B is not based on a gross return increase, but is sourced by a lower level of risk, other conditions being equal. Hence, value is created through portfolio diversification as a result of controlling its key determinant, namely (average) default correlation across portfolio positions. High (or perfect for that matter) default correlation is the reason why a single-asset portfolio or a concentrated portfolio cannot be eligible for a securitization process: the minimum conditions to create value are missing.

AI/Deep Learning models and Human Augmentation

The Multi-Layer Neural Network (that is Deep Learning) is the most powerful statistical tool to analyze data and to learn from them. We define 0.5% as the level of 1 year probability of default that identifies the limit between an Investment Grade-equivalent universe and a High Yield-equivalent universe in SME markets. The following illustrative example will clarify the meaning of Human Augmentation applied to credit decisions.

Let's assume that we have to decide to invest in one of 1.000 companies, each of them having the same

default probability of 5%. In private markets we estimate the default probability thanks to the Basel Advanced Credit Rating tools: if the system is well calibrated, we can state that 50 companies out of 1.000 will default. However, we do not know which are the companies that will default.

With the above statistical information, the investible universe falls into the High Yield-equivalent Market (the default probability is 5% and it is higher than the max Investment Grade default probability equal to max 0.5%) and we can set up a risk-adjusted pricing in order to incorporate a credit risk premium with the goal of immunizing the credit risk.

In other words, we do not know which are the 50 companies that will enter into default. However, we can set up a price that – even if we do not eliminate the default risk – can neutralize it at portfolio level, thanks to a risk premium charge on the interest rate.

Thanks to the Deep Learning approach (and assuming that the AI systems are well calibrated as well) we can get additional information and – for this illustrative example – the outcome of the systems suggests to exclude 200 companies from the investible universe. Out of the 200 excluded companies, let's assume that 48 are bad companies and 152 are good ones.

According to the AI/Deep Learning, the asset manager invests in an IG-like portfolio: 800 companies,

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out of which 2 are bad, default frequency 0.25%. The jump from a 5% default frequency portfolio to a 0.25% default frequency portfolio can be defined as Human Augmentation.

Final remarks

The new SME credit funds based on the value creation process via risk minimization can provide a level of principal protection in line with an IG-like risk and at the same time deliver High Yield-like returns.

If we consider that both IFRS and FASB valuation principles are based on a stand-alone analysis of each single asset and do not consider the portfolio risk mitigation, we can say that the NAV could be systematically underestimated. Additional applied research will be published in the near future. ■

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SUMMARY

Starting from a SME First Liens/Senior Secured Portfolio, the minimization of Portfolio Tail Risk jointly with the implementation of SME AI/Deep Learning tools can materially enhance the level of capital protection.

The new approach is potentially able to transform, under certain conditions, the risk profile of an SME First Liens/Senior Secured Portfolio into an Investment Grade-equivalent risk.

The outcome is to invest in SME portfolios, where the level of capital protection is Investment Grade-like while the Returns are High Yield-like.