

E-A-R[®]'s

Fixed Income Research

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Introduction

The traditional objective of investing in fixed income instruments focuses on capital preservation. Nonetheless, some investors and potential "new entrants" may want to go beyond capital preservation and earn higher returns. The search for higher returns could drive some investors to move down the credit quality scale and lead them to invest in so-called high yield bonds - these are bonds issued by companies of poor credit ratings¹, often below or just above investment grade. These bonds tend to offer a higher yield to maturity because they have a relatively higher risk of default. The second issue of the fixed income research note enumerated the different risks of investing in corporate bonds. Amongst those were default/credit risk and sector risk. The focus of this issue is default risk on a particular sector; being the construction sector. Out of four of listed construction companies that EAR considered, only two of them (i.e. Aveng and Group Five) proved to have listed tradable bonds with sufficient data.

Notably, the South African construction sector has been billed by many investors as a dangerous sector (no pun intended). Such perceptions could cast a shadow of risk on the entire construction sector. Consequently these perceptions could see investors demanding a higher risk premium for investing in the sector; with some inferring some strong degree of default risk due to some noise around these companies' difficulties to maintain healthy balance sheets. Therefore, EAR through its latest equity and fixed income research notes; hopes to uncover the degree to which investors can expose themselves to both credit/default,

sector and equity risk associated to selected South African construction companies.

Observable factors of cost/ (loss) and Return

It is important for Investors who participate in fixed income markets, to understand the different layers of risk that come with investing in bond instruments. Apart from market and systemic risks (which will be expounded upon in subsequent issues); there are three main and observable cost / return factors that investors need to consider when evaluating investment opportunities in the fixed income space:

- *Coupon income:* a bond's prospectus defines the stream of coupon payments it will make over the life of the bond. In the case of floating rate bonds/notes, the interest payment due each period will fluctuate based on some base rate; such as the Johannesburg Interbank Agreed Rate (JIBAR), which is a rate banks charge each other for short term loans. Therefore, the interest payment will be the sum of JIBAR plus a credit spread, often referred to as the "margin". In most cases the margin remains constant for the life of the bond. For fixed rate bonds; the bond pays a fixed coupon rate throughout the life of the bond.
- *Dynamics of Discount and Premium Prices:* Bond prices in the secondary market² reflect the current and expected market climate with regards to inflation expectations, general interest rates and credit risk of the issuer in question. Bonds that are purchased at a discount

¹ Credit rating is also known as debt/bond rating is an opinion expressed by the main global rating agencies (such as Fitch, Standard and Poor's and Moody's Investor Services) on the creditworthiness of the bond issuer

² A market where investors buy and sell financial assets (in these case bonds) from and to other investors rather than from the issuing company. The JSE facilitates this.

or premium to the par value pull to par when approaching their maturity dates. Therefore, the price accretion (positive price returns) contributes to the bond's periodic return.

- *Funding risk premium*: different corporates have different funding rates. In some instances, a BBB- corporate may reflect a higher risk premium in the market-place for funding relative to an AA-rated institution.

Credit/Default Risk

These cost/return factors are fairly workable. Be that as it may, the major driver of pricing in potential returns or losses is the default rate/intensity on corporate bonds. At any given point in time, a corporate debt contract will be in one or two states. Either the company performs as expected and thus honours its coupon and principal obligation or the borrower/corporate defaults because it cannot service the bond, by paying coupons and principal when due. The potential of a default event represents the primary risk of corporate bond investing. As such, default risk is quantifiable and one of the key measures of default risk is Loss Given Default (LGD). LGD is the percentage loss rate suffered by the investor/lender on an exposure if the borrower (in this case the corporate) defaults. First, we need to estimate the default intensity/hazard rate of the two corporates, namely Group Five and Aveng. The default intensity/hazard rate measures the probability that a corporate could default, given its risk premium. as the aim is to gauge which of the two construction companies reflects a relatively higher credit risk that could entice investors to move down the credit quality scale. The hazard rate measures the probability of default in a period, conditional on no earlier default event, if any.

Table 1: Default Intensity/Probability Model

Indicators	Group Five	Aveng
Notional Amount Outstanding as at June	R 285 712 000	R 1 731 000 000
Recovery rate	40%	40%
Lambda	2.35%	11.56%
Default density/Probability/Hazard Rate	3.92%	19.27%

Source: Bloomberg and EAR's Workings

The default intensity/probability of default model presented in table 1 does not explicitly consider the individual corporate debt ratings as not all corporates may be rated by rating agencies. The choice for this risk neutral default probability model is informed by the fact that corporates in South Africa price off the sovereign/ government bond yield curve. The notional amounts outstanding reflect the balances as of June 2016; that is the outstanding amount/issued on the bond instrument. The Group Five fixed rate bond matures in November 2017 whilst the Aveng Convertible Bond matures in January 2020. The Recovery Rate (RR) can be viewed in a similar light as the investors' collateral in the event of a default event. Therefore, investors in both Group Five bond instruments as well as Aveng's convertible bond instruments might recover 40% of the outstanding amount. The choice for the same RR of 40% is based on a quantitative methodological assumption which states that, at least 40 to 50 per cent should serve as good indication for average losses. The probability that Group Five might default on its principal obligation over the next year is 3.92%. With regards Aveng, there is a 19.27% that the company might default on its principal obligation. This analysis indicates the following: there seem to be a very low degree of contagion risk premium³ from one construction company to another (i.e. from Aveng to Group 5).

Bondholders of Aveng convertible bond earn a higher risk premium than those of Group Five. Furthermore, the term spread (difference between the yield of a longer dated government bond and that of a shorter dated corporate bond

³ Contagion risk is the risk that the default of one corporate triggers an increase in the default of another corporate

yield) associated to Group Five bond is lower than the one associated to Aveng.

Table 2: Expected Loss

Potential Default Indicators	Group Five	Aveng
Loss Given Default (LGD)	60%	60%
Expected Loss (EL)	R 7 038 471.69	R 200 138 220.00
Unexpected Loss	R 10 527 791.80	R 204 518 307.23
Expected Return	R 6 504 277.11	-R 137 389 470.00

Source: Bloomberg and EAR's Workings

Loss Given Default (LGD) represents an unbiased view of the loss the investor might suffer in a default scenario. A proper, unbiased estimate of LGD is independent of the probability of default estimate, mainly because it is an estimate of a loss once a default occurs. Due to changes in risk trading spreads, the probability of default could rise faster than the LGD. Thus, if Group Five were to default, the bondholder would lose 60% of the exposure at default (EAD) which is an amount made up of the principal and the next coupon payment. Similar to Group Five, investors invested in Aveng convertible bonds could also lose 60% of the EAD. In a case of a default by Group Five, investors could expect to lose R7.04 million. Those invested in Aveng could lose R200.14 million. for the next six months; the expected "absolute" coupon return (as indicates by expected return) that investors could price in, given a default event is R6.5 million on the Group Five fixed rate bond. The higher risk premium that could come with investing in Aveng's convertible bond, could, in the event of a default result in an expected "negative" coupon return (in this case loss) of R137.39 million. This is conditional, among others, on its yield remaining at high levels of around 19.5 per cent which gave rise to a higher expected loss. Furthermore, Aveng's bond proves to be more liquid than that of Group Five. This was confirmed by a relatively static spread between the Group Five bond and the companion government bond. Noteworthy, Aveng is one of the few corporates to issue a hybrid security (convertible bond) which is different from other bond instruments. The Unexpected Loss (UL) deals with the uncertainty with regards to losing an amount that is beyond the expected loss.

This takes into account the volatility of both the default intensity and LGD. The two parameters (statistics) are computed through probabilistic means that suggest the following: a default event is a Bernoulli process (either a company defaults or it does not). Thus, the unexpected loss is partly the upside volatility of expected loss (VoL).

Convertible Bonds – Aveng and Investor Payoff

The first issue of EAR provided a list of the different types of bond instruments; one of which was convertible bond instruments. The second issue of EAR's fixed income research elaborated on the concept of yield advantage which applies to convertible bond holders. Notwithstanding the fact that convertible bonds are scarce and somewhat different from conventional instruments; these are worth analyzing, as they could help investors infer something about those corporates that issue them, such as Aveng. Convertible bonds are a spin off from the traditional corporate bond market. The main difference is that the buyer of the convertible bond has the possibility to convert the convertible bond into shares (mostly ordinary shares) of the issuing company. The behaviour of this instrument is on the crossroad of three asset classes; equity, fixed income and to a lesser extent exchange rate. A simplified definition of a convertible bond is a bond with an embedded call option. The final payoff is written as: $\max(N, Cr * S)$. Where the holder of this convertible bond has the right, at maturity, to swap the face value (N) for shares with price (S), where (Cr) is the conversion ratio.

Most convertibles are American option-style⁴ in their conversion possibilities. The skeleton of a convertible is somewhat simple; the investor receives annual coupon payments (c) until maturity. At maturity, the bond is redeemed by the issuer and the bondholder is entitled to the face value (N). The bond could be redeemed in

⁴ An American style option may be exercised at any time prior to the expiration date

cash but also in shares. Thus, a convertible bond is a path dependent derivative structure.

This is how a convertible bond can be redeemed:

- *Default* – In case of default/credit event, the bond holder will receive what he is entitled to, based on the ranking of the bond in the capital structure of the company.
- *Put* – The bondholder might, when he is entitled to and when it is in his interest, put the bond back to the issuer at the predetermined put value.
- *Forced Conversion* – If the bond gets called, the issuer will pay the investor the call price. But if conversion value (parity) is high enough, the convertible bond will be too far in the money for the investor to give his/her advantage away. The investor is therefore likely to convert the bond into shares. This therefore strengthens the case for proper modelling of the probability that the issuer is going to call the bond!
- *Optional conversion* – the investor decides to convert the bond into shares. Often, this decision is underpinned by the price path followed by the underlying stock. An investor will convert when it is beneficial to do so. A potential scenario would be where the share price has increased greatly and is trading higher than the conversion price. At the same time, the coupon earned should be lesser than the dividend earned on the share (recall yield advantage!)
- *Call* – the issuer will call the bond when he is entitled to and when it is in the issuer's advantage to do so. This is where interest rate path dependency features strongly; when general interest rates decline, the issuer could, for example, squeeze the investors out by calling back the bond. This might help the issuer to finance at lower rates. Even so, the investor has the final say in all this.

- *Redemption at Maturity* – the bond has neither been called nor put, and the conversion value is below the pay-out of the notional amount plus the final coupon.
- *Conversion at Maturity* – the bond has neither been called nor put and the conversion value is high enough for the investor to be repaid in shares.

Therefore, it is likely that an investor would convert if $Cr * S > (K + \text{Accrued interest})$. Where K is the call or early redemption price.

Owing to limited information on Aveng's convertible bond; suffice it to say that, potential investors in the Aveng's bond would earn a yield advantage of 7%. Equally, the yield to maturity of 19.49% is enticing, especially for those willing to hold up to maturity (consider riding down the curve, price returns and coupon income/yield advantage). If the investor were to convert to Aveng ordinary shares on 14 October 2016, they would have converted at R28.70 per share. Therefore, an investor would have converted at a premium to the closing price of R7.15 on the same day (301% premium). Thus, this convertible bond is in the money for the investor to forsake their position, implying that it would be beneficial to hold the instrument at this point as opposed to converting. Furthermore, the expected return loss (*presented in table 2*) decreases if the investment period is longer than six months. So, investors can experience the swings and roundabouts that come with investing.

Conclusion

EAR is of the view that investors should be wary of applying a blanket approach to this sector. The two construction companies are not the same and could offer opportunities to different investors; those who prefer relatively "lazy" returns" could consider Group 5. On the other hand, for those investors who are willing to benefit from price returns and coupon return associated to yield advantage; Aveng presents luring opportunities.

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