

ISSUER IN-DEPTH

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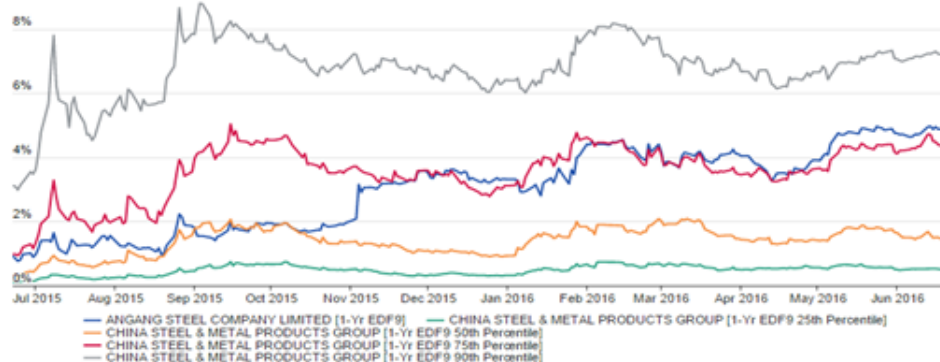
EDF Case Study

Angang Steel's Credit Risk Rises As Local Rating Agencies Remain Sanguine

Angang Steel (Ansteel) is one of China's largest steel producers, but in recent times slower economic growth, coupled with elevated steel production, have put downward pressure on prices and revenues. Ansteel's Expected Default Frequency (EDFTM) has been steadily increasing since mid-2015 as the company's financial risk, as measured by its market leverage, has risen. Earlier this year, the company reported a 28% fall in revenues from CNY 74 billion in 2014 to CNY 53 billion in 2015. Ansteel reported a loss of CNY 615 million in the first quarter of 2016, compared with a CNY 19 million profit a year earlier. According to our probability of default model, Ansteel's credit worthiness should be closely monitored, though does not appear to be at risk of imminent default. The firm's one-year EDF measure currently sits at 4.96% which corresponds to an implied rating of Caa2. This sits well below the optimistic views of Chinese rating agencies, which assess Ansteel as solidly investment grade with a low risk of default.

Exhibit 1

Ansteel's One-Year EDF Measure vs EDF Distribution of Its Peer Industry Group (%)



Source: CreditEdge

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Ansteel's rising credit risk can be partly explained by developments in the macroeconomy. Domestic steel prices declined 45% from the start of 2014 to the end of 2015, pushing up EDFs throughout the Chinese steel sector. China's steel production remains at record levels, despite a domestic push to cut production and pressure from the US and Europe to refrain from flooding global markets. Steel output rose to 70.5 million metric tons in May, 1.8% higher than a year ago and 1.6% higher than in April, though slightly below March's record output of 70.65 million tons. The oversupply has pressured steel prices, leaving many local producers highly indebted.

Amid these more difficult conditions, Ansteel's EDF rose faster than its peers. Our research shows that the trend of a company's EDF metric, alongside its relative movement against its industry peer group, can provide an early warning of default risk. Exhibit 1 shows Ansteel's one-year EDF measure as well as the median, 25th, 75th, and 90th percentile EDFs for the firm's industry peer group: the China Steel and Metal Products Group. Over the past year, the company's EDF measure has increased from 0.75% to 4.96%, while the median EDF for the China Steel and Metal Products Group rose from 0.33% to 1.38%. Its EDF is now in line with the 80th percentile of its industry peer group. The rise in Ansteel's EDF measure, as well as the increase relative to its peer group, confirms that the company's default risk is rising.

However, this doesn't necessarily mean that all Ansteel positions should be abandoned. Moody's Analytics has established thresholds for each industry group, which flags companies with elevated default risk¹. The optimal threshold, or value at which firms in the China Steel & Metal Products Group should be flagged for additional review, is 6.17%. 27 out of 185 companies in that group have EDF measures above this level, suggesting that the group itself is relatively risky, but that Ansteel's EDF does not signify an imminent default risk.

Signals From the EDF Term Structure

Under the updated EDF9 model (which became the default model from July 1, 2015), a company's term structure tends to be upward-sloping during an economic expansion, unless it is in distress. Even as China's economic expansion has slowed in recent months, of the 3,228 Chinese companies in the EDF database just 65 currently show a downward sloping EDF curve, suggesting that such instances are relatively rare.

Exhibit 2 shows Ansteel's five-year annualized EDF measure and its one-year EDF. We observe that the company's PD curve was inverted (the one-year EDF was higher than the five-year EDF) through the financial crisis and again (briefly) in 2010. More recently, the gap between the firm's one- and five-year EDF measures has widened. Ansteel's normal PD curve suggests a somewhat smaller near-term risk of default.

Exhibit 2

Ansteel's One- and Five-Year EDF Measures (%)



Source: CreditEdge

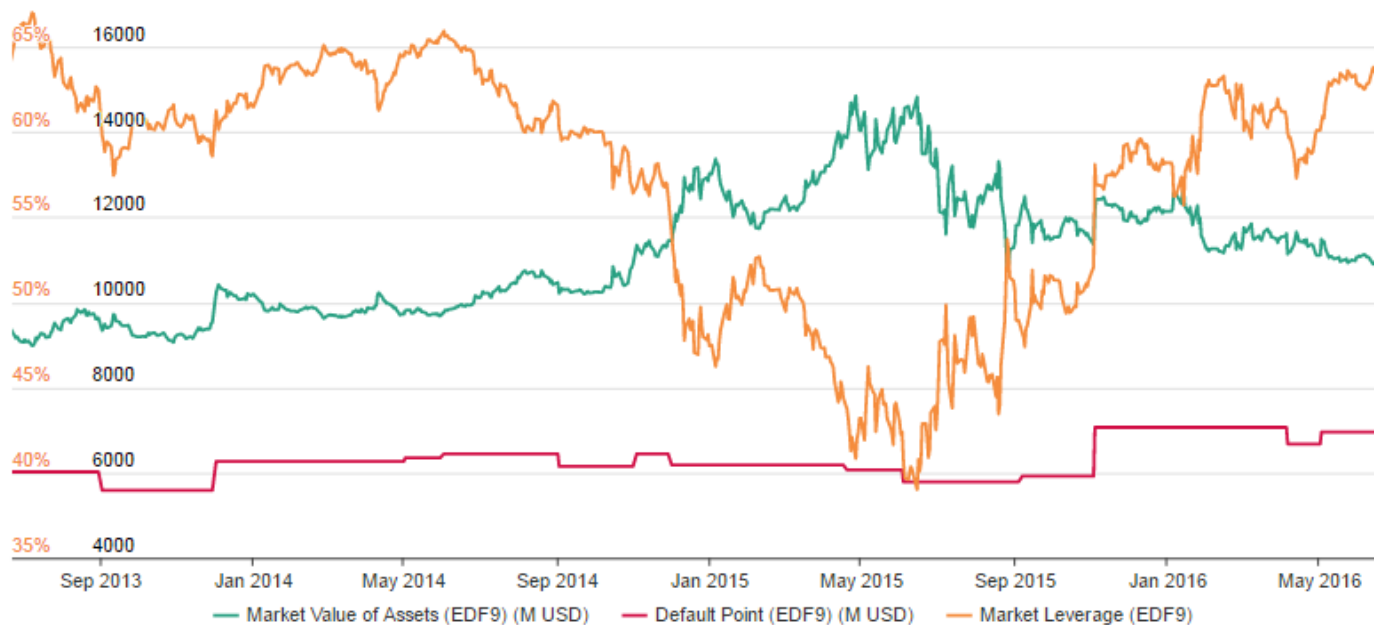
A Closer Look at the EDF Drivers

Expected Default Frequency measures are probabilities of default that incorporate the two primary fundamental drivers of credit risk: financial risk and business risk. In contrast to some black-box statistical models of credit risk, the drivers of the EDF model draw on the fundamental approach to credit analysis, while supplementing it with forward-looking market information. Studying these drivers in addition to the EDF itself reveals that the main reasons for the steady rise in Ansteel's EDF metric over the past year were an increase in the company's default point, a decline in its market value of assets, and consequently, a large increase in its market leverage. Market leverage summarizes a firm's financial risk and is defined as the ratio of a firm's default point to its market value of assets (expressed as a percentage). Unlike book leverage, market leverage reflects the forward-looking views of investors. One can view changes in the market value of a firm's assets as investors' collective view on the expected profitability of a company: when the market value of assets goes up, investors expect future cash flows to increase. The opposite is true when the market value of assets goes down, as in the current case.

Exhibit 3 shows the company's market value of assets, default point, market leverage, and asset volatility. Ansteel's financial risk has been steadily increasing over the past year, driven by a 20% increase in its default point and a decline in the firm's market value of assets from CNY 88.7 billion to CNY 71.7 billion. Ansteel's market leverage currently sits at 63%, suggesting that it is highly levered compared to its peers (its leverage is in line with the 90th percentile of its peers). The firm's asset volatility has risen mildly recently, but remains well below the levels seen in previous years (see Exhibit 4).

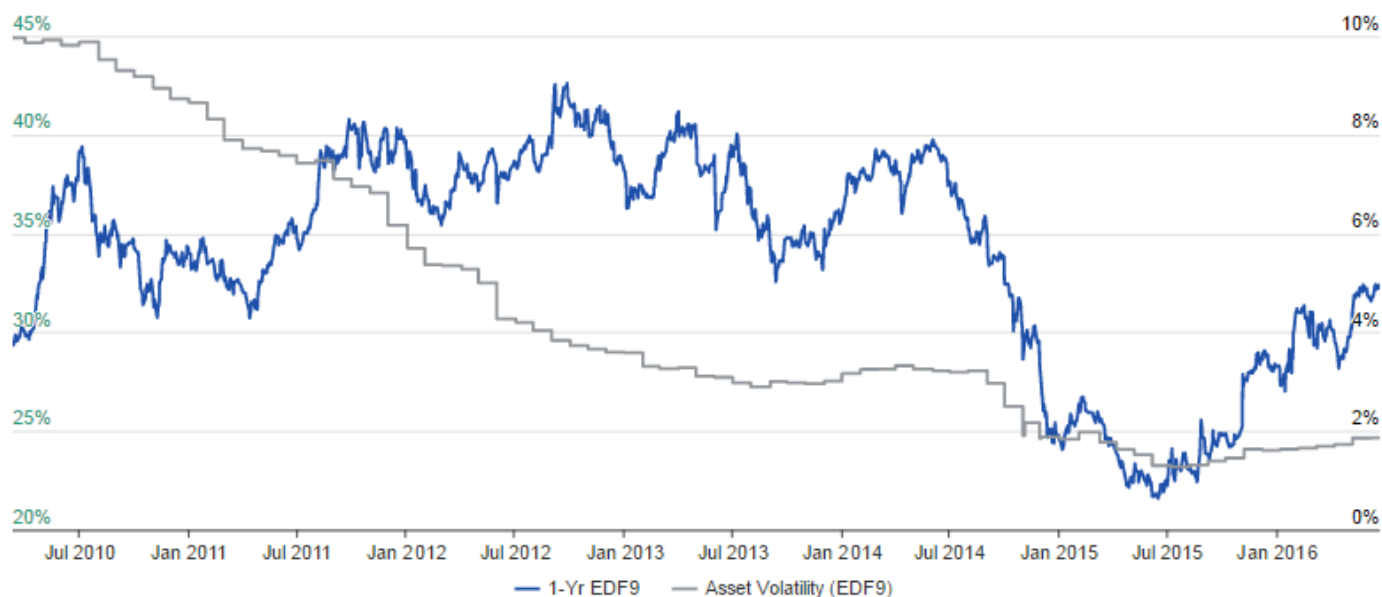
Exhibit 3

Ansteel's Default Point, Asset Volatility and Market Value of Assets



Source: CreditEdge

Exhibit 4

Ansteel's EDF Measure and Asset Volatility

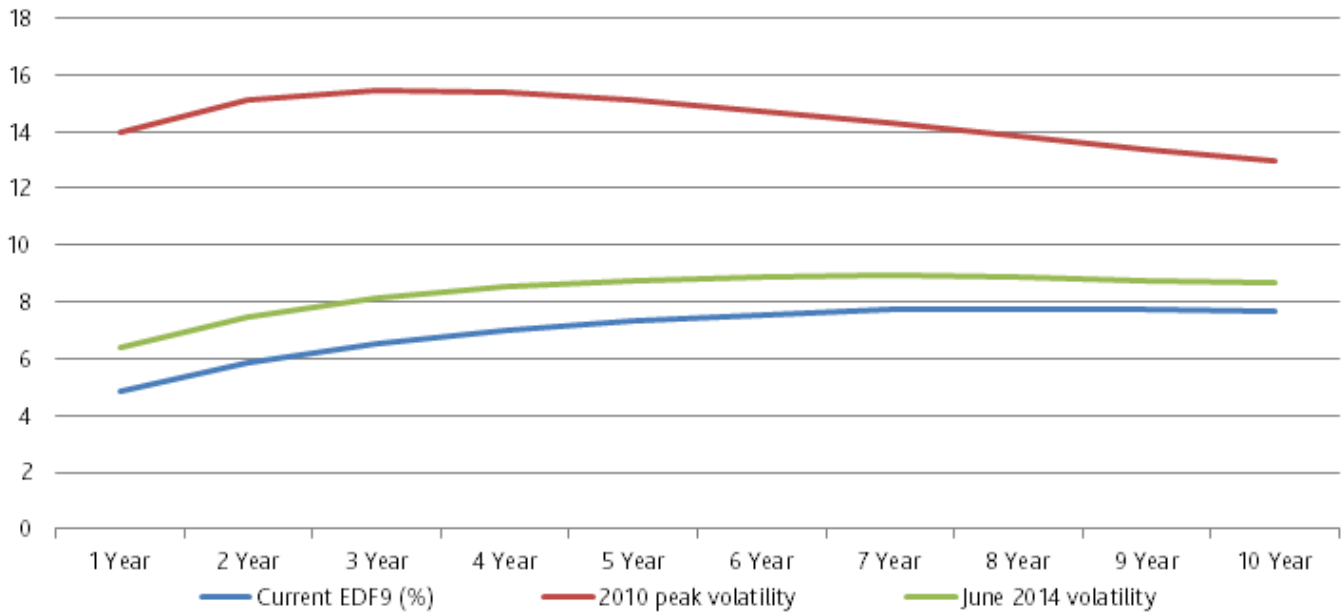
Source: CreditEdge

Stress Testing Angang Steel's Credit Profile

Ansteel's EDF remains elevated, though it is still lower than in 2013 and 2014 when its asset volatility was much higher. At such times, it can be worthwhile to run different simulations to gauge the sensitivity of a firm's credit risk to changing conditions. We present two such exercises here.

The first test uses the CreditEdge What-If tool, which provides a static simulation of a firm's credit risk by altering one or more of the inputs to the EDF model. As mentioned above, the decline in Ansteels's asset volatility since 2010 has prevented the EDF from rising too sharply even as it levered up. Asset volatility sits at 24.7% after being as high 44.8% in 2010 (Exhibit 5). We run two simulations here – one with asset volatility at 28%, which is where it was two years ago when its EDF was elevated, and the other at its 2010 high of 44.8%. The simulations confirm that Ansteel remains vulnerable to a spike in asset volatility.

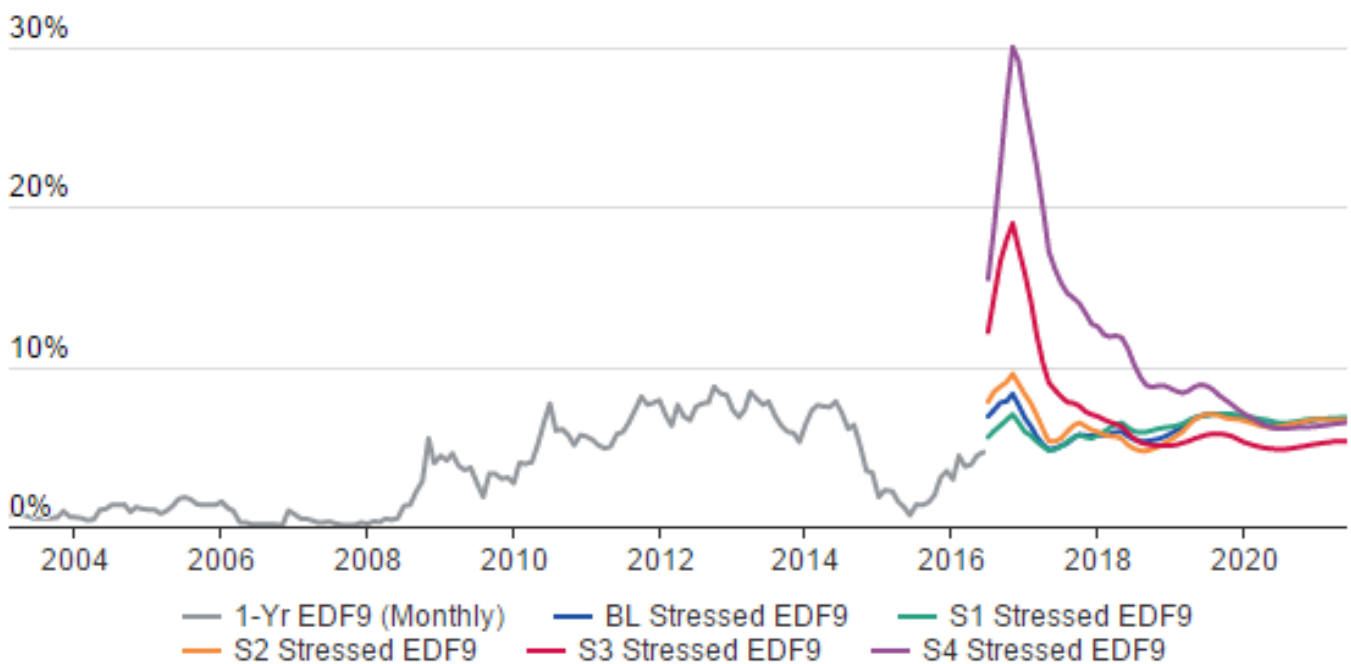
Exhibit 5
Ansteel's EDF Term Structure Under Two asset Volatility Simulations



Source: CreditEdge

Another way to gauge a firm's sensitivity is using the Stressed EDF module, which produces a time series of a firm's one-year EDF conditioned on an economic scenario. Here, we show Ansteel's Stressed EDF path under the Moody's Analytics alternative economic scenarios (known as S1-S4)².

Exhibit 6
Ansteel's One-Year EDF Under Different Economic Scenarios



Source: CreditEdge

The results, shown in Exhibit 6, above, confirm that a change in economic conditions, such as the S3 or S4 downside economic scenarios, would push Ansteel's EDF towards or above 20%, depending on the severity of the downturn.

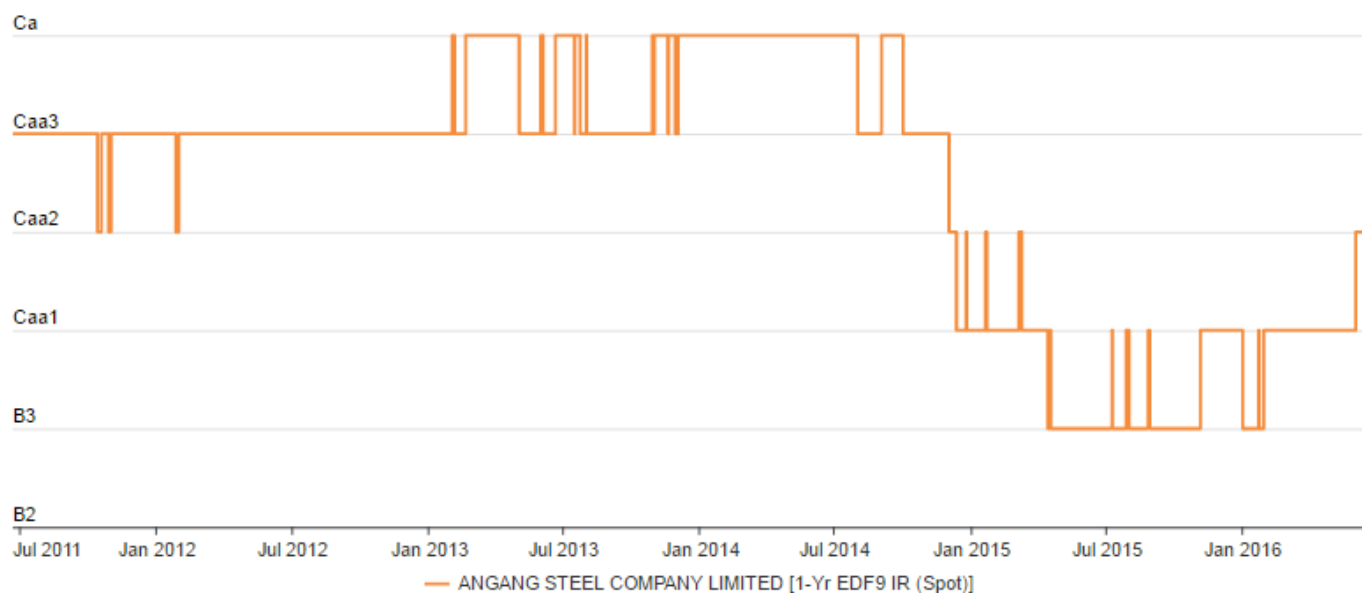
EDF-Implied ratings vs Chinese agency ratings

Ansteel's EDF measure, derived from data in its share price and balance sheet, suggests that it is an elevated default risk. This EDF measure maps to an implied rating of Caa2, suggesting it is non-investment grade with a high chance of default.

Ansteel is unrated by Moody's Investors Service, S&P, or Fitch. However, it is rated by two Chinese rating agencies – Chengxin and China Credit Rating Co. – at AAA and AA+, respectively. This is far more optimistic than what the EDF model implies and suggests a ratings gap of 16 or 17 notches. This is an enormous gap – there are only 21 notches on the Moody's rating scale. So far, Ansteel has not defaulted on any bonds and it may be that the Chinese rating agencies are correct, particularly if there is important qualitative information not captured by the EDF model, such as a promise of government support in the case of default. That said, China's steel sector is consolidating and we remain confident in the power of the EDF model as a forward-looking gauge of PD. The differing opinions suggest, at a minimum, there is value in gathering information from multiple sources when assessing a firm's credit-worthiness.

Exhibit 7

Ansteel's EDF Metrics in Ratings Space



Source: CreditEdge

Conclusion

Ansteel remains a moderate credit risk. Its EDF metric has increased over the past year, in absolute terms and relative to its peers. Yet other signs suggest that it is not at risk of imminent default. Unlike in 2012, its EDF has yet to breach the 90th percentile of its peer group, and its EDF curve remains upward sloping. Assessing credit risk is rarely a simple process and, as with most credits, Ansteel provides mixed signals of default risk. The data confirm that its credit worthiness should be monitored.

Endnotes

- [1](#) The optimal threshold is calibrated using actual defaults. It aims to maximize the number of true positives and true negatives while minimizing the number of false positives and false negatives. For more details please see Baron, I. and D. Ferry. (2016). *Using EDF Measures to Identify At-Risk Names - A Monitoring & Early Warning Toolkit*. Moody's Analytics Viewpoints
- [2](#) Moody's Analytics' economics division (ECCA) produces economic forecasts, updated monthly, under a baseline scenario and various upside and downside alternative scenarios. S4 is a downside scenario of similar severity to the 2009 global recession. S3 is a milder downside scenario

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