

## Chapter 3

### Literature Review

#### 3.1 Market Efficiency and Information Flows

The Efficient Market Hypothesis (EMH) introduces the concept of an efficient market whereby information is fully reflected in security prices at any point of time (Fama, 1970). The author further categorised three forms of market informational efficiency according to the extent and speed of price adjustment towards information. The weak form whereby stock prices reflect only historical information states that there is no excess returns on the stocks based on these information. The semi-strong form whereby all publicly available information is reflected in stock prices states that there is no excess returns on the stocks due to these information. The strong form, on the other hand, dictates that share prices reflect all information both publicly available or not, and that there is no excess returns even if one has private information.

As EMH is closely linked with the flow of information, this scope of study has been much visited by researchers. Through this hypothesis, the strong form dictates the efficient dissemination of any new information into the market, that is, the information will be reflected in the market prices almost immediately. Most financial researches on the informational efficiency have found almost efficient market situations in disseminating and incorporating new information.

Pinches and Singleton (1978), from their research on 207 bond rating changes in the US market by Moody's between year 1950 and 1972 had found that the market returns precede the actual bond rating announcements. The authors found that investors have anticipated rating changes some 15 to 18 months before the actual rating action itself. They concluded that the stock market is highly efficient in disseminating information pertaining the rating; no excess returns will be gained during the announcement itself.

Chan (2002) in his study on speed of share prices reaction to systematic information such as earnings disclosure found that in the Hong Kong stock market, prices would on average adjust within six days from the date the information is conveyed to the market. These findings were based on the analysis of daily closing index values between January 1988 and December 1996 of both Hang Seng Index and the HK-All-Ordinaries Index. The author further found that the New York and Tokyo markets, within the same time period, also display similar characteristics.

On the other hand, Followill and Martell (1997) had found that actual bond rating change announcements by itself will not convey new information to the investing market if some other information channel has been established before. The authors had found through their study on 46 bond rating review announcements by Moody's of the US market between 12<sup>th</sup> December 1985 and 26<sup>th</sup> May 1988 that stock values are relatively unaffected

during a rating change announcement if there is a rating review announcement made previously.

Other researches have indicated a lower market informational efficiency. The study by Mulugetta, Movassaghi and Zaman (2002) pertaining the impact of S&P's ranking changes of US firms towards stock prices had shown positive (negative) market reaction towards ranking upgrades (downgrades). By applying the market model in their analysis of 2,543 stock ranking changes by S&P between January 1993 and December 1995, the authors concluded that such ranking changes were unexpected and hence new informational content is perceived by the investing market.

In relation to this notion, Patell and Wolfson (1982) studied on the timing employed by companies in announcing corporate disclosures. Their research were based on about 1,000 announcements on earnings and dividends grouped as "good news" and "bad news" which were issued by 86 US firms in years 1976, 1977 and 1979. The authors found that companies are more inclined to release "good news" during the trading period of the day, and to disseminate "bad news" after the close of trading period.

This theory is also supported by another study on the US market by Kothari, Shu and Wysocki (2009) who concluded that a firm's management will on average delay its communication of bad news to its investors. The authors found through their research of 965 good and 3,051 bad news on

management forecast earnings that stock prices are comparatively more reflective of good news rather than bad news. They implied on the possibility of leaking of good news by the management into the market and hence led to earlier readjustment of stock prices and hence a reduced market reaction during the actual announcement. On the other hand, dissemination of bad news are implied to have been delayed as far as possible, leading to higher magnitude of market reaction when the announcement is made.

### **3.2 The informational value of bond ratings**

The informational content of a bond rating may be measured through several different methods. One of them is the frequency of credit default within a rating class. This method is applied by independent credit rating agencies such as Standard & Poor's and RAM via publication of default studies, usually on a yearly basis.

Another method which has been extensively researched in the US market is by studying the relationship between a credit announcement and bond returns (Kliger and Sarig, 2000). May (2010) had found statistical significance in the positive correlation between bond returns and bond rating announcements; that is, downgrades generally incite negative bond returns while upgrades induces positive bond returns, albeit on a smaller scale as compared to the former.

Prior research by Katz (1974) implied that the efficiency of bond market in incorporating new information is low. Through the study on the process of price adjustment for 115 bond rating announcements issued by utility companies, it is found that bond prices require an average of six to ten weeks before fully adjusting to the rating change. The author has attributed the long time lag to the presence of inefficient markets in incorporating new information.

Kwan (1996) also reported on a positive, albeit lagging relationship between changes of bond yields and stock prices. From his study of 702 bond ratings issued by S&P from 327 issuers, the author found that bond yield changes can be somewhat explained through lagged stock returns but not the other way around. The author concluded that bond yields lagged stock returns in terms of incorporating firm-specific information.

Downing, Underwood and Xing (2009) on the other hand found that the stock market is more informationally efficient as compared to the corporate bond market. The authors found from their study on stock and bond returns for both non-convertible bonds that bond returns lag stock returns for bonds from most of the rating classes.

Research which utilised bond returns are however noted to also reveal similar findings to the majority of those which utilised stock returns (Hotchkiss and Ronen, 2002). The authors argued that corporate bond prices and its

related stocks displays similar informational efficiency and that the market quality of the two is at par. Through their analysis of hourly and daily returns of 55 nonconvertible bonds under the fixed income pricing system (FIPS), the authors concluded that the relationship between bond and equity returns is not of a causal one even though the two are highly correlated.

However, Löffler (2005) claimed that the policies applied by rating agencies, whereby a rating action shall only be taken when the possibility of a rating reversal within a short time period is unlikely, has impacted the informational value of a bond rating. The author found that rating agencies, in their attempt to avoid the “rating bounce”, have in turn reduced the probable occurrence of a rating change. Such rating changes would generally lag changes of the issuer’s risk.

Recent study by He et al. (2010) shows the inter-relation of information between the corporate bond market and the equity market. Based on a total 279 upgrade and 310 downgrade announcements obtained from Moody's, S&P's and Fitch, the authors researched on the effects on information asymmetry in stock trading due to bond rating changes. The results indicated that the information asymmetry in stocks is significantly reduced during the announcement of good news such as bond upgrade ratings and vice versa.

The inconsistency of prior findings has prompted the introduction of another method for measuring the informational content of bond ratings which

has stirred a large interest among market practitioners and the research community alike. The method in question studies on the relationship between credit announcement and stock returns. EMH according to Fama indicates that the efficient market allows investors access to information and that the information is reflected in stock prices almost immediately, that is, rating changes which contains new information will have an effect on prices in an efficient market. This is also supported by Kliger and Sarig (2000) who argued that the methodology of analysing the price movements of bonds and stocks in relation to rating change announcements allows control over all relevant pricing factors.

### **3.3 Bond Ratings and Market Reactions**

A multitude of earlier researches in the US market which studied the effects of bond rating changes announcements over stock prices had found significant negative market reaction to bond rating downgrades (Griffin and Sanvicente, 1982; Zaima and McCarthy, 1988; Hand, Holthausen and Leftwich, 1992; Goh & Ederington, 1993). Similar findings are yielded from research conducted in non-US markets such as Australia (Matolcsy and Lianto, 1995; Creighton et al., 2007), the UK (Barron, Clare and Thomas, 1997), France (Dallocchio et al. 2006), Spain (Abad-Romero and Robles-Fernandez, 2006) and China (Poon and Chan, 2008). With the exception of Abad-Romero & Robles-Fernandez (2006), these researches had further indicated that bond rating upgrades did not significantly impact stock returns.

Abad-Romero and Robles-Fernández (2006) found significant market reaction towards positive announcements albeit a negative one in their study on the Spanish stock market. The authors attributed these findings to the presence of wealth redistribution from owners and creditors due to the perceived increased value of bonds. Other small non-US markets such as Australia (Creighton et al., 2007), Sweden (Li et al., 2004) and New Zealand (Elayan et al., 2003) has on the other hand yielded positive market reaction towards bond rating upgrade announcements.

The study by Zaima and McCarthy (1988) was hinged on the presence of informational content and wealth redistribution factor. In the context of informational content, stock and bond values decrease (increase) when a bond is downgraded (upgraded). The wealth redistribution factor worked in the opposite direction, that is, stock values increase (decrease) when a bond is downgraded (upgraded). The authors summarised that the former factor led the rating downgrades whereas the latter dominated the rating upgrades. They further argued that the wealth redistribution mechanism between bondholders and shareholders will be triggered when bond rating changes implied a change in the firm's default risk.

A bond upgrade is perceived to lower the borrowing costs and in turn distributes the tentative gains in favour of bondholders at the expense of shareholders, thus causing a fall in stock prices, and vice versa (Kim and Nabar, 2003). On the other hand, the authors argued that the negative effect



on stock price due to downgrade ratings are caused by the significant costs imposed to the firm due to the downgrade or the "cost imposition hypotheses" rather than just the negative confidential information conveyed by the downgrade itself or "the information provision hypotheses". Results from the analysis of 184 bond rating downgrades from Moody's Bond Survey between years 1991 to 1995 supported the authors' argument.

The asset substitution theory supported by Kliger and Sarig (2000) was similar whereby bondholders benefit from bond rating downgrades due to the reduced assessments on risk at the expense of stockholders. The authors' analysis indicated a higher degree of price volatility when rating announcements are found to be lower than expectations and that a firm's debt and equity values will be affected by the announcement but not the firm's overall value. They further observed that the effects of the information content are more profound in firms with high degree of gearing than firms with lower gearing.

Goh and Ederington (1993) had studied on the effects of different types of rating announcements on common stock returns. The authors argued that downgrades which allow greater wealth to be transferred to the stockholders would not be met with a negative stock reaction. From a sample of 428 rating changes announced by Moody's within a three-year span between 1984 and 1986, the authors concluded that rating downgrades due to projections of a firm's financial performance or prospects provides significant information

value to the market while downgrades due to change in the firm's leverage may have been levered against past changes and were hence not unexpected; as such no new information is provided to the public.

A separate study by Ederington and Goh (1998) indicated that the relationship between bond downgrades and effects on earnings and forecasts of future earnings flows both ways. The study indicated that market reactions towards downgrades which succeed prior strong negative abnormal returns are stronger. The authors attributed this to the degree of information perceived by the investing market. They further concluded from their study that downgrade announcements are perceived to first convey informational value on anticipated future earnings, then on borrowing costs.

Their findings were also supported by the later research by Jorion and Zhang (2007), who studied the role of a credit rating prior to a new rating announcement towards stock price changes. From their research sample of 1,195 downgrades and 361 upgrades announced by Standard & Poor's (S&P) and Moody's between January 1996 and May 2002, the authors highlighted the existence of a non-linear relationship between credit ratings and stock prices. They found that prior ratings adversely affect the magnitude of stock returns, that is, the higher the prior ratings, the lower the price effects. This applies to both rating upgrades and downgrades although the authors concurred that the effects of upgrades on prices are only about half the size as compared to downgrades.

On the other hand, the market size also influences the informational efficiency of credit rating announcements. A study conducted by Elayan et al. (2003) on 179 credit rating announcements in the New Zealand market found that the informational content of bond rating announcements were much more profound in small markets. The authors agreed that the limitation of available information coupled with “analyst neglect” factors has in turn pushed credit rating agencies to the forefront as a source for new information. Dallacchio et al. (2006) also reported similar findings from their study of 35 rating change events (15 grades and 20 upgrades) by both S&P and Moody’s in the French bond market.

Dichev and Piotroski (2001) on the other hand studied the long-term stock returns due to rating announcements. By utilising information on bond rating changes by Moody’s between years 1970 and 1997, the authors did not find abnormal returns due to upgrades; the opposite however was found following downgrades. Further analysis revealed that the negative effects lasted at least a year and is at its strongest during the early months upon the announcement. They further concluded that the effects of a bond rating announcement are more apparent among small and low credit quality companies.

Another influencing factor on the effects of a change in bond ratings is the economic environment. Joo and Pruitt (2006) had found that a change in bond ratings triggers a significantly larger change in stock prices during the

Korean financial crisis as compared to a similar change in ratings prior to or after the crisis. The timeline of the Korean financial crisis as applied by the authors were between 1<sup>st</sup> October 1997 and 31<sup>st</sup> July 1998.

Industry characteristics also impact the market reaction towards bond rating announcements. Rajagopal and Kohers (2004) noted from their study on 136 bond downgrades for 117 industries identified through the Standard Industrial Classification (SIC) code between years 1990 and 1995 that rating announcements affect not only the firm being rated but also others which are within the same industry. The authors found that the effects of debt downgrades does not stop at the equity value of the firm being rated but also spills over to its industry rivals.

Table 3.1 generally summarises the findings of past research on informational efficiency in the stock market.

### **3.4 Studies on Malaysian Market**

Studies on market and informational efficiency from the perspective of the Malaysian financial markets have also yielded inconsistent results. From the banking sector, the study by Ameer and Othman (2010) on 27 bond issuances by banks between February 2000 and April 2007 found significant negative reaction from the stock price of the banks towards bank bond

**Table 3.1**  
**Past Research on Informational Value of Bond Rating Announcements in the Stock Market**

Researcher	Year	Credit Rating Agency in research	Data timeline	Informational value of bond rating	
				downgrades	upgrades
Griffin & Sanvicente	1982	Moody's and S&P	1960 - 1975	significant	insignificant
Zaima & McCarthy	1988	S&P	Jan 1981 - June 1981	significant	insignificant
Hand et al.	1992	Moody's and S&P	1977 - 1982	significant	insignificant
Goh & Ederington	1993	Moody's	1984 - 1986	significant	-
Matolscy & Lianto	1995	S&P - Australian Ratings	1982 - 1991	significant	insignificant
Barron et al.	1997	S&P	1984 - 1992	significant	insignificant
Ederington & Goh	1998	Moody's	Jan 1984 - Dec 1990	significant	insignificant
Dichev & Piotroski	2001	Moody's	1970 - 1997	significant	insignificant
Elayan et al.	2003	S&P, Reuters' Business Briefing, Datex, Newztext	July 1990 - June 2000	significant	significant
Li et al.	2004	Moody's and S&P	Feb 1992 - Feb 1993	significant	significant
Abad-Romero & Robles-Fernandez	2006	Moody's, S&P and FitchIBCA	Jan 1990 - Feb 2003	significant	significant
Dalocchio et al.	2006	Moody's and S&P	2000 - 2004	significant	insignificant
Creighton et al.	2007	Moody's and S&P	Jan 1990 - July 2003	significant	insignificant
Poon & Chan	2008	Xinhua Far East China Ratings	Jan 2002 - July 2006	significant	-

issuances in general. The authors suggested that the potential benefits brought upon by bond issuances such as the reduction in agency costs were overshadowed by fears of reduced cash flows to the investors.

A study conducted by Chelliah (2002) on the effects of bond rating downgrades or upgrades towards investment and speculative-type shares however yielded surprising results. Through analysis of bond rating announcements between years 1996 and 2001, the author found no significant impact of bond rating downgrades or upgrades on stock returns. Reason for rating announcements such as the change in company leverage or future financial prospects also yielded insignificant results.

Ambalagam (2002) whose study had concentrated on the effects of initial, reassignment, upgrade and downgrade bond rating announcements towards market returns also reported similar findings. The author found that the market efficiency is not impacted by any of the four types of rating announcements and that rating announcements did not provide significant abnormal returns for any of the four announcement types, implying that the equity market is efficient.

Research by Raman (2002) also found insignificant results on stock returns during a bond's initial, upgrade and downgrade rating announcements i.e. his analysis on the equity market has indicated evidence of an efficient market. As for reassignment ratings whereby significant abnormal returns are

found, the author has attributed such findings to the presence of the element of surprise; that is the market has prior expectations for rating changes as compared to the reassignment rating as subsequently announced. As such, new information are being disseminated to the public and hence the presence of abnormal returns.

Doma and Omar (2006) on the other hand have extended their methodology of research to include the ARMA-GARCH lag specification in the market model apart from the conventional event study methodology. From their analysis of 206 bond rating upgrade and downgrade announcements between January 1993 and December 2003, the authors has initially found that both upgrade and downgrade announcements by rating agencies indicate the arrival of new information to the stock market by way of negative market reaction. Further analysis on an adjusted sample which omitted rating announcements during the Asian Financial Crisis period namely years 1997 and 1998 however revealed that bond upgrades did not indicate new informational content. The authors attributed the Asian Financial Crisis for the negative market reaction towards bond upgrades found in the initial analysis.