MOODY'S ANALYTICS

EDF™ CASE STUDY

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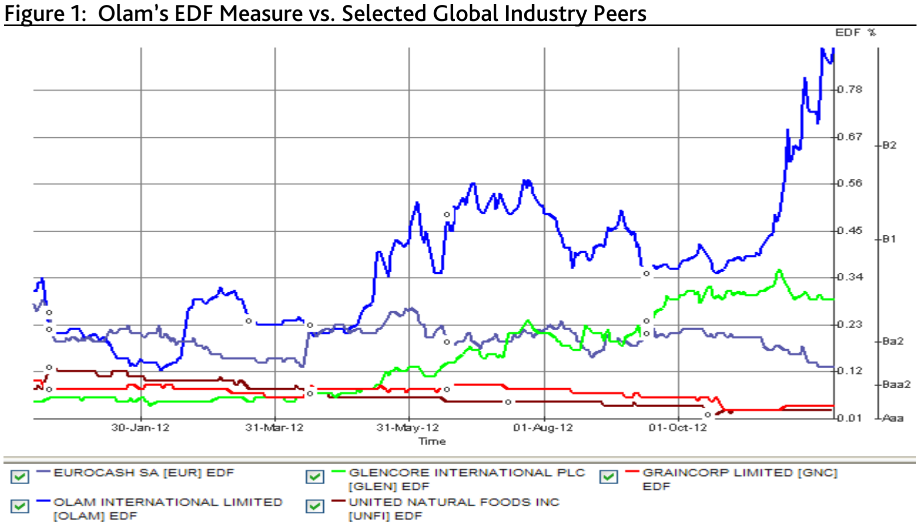
Olam International Limited

Debt Financed Expansion Drives Default Risk Sharply Higher

Summary

- Olam International Limited, founded in 1989, is a leading global trader, producer and wholesale distributor of agricultural commodities. Since Olam does not have any long-term debt rated by Moody's, Moody's Analytics' public Expected Default Frequency (EDF™) model provides a unique tool to assess the credit risk of the company.
- Olam's probability of default has jumped significantly since the start of the year, as the company's debt level increased, and as it attempted to shift from a low-margin commodity trading business to the full-fledged production and processing of agricultural commodities. In September 2012, Olam reported SGD 8.4 billion in short- and long-term debt, while its cash flow from operations was SGD 587 million. The rise in Olam's debt level has increased its default point. As of December 17, Olam's one-year EDF measure stood at 1.17%, up from 0.2% in January.
- To shore up its liquidity, in recent weeks Olam has issued debt with warrants attached. The current 1.17% level of its EDF measure can be understood in terms of the changes in the company's two primary drivers: market leverage and asset volatility. Since January 2012, Olam's market leverage has risen by 25%, driven by a 12% decline in its market value of assets and a 10% rise in its default point. Olam's sharp increase in leverage has more than offset a decrease in its asset volatility over the past two years, and has resulted in a higher and rising EDF level.

Figure 1: Olam's EDF Measure vs. Selected Global Industry Peers



EDF Metric Signals High Degree of Financial Distress

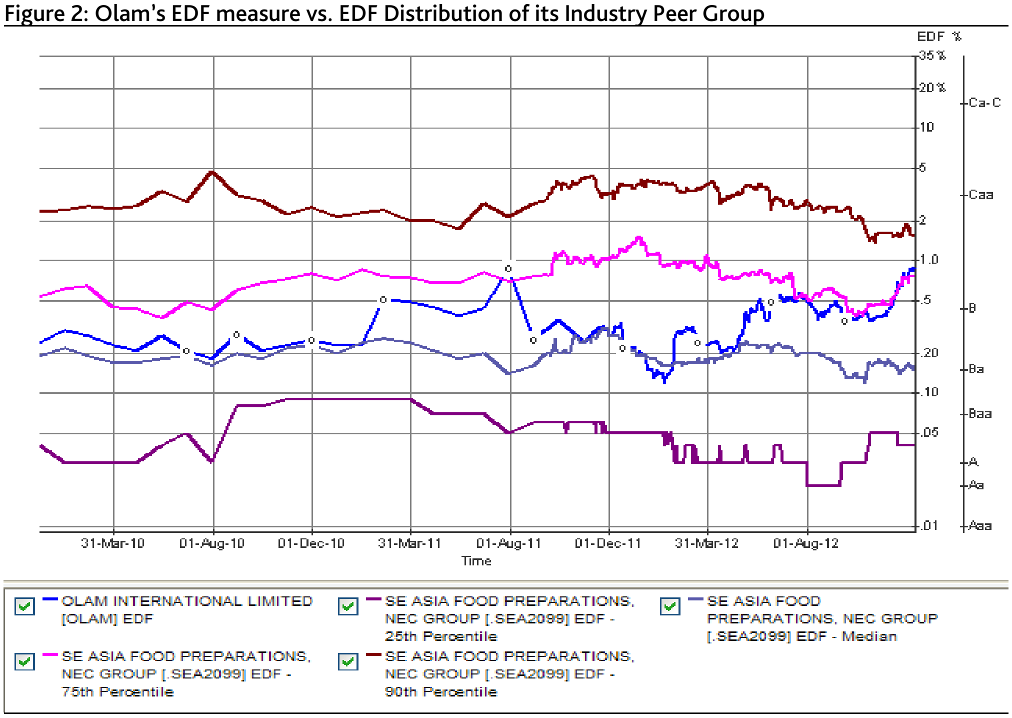
The risk of default for Olam International Limited has increased sharply as the firm has issued debt to finance expansion into the production and processing of agricultural commodities. This, together with low margins and reliance on external funding, has caused investors to question the financial stability of the company. On December 17, 2012, Olam's one-year Expected Default Frequency (EDF) measure stood at 1.17%, up substantially from its 0.2% January level. The pace of deterioration in its EDF metric accelerated over the past two weeks, since November 19, when investors began to question the firm's accounting practices for future increases in the value of its crops and other biological assets.

Because Olam does not have any public debt rated by the major credit rating agencies, Moody's Analytics' public EDF model provides a unique tool to assess the credit risk of the company. Olam's current 1.17% EDF level maps to an implied rating of B3 on Moody's rating scale – a level historically consistent with speculative-grade firms at a relatively high risk of default. The company's current implied rating is down sharply from January, when its 0.02% EDF level implied a rating of Baa.

Since 1989, Olam, the world's second-largest rice trading company after Louis Dreyfus Commodities, has evolved into a multi-product, multi-national supply chain. In 2009 the company began to shift away from a commodity trading business to the acquisition of longer term biological assets, such as farms and plantations. The accumulation of debt to finance the expansion beyond commodities trading over the past three years has led to a significant rise in Olam's probability of default, both in absolute terms and relative to its major competitors Glencore Int., Graincorp Ltd., and United Natural Foods, as shown in Figure 1 on the cover of this report.

In early December, Olam announced a SGD 1.4 billion rights issue plan, intended to improve the firm's liquidity. The plan is supported by both of Olam's biggest shareholders, Kewalram Singapore Ltd. and Temasek Holding Pte Ltd., which own 20% and 16% of the firm, respectively. Temasek has committed to fully underwrite the SGD 1.4 billion issue, potentially raising its stake to 28 percent if other shareholders do not participate.

Figure 2: Olam's EDF measure vs. EDF Distribution of its Industry Peer Group



The evolution of Olam's EDF credit measure clearly illustrates the problems that the firm is facing. However, an analysis of the trend and relative movement against its industry sector sheds additional light on just how much its risk of default has risen. In addition to the level of Olam's EDF measure, Figure 2 shows the median, 25th, 75th, and 90th percentiles of the EDF for Olam's industry peer group, the South East Asia Food Preparations group. Relative to the other firms in its peer industry group, since the beginning of 2012, Olam's EDF measure underperformed the approximately 0.19% median EDF of its industry sector. Over the past six months the firm has been trending among the 75th percentile of the riskiest firms in its industry. Olam's current level of EDF measure is in line with its EDF level in July 2011, when the commodities trader announced that it was raising about SGD 720 million in a share sale to fund acquisitions and agricultural investments. In the last fiscal year, which ended on June 30, the company reported gains of SGD 111 million on its biological assets, an increase of 38% over the previous fiscal year, along with net annual earnings of SGD 371 million. However, investors are concerned over whether Olam is properly accounting for these gains, which are reported in its income statement as a source of income. Olam also reported an increase in its total debt of SGD 8.4 billion for its fiscal quarter that ended September 30, which is more than four times the SGD 1.9 billion it reported in 2007.

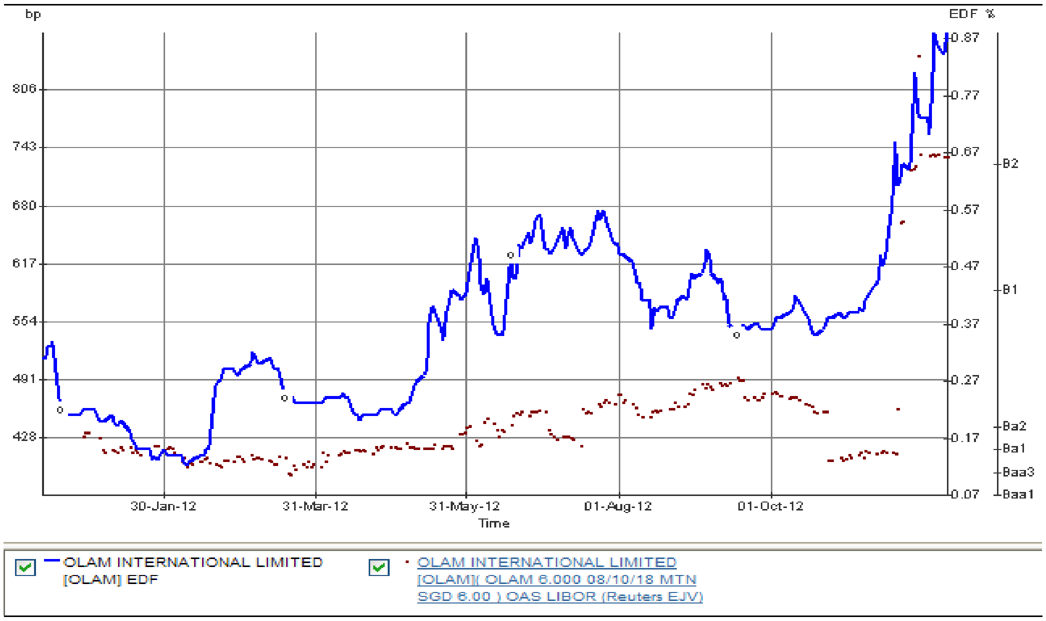
Furthermore, the increase in Olam's EDF measure was in sharp contrast to changes in the median EDF level for the SE Asia Food preparations group as a whole, which was essentially flat over the same period. Moody's Analytics' research has shown that firms that underperform their industry sectors, regardless of the level of their EDF measure, tend to experience higher default rates. Based on data from 1992 to 2011, we calculated actual default rates conditioned on a firm's relative performance versus its sector. Relative performance is measured by the difference in the change in a firm's EDF measure and the change in its industry median EDF measure. Figure 3 shows the results. Firms whose EDF measures increase by 3% more than their sectors experienced a default rate 11 times higher than firms that tracked their sector (a difference of zero). Between January 2012 and December 2012, Olam's EDF measure worsened by 585%, while the SE Asia Food preparations group's median EDF improved by 23% over the same time period. Hence, the trend versus its industry group shows the heightened risk of default for the company. The firm's high and rising EDF measure in terms of both level and relative basis indicates that the firm has come under serious financial pressure.

Figure 3: Average Realized Default Rates by EDF Level and Relative Performance vs. Industry Sector

		EDF Change Relative to Industry Peer Group Change										
		1	2	3	4	5	6	7	8	9	10	ALL
Firm EDF Level	1	0.05%	0.03%	0.02%	0.00%	0.00%	0.01%	0.03%	0.00%	0.00%	0.00%	0.02%
	2	0.10%	0.05%	0.06%	0.06%	0.00%	0.00%	0.02%	0.07%	0.11%	0.27%	0.05%
	3	0.10%	0.06%	0.01%	0.03%	0.01%	0.03%	0.07%	0.06%	0.03%	0.18%	0.05%
	4	0.28%	0.12%	0.17%	0.15%	0.09%	0.10%	0.08%	0.09%	0.17%	0.30%	0.15%
	5	0.32%	0.23%	0.24%	0.32%	0.22%	0.24%	0.21%	0.27%	0.22%	0.46%	0.27%
	6	0.62%	0.44%	0.45%	0.34%	0.44%	0.56%	0.44%	0.72%	0.51%	0.97%	0.55%
	7	0.71%	0.56%	0.66%	0.80%	0.64%	0.72%	0.73%	1.06%	1.18%	1.63%	0.89%
	8	1.01%	1.01%	1.19%	1.25%	1.27%	1.44%	1.58%	1.65%	2.05%	3.10%	1.68%
	9	3.14%	2.22%	4.83%	5.16%	5.25%	4.34%	4.87%	5.75%	6.37%	8.39%	5.60%
	10	6.43%	4.68%	5.76%	7.70%	7.70%	6.96%	7.67%	9.31%	9.99%	13.70%	8.94%
	All	0.66%	0.63%	1.08%	1.73%	1.73%	1.83%	2.24%	2.92%	3.13%	5.96%	2.16%

One of the advantages of the public EDF model is that it uses equity market information together with fundamental financial statement data to estimate probabilities of default. As we show in Figure 1, the liquidity of the public equity market relative to the bond or credit default swap markets enables EDF credit measures to signal sudden changes in default risk. Figure 4 shows that the bond market was relatively slower to re-price the risk of default following certain key events. Here we compare the performance of the public EDF measure for Olam and the spread over Libor on Olam's 6% bonds maturing in 2019. Credit spreads (both bond and CDS) are often used as proxies for early warning of credit risk. However, as seen in Figure 4, Olam's EDF measure doubled within the first few months of 2012 and continued to rapidly increase to its current level of 1.17%, while the bond spread increased by just 2%. Only after the concerns expressed by investors in November did Olam's bond spread jump by 75% to its currenlt level of 724 bp.

Figure 4: Olam's EDF Measure and its Bond Spread Over Libor



A Deeper Dive: Understanding the Drivers of Olam's EDF Credit Measure

In this section we look into the drivers of Olam's EDF measure in more detail. In contrast to some black-box statistical models of credit risk, the drivers of Moody's Analytics' EDF model have direct connections to basic concepts of fundamental credit analysis. Studying these drivers in addition to the EDF measure itself helps identify why a firm's default risk is changing.

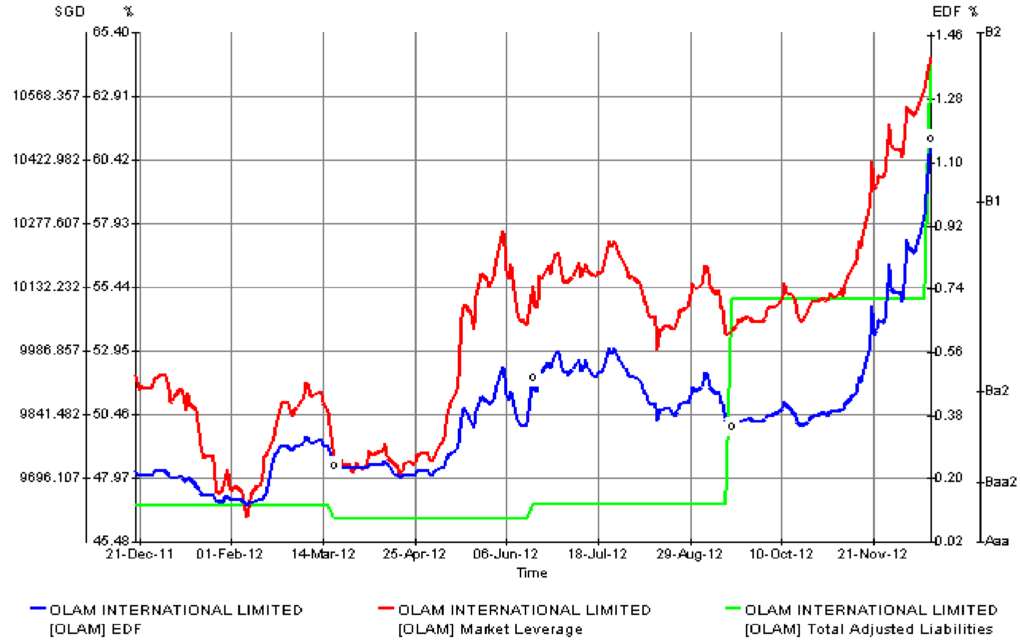
Moody's Analytics' public firm EDF model belongs to a class of credit risk models referred to as structural or asset value models. The basic assumption of asset value models is that there is a causal, economically motivated reason that default occurs. Default is highly likely to occur when the market value of the firm (the sum of the value of its market capitalization and debt) is insufficient to cover its liabilities due at some future date – i.e. firms tend to default when they are insolvent. This follows from the fact that equity holders are residual claimants on the value of the firm. If the market value of the firm is negative, equity holders can and often will "put" the residual value of the firm to creditors.

The above economic intuition can be translated into three quantifiable variables: the expected value of a firm's assets (*A*), the volatility of its assets (denoted by σ), and its default point, *X*, which is determined by a firm's liabilities. The interaction of the three variables is encapsulated by the firm's distance-to-default (*DD*) which, under some largely innocuous assumptions, can be expressed as:

$$DD \approx (\ln(A)-\ln(X)) / \sigma$$

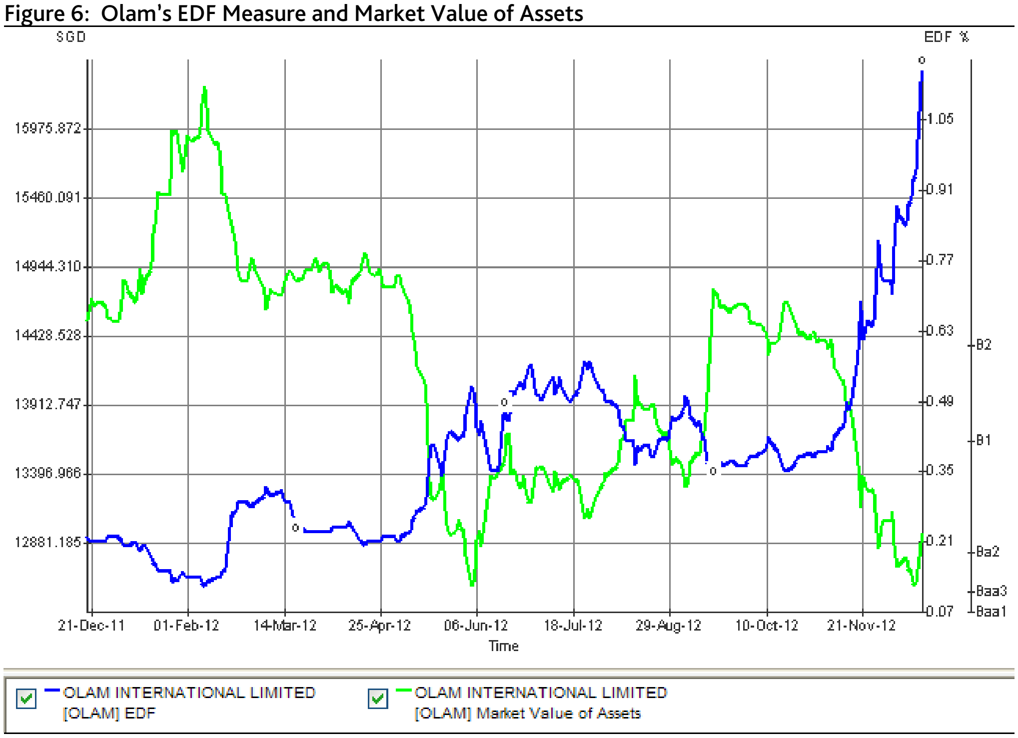
This simple equation essentially states that a firm's relative credit risk (measured by *DD*) is a function of its financial risk and its business risk, two factors that are core concepts of fundamental credit analysis. The numerator of the above equation measures market leverage – i.e. financial risk. All else equal, higher leverage decreases *DD* and hence increases the probability of default. The denominator of the *DD* equation can be viewed as business risk. Firms in industries with high asset volatility tend to exhibit higher risk of default, all else equal. Once we have calculated a firm's *DD*, we can derive its probability of default (its EDF measure) by looking at the historical average default rate consistent with each *DD* level.

Figure 5: Olam's EDF Measure, Total Adjusted Liabilities, and Market Leverage



Olam's rising EDF measure has been caused by both rising financial risk and worsening operating performance (equivalently, rising business risk) over the past two years. In Figure 5 we show how its financial risk, measured by its total adjusted liabilities and its market leverage, have both increased sharply since the start of the year. The firm's aggressive investment into the acquisition of assets such as dairy farms, orchards and rubber plantations, drove the 10% increase of the total liabilities this year alone. In September, Olam had reported SGD 8.4 billion in short- and long-term debt, which is more than four times the SGD 1.9 reported at the end of 2007. Market leverage is the ratio of a firm's default point – which is calculated as short-term liabilities plus 50% of long-term liabilities – to its market value of assets. Unlike traditional measures of financial leverage (such as debt to assets), market leverage incorporates the forward-looking views of investors. The equity market has responded to the company's troubles by bidding the value of its shares lower, leading to a reduction in the market value of its equity, and lower market value of assets.

Figure 6: Olam's EDF Measure and Market Value of Assets



Since Olam announced that it would raise SGD 720 million in a share sale to fund acquisitions and agricultural investments in the summer of 2011, the market value of Olam's assets has dropped by 20% from SGD 15.8 billion to SGD 12.9 billion. Over the same period Olam's default point increased by 10%, to its current level of SGD 8.3 billion, which puts Olam's market value of assets closer to its default point. Historically, when a firm's market value of assets falls below the default point, it is highly likely it will be unable to sell assets or raise additional capital to pay its creditors.

The fall in the market value of assets and the rise in its default point has in turn led to a significant increase in Olam's market leverage. Olam's market leverage rose from 50% in January 2012 to its current level of 65%. Olam's current market leverage is in the 75th percentile of South East Asia large corporate group.

Another driver of Olam's rising probability of default is its asset volatility, which measures the operating performance of the firm. Olam's aggressive investments in its agricultural business should, theoretically, help diversify its revenue sources and reduce its business risk. The history of Olam's asset volatility seems to bear this out. The firm's current level of asset volatility of 13% ranks it in the 15th percentile of firms in the South East Asian large corporates group. Since 2010 its asset volatility has fallen by 25%, from 17.5% per annum to 13% per annum. Falling asset volatility will, all else equal, lead to lower EDF levels (as the DD equation above shows). However, Olam's sharp increase in leverage has more than offset this effect, and resulted in a higher and rising EDF level.

Summary

Olam's probability of default has jumped significantly since the start of year, from 0.2% to its current level of 1.17%, suggesting heightened risk of a credit event. The firm's low margins, increasing debt levels to fund agricultural investments, liquidity concerns, and a deteriorating market capitalization, all indicate that the firm's probability of a credit event has increased. The firm's EDF measure has underperformed its industry peer group, which according to Moody's Analytics' research is an early warning signal of default risk. Since January 2012, Olam's EDF measure has risen nearly five-fold, while the South East Asia Food Preparations group's median EDF improved by 23% over the same time period. The rise in Olam's EDF level has been caused primarily by an increase in Olam's market leverage (financial risk). Since January 2012, Olam's market leverage has risen by 25%, driven by a 12% decline in its market value of assets and a 10% rise in the firm's default point. Ongoing investors' concern about Olam's accounting practices and rising debt levels has led to a significant rise in the company's probability of default, both in absolute terms and relative to its major competitors.

Report Number: 148241

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