

EDF CASE STUDY Research in Motion Ltd.

Moody's Capital Markets Research, Inc.

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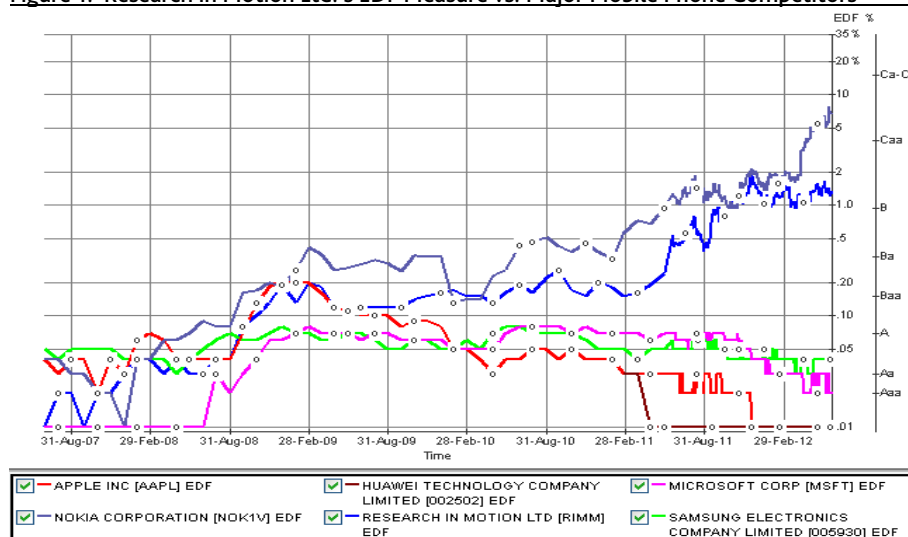
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Summary

- Since Research in Motion (RIM) Ltd.'s June 2011 announcement that its revenue dropped for the first time in nine years, the firm's one-year probability of default has increased by 215%, from 0.45% on June 21, 2011 to 1.42% as of June 21, 2012. The deteriorating momentum in RIM's EDFTM measure and its underperformance relative to its peers in the US & Canada technology and IT services group, indicate that RIM is a relatively risky firm among its direct competitors.
- In May 2012, RIM warned of further likely operating losses as Android-based mobile phones gain strength in emerging markets, and as RIM continues to lose ground to rival Apple Inc.'s iPhone. Apple and Samsung together hold 55% of the mobile phone market, leaving RIM, the designer and developer of the BlackBerry, with only 9% market share.
- The increase in RIM's EDF measure has been driven by deterioration in its two primary components, market leverage (financial risk) and asset volatility (business risk). Between 2007 and 2010, RIM's asset volatility increased at the same time that its market leverage increased, resulting in a significant rise in its EDF level. RIM's market leverage has more than doubled since June 2011 to its current 38.8%. Its 29.8% annualized asset volatility places it in the 80th percentile of its industry sector, making it one of the more risky companies on that metric.

Figure 1: Research in Motion Ltd.'s EDF Measure vs. Major Mobile Phone Competitors



Fierce Industry Competition Drives RIM's Default Risk Higher

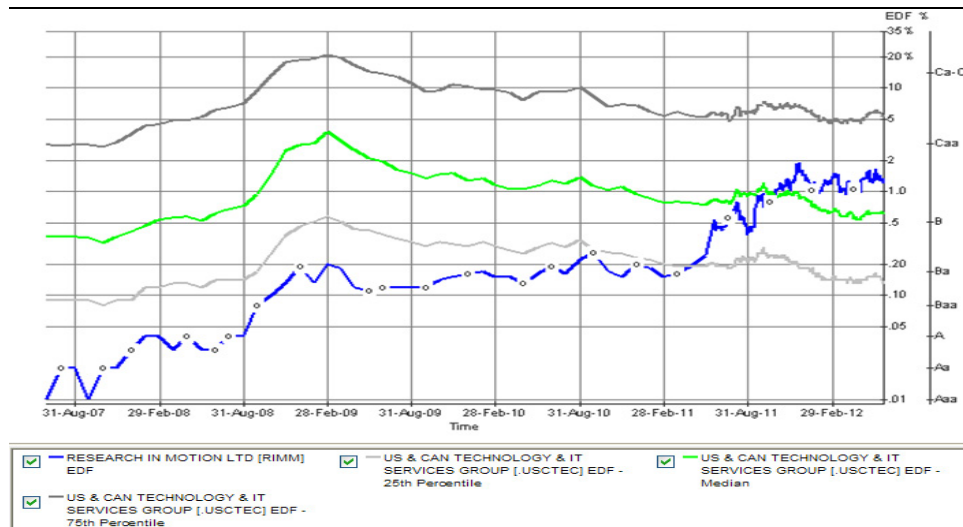
The Expected Default Frequency (EDF) measure for Research in Motion Ltd. (RIM), the developer and designer of the BlackBerry smartphone, has experienced a sharp rise over the past year. The firm's one-year probability of default increased from 0.45% in June 21, 2011 to 1.42% as of June 21, 2012. The company that was once known as the fastest growing company in the world with a growth of 84% in profits between 2006 and 2009, has experienced a dramatic decline in sales of its BlackBerry devices due to the growth in demand for Apple Inc.'s iPhone and Google Inc.'s Android-based mobile phones.

Because RIM does not have traded bonds or CDS from which to observe credit spreads, and because it is not rated by any of the major global credit rating agencies, Moody's Analytics' public EDF measures provide a unique view into the company's credit risk. As Figure 1 on the cover of this report shows, the failure of RIM to keep pace with changes in consumer tastes in the mobile phone market has led to a significant rise in its probability of default, both in absolute terms as well as relative to its other major competitors. Only Nokia, which is facing similar competitive pressures, has performed worse.

RIM once held a dominant position in the mobile phone market with 44% of US market share in 2009. As of June 2012, that share has fallen to under 10%. RIM was once Canada's most valuable company. However, from June 2008 to June 2012, the company's market capitalization dropped from USD 83 billion to USD 5.5 billion. On May 31, 2012 the company announced that it will undergo a restructuring involving thousands of layoffs across its worldwide operations.

As we show in Figure 2, in addition to the rising level in its EDF measure, RIM has also underperformed its peers in the US and Canada technology and IT services group. Here we show the trend in RIM's EDF measure over the last five years, as well as the median, 25th, and 75th percentile EDF for its industry peer group. Over the past year RIM's EDF measure has been trending above the median EDF for its industry sector, and is currently twice as high as the median of its sector. Furthermore, the increase in RIM's EDF measure since June 2011 was in sharp contrast to the changes in the median EDF level for the US & Canada technology and IT services group, whose EDF metric improved by 26% over the same period.

Figure 2: RIM's EDF Measure vs. EDF Distribution for US and Canada Technology and IT Services Group



Moody's Analytics' research has shown that firms that underperform their industry sectors, regardless of the level of their EDF measure, experience higher default rates. Based on data from 1992 to 2011, we calculated one-year default rates conditioned on a firm's EDF level and on the relative EDF change 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. For ease of presentation, we bucketed EDF levels and change versus sector into ten equally sized categories (deciles). Firms whose EDF measures underperform their industry sectors (categories 6 through 10) experience higher default rates, regardless of EDF level. In Figure 3, this is shown by the fact that default rates increase from left to right. Taken with the

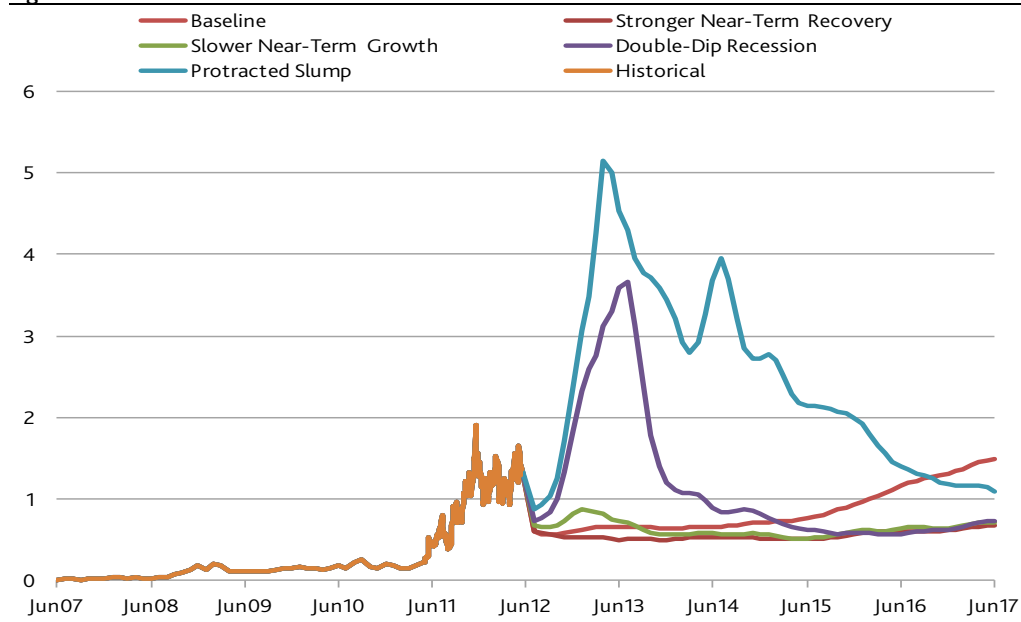
data from Figure 3, the table suggests that the trend of RIM's EDF metric versus its industry group shows relatively heightened risk of default in both absolute and relative terms.

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

Firm EDF Level	EDF Change Relative to Industry Peer Group Change										ALL
	1	2	3	4	5	6	7	8	9	10	
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%

Despite the recent sharp rise in credit risk for RIM, bankruptcy seems a remote possibility in the near term. With USD 2 billion in cash, the company can likely stay afloat for some time. However, given its weakened competitive position and rising trend in credit risk, the company is vulnerable if the economy experiences another downturn. Although the likelihood of another recession in North America is viewed as minimal, recent weak US employment data, coming on top of the high uncertainty about the potential effect of the sovereign debt crisis in Europe, nevertheless makes an economic slowdown a nontrivial concern.

Figure 4: Stressed EDF Measures for Research In Motion Ltd.



Stressed EDF credit measures, a recent innovation by Moody's Analytics, enable us to look into potential future changes in a firm's default probability conditioned on several different macroeconomic scenarios.¹ The model examines the behavior of EDF measure for a baseline, one upside, and three downside economic scenarios with a five year prediction horizon. Figure 4 shows the one-year EDF measures for RIM under Moody's Analytics' latest economic scenarios.² According to the baseline macroeconomic scenario, which is predicated on gradual economic growth, credit risk for RIM may subside in the near term, but will not return

¹ Complete details of the Stressed EDF model estimation process can be found in the methodology document "Stressed EDF™ Credit Measures," available on www.moodyanalytics.com.

² As of June 2012. See "U.S. Macroeconomic Outlook Alternative Scenarios", available on moodyanalytics.com.

to levels observed over the 2007-2010 years. Indeed, the trend in RIM's EDF under the baseline scenario is to worsen in the long run, despite the more favorable predicted macroeconomic environment. In the event that the US and Canada experience another sharp economic downturn, RIM's EDF measures would jump considerably. As Figure 4 shows, RIM's EDF probability of default would rise to over 5% in the event of a protracted economic slump, and to about 3.5% in the event of a "double-dip" recession.

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

In this section we examine the drivers of RIM's EDF measure. In contrast to some black-box statistical models of credit risk, the drivers of the EDF model share many of the same basic approaches to measuring credit risk as fundamental credit analysis. Studying these drivers in addition to the EDF itself helps identify why a firm's default risk is changing.

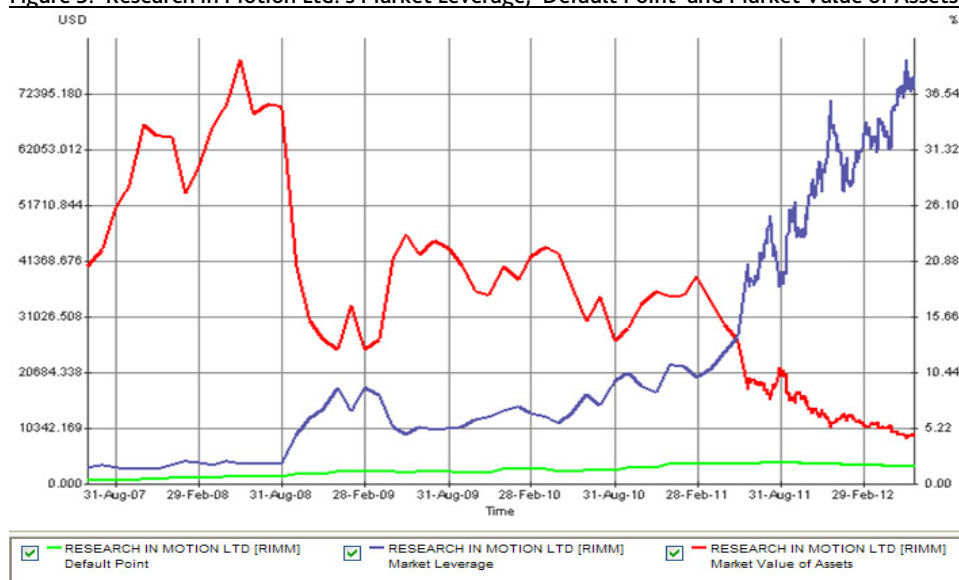
Moody's Analytics' public firm EDF model belongs to a class of credit risk models referred to as structural or asset value models. The basic assumption of asset value models is that there is a causal, economically motivated reason that default occurs. Default is highly likely to occur when the market 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 . The default point represents the amount of a firm's liabilities due in the future that would trigger a default if not paid on time. 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:

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

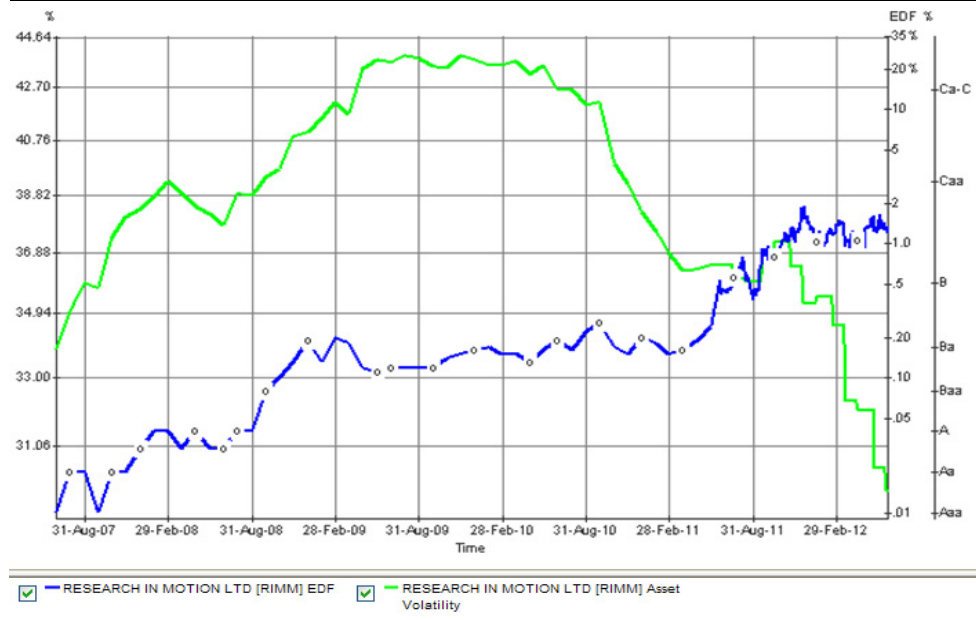
This simple equation essentially states that a firm's relative credit risk (measured by DD) is a function of its financial risk and its business risk, two factors that are core concepts of fundamental credit analysis. The numerator of the above equation measures market leverage – i.e. financial risk. All else equal, higher leverage decreases DD and hence increases the probability of default. The denominator of the DD equation represents the firm's 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: Research in Motion Ltd.'s Market Leverage, Default Point and Market Value of Assets



The sharp and sustained increase in RIM's EDF metric starting in 2008 has primarily been the result of rising market leverage (which is measured as the ratio of the default point to the market value of assets). Figure 5 shows the time series of RIM's market leverage, market value of assets, and its default point. In the fourth quarter of the fiscal year ending March 2012, RIM announced a net loss of USD 125 million, its first net loss since the fourth quarter of fiscal year 2005. RIM's sharp increase in market leverage has been driven by pronounced decline in the firm's market value of assets. The equity market has responded to the company's increasing troubles by bidding the value of its shares lower, leading to a reduction in the market value of its equity, which has in turn led to an increase in its market leverage. The financial risk of the company, measured by its market leverage, rose by 102%, from 19.15% in June 2011 to 38.8% as of June 21, 2012. During the same period of time the market value of RIM's assets dropped by 54% from USD 19 billion to USD 8.7 billion in June 2012. The firm's current default point is USD 3.3 billion.

Figure 6: Research in Motion Ltd.'s EDF Metric and Asset Volatility



RIM has recently taken a number of steps in an effort to increase its operating performance. The company recently announced that its goal is to save USD 1 billion in operating costs annually by cutting the number of manufacturing sites and by shedding 2,000 to 3,000 employees. RIM's default point has come down as it pivots from a growth to cost saving business strategy, with total adjusted liabilities falling by 7.1% over the past year. The changes have also helped bring down RIM's business risk, as measured by its asset volatility (which is the standard deviation of the annual change in the market value of assets), shown in Figure 6. RIM's asset volatility has been declining since 2011, and currently stands at 29.83%. Despite the improvement, that figure is relatively high, corresponding to roughly the 80th percentile in its peer US & Canada large corporate group. The recent relative improvement in operating performance has, however, not been enough to halt the rise in its probability of default. Between 2007 and 2010, RIM's asset volatility increased by 28% to about 43.5% at its peak. The increase in business risk occurred at the same time that RIM's market leverage was increasing, which resulted in a jump in its EDF level. Given the firm's high and increasing market leverage, the effect of the improvement in its business risk is marginal.

Summary

RIM does not have traded bonds or CDS from which to observe credit spreads, and is not rated by Moody's Investors Service. However, Moody's Analytics' public EDF measure effectively captures and quantifies changes in the company's credit risk. Since Research in Motion Ltd.'s June 2011 announcement that Q1 2011 revenue would drop for the first time in nine years, the firm's one-year probability of default increased from 0.45% on June 21, 2011 to 1.42% as of June 21, 2012. The deteriorating momentum in RIM's EDF measure and its underperformance compared to its peers in the US & Canada technology and IT services group

indicate that RIM is a relatively risky firm among its direct competitors. The increase in RIM's EDF measure has been driven primarily by an increase in its market leverage (financial risk). Between 2007 and 2010, its asset volatility increased at the same time that its market leverage was increasing. The firm's market leverage rose by 102%, while the market value of RIM's assets dropped by 54%. The firm's current level of asset volatility is at the 80th percentile of firms in its industry peer group. Despite the recent sharp rise in RIM's credit risk, bankruptcy seems a remote possibility in the near term. With USD 2 billion in cash, the company can likely stay afloat for some time. However, given its weakened competitive position the company remains vulnerable.

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