

Louvain School of Management

A study of the effect of the financial crisis of 2008 on the credit rating agency business model

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Introduction

There are two superpowers in the world today in my opinion. There's the United States and there's Moody's Bond Rating Service. The United States can destroy you by dropping bombs, and Moody's can destroy you by downgrading your bonds. And believe me, it's not clear sometimes who's more powerful (Friedman, 1996).

Friedman made this striking statement in 1996 yet today, after more than two decades, credit rating agencies (CRAs) are still powerful institutions who hold a central and indisputably important role in bond markets. They assess issuers' creditworthiness, their willingness and ability to pay, and assign a credit rating. They cover financial institutions, non-financial institutions, corporations and national and local governments. They also assess the probability of default of debt issues, covering bonds, notes, commercial paper and structured finance securities. Their credit ratings determine the cost of raising capital and the potential pool of investors which issuers will be able to reach.

CRAs also play a key role in the debt market by reducing information asymmetry that exists between issuers and investors. Issuers know more about their own creditworthiness than investors do, and so by acting as an informational intermediary, CRAs enable investors to make informed investment decisions. Their ratings provide a standardised global scale that promotes comparability, by providing a relatively simple means to understand an otherwise vast debt market.

CRAs promote market efficiency by promoting liquid markets and the total supply of capital. Put simply, their ratings control the flow of capital in debt markets.

CRAs not only play an important role in financial markets, but also in financial market regulation. Their credit ratings are used to determine capital requirements of prudentially regulated financial institutions under Basel III; some financial institutions are effectively limited in the investments they can make based on credit ratings since they are only allowed to invest in investment-grade securities, and the financial contracts incorporate credit ratings into their collateral calls. The incorporation of their credit ratings into numerous financial regulations emphasises the importance of CRAs' operations for financial markets since any decision to change a rating will have a system-wide effect.

However, the past inability of CRAs to predict crises, illustrated by late downgrades, as far back as the U.S. stock market crash of 1929, are well-known. Yet, they have remained prominent and their reach and importance has grown significantly over the years.

In the financial crisis of 2008, the CRAs, for the first time, played a significant and crucial role. Their actions helped to spread the effects to markets globally, outside the U.S. It shone a harsh light on the shortcomings of their business model, whereby they are paid by the issuers they rate; this gave rise to conflicts of interest. It was revealed that CRAs had provided issuers of subprime mortgage-backed securities and collateralised debt obligations with inflated ratings. These subprime structured finance securities traded globally and the CRAs' high ratings enabled them to find interested investors all over the world. This made the financial crash all the more far-reaching and devastating than would have otherwise been the case.

Following the financial crisis, the CRAs were heavily criticised for their conduct and new regulations governing CRAs were enacted in both the U.S. and Europe. Their business model was assessed and questioned, and there were many calls for the implementation of alternative business models. However, despite the new regulations which were designed put to solve the problems that arose with CRAs, today CRAs are still just as powerful and important in debt markets as they were before the crisis, and certainly more profitable than ever.

This study analyses the effect of the financial of 2008 on the CRA business model in order to determine the reasons why, after such a significant and negative role in the financial crisis, they are still important intermediaries in global debt markets.

In order to gauge a complete understanding of the mechanics of the CRA industry and their continued prevalence today, the study covers all aspects of the business model: ratings and rating methodologies, the regulatory environment, the nature of competition, existing barriers to entry, and revenue and profitability.

To do so, the study begins by providing a brief overview of credit rating agencies in order to provide an understanding of their main elements and how they function. It explains the mechanism for setting credit ratings and looks at why they were created and their evolution throughout the 20th century. It then explains the importance and use of credit ratings in the bond market, and the evolution of the CRA business model before the financial crisis and the key CRA market participants.

The second part of the study assesses the credit rating agency industry before the financial crisis of 2008 in order to gauge the nature of the industry, and to understand the characteristics that define the CRA business model. This is followed by a SWOT analysis in

order to assess the strengths and weaknesses of CRAs, and opportunities and threats that are present in the external environment. In the context of the SWOT model, a large CRA, Moody's Investors Service, is used for illustrative purposes.

The third part of the study looks at the financial crisis of 2008 and the CRAs role in the financial crisis. It explain the process of securitisation, the beginnings of the financial crisis, and the subsequent financial crash. It then determines how the CRA market characteristics, with the weaknesses and threats which are identified by the SWOT analysis conducted in the second part of the study, shaped the role of the CRAs financial crisis.

The fourth part explores the immediate consequences of the financial crisis for CRAs. It covers new regulation that was subsequently enacted in the U.S. and Europe and takes a look at the CRAs' own reaction towards the criticisms they received. Afterwards, it examines the consequences for the CRAs' reputation, revenue and profitability, and the changes that CRAs made to their rating models. It ends by assessing the feasibility of alternative business models, following the numerous new options that were suggested in light of the shortcomings of the issuer-pays business model that became apparent following the financial crisis.

The final part of the study looks at the CRA industry today. It examines the effect of post-financial crisis CRA regulation on the CRA industry, the current business model in use, competition in the industry, and what problems remain. It ends by assessing why CRAs continue to play a central role in the operation of the financial markets.

This study is important because it enables an understanding of what was done following the financial crisis, and assess the failures and successes of what was implemented. It will serve to better understand what would or would not work for future regulations, bearing in mind the key components of the CRA business model, which need to be taken into account when making regulations.

In order to conduct the study in an effective manner, information and data gathering and sorting were key. It draws on existing literature, surveys, market studies, annual reports and studies. Existing literature serves as a premise for assessing the effect of the financial crisis of 2008 on the CRA business model. Since the CRA industry is highly reputation based, the use of surveys to assess investors' and issuers' views about CRAs was highly important. Market studies served to analyse market share and the state of competition, and annual reports were used to provide revenue information, identify CRA-specific market trends, and examine the evolution of debt issues in global debt markets. Finally, quantitative studies provide statistical evidence to support the theories that are explained.

This study stemmed from personal interest and a desire to understand more about the mechanisms and the forces at play behind the seemingly simplistic rating scales produced by CRAs. The importance of the subject is illustrated by the manner in which an apparently small change to a credit rating is able to have such far-reaching effects on the business of companies, in some circumstances even so far as to threaten their continued existence. For sovereigns, a rating change (particularly a downgrade) could have significant political and economic ramifications.

The main difficulty encountered in the context of this study were biases that are inherent in surveys. In addition, it seems that some academics were biased in their writings. Some commentators and analysts seemed influenced by the sense of outrage, held by many in society, that CRAs should be held to account for the role that they had played, and the continued use of the issuer-pays business model by the CRAs remains controversial. Considering the controversial topic that is the issuer-pays business model and the anger some experienced following the financial crisis.

This study is limited to the effect of the financial crisis on the CRA business model. Therefore, it does not investigate the sovereign crisis. It is also limited to developments that happened in the U.S. and EU. In addition, it does not look at regulation that exists on CRAs, or that appeared following the financial crisis in other countries, nor does it seek to analyse their CRA industry.

Part I. An Overview of Credit Rating Agencies

Chapter 1. Credit Rating Agencies and Credit Ratings

A. Credit Rating Agencies

CRAAs are private independent companies that determine and publish independent and objective credit ratings regarding issuers of debt securities, also known as obligors, and of the individual debt issues themselves (Hemraj, 2015). De Haan and Amtenbrink (2011) explain that they assess credit risk by evaluating the creditworthiness of issuers, or in other words, their relative ability and willingness to meet their financial obligations, and the credit quality of the individual debt issues and their likelihood of default.

CRAAs rate a vast range of issuers and debt security types. Issuers covered are entities, such as financial institutions, non-profit organisations, special purpose vehicles and corporations, and national and local governments (Stowell, 2013). Debt obligations range from bonds and notes to other debt securities such as structured finance instruments (Office of Investor Education and Advocacy & Office of Credit Ratings, 2017).

B. Credit Ratings

1. Credit Rating Scale

Credit ratings are based on an ordinal rating scale that focuses on the long term (maturity of one year or more) (Moody's Investors Service, 2018a). Each letter represents a relative level of creditworthiness of the issuer or debt instrument and their likelihood of default (White, 2013). The most well-known rating scale starts at AAA, the least likely to default, and ends with D, the most likely to default (S&P Global Ratings, 2018). The rating scale makes a distinction between investment-grade ratings and non-investment grade ratings, which are also known as speculative, high yield or junk bonds (White, 2013). This line is drawn at BBB: above or equal to BBB is investment grade, and below BBB is non-investment grade. This form of letter scale is used by two of the largest CRAAs, S&P and Fitch, and the majority of other CRAAs, whereas the other largest CRA in the industry, Moody's, uses a slight variation. Moody's starts at Aaa, draws the investment-grade line at Baa, and ends with C, as illustrated in table 1 (Fitch Ratings, n.d.; Moody's Investors Services, 2018a; S&P Global Ratings, 2018; U.S. Securities and Exchange Commission, 2012) (see appendix A for S&P's and Moody's' rating scales with corresponding rating classification definitions).

Table 1

Equivalence of Moody's to S&P's and Fitch's credit rating scales

Moody's	S&P and Fitch
Aaa	AAA
Aa	AA
A	A
Baa	BBB
Ba	BB
B	B
Caa	CCC
Ca	CC
C	C
N.a. ¹	RD ² /D

Note. Adapted from “Credit Rating Agencies: A Constitutive and Diachronic Analysis”, by Marandola, G. and Sinclair, T., 2014, *Sheffield Political Economy Research Institute*, 16, p. 2. Copyright by 2014 by the Sheffield Political Economy Research Institute

Credit ratings are further refined with ‘modifiers’, each representing a ‘notch’, generally appended to rating classifications from AA (Aa) to CCC (Caa) (U.S. Securities and Exchange Commission, 2012). Moody’s favours the numbers one to three whereas S&P and Fitch use a plus or minus sign. They indicate whether the rating is ranked at the higher end of its rating category (‘+’ or ‘1’), in the middle (‘2’), or at the lower end (‘-’ or ‘3’) (Fitch Ratings, n.d.; Moody’s Investors Service, 2018a; S&P Global Ratings, 2018).

2. Outlooks and Watches

CRA's convey their opinions regarding future developments and potential changes or revisions of ratings with ‘outlooks’ and ‘watches’ (De Haan & Amtenbrink, 2011).

¹ Moody’s does not have a D category (Moody’s Investors Service, 2018a).

² Fitch uses an additional category called “restricted default” that precedes D and refers to when non-payment is partial or selective (Fitch Ratings, n.d.).

Outlooks provide a medium-term view of the likely direction a rating will take, which can be either positive (an upgrade), negative (a downgrade), developing (unsure of the direction) or stable (no change in the direction) (Moody's Investors Service, 2018).

Watches are short-term reviews that provide information about ratings currently under consideration for an upgrade, downgrade or yet to be determined, because "a rating action may be warranted in the near-term but further information or analysis is needed to reach a decision on the need for a rating change or the magnitude of the potential change" (Moody's Investors Service, 2018, p. 26).

3. Rating Methodologies

Ratings are based on quantitative and qualitative factors and focus on both business and financial risk (European Commission, 2016b; Stowell 2013). They rely on analytical models, assumptions and expectations, and factor in historical data, current information and any potential impacts of foreseeable future events (S&P Global Ratings, 2018). Information collected and used for the determination of the rating comes from the issuer who solicited the rating and from additional research conducted by the CRA's analysts (S&P Global Ratings, 2018).

The quantitative analysis focuses on the issuer's ability to generate cash by incorporating historical and projected financial information such as debt structure, cash flow, operating margin, and sources of liquidity (Fitch Ratings, 2018c; Moody's Investors Service, n.d.; S&P Global Ratings, 2018b).

The qualitative analysis focuses on the business environment of the issuer by analysing background and history, management structure, experience and credibility, industry trends, peer comparisons, corporate strategy and governance, and operating and competitive position and philosophy (Fitch Ratings, 2018c; Moody's Investors Service, n.d.; S&P Global Ratings, 2018b).

Rating methodologies rely on categorisations and aggregations of various weighted factors and assessments (Partnoy, 2017). Moody's Investors Service (2018a) states that, for example, the rating of non-financial corporates, financial institutions and governments, generally involves a scorecard on which all the different quantitative and qualitative factors are assessed and assigned weights according to their importance or strength. It goes on to explain that these weights are aggregated, and a rating is assigned based on the total score.

C. History of Credit Rating Agencies

1. Genesis

Deb, Manning, Murphy, Penalver & Toth (2011), Partnoy (1999) Whalen (2016) and White (2013) agree that the advent of the credit rating system can be traced back to the United States in 1909 when John Moody published a manual containing a rating system for railway bonds. White (2013) is of the opinion that it happened specifically in the United States because the railway industry was booming and railway companies, who were among the largest at the time, needed funding in order to sustain their rapid growth. Furthermore, White (2013) adds that the United States' bond market was one of the largest in the world with bank loans being the most common form of lending. John Moody's rating manual was well received and filled an apparent void in the market at the time; publicly traded companies were not obligated to disclose financial information³ (White, 2013). White (2013) views it as only natural that with little publicly available information, investors, in particular smaller institutions or individuals who had fewer resources at their disposal, sought the help of third-parties in order to assess the creditworthiness of bonds in which they were considering investing.

John Moody's ratings branched out from railway bonds to cover municipalities and cities in 1918, and Moody's Investors Service was incorporated in 1914 (Partnoy, 1999). Following Moody's success, several other companies entered the ratings market: Poor's Publishing Company in 1916, Standard Statistics Company in 1922 and Fitch Publishing Company in 1924 (White, 2010). In 1941 Standard Statistics and Poor's Publishing Company merged to form Standard & Poor's (Cantor & Packer, 1994).

2. Throughout the 20th Century

In 1931, when the Comptroller of Currency decided to use credit ratings as a measure of quality for bonds for national banks, credit ratings were incorporated for the first time into U.S. prudential regulation (Financial Crisis Inquiry Commission, 2011; Partnoy, 1999; White, 2013). They decided that bonds "could be valued at their purchase cost if the bonds were investment grade but would have to be marked to market if the bonds were speculative" (White, 2013, p. 100). The Banking Act of 1935 then restricted national banks to the purchase of investment grade bonds only, as determined by 'acceptable' CRA rating manuals: Moody's, S&P's and Fitch's (Partnoy, 1999; Whalen, 2016; White, 2013). A year later, this ruling was

³ Today, the Securities and Exchange Commission (SEC) mandates that all publicly traded companies disclose financial information. However, the SEC was not created until 1934 (U.S. Securities and Exchange Commission, 2013).

widened to include state member banks under the Federal Reserve Act, and four years after that to include money market funds under the Investment Company Act of 1940 (Partnoy, 1999; White, 2013). Partnoy (1999) describes the subsequent protests of outrage, as half of the 2,000 listed and publicly traded bonds at the time failed to make the investment-grade cut. Whalen (2016) and White (2010, 2013) identify this ruling as a turning point for CRAs. Whalen (2016) states that it increased demand for ratings because banks had to start paying CRAs for ratings, since it formed a prerequisite for their investments. White (2013) adds that, since banks were such important participants in public debt markets, other market participants took an interest in the ratings, wanting to know what banks were prohibited from or allowed to buy. As described by White (2010), CRAs had “attained the force of law” (p. 213).

Until the 1970s, CRAs were not incorporated into additional regulation (Partnoy, 1999). However, following the credit crisis of the early 1970s, from 1973 onwards CRAs were gradually included in an increasing number of rules and regulations covering real estate, insurance, pension, and securities (Partnoy, 1999). In 1975, the U.S. Securities and Exchange Commission (SEC) changed minimum capital requirements for broker-dealers (investment banks and securities firms) in order to make them sensitive to the level of risk of the debt instruments held by broker-dealers (White, 2010). Broker-dealers were to use credit ratings to determine the ‘haircuts’ (the percentage of a financial asset’s market value) they could deduct in the calculation of their net capital (Partnoy, 1999). Cankaya (2017), Partnoy (1999) and White (2010) believe that this is when the CRAs’ centrality in capital markets was crystallised.

With these new rules in mind, the SEC also created a new category of CRAs in 1975: Nationally Recognised Statistical Rating Organisations (NRSROs), whose ratings would exclusively be used in determining minimum capital requirements (Cankaya, 2017; Fennell & Medvedev, 2011).

In Europe there had been little development regarding CRAs: European CRAs were few and of little significance in terms of market share, size or standing compared to the American CRAs (Fennell & Medvedev, 2011; White, 2016). It was not until the 1980s and 1990s, as the importance of capital markets increased in Europe, that the demand for credit ratings also began to grow (Fennell & Medvedev, 2011; White, 2016). Basel II solidified the market for CRAs in Europe by introducing credit ratings as a means to determine risk exposure in the calculation of capital requirements for financial institutions (Lannoo, 2010). Following the introduction of credit rating usage in regulation, national supervisors created their own category of CRAs whose ratings were to be exclusively used to comply with regulatory requirements: External Credit Assessment Institutions (ECAIs) (Legind & Jensen, 2014).

Chapter 2. Credit Rating Agencies' Role in The Bond Market

Hemraj (2015) elaborates on how CRAs serve a public function and their existence is beneficial to the efficiency of financial markets. He assimilates CRAs' role with that of gatekeepers: intermediaries who solve the information asymmetry problem that exists between issuers and investors. Indeed, investors are at a disadvantage to issuers because they know much less about issuers' creditworthiness than the issuers themselves (Hemraj, 2015). To that extent, Coffee (2011) and Payne (2014) consider CRAs as holders of reputational capital that they pledge to investors in order to produce credible and accurate ratings. CRAs provide a service that some investors, such as small institutions or individuals, would have difficulty accomplishing on their own due to a lack of resources, time and expertise (Hemraj, 2015).

De Haan and Amtenbrink (2011), Hemraj (2015), Ryan (2012) and Stowell (2013) agree that CRAs reduce transaction and information costs, increase the total supply of capital and promote liquid markets; this combination results in increased market efficiency.

CRAs also play a consequent role in financial market regulation. If a CRA receives government certification in either the U.S. or EU, then its ratings can be used in the calculation of financial institutions' capital requirements and as benchmarks for acceptable investment decisions for pension funds and money market funds, among others (De Haan & Amtenbrink, 2011).

Chapter 3. Credit Rating Agencies' Business Models

A. The Change from Investor-Pays to Issuer-Pays

White (2016) identifies the bond market as a two-sided market; investors want to know the creditworthiness of issuers, and issuers who are more creditworthy want this to be conveyed to investors. He explains that in such a market both sides could effectively be charged for creditworthiness services. Consequently, CRAs are able to implement two different business models: the investor-pays model and the issuer-pays model (White, 2016).

The investor-pays model, or subscription model, charges fees to investors for rating publications and provides issuers with ratings free of charge (OECD, 2010). On the other hand, the issuer-pays model charges the issuers a fee in order to be rated and provides the information free of charge to the investors (OECD, 2010).

When CRAs began their business, the sole model used was the investor-pays model (Cankaya, 2017; Fennell & Medvedev, 2011). It prevailed until the early 1970s, when a change was made to the issuer-pays model (Cankaya, 2017; Fennell & Medvedev, 2011). Cankaya

(2017) and Fennell and Medvedev (2011) explain that the issuer-pays model was gradually adopted by nearly all CRAs and is the dominant business model in the CRAs industry. The change of business model was catalysed by a number of events, the most important of which are described below.

Cantor & Packer (1994), Fennell & Medvedev (2011), Lynch (2010) and Partnoy (1999) explain that the 1970 Penn Central station bankruptcy following its default on eighty-plus million dollars of commercial paper was unexpected. A liquidity crisis ensued, as many investors refused to roll over their commercial paper, resulting in the bankruptcy of other companies. The authors explain that as a result, issuers sought to reassure investors that they were of low default risk and that their creditworthiness was high by soliciting more than one credit rating. In essence, they were willing to pay to be rated.

Fennell & Medvedev (2011), Frost (2006), Whalen (2016) and White (2010) also identify that the investor-pays model was beginning to show signs of being unsustainable in the long-run. It became apparent that it did not provide CRAs with sufficient revenue to support their growing operations. CRAs were finding it increasingly difficult to expand their subscriber base and the advent of the high-speed photocopying machine meant that the problem of free-riding by investors surfaced; rating manuals could easily be copied and used by investors who did not pay for them. Sinclair (2010) adds that the problem of free riding also arose because news services began making announcements about ratings, hence turning them into public goods⁴. Yet, the volume and complexity of securities was increasing as was the demand for higher-quality ratings. In order to keep up with demand, CRAs needed additional funds to be able to expand their businesses and staffs (Anonymous, 2009; Frost, 2006).

Additionally, White (2010) hypothesises that CRAs realised that issuers needed to have their bonds rated in order for financial institutions to be allowed to invest in them, and that the issuers should therefore pay for this ‘privilege’.

Although many CRAs use the issuer-pays model today, some smaller CRAs still use the investor-pays model such as Egan-Jones (Gannon, 2011). Furthermore, issuer-pays CRAs continue to offer subscription-based services to investors in the form of research services (European Commission, 2016b; Fennell & Medvedev, 2011; U.S. Securities and Exchange Commission, 2017). Following regulatory changes requiring banks to develop their own

⁴ A public good is non-excludable (ratings are made publicly available to all investors at the same time) and non-rival (the use of ratings by one investor does not reduce its availability to others).

internal ratings-based approaches (under Basel II), CRAs have been able to introduce ancillary services such as risk management and database management services⁵ (Datar, 2011).

B. Unsolicited Ratings

In addition to solicited ratings, CRAs also provide unsolicited ratings, which rate issuers, and their debt issues, who have not requested a rating. Stowell (2013) explains that the aim is to protect investors against issuers who might withdraw their ratings when their performance begins to deteriorate in order to avoid a downgrade. To a certain extent, unsolicited ratings act as a barrier to rating shopping by exposing any unduly high rating given by another CRA (Cantor & Packer, 1994).

Chapter 4. Credit Rating Agency Market Participants

According to S&P Capital IQ (2018), as of May 2018 there are approximately 160 companies worldwide who are primarily active as ‘business and sovereign credit rating agencies’. Their combined total revenue for the fiscal year of 2016 was around €10.5 billion (S&P Capital IQ, 2018).

There are three dominant CRAs in the industry commonly known as the Big Three: Moody’s Investors Service (Moody’s), Standard & Poor’s Global Ratings (S&P) and Fitch Ratings (Fitch) (White, 2013). They operate globally and accounted for a total of 93.18% market share among EU registered CRAs based on total reported revenue for the calendar year 2016, and 94.4% among NRSROs based on total reported revenue for the fiscal year 2016 (European Securities and Markets Authority, 2017; U.S. Securities and Exchange Commission, 2017).

A. The Big Three

1. Moody’s Investors Service

Moody’s is a subsidiary of Moody’s Corporation, a publicly traded company since 2000. Moody’s Corporation is headquartered in New York (S&P Capital IQ, 2018). In addition to its rating business through Moody’s Investors Service, it also operates Moody’s Analytics, which provides “tools for financial risk measurement and management” (Moody’s Corporation, 2018a, p. 6).

⁵ The European Commission (2016b) defines ancillary services as “products or services that are not part of credit rating activities and include market forecasts, estimates of economic trends, pricing analysis and other general data analysis as well as related distribution services” (p. 24).

Moody's' ratings revenue from the fiscal year 2017 was US \$2.8 billion, or 66%, of Moody's' total revenue of US \$4.2 billion (Moody's Corporation, 2018d). Moody's Investors Service has offices in 24 countries and has rated a total of over US \$72 trillion debt (Moody's, 2018a). As of 31st December 2017 it covers approximately 28,000 entities, 138 sovereigns, 47 supranational entities and 11,000 structured deals (Moody's Corporation, 2018a).

2. Standard & Poor's Global Ratings

S&P was created through the merger of Standard Statistics and Poor's Publishing Company in 1941 (S&P Global, n.d.-a). S&P is headquartered in New York (S&P Capital IQ, 2018). It began branching out into other services in 1957 with the introduction of the S&P 500 Stock Index and was acquired by McGraw-Hill, a publicly traded company since 1929, in the 1960s (S&P Global, n.d.-e). In 2016, it rebranded itself as S&P Global and has many divisions providing an arsenal of services relating to data, analytics, research, commentary, benchmarking and credit ratings: S&P Global Ratings, S&P Global Market Intelligence, S&P Dow Jones Indices, S&P Global Platts and CRISIL (S&P Global, n.d.-b).

S&P's ratings revenue from the fiscal year 2017 was US \$3.0 billion, or 49%, of S&P's total revenue of US \$6.1 billion (S&P Global, 2017). S&P Global Ratings is present in 28 countries and has rated a total of over \$47 trillion debt (S&P Global, 2017b). It had over 1.1 million ratings outstanding as of 31st May 2018 (S&P Global Ratings, n.d.-a).

3. Fitch Ratings

Fitch belongs to the Fitch Group, a provider of financial information services and is dually headquartered in London and New York (Fitch Ratings, 2018a). The Fitch Group is made up of three entities; Fitch Ratings, Fitch Solutions and Fitch Learning (Fitch Ratings, 2018a). Fitch was acquired by Fimalac in 1997 (Fimalac, 2010). Under Fimalac Fitch acquired a series of smaller CRAs enabling it to expand its business, reputation and market share. In 1997 it acquired IBCA, a British CRA; in 2000 it acquired Duff & Phelps, a North American CRA, and Thomson Bankwatch, a Canadian CRA (Becker & Milbourn, 2009; Fimalac, 2016). Fitch was fully owned by Fimalac until 2006 when Hearst Corporation acquired an interest (Hearst Corporation, 2018). In April 2018, after buying out Fimalac's remaining 20% stake for US \$2.8 billion, Fitch is now fully owned by Hearst Corporation (Hearst Corporation, 2018).

Fitch's rating revenue from the fiscal year 2016 was US \$927.6 million, or 79% of total revenue of US \$1.2 billion (Fimalac, 2016). Fitch Ratings has offices in 31 countries and covers 8,000 entities globally (Fitch Solutions, 2018).

B. Other Credit Rating Agencies

The other CRAs in the industry are much smaller in size than Moody's, S&P and Fitch. They tend to concentrate their geographic coverage locally or nationally and specialise in rating a few different types of debt instrument or concentrate on a niche market (White, 2016).

Based on total reported revenue for the calendar year 2016, the European Securities and Markets Authority (2017) calculated their market share to be 6.82% among EU registered CRAs. The U.S. Securities and Exchange Commission (2017) calculated their market share at 5.6% among NRSROs, based on total reported revenue for the fiscal year of 2016. Individually, for both EU registered CRAs and NRSROs, each CRA holds less than a 2% market share (European Securities and Markets Authority, 2017; U.S. Securities and Exchange Commission, 2017).

C. Government-Certified Credit Rating Agencies

Certified CRAs have been officially recognised by the SEC in the United States and by national supervisors in the European Union as providers of credit ratings for regulatory requirements (Utzig, 2010). There are currently 10 NRSROs and 31 EU registered CRAs (U.S. Securities and Exchange Commission, 2018; European Securities and Markets Authority, 2018) (see appendix B for a full list of CRAs registered as NRSROs and CRAs registered in the EU).

1. Nationally Recognised Statistical Rating Organisations

According to Whalen (2016), when the SEC decided to outsource the determination of haircuts applicable for broker-dealers' minimum capital requirement calculations to CRAs in 1975, they created the NRSRO category in order to ensure that no low quality CRA would enter the industry and drive down prices.

The Big Three CRAs were immediately certified upon the creation of the NRSRO category (White, 2013). No others were certified until 1982, when Duff & Phelps was accepted, closely followed by McCarthy, Crisant & Maffei in 1983, IBCA in 1991 and Thomson Bankwatch in 1992. However, following a series of mergers between the entrants and the

acquisitions of Duff & Phelps and Thomson Bankwatch in 2000 by Fitch, the number of NRSROs fell to the original three by the turn of the 21st century (White, 2013).

DBRS and A.M. Best Rating Services were designated as NRSROs in 2003 and 2005 respectively (Partnoy, 1999). Following the enactment of the Credit Rating Agency Reform Act (CRARA) in 2006, the SEC was required to change the designation process in order to promote competition in the CRA industry (Bayar, 2014).

2. External Credit Assessment Institutions

Lannoo (2010) and Utzig (2010) explain that the first form of government certification to exist in Europe came after the enactment of the Capital Requirements Directive (CRD) and the Basel II framework. The External Credit Assessment Institutions (ECAIs) category was created and they are the only CRAs whose ratings can be used in the context of Basel II (Lannoo, 2010).

Following the financial crisis of 2008, the EU implemented a registration process for CRAs wishing to operate in Europe (Bayar, 2014). In 2011, ESMA was specifically created to take up oversight of registered CRAs (Bayar, 2014). Today, all EU registered or certified CRAs qualify as ECAIs (European Banking Authority, n.d.).

Part II. The Credit Rating Industry Before the Financial Crisis of 2008

Chapter 1. Market characteristics

Before the financial crisis, the CRA market was an oligopoly dominated by Moody's, S&P and Fitch. Deb et al. (2011) estimate that the Big Three accounted for 90% of the total revenue of all CRAs in 2005. The OECD (2010) has identified three key factors affecting the competitive dynamics of the CRA industry.

The first key factor relates to the fact that credit ratings are 'experience' goods i.e. the quality of ratings can only be ascertained after a considerable period of time after which it is possible to observe whether the assigned rating level was warranted or not (OECD, 2010). Therefore, building a reputation for quality ratings requires time and a long track record. A reputation of a good track record is a key competitive advantage in the CRA industry. The European Commission (2016b) and Partnoy (1999) support the importance of reputation, explaining that investor preferences influence issuers' choice of CRAs, since they aim to make their debt issuances as attractive as possible to investors. In turn, investors favour large well-known CRAs because they are familiar with their rating methodologies, and know that they can trust the accuracy and quality of the credit ratings because of a strong track record (European Commission, 2016b; Partnoy, 1999).

The second key factor is the standardisation of rating systems of each CRA across countries and products (OECD, 2010). This offers the investors comparability and consistency, simplifies the interpretation of credit risk. Thus, the larger the coverage of a CRA, the greater its value to investors. Wide coverage is a key competitive advantage in the CRA industry.

The third and final key factor is the longstanding relationship that issuers build with one or two CRAs (OECD, 2010). Establishing this relationship takes time and involves many executive meetings. An investor or issuer considering changing CRA would need to accept the sacrifice of their previous effort, time and costs and be prepared to reinvest their time in building a new relationship and adapting to a different rating system (Gannon, 2011). In addition, issuers value most highly the CRAs whose ratings are most trusted and widely understood by investors, since this will facilitate debt issuances and placement, provide the lowest spreads, and reach a wider range of potential investors (OECD, 2010).

Cash (2017) and Coffee (2011) agree that the CRA industry is therefore a naturally occurring oligopoly. Gannon (2011) illustrates that the CRA industry exhibits key

characteristics of an oligopoly: few market participants, interdependence, price setting, high profitability and high barriers to entry.

A. Market Participants

The CRA industry has always had few market participants. By 2000, worldwide, 130-150 CRAs were operating, although many of them specialised in specific industries, or operated in geographic niches. They offered local, regional or national coverage as well as ratings for a few product types (Frost, 2006). For example, A.M. Best Rating Services used to operate exclusively in the insurance segment (Partnoy, 1999).

The Big Three offered both global and product coverage. By example, by 2000, Moody's operated in 14 countries outside of the US across 5 business segments: structured finance, corporate finance, financial institutions and sovereigns, public finance, and opinion research products and risk management (Moody's Corporation, 2000).

B. Interdependence

Deb et al. (2011) and Gannon (2011) postulate that CRAs exhibit 'herd' behaviour, alleging that actions by one CRA influence the sales and profits of other CRAs in the market; similarly, rating actions of one CRA impact on rating actions of other CRAs.

However, the European Commission (2016b) contends this view, reasoning that what appears to be 'herd' behaviour can be explained by CRAs' similar processing methods for gathering information and their similar business strategies. They are also influenced by the current phase of the business cycle (European Commission, 2016b).

C. Price Setting

The Big Three possess high pricing power enabling them to charge high prices without affecting the demand for ratings (Ryan, 2012). Both issuers and investors need ratings, to encourage investors to invest or to be reassured of issuers' creditworthiness, respectively (Ryan, 2012). The Big Three are able to charge even higher fees by virtue of the value of their brand name and their high reputation (Gannon, 2011).

Moody's Corporation (2000) provides an overview of the evolution of its total revenue as of 1981. It shows a relatively stable growth from approximately US \$35.0 million in 1981 to US \$350.0 million in 1996. Over the next five years, it more than doubles to US \$796.7 million, and then nearly triples to reach US \$2,037.1 million in 2006 (Moody's Corporation,

2006). From 2000 to 2006, Moody's annual reports show that rating revenue consistently accounted for between 79.0% and 87.2% of total revenue. (Moody's Corporation, 2000, 2001, 2002, 2003, 2004, 2005, 2006).

D. Profitability

The explosion of CRAs' revenues in the 21st century illustrates the high prices that they were able to charge for their ratings and products, as well as the growing demand in developing capital markets. In particular, structured finance ratings offered a higher profit margin than any other debt instrument (De Haan & Amtenbrink, 2011). Indeed, Moody's Corporation (2000, 2006) reports a healthy increase in its operating margin from 47.8% in 2000 to 61.8% in 2006.

E. Barriers to Entry

Many authors, Deb et al., (2011), the European Commission (2016b), Gannon (2011), Kedia, Rajgopal & Zhou (2017), Whalen (2016) and White (2016), to name a few, identify the numerous barriers to entry found in the CRA industry. Barriers to entry include government certification, reputational capital, sunk costs and economies of scale and scope.

1. Government Certification

Cantor and Packer (1994), Gannon (2011), Kedia et al., (2017), Whalen (2016) and White (2010, 2016), and posit that, since its creation by the SEC in 1975, the NRSRO category has posed an important barrier to entry not only for new CRAs but also for smaller CRAs wishing to grow. A CRA without government certification is placed at a disadvantage, because investors will be unable to use their ratings to meet regulatory requirements; this also reduces issuer demand (Gannon, 2011; White, 2009, 2016).

From its creation until 2006, the SEC rejected the majority of CRAs that applied for the NRSRO certification (Gannon, 2011). Partnoy (1999) illustrates this with IBCA, who fought for nearly a decade to be accorded full NRSRO certification, and a Japanese CRA and a Canadian CRA who experienced similar problems. Ryan (2012) adds that from 1991 to 2003 no new NRSRO application was accepted. Cantor and Packer (1994) explain, the SEC did not establish a transparent application process, selection process or set of selection criteria upon which selection was based. However, they did offer a glimpse into their selection process; the CRA must be seen as a provider of credible and reliable ratings by issuers and investors (Cantor & Packer, 1994). Ironically, as pointed out by Cantor and Packer (1994), this

entailed a previously well-established and robust reputation in the market, which was nearly impossible for CRAs to achieve without the NRSRO designation.

In addition, Gannon (2011), Langohr and Langohr (as cited in Kedia, et al., 2017) and Pagano and Volpin (2011) view the heavy expense of applying for certification as a deterrent for smaller CRAs because the costs would weigh proportionately more heavily on them.

2. Reputational Capital

The CRA industry is highly reputation based and the OECD (2010) considers reputation to be a key competitive advantage (cf Part II Chapter 1). As expressed by Gannon (2011), a good reputation takes a long time to build because market participants need time to assess the accuracy of ratings. The Big Three have had many years to build their reputations (Partnoy, 1999; Reiss, 2009). Against the dominant leaders, small or new entry CRAs are disadvantaged.

3. Sunk Costs

White (2016) explains that sunk costs are large in the CRA industry. Rating methodologies and models must be researched and developed, and procedures and policies implemented (White, 2016). Therefore, there is a need for highly-qualified and experienced personnel. Couple large sunk costs with the time needed to build a reputation, and new entrants are incur significant risk (White, 2016).

4. Economies of Scale and Scope

Deb et al. (2011) and Gannon (2011), recognise that the Big Three benefit from important economies of scale and scope resulting from years of experience and operations. They are able to better allocate resources and costs resulting in increased efficiency (Deb et al., 2011; Gannon, 2011).

Chapter 2. SWOT Analysis

The SWOT model permits for an analysis of the competitive environment of the industry in which a company is present. It analyses a company's internal factors (Strengths and Weaknesses) and external factors (Opportunities and Threats) (Stermann, n.a.). For illustrative purposes, this SWOT analysis shall centres on Moody's.

A. Strengths

1. Reputation

The continuity of the CRAs' business is dependent on their reputations for objective and accurate ratings (Partnoy, 1999). A strong reputation and well-known brand name, such as Moody's, produces positive 'network externalities': investors prefer to use the same information that others are using in their investment decisions, and issuers prefer to be rated by a CRA whose information is used by investors (Fennell & Medvedev, 2011). In other words, the more a CRA's ratings are used, the more their value increases (Fennell & Medvedev, 2011).

2. Economies of Scale and Scope

Moody's benefits from being cost effective thanks to its economies of scale and scope that allow it to better allocate resources (Deb et al., 2011; Gannon, 2011; Giordano et al., 2011). It enabled it to expand geographically, industry-wise and product-wise, consequently increasing its coverage and establishing its reputation and the value of its brand name value among investors (Giordano et al., 2011).

Gannon (2011) believes that this was particularly beneficial for it when rating new and complex financial products, for example when structured finance products were began to gain in popularity during the 1990s; in addition, they were able to better allocate analytical, legal, research, administrative and marketing costs (Gannon, 2011).

B. Weaknesses

1. Conflicts of Interest

The most important and widely discussed weakness that can be identified originates from the issuer-pays business model. This model gives rise to potential conflicts of interest since CRAs are paid by the issuers they rate and they develop longstanding relationships with them (Fennell & Medvedev, 2011).

However, according to Gannon (2011), for 30 years following the implementation of the issuer-pays business model in the early 1970s, this particular problem was not evident. Cantor and Packer (1994) state that before the financial crisis of 2008, the upholding of reputation provided sufficient incentive for CRAs to dismiss issuers' requests for higher than justified ratings and the risk that they would take their business elsewhere. Pagano and Volpin (2010) explain that in the context of the traditional bond market, inflated or inaccurate ratings would have been quickly discovered by other market participants or analysts because the

market is highly transparent with a vast amount of publicly available information. In addition, there were thousands of issuers and each represented a fraction of a CRA's total revenue. This rendered the potential loss of business inconsequential (Božović, Urošević & Živković, 2011; Pagano & Volpin, 2010). Furthermore, as Giordano et al. (2011) and Rhee (2013) point out, it was traditional practice to solicit two or more ratings for each individual issue which reduced competitive pressures on the Big Three and mitigated any threat of loss of business.

Conflicts of interest were not only inherent to the issuer-pays business model. Although not widely discussed, conflicts of interest also arose from the ownership structure of CRAs (European Commission, 2016b; Kedia et al., 2017). The European Commission (2016b) claims that there is evidence to suggest Moody's issued more favourable ratings than S&P to its large shareholders following its initial public offering (IPO) in 2000. Kedia et al.'s (2017) study assessed whether Moody's' large shareholders (characterised as having more than a 5% stake over the sample period) were assigned more favourable ratings by Moody's than S&P. The authors found that Moody's did indeed assign higher ratings to investee firms of its two largest shareholders, Berkshire Hathaway and Davis Selected Advisors (see appendix C for Moody's original and current ownership structure). Kedia et al. (2017) concluded that the threat of exit or sell-off was potent enough to pressure CRAs into inflating ratings.

Kedia et al. (2017) add that a more implicit favourable bias could exist and arise from analysts who develop longstanding relationships with the large shareholders; they could view them as "savvy investors, given their large and stable stakes in Moody's" (p. 634). Fracasso, Petry & Tate (2013) concur, explaining that tenure covering a particular entity is positively correlated with optimism and negatively correlated with accuracy in the rating process.

A further conflict of interest arose from the high employee turnover rate in the CRA industry. Analysts were underpaid and undertrained because CRAs expected them to leave for a more lucrative position in the banking industry (European Commission, 2016a). This meant that analysts were rating their potential future employers. The European Commission (2016a) explained that analysts were aware of this and so were tempted to inflate their ratings.

Favourable biases are facilitated by the subjective assessment of qualitative aspects, such as management experience and structure, and competitive philosophy, that unavoidably takes place during the rating process (Fernández & Vila, 2015; Fridson, 2014; The Office of Investor Education and Advocacy and Office of Credit Ratings, 2017).

In addition, in the late 1990s Moody's began diversifying its product range and providing risk and rating consulting services to the issuers it was rating. According to Datar (2011), it is natural that CRAs would begin to diversify their activities by offering research and

complimentary services and products, since CRAs track credit risk factors over long periods of time owing to the long-term perspective of their ratings.

2. Rating Time Lag

CRAs faced criticism regarding their failure to predict the Asian crisis of 1997 because it was only once the crisis had begun that they downgraded sovereign (Reisen, 2002). Frost (2006) and De Haan and Amtenbrink (2011) add that they were also slow to downgrade large companies such as Enron and WorldCom that went bankrupt in the early 2000s, assigning downgrades merely days before they collapsed. In addition, once it was discovered that these companies had committed fraudulent accounting, the CRAs were also criticised for their lack of due diligence in relation to confidential information which they had access to in the context of their issuer-CRA relationship (Frost, 2006).

Deb et al. (2011), Frost (2006), Partnoy (1999) and White (2013) explain that the CRAs' slow reaction to downgrade ratings is inherent in the rating system; CRAs aim to rate 'through the cycle' in order to provide investors with stable ratings. According to Deb et al. (2011), this means avoiding "ratings volatility by capturing relative creditworthiness independent of the point in the financial cycle" (p. 4). Short-term perturbations to an issuer's creditworthiness would be ignored because they would generally disappear in the long-run. In other words, CRAs need to wait to see whether or not a short-term perturbation will develop into a long-term disruption (White, 2013). White (2013) states that CRAs believe "relative stability better serves bond investors who want accuracy but also do not want to incur the transactions costs of selling and then rebuying bonds based on short-term perturbations that are subsequently reversed" (p. 109).

On the other hand, Gannon (2011) argues that the rating time lag is a result of lack of innovation in the CRA industry. Gannon's (2011) opinion is that this is due to the CRA oligopoly which naturally suppresses innovation. For example, the Big Three use similar modelling techniques (Gannon, 2011). Indeed, any superior new modelling techniques developed by smaller or new CRAs are unlikely to enable them to attract new business since they don't have the strong reputation required to succeed (Gannon, 2011). Coffee (2011) even suggests that the reason is economic; CRAs have nothing to gain from downgrading an issuer, only an unhappy customer and potentially lost future business.

The rating time lag can be dangerous because it leads to ‘cliff effects’. When sudden unexpected mass downgrades occur, it exacerbates an already bad situation because it can lead to trigger calls and liquidity problems (Ryan, 2012).

C. Opportunities

Before the financial crisis, several economic and capital market trends offered opportunities for the CRAs to grow and expand their business. Moody’s Corporation (2000) identified the following trends: the global economy was growing, global public capital markets and global structured finance were also on the rise, and the information technology sector was flourishing.

1. Global Economic Growth

As Moody’s Corporation (2000) explains, global economic growth increases profitable investment opportunities, that in turn, if financed by debt, will increase the number of issuances and consequently the need number of ratings.

In 2000, global capital markets issued over US \$40 trillion debt, of which Moody’s ratings covered approximately US \$30 trillion (Moody’s Corporation, 2000). Moody’s Corporation (2000) stated that its ratings at the time covered “85,000 corporate and government securities issued by 6,000 borrowers, 68,000 public finance obligations in the US municipal bond market, and nearly 15,000 structured transactions” (“Our Business”, para. 6).

2. Global Public Capital Markets Growth

From the 1980s, international financial markets began to develop (White, 2016). Global public debt markets grew from about US \$22 trillion outstanding in 1993 to US \$29 trillion outstanding in 1996, and US \$36.5 trillion outstanding in 2001 (Moody’s Corporation, 2001). Moody’s Corporation (2002, 2006) estimated that global issuance of rated debt grew at a compound annual growth rate (CAGR) of 16% from US \$1.7 trillion in 1996 to US \$3.6 trillion in 2002. From 2002 to 2006, the CAGR was 23% as it increased to reach US \$7.3 trillion.

According to Cantor and Packer (1994), the Big Three were able to successfully expand their businesses geographically thanks to their competitive advantage over non-U.S. CRAs; they possessed well-known brand names and strong reputations. Indeed, Moody’s first non-U.S. office opened in Tokyo in 1985 and fifteen years later it had offices in an additional 13

countries. By 2006, it had offices in 28 countries worldwide (Moody's Corporation 2000, 2006). Moody's Corporation (2001, 2006) also explains how it gained access to additional markets through strategic joint ventures with CRAs in countries such as Chile, Argentina, Czech Republic, Russia and China.

The growth of public capital markets was driven by a number of trends: disintermediation, global structured finance growth, developments in the IT sector and product development (Moody's Corporation, 2000).

a. Disintermediation

Lannoo (2010) and Wymeersch and Kruithof (2006) discuss how and why European demand for credit ratings considerably lagged behind that of the United States. For most of the 20th century, the CRA industry grew exclusively in the U.S. which had a market-based financial system, unlike Europe which had an institution-based financial system. Borrowers still sought capital primarily through the intermediary of banks, who performed credit risk analyses themselves (Lannoo, 2010; Wymeersch & Kruithof, 2006). Wymeersch and Kruithof (2006) note that European banks were able to collect information and data efficiently because they had many branches, even in sparsely populated areas, hence attenuating any demand for CRAs' ratings. Lannoo (2010) theorises that the reputational strength of the U.S. capital market model caused it to gradually gain ground in Europe. Therefore, as international public capital markets began to develop, the need for credit ratings increased; borrowers had yet to find a way to establish recognition in the capital markets as sound issuers, and investors were faced with an increasing number of investment opportunities that they needed to assess in terms of risk (Moody's Corporation, 2000). Lannoo (2010) also recognised that rating demand was increased further by the incorporation of credit ratings into Basel II in 2004.

Lannoo (2010) and Moody's Corporation (2000) accredit disintermediation to the creation of the European Economic and Monetary Union in 1992. It involved "the coordination of economic and fiscal policies, a common monetary policy, and a common currency, the euro" (European Commission, n.d., para. 1). This facilitated transnational investments and borrowings, and stimulated the creation of European public capital markets (Moody's Corporation, 2000).

Moody's Corporation's (2001) analysis of the European bonds market yielded results that clearly illustrated the different financial systems that dominated Europe and the United States. From 2001, over 50% of financing in the UK, the Netherlands and Switzerland was

provided by banks, and reached over 70% in countries such as Germany, France and Italy (Moody's Corporation, 2001). These numbers were very high in comparison to the United States where financing from banks had a 25% share of the public capital market (Moody's Corporation, 2001).

From the mid 1990s until 2000, Moody's European issuer ratings increased 50% to more than 800, as European transnational issuance grew from under US \$400 billion in 1996 to just under US \$1.0 trillion in 2000 (Moody's Corporation, 2000). Moody's Corporation (2000) added that during the same time period, European share of total revenue grew by a CAGR of 34%, the highest growth rate of all regions.

Asian and South American public capital markets were also gradually growing (Moody's Corporation, 2005). Moody's non-US revenue accounted for 18% of total revenue in 1996 in comparison with 37% in 2006 (Moody's Corporation, 2000, 2006).

These trends continued upwards until the financial crisis of 2007-2008 (Moody's Corporation, 2007).

b. Global Structured Finance Growth

The use of structured finance began to grow during the 1990s (White, 2013). Structured finance is an attractive sector in capital markets because it allows companies to sell otherwise illiquid assets thereby increasing their cash flows, and regulated institutions to reduce their required capital thereby increasing potential investment possibilities and also cash flows (Moody's Corporation, 2000). The number of assets that offered securitisation possibilities grew from below 20 in the early 1990s to over 100 by the mid 2000s (Moody's Corporation, 2005).

Global issuance of rated structured finance instruments increased from US \$290 billion in 1996 to US \$2.2 trillion in 2002 and subsequently US \$3.0 trillion in 2006 (Moody's Corporation (2002, 2006). Although the U.S. exhibited a CAGR of 21%, it was non-U.S. issuance that increased the most with a CAGR of 43% (Moody's Corporation, 2002). The share of global issuance of rated debt originating from structured finance in 1996, 2002 and 2006 was 12%, 36% and 41%, respectively (Moody's Corporation, 2002, 2006). Moody's Corporation (2002, 2006) also reported that revenue from structured finance grew from US \$199.2 million, or 33%, of total revenue in 2000, to US \$886.7 million, or 44%, of total revenue in 2006.

Moody's Corporation (2000) further estimated a global CDO growth of approximately 30 transactions with a rated volume of US \$20 billion in the second half of the 1990s to 190 transactions with a rated volume of US \$120 billion in 2000. In 2000 alone, European asset-backed issuances increased by 33%, CDO issuances by 117% and the amount of asset-backed commercial paper programs grew by 160% (Moody's Corporation, 2000).

c. IT Sector Development

The development of information technology, in particular internet, allowed the CRAs to increase their ratings volume as investment opportunities for investors increased and issuers could reach a wider spectrum of investors (Moody's Corporation, 2001). Rating models and methodologies were digitalised, and new modelling technologies spurred development (The Financial Crisis Inquiry Commission, 2011)

D. Threats

1. Threat of Damaged Reputations

Maintaining reputation is critical for a CRA's business (European Commission, 2016b). CRAs are exposed to reputational risk, defined by the Basel Committee on Banking Supervision (1998) as "the risk of significant negative public opinion that results in a critical loss of funding or customers" (p. 7). Reputational risk arises from several situations such as behaviours that result in a lasting negative public image or a major loss of confidence in the ability to perform daily operations, and responses to actions of third parties (Basel Committee on Banking Supervision, 1998). Reiss (2009) identifies three 'reputational inputs' that are relevant in the context of CRAs: trust, transparency and leadership.

When CRAs are criticised following crises or unexpected bankruptcies, they run the risk of damaging their reputations, losing investor and issuer trust, and reducing confidence in their ability to produce timely and accurate information (Frost, 2006; Hemraj, 2015). Cankaya (2017) and Reiss (2009) explain that in the context of CRAs, any damage to reputation generally results in more regulation.

2. Threat of Regulation

Following intense scrutiny from the bankruptcies and scandals in the early 2000s of large companies, such as Enron and WorldCom, Moody's Corporation (2001) identified the possible threat of CRA regulation, in particular in the United States where discussions had

already begun. However, no CRA regulation was enacted. Instead, the CRAs were issued with the Statement of Principles Regarding the Activities of Credit Rating Agencies by the International Organization of Securities Commissions (IOSCO) in 2003 (Bayar, 2014; Legind & Jensen, 2014). A year later, IOSCO published an internationally accepted Code of Conduct Fundamentals for Credit Rating Agencies that CRAs were expected to implement into their own codes of conduct (Bayar, 2014; Legind & Jensen, 2014; Utzig, 2010). Utzig (2010) clarifies that the IOSCO Code is based upon the principle of ‘comply or explain’, which is a form of self-regulation. Bayar (2014) describes both IOSCO publications as voluntary principles which cover the quality and integrity within the rating process, the CRAs’ independence and avoidance of conflicts of interest, the CRAs’ responsibilities to market participants and the public disclosure of their codes of conduct. Frost (2006) lists the disclosure recommendations that were in the Code: “The meaning of each rating category, the definition of default, the time horizon the CRA used when making a rating decision, information about historical default rates of CRA rating categories and whether the default rates of these categories have changed over time, and whether a rating is unsolicited” (p. 11).

The first CRA regulation, the CRARA, was enacted in the United States in 2006 (Bayar, 2014; Utzig, 2010). Bayar (2014) explains that the CRARA aimed to make the CRA industry more competitive, improve ratings quality, protect investors and promote accountability and transparency. It revised the NRSRO designation system and provided the SEC with oversight powers regarding, for example, the use of confidential information. The NRSRO designation system changed from one of approval to one of registration. In theory, it made easier for CRAs to obtain government certification (Utzig, 2010). However, Utzig (2010) adds that although the objective to promote competition by reducing the government certification barrier to entry was well-founded, the eligibility criteria for NRSROs under the CRARA were actually stricter than they had previously been.

3. Threat of Competition

Despite the CRA industry having always been highly concentrated, there was still the threat of more competition. Before the 21st century, the industry was dominated by Moody’s and S&P. Fitch was a less significant player, who specialised in structured finance and held a 78% market share in mortgage-backed securities in 1995 (Partnoy, 1999). Cantor and Packer (1994) and Partnoy (1999) considered the only other significant entry to the U.S. CRA industry to be Duff & Phelps, founded in 1932, who began producing ratings in 1982 and provided a

wide coverage. Only one other CRA entered the U.S. market: McCarthy, Crisant & Maffei in 1975 (Partnoy, 1999).

The European Commission (2016b) points out that smaller and new CRAs are able to enter the market and establish themselves in niche segments, specialising in a particular product at a national or regional level. For example, A.M. Best Company, a British CRA, used to specialise exclusively in the insurance industry (Partnoy, 1999). Unsolicited ratings also provide a way for smaller CRAs to build their reputation and coverage, and gradually expand into new sectors and markets (Bayar, 2014; Frost, 2006).

In the context of the CRA industry, new entrants that do manage to establish a reputation and brand name are generally acquired by larger CRAs (Deb et al., 2011; European Commission, 2016b; Fennell & Medvedev, 2011). Fitch undertook such a strategy and acquired IBCA in 1997, a British CRA, followed by Duff & Phelps (itself having previously acquired McCarthy, Crisant & Maffei in 1991) and Thomson Bankwatch in 2000 (Coffee, 2011; Partnoy, 1999; White, 2013). Coffee (2011) illustrates that Fitch was able to rise to become a significant player in the CRA industry thanks to its acquisitions; its monthly U.S. market share increased from 20% in 2000 to 45% in 2006. According to Frost (2006), Fitch claimed that S&P and Moody's responded by using 'notching' in an attempt to force it out of the structured finance market. Frost (2006) defines 'notching' as "the practice of lowering ratings on, or refusing to rate, securities issued by asset pools (such as collateralized debt obligations) – unless a large share of the assets within those pools also were rated by them" (p. 19).

Further competition could potentially arise from other CRAs granted NRSRO certification by the SEC. Moody's Corporation (2003, 2005) identified DBRS in 2003 and A.M. Best Company in 2005 as threats to its market share when they became NRSROs.

4. Threat of Substitutes

From 2000 to 2006, Moody's Corporation's annual reports consistently listed the introduction of competing products and technologies by other companies as a factor that could affect future results.

Moody's recognised that the market for credit ratings was becoming increasingly competitive (Moody's Corporation, 2001). Moody's Corporation (2001) identified product and technology innovation that will anticipate changing customer requirements as a key factor to maintaining market share and a competitive advantage. It considered the possibility that

“competitors may develop quantitative methodologies for assessing credit risk that customers and market participants may deem preferable to or more cost-effective than the credit risk assessment methods currently employed by Moody’s” (Moody’s Corporation, 2001).

One such example was KMV, a leader in quantitative credit analysis services who threatened to undermine the core value of credit ratings. KMV offered the same end-product as credit ratings i.e. probabilities of default (Frenkel, Hommel & Rudolf, 2000). However, Frenkel et al., 2000 explained that KMV provided daily updates as opposed to CRAs whose ratings were updated about once a year. Equally, Saunders and Allen (2002) found that CRAs were slower to upgrade or downgrade their ratings than KMV was to change its probabilities of default. In response to this threat, Moody’s acquired KMV in 2002, and renamed its risk management services business segment to Moody’s KMV (Moody’s Corporation, 2002).

5. Threat of Employee Poaching

Rhee (2013) explains that the financial services industry was highly competitive in terms of hiring qualified and experienced staff; CRAs had to compete with investment banks, commercial banks, accounting firms and consulting firms. Indeed, from 2000 to 2006, Moody’s Corporation’s annual reports routinely listed the potential loss of key employees as a factor that could affect its future results.

Part III. The Credit Ratings Agencies' Role in the Financial Crisis of 2008

Chapter 1. The Financial Crisis

The growing use of securitisation was one of the main factors that contributed to the financial crisis by enabling illiquid loans to be converted into liquid, tradable securities, such as mortgage-backed securities (MBS), residential mortgage-backed securities (RMBS) and collateralised debt obligations (CDOs) (Jobst, 2008). Academia is also of a consensus that CRAs played an important role in the financial crisis of 2008 by enabling these securities to be traded globally because their ratings enabled regulated financial institutions to invest in them.

In order to better understand the financial crisis, it is necessary to explain the process of securitisation, which is at its heart.

A. Securitisation

1. The Process of Securitisation

Jobst (2008) explains securitisation as “the process in which certain types of assets are pooled so that they can be repackaged into interest-bearing securities”, or structured finance products, and sold to investors. In doing so, interest rate, principal payments and credit risk are transferred from the issuer to the investor (Jobst, 2008).

More specifically, the ‘originator’, the company (generally a bank or mortgage broker), who owns loans that it wants to get rid of (auto, student, credit card, commercial real estate, residential mortgage, etc.) packages them up together into pools and sells them to a ‘special purpose vehicle’ (SPV), specifically created for this purpose (Pagano & Volpin, 2010). In doing so, the originator removes them from its balance sheet, thus making the SPV a bankruptcy-remote legal entity: any risks that were associated with the originator, including its risk of future bankruptcy, won’t have any effect on the SPV’s cash flows to investors (Schwarcz, 2011). The loans bought by the SPV form its collateral pool (Jarrow, 2011). The SPV funds its purchase by issuing asset-backed securities (ABS) onto the capital markets. If the collateral pool contains mortgages or residential mortgages then the ABS are called MBS and RMBS, respectively (Jarrow, 2011). Jarrow (2011) explains that the ABS are sliced and diced into ‘tranches’: senior, mezzanine and equity. The term ‘waterfall structure’ was coined to describe how the tranches order the flow of cash-flows and potential losses: cash-flows flow from the senior tranche to the equity tranche and losses flow in the opposite direction, from the equity tranche to the senior tranche (Jarrow, 2011). Therefore, each tranche represents a

different level of default risk, with the senior tranche being the safest to invest in since it is cushioned by all subsequent tranches. It is at this moment that the CRAs enter the securitisation process (Pagano & Volpin, 2010). CRAs assign ratings to senior and mezzanine tranches (the equity tranche is unrated) and the senior tranche receives the highest rating because it is the least risky. As stated by Pagano and Volpin (2010), this provides investors with investment opportunities that are catered to their specific risk tolerance.

The ‘originate and distribute’ model of securitisation transfers credit risk from the originator to the issuer (and ultimately to the investor), spreads out credit exposures and mitigates risk concentration (Hemraj, 2015; Mullard, 2012). Hemraj (2015) and Mullard (2012) both contrast this model with the traditional ‘originate and hold’ in which the originator held the loan until its term.

2. The Beginnings of Securitisation

Jobst (2008) and White (2013) attributed the beginnings of securitisation to the 1970s, when U.S. government-backed agencies, Fannie Mae, Freddie Mac and Ginnie Mae, began pooling residential mortgages into securities. Until the late 1980s, securitisation was almost exclusively conducted by these three U.S. agencies because their government-backed status gave credibility to the default (White, 2013). White (2013) explains that any non-government-backed agency, such as a bank, was therefore not able to participate in the securitisation market. However, the banks were able to circumvent this hindrance by creating SPVs in 1988, the waterfall structure and its tranches (Financial Crisis Inquiry Commission, 2011; Partnoy, 2009; White, 2013). They provided the senior tranche with a loss-absorbing buffer and solicited ratings from the CRAs for each tranche, so as to offer the same-level guarantee as the government-backed agencies (White, 2013). Soliciting the CRAs’ ratings for each tranche increased the reach of securitisation and enabled regulated financial institutions to invest in structured finance products (Pagano & Volpin, 2010).

As securitisation proliferated, the complexity of structured finance instruments increased (Mullard, 2012; Wittenberg, 2015). Mullard (2012) and Partnoy (2009) cite CDOs, which were created with the mezzanine tranches of MBS and other ABS and then once again structured into tranches, as a prime example.

Securitisation offers a variety of advantages. It provides new sources of funding at a lower cost than borrowing and increases the supply of credit in the economy. Additionally, it enables originators to raise funds directly from capital markets and acquire a higher rating for

their pooled securities than if they had issued the securities themselves (Schwarcz, 2011). In the case of prudentially regulated institutions, it allows them to lower minimum capital requirements since assets are removed from the originator's balance sheet once they have been pooled and sold to an issuer. Thus, the originator avoids inflation of its balance sheet liabilities and instead has new funds for future investments (Jobst, 2008).

B. The Origins of the Financial Crisis

The roots of the financial crisis can be traced back to the 1990s when interest rates were declining, and favourable macro-economic conditions flooded banks with liquidity and boosted housing prices (Fennell & Medvedev, 2011; Gupta et al., 2010; Ramskogler, 2015; Schwarcz, 2011; Wittenberg, 2015). The Financial Crisis Inquiry Commission (2011), Ramskogler (2015) and Schwarcz (2011) explained that this resulted in increased demand for higher yields. Indeed, banks sought to invest their additional funds and more subprime borrowers requested mortgages since they had greater access to the credit market due to relaxed lending standards. The use of securitisation in the subprime mortgage market rose since originators were able to acquire additional funds to grant further mortgages to subprime borrowers (Wittenberg, 2015).

Consequently, the issuance of subprime RMBS and CDOs grew tremendously. Mullard (2012) estimates that at the height of securitisation, approximately US \$3 trillion was securitised annually. From 2000 to 2006, CRAs rated US \$4 trillion in MBS, of which 36% was backed by subprime mortgages (Mullard, 2012). According to Mullard (2012), during the same six-year period, S&P and Moody's each rated approximately 10,000 RMBS as triple-A. Mullard (2012) emphasises that approximately 80% of subprime MBS were assigned a triple-A tranche, while less than 5% was assigned to below investment grade tranches. In 2006, on the eve of the financial crisis, subprime mortgages represented 20.1% of the mortgage market (De Haan & Amtenbrink, 2011).

C. The Financial Crash

As early as 2005, the economic growth in the United States slowed down and interest rates and housing prices began to rise (Wittenberg, 2015). A year later, housing prices peaked and by the end of the year, they had begun their downward spiral (Ryan, 2012; White, 2013). Ryan (2012) further explains that as refinancing became increasingly difficult, an increasing amount of loans became delinquent. Indeed, by January 2007, approximately 10% of all subprime loans were delinquent (Ryan, 2012). Mullard (2012) and Ryan (2012) noted that

surprisingly, securitisation suddenly increased; Moody's monthly volume of CDO ratings grew from US \$10 billion in October 2006 to US \$40 billion in April 2007. Ryan (2012) wondered if CRAs quickly produced as many ratings as they could to avoid losing any revenue, because they knew their mass downgrades were to come.

Subprime borrowers' defaults increased as time went by and in July 2007, the CRAs pulled the trigger and downgraded hundreds and then thousands of highly-rated RMBS and CDOs to below investment-grade, causing them to lose value and become illiquid. Secondary markets froze and then collapsed (Financial Crisis Inquiry Commission, 2011; Ryan, 2012). Mullard (2012) estimates that approximately 90% of all triple-A securities rated by Moody's and S&P between 2005 and 2007 were downgraded to below investment grade status.

The United States' MBS market had become the largest fixed income market in the world which contributed to the financial crisis' global reach and worldwide devastating consequences (Gupta et al., 2010).

Chapter 2. The Shortcomings of the Credit Rating Agency Business Model

The SWOT analysis conducted in part II provides an insight into the CRAs' role in the financial crisis. Two factors caused the CRAs to become major players in the run up to the financial crisis. Firstly, weaknesses identified in the CRAs' issuer-pays business model, such as potential conflicts of interest materialised in the context of structure finance instruments. This gave rise to rating inflation. Secondly, the threat of increased competition with the rise of Fitch focussed Moody's' and S&P's attention on the maintenance of market share at the expense of reputation. Furthermore, flawed rating models underestimated the risk associated with complex structured finance products. Consequently, the CRAs' ratings enabled the subprime structured finance market to rapidly develop and their late downgrades resulted in 'cliff effects' which further exacerbated the financial crash (Financial Crisis Inquiry Commission, 2011).

A. Conflicts of Interest

Coffee (2011), European Commission (2016b), Fennell and Medvedev (2011), Gannon (2011), Gupta et al. (2010), Kedia et al. (2017), Malik (2014), Pagano and Volpin (2010) and Sinclair (2010), to name a few, agree that the issuer-pays business model, whereby the issuer pays the CRA to be rated, led to significant conflicts of interest. There are several reasons why

conflicts of interest arose in the context of structured finance whereas they previously hadn't within the traditional bond market (Coffee, 2011; Pagano & Volpin, 2010).

Firstly, in the case of structured finance it was not the norm to solicit more than one rating (Fennell & Medvedev, 2011; Gannon, 2011; Kedia et al., 2017). Owing to the fact that there were only a handful of issuers in the market, a dozen of them responsible for about 80 to 90% of all MBS issuances, any threat to take their business elsewhere unless they received a high rating (a large triple-A tranche) was damaging (Coffee, 2011; Gannon, 2011; Mullard, 2012; White, 2013). The authors recognise that this gave MBS issuers significant power since losing the business of an MBS issuer would mean losing considerable market share of a highly profitable market. Indeed, rating structured finance products had become the primary source of income for CRAs, offering larger profit margins than rating traditional bonds (De Haan & Amtenbrink, 2011; Gannon, 2011). The Financial Crisis Inquiry (2011) and Mullard (2012) identified that the Big Three charged exorbitant fees ranging from US \$0.5 million to US \$ 0.85 million depending on the complexity of the product and size of the senior tranche. Moody's Corporation (2005, 2007) reported an increase in total revenue from US \$1,732 million in 2005 to US \$2,259 million 2007, reaping respectively US \$710 million and US \$873 million from structured finance. Similarly, the McGraw-Hill Companies (2005, 2007) reported an increase in S&P's total revenue from US \$2,401 million in 2005 to US \$3,046 million in 2007. Fitch equally saw an increase in total revenue, from US \$693 million to US \$988 million⁶ (Fimalac, 2005, 2007).

The second reason for the rise of conflicts of interest in the context of structured finance is explained by Coffee (2011), who states that competitive pressures arising from Fitch's sudden growth in 2000 and its specialisation in MBS further solidified the importance of retaining MBS issuer business. CRAs catered to issuers' requests and provided them with inflated ratings. A study conducted by Becker and Milbourn (2011) on the effect of increased competition on corporate credit ratings provided evidence that increased competition is positively correlated with inflated ratings: with increased competition the percentage of investment grade ratings went up and the percentage of non-investment ratings went down.

The practice of only soliciting one rating for structured finance issues and the addition of a third significant player gave rise to rating shopping, the process by which issuers would request preliminary ratings from more than one CRA and then choose to solicit their final rating

⁶ Twelve months ended 30 September 2007 (Fimalac, 2007).

from the CRA who offered the largest AAA tranche (Deb et al., 2011; Fennell & Medvedev, 2011).

Lastly, conflicts of interest also arose from the operating manner of the consulting and advisory services CRAs offered to issuers. They would provide issuers with a preliminary rating that they would receive for different structures (tranche sizes) of their ABS (Datar, 2011; Frost, 2006; Reiss, 2009). There then ensued a back-and-forth between the CRA and the issuer, with the latter submitting potential structures and the ratings they expected to receive, and the CRA providing feedback and ratings it would assign to the given structure (Fennell & Medvedev, 2011; Stowell, 2013). As explained by Deb et al. (2011), Fennell and Medvedev (2011) and Stowell (2013), modifying the structure of ABS was easy; the issuer could tweak the size of collateral assigned to the senior tranche or the mix of underlying assets in order to come up with an optimal structure that would receive the highest possible ratings.

Coffee (2011), Gannon (2011), Pagano and Volpin (2010), Partnoy (2001, 2009) and Rhee (2013) agree that temptations for CRAs to cater to issuers' requests were further heightened by their lack of legal accountability. Partnoy (2009) explains how CRAs have been exempt from liability for misstatements since the enactment of the U.S. Securities Act in 1933. He adds that the CRARA of 2006 further limited private rights of actions. CRAs have also repeatedly stated that they are 'financial publishers' whose ratings are opinions (Deb et al., 2011; Pagano & Volpin, 2010; Partnoy, 2009; Rhee, 2013; Sabatino, 2014). This allowed CRAs to successfully defend themselves in court with the First Amendment of the U.S. Constitution which guarantees freedom of expression to the press and individuals. This resulted in a vast majority of cases being ruled in their favour (Pagano & Volpin, 2010; Partnoy, 2009; Rhee, 2013).

The combination of all these factors culminated in conflicts of interest which gave rise to inflated ratings (Coffee, 2011; Gannon, 2011). By tweaking their ratings to keep issuers happy and to maintain their high level of revenue, CRAs vastly inflated the size of the triple-A tranches of structured finance products. In 2012, Griffin and Tang conducted a study that examined rating inflation amongst a sample of 916 CDOs issued from 1997 to 2007. They found that rating adjustments inflated the triple-A tranches by an additional 12.1%, overvaluing them by US\$ 86.22 billion (Griffin & Tang, 2012). Furthermore, just 1.4% of triple-A tranches actually corresponded to the CRAs' own definition of triple-A default risk (Griffin & Tang, 2012). White (2013) determined that ratings inflation was facilitated by the lack of transparency in the structured finance market (little information about underlying collateral was publicly available), the CRAs' rating models and the CRAs' rating decisions. The little

information that was publicly available required advanced analytical skills that most investors did not possess since structured finance instruments were relatively new and highly complex (Fennell & Medvedev, 2013). Therefore, the probability of it being discovered by analysts or market participants was relatively low (White, 2013).

Božović et al. (2011) were of the opinion that the high concentration of issuers and the opacity and complexity of structured finance markets resulted in a situation where reputation no longer acted as a barrier to conflicts of interest. Eving and Hau's (2015) and the European Commission's (2016b) studies yielded similar results; reputation became secondary to the importance of the maintenance of market share and the relationships with key issuers, and the continuation of high levels of revenue. Another study conducted by Bar-Isaac and Shapiro (2013) showed that rating quality is countercyclical. In other words, a CRA is less likely to issue high quality ratings when the fees they are able to charge are high, competition for qualified analysts is intense and securities' default probabilities are low.

B. Underestimation of Risk

CRA's had no prior experience when it came to rating these new complex products (White, 2010). New types of mortgage loans were being used, such as adjustable rate mortgages, teaser mortgages and non-documented mortgages (Mullard, 2012). Since there was no available historical data, the CRA's used models which relied on traditional thirty-year mortgages characterised by historically low default rates (Financial Crisis Inquiry Commission, 2011; Mullard, 2012; Partnoy, 2009). The Financial Crisis Inquiry Commission (2011) adds that Moody's only developed a model to account for the layered risks of subprime securities in 2006, by which time it had already rated about 19,000 subprime securities. Therefore, Gupta et al. (2010) and Božović et al. (2011) claimed that it stands that these models couldn't correctly predict the level of credit risk associated with subprime MBS; their downgrade dynamics differ from those of traditional bonds because of the pools of underlying collateral and the resulting systemic risk.

Moreover, CRA's didn't input high quality data into their models (Jarrow, 2011). Traditionally, issuers conducted the due diligence of portfolios of mortgages that they were thinking of purchasing from originators. They hired third-party firms for the process, however, after 2000 they began to stop doing so. Coffee (2011) hypothesised that the increasingly subprime loans in the mortgage market were prompting third-party firms to start expressing concern about the quality of the underlying collateral, and issuers didn't want CRA's to become

aware of these concerns for fear that they might assign lower ratings. As the Financial Crisis Inquiry Commission (2011) discovered, CRAs performed no due diligence of their own. Deb et al., (2011) and Fennell and Medvedev (2011) hypothesised that investors didn't conduct their own due diligence either since NRSRO ratings were recognised by regulators, which they believed to be an endorsement of their quality.

Gannon (2011) reported that errors in rating models and methodologies, resulting in inaccurate ratings, are also a consequence of the CRA oligopoly. Indeed, Gannon (2011) pointed out that high price setting power led to decreased productivity and market entrenchment led to complacency. The outcome was manifested in the form of modelling errors (Gannon, 2011).

C. Internal Corporate Culture

The climate in the CRA industry changed from maintenance of reputation to one of maximising of market share and profits. Proeba (as cited in Financial Crisis Inquiry Commission, 2011, p. 208), the former senior vice president at Moody's testified that "an analyst's worst fear was that he would do something that would allow him to be singled out for jeopardizing Moody's market share, for impairing Moody's revenue or for damaging Moody's relationships with its clients and lose his job as a result".

The Financial Crisis Inquiry Commission (2011) also revealed that CRAs were understaffed and could not perform the in-depth analyses required for more complex products. Reiss (2009) concurs and Mullard (2012) adds that newly recruited staff members didn't have the level of expertise or knowledge to perform the tasks at hand.

D. Belated Downgrades

CRAs were slow to react to changing market conditions and their subsequent mass downgrades of thousands of subprime MBS and CDOs worsened an already precarious situation (Deb et al., 2011; Ryan, 2012). Rating changes generally onset a 'cliff effect' in the market: "small shifts in a rating can prompt an avalanche of sales worsening a bad situation" (Ryan, 2012). Ryan (2012) and Deb et al. (2011) identified downgrading as potentially dangerous for a market because it has extreme consequences; investors' confidence plummets, the issuer begins to face a liquidity problem and his financial costs increase. Ryan (2012) emphasised that a major downgrade has even worse consequences because it triggers collateral calls, which generally results in bankruptcy.

Deb et al., (2011) and Fennell & Medvedev (2011) agreed that the impact of rating downgrades is amplified because of its direct link to regulatory capital requirements. Inflated ratings result in an underestimation of risk, which itself results in an undercapitalisation of prudentially regulated financial institutions. In the case of mass downgrades, this threatens system-wide financial stability (Deb et al., 2011; Fennell & Medvedev, 2011).

Part IV. The Immediate Consequences of the Financial Crisis for Credit Rating Agencies

Chapter 1. Regulation

In light of the CRAs' role in the financial crisis, both the United States and the European Union enacted CRA regulations aimed at solving the problems that had become apparent in the CRA industry. In particular, these regulations aimed to solve the lack competition and of diversity in ratings, over-reliance on ratings and their entrenchment in regulation, conflicts of interest and rating shopping, methodological issues and model risk, and misperception of what ratings actually represent (Deb et al., 2011).

A. Europe

1. CRA I

The European Union enacted its first regulation on CRAs in 2009: Regulation (EC) No 1060/2009 on Credit Rating Agencies, also known as CRA I. Its objective was to solve conflicts of interest, ensure the quality and transparency of ratings and rating methodologies, and address the lack of legal accountability; it also implemented a European registration process and supervisory framework (Legind & Jensen, 2014; OECD, 2010).

2. CRA II

The creation of the European Securities and Markets Authority (ESMA) in January 2011, prompted a revision of the CRA I regulation (European Commission, 2015b). CRA II granted ESMA oversight powers regarding supervision and registration of CRAs (Legin & Jensen, 2014). CRA II also aimed to increase competition in the CRA industry by facilitating the process of unsolicited ratings by smaller CRAs; issuers were required to provide all CRAs, registered or not, with access to information about their structured finance products (Bayar, 2014).

3. CRA III

Following the European Union sovereign debt crisis of 2010, an amendment to CRA II in 2013 resulted in CRA III, the regulation applicable to this day (European Commission, 2016a). The main objective of this amendment was to mitigate and manage current and future

conflicts of interest (Utzig, 2010). It was also geared towards reducing investors' over-reliance on credit ratings, further promoting competition and introducing civil liability (Bayar, 2014).

Conflicts of interest are mitigated by means of several rotation provisions limiting the duration an analyst is permitted to work with an issuer, and the duration a CRA is allowed to work on the re-securitisation of underlying collateral from the same originator. Furthermore, CRAs are prohibited from providing consulting and advisory services to issuers (Legind & Jensen, 2014). However, ancillary services such as "market forecasts, estimates of economic trends, pricing analysis and other general data analysis as well as related distribution services" are permitted (Legind & Jensen, 2014, p. 130).

Transparency was also increased and CRAs are now required to disclose information with respect to rating models and methodologies and their changes, compensation agreements, the code of conduct, internal control procedures, etc. (Wittenberg, 2015). The objective is to provide investors with more information that could help them conduct their own analyses (Wittenberg, 2015). To ensure that over-reliance of ratings does not happen again, some financial institutions are required to conduct their own internal credit risk assessments (Legind & Jensen, 2014). A revision of Basel II in 2013, renamed Basel III, encouraged banks to increase reliance on internal rating models when calculating risk exposures for regulatory capital requirements (Legind & Jensen, 2014). Furthermore, CRAs are required to conduct their own due diligence and to ensure the quality of their ratings and methodologies (Legind & Jensen, 2014).

CRA III also aimed to promote competition. Two ratings for structured finance instruments are required and the second rating must be solicited from CRA that has less than a 10% market share (on a 'comply or explain' basis). Regulatory barriers to entry, which impeded smaller CRAs' expansion efforts, were reduced. Small CRAs (less than 50 employees) are exempted from certain compliance costs. In addition, a public database, the European Rating Platform, operated by ESMA centralises all credit ratings with the intention of increasing smaller CRAs' visibility (European Commission, 2016a, 2016b).

B. United States

The United States reformed the CRARA in 2008 to increase NRSRO transparency and mitigate potential conflicts. It also enacted the Dodd-Frank Wall Street Reform and Consumer Protection Act in 2010 to promote financial stability (Gannon, 2011). The Dodd-Frank Act resembles the European CRA regulation in its objectives: mitigating and preventing conflicts

of interest, ensuring oversight, further promoting corporate governance, competition and disclosure requirements, and introducing legal accountability (Giordano, Novembre & Susi, 2011; Rhee, 2013). It also demanded the removal of any mention of NRSROs from federal law, and established the Office of Credit Ratings in 2012 upon which its oversight power was bestowed (Stowell, 2013; U.S. Securities and Exchange Commission, 2017b).

Chapter 2. The Credit Rating Agencies' reaction

CRAAs did not particularly welcome the advent of increased regulation. In particular, statements made by CRAAs expressed their concern that rotation provisions in CRA III would damage and undermine the stability of ratings (O'Connell, 2012). The CRAAs' reaction to the inclusion of legal accountability in the Dodd-Frank Act however, was not so composed. Regarding their new liability for misstatements, i.e. inaccurate ratings, in registration statements, Coffee (2011) and Partnoy (2017) detail how they resisted by blocking their ratings from being referenced in registration statements. In the case of ABS this was mandated by SEC rules. As a result, the public debt market froze (Coffee, 2011). The SEC responded by initially suspending, and then completely removing, the requirement of ratings in registration statements. Partnoy (2017) observes that the SEC reversed the legal accountability that had been instated by the Dodd-Frank Act.

Facing numerous criticisms for their role in the financial crisis, the CRAAs generally defended themselves by insisting that the financial crisis was not purely, if at all, their fault (Mullard, 2012). They should not be blamed for market forces that naturally govern and for the actions of investors who chose to over-rely on ratings in their investment decisions (Mullard, 2012; Ryan, 2012). According to Mullard (2012), CRAAs insisted that due diligence was not their responsibility, and that it was up to the investor to ensure that he was sufficiently informed of his investment decisions. Moody's CEO Raymond McDaniel, at his hearing before the FCIC in 2010, stated that not only the CRAAs but also other market participants had failed to recognise the fragility of the housing market and predict the onset of the financial crisis (Financial Crisis Inquiry Commission, 2011). In a court case brought against S&P by the U.S. Justice Department in 2015 for its behaviour in the financial crisis, S&P even claimed that its ratings should not have been taken seriously by investors since they were false praise and exaggerated for marketing purposes (Courtenay, 2015).

Chapter 3. Credit Rating Agency Business Model

A. Reputation

Qualitative studies are particularly pertinent for assessing perceived reputation. The CFA Institute (2014) conducted a member survey on CRAs' perceived performance and accountability since the financial crisis. A majority of members agreed that investors have become more cautious regarding the use of ratings in their investment decisions and that "the removal of regulatory and statutory requirements for financial firms to rely on the ratings of CRAs" has had the biggest positive impact on the reliability of credit ratings (CFA Institute, 2014, p. 6). Sapsford (n.d.) and Jaballah (n.d.) researched market participants' perceptions of CRAs since the financial crisis. Their findings aligned with those of the CFA Institute (2014); the validity of credit ratings has been questioned, investors have reassessed their view on credit rating quality and are more cautious in their use of credit ratings.

From a more quantitative perspective, Courtenay (2015) examined a Bloomberg survey from 2012 that illustrated the consequences of the financial crisis on the CRAs' reputation and perceived ratings reliability. The survey found that over 50% of the time, credit spread movements contradicted S&P's and Moody's' rating announcements (Courtenay, 2015). Courtenay (2015) concluded that investors are increasingly aware that they can no longer rely blindly on credit ratings and must also conduct their own credit assessments. Jaballah's (n.d.) and Zhao, Moreira and Wang's (n.d.) studies on the impact of the financial crisis on CRAs' reputation and investor reliance on credit ratings supported these findings.

B. Revenue and Profitability

All CRAs experienced a decline in revenue following the financial crisis. Moody's total revenue decreased by 22% from US \$2,259 million in 2007 to US \$1,755 million in 2008, with its structured finance revenue plummeting 53% from US \$873 million to US \$411 million (Moody's Corporation, 2008). S&P's total revenue fell slightly less, by 13% from US \$3,046 million in 2007 to US \$2,654 million in 2008 (The McGraw Hill Companies, 2008). Fitch's revenue fell 11% from US \$988 million⁷ to US \$882 million⁸ (Fimalac, 2008).

Operating margins also decreased; Moody's' fell from 50.1% in 2007 to 42.6% in 2008 and S&P's fell from 44.6% to 39.7% (Moody's Corporation, 2008; The McGraw-Hill Companies, 2008).

⁷ Twelve months ended September 30, 2007 (Fimalac, 2007).

⁸ Twelve months ended September 30, 2008 (Fimalac, 2008).

C. Rating Models

Following the financial crisis, CRAs' rating methodologies were criticised for having been too basic to have been able to account for the complexities of ABS (Partnoy, 2017). The CRAs responded by updating their models, and financial institution rating methodologies were among the first to be revised (Packer and Tarashev, 2011). Packer and Tarashev (2011) provided an analysis of the Big Three's revisions to their models. Moody's' and S&P's revisions will be analysed in further detail in the following paragraphs.

When assessing a bank's creditworthiness, CRAs need to take into account external support that they will generally receive in periods of distress, from their parent institution or public authorities (Packer & Tarashev, 2011). Therefore, CRAs generally assign two ratings to banks: a stand-alone rating that reflects the bank's probability of default and a final rating factoring in external support the bank could receive in periods of distress.

In 2009, Moody's recalibrated the importance it attached to certain factors in its bank rating methodology. Notably, it reassessed external support of banks because it realised that it been underestimated (Moody's Investors Service, 2009; Packer & Tarashev, 2011). Moody's also revised its assessment of stand-alone ('baseline') strength putting a "greater emphasis on forward-looking assessments of bank capital ratios, based on analyses of expected losses for risk assets in stress scenarios" (Packer & Tarashev, 2011, p. 46) (see appendix D for a schematic overview of Moody's bank rating methodology of 2009)⁹.

S&P overhauled its framework and created an 'anchor' rating to assess stand-alone risk. They created the Banking Industry Country Risk Assessment (BICRA) which scores industry risk and the economic risk of the country in which the bank operates. It then aggregates them to determine the anchor rating. If the bank operates in more than one country then a weighted average of economic risk of all countries is used (Standard & Poor's Ratings Services, 2013). Bank-specific factors such as business position, capital and earnings, risk position and funding and liquidity are then applied to the anchor profile, potentially modifying the anchor rating by one or two notches. The result is the stand-alone rating, upon which external support is assessed in order to obtain the final rating (Standard & Poor's Ratings Services, 2013) (see appendix G for a schematic overview of S&P's 2013 revised bank rating methodology). S&P now uses

⁹ Moody's current bank rating methodology as of 1 August 2018, which has since added a step between the stand-alone rating and final rating to account for loss given failure (risks different creditors are exposed to in the event of the bank's failure, absent external support), can be found at https://www.moody's.com/researchdocumentcontentpage.aspx?docid=PBC_1128883

adapted versions of this framework for other industries, such as for corporates whose rating methodologies were updated in 2013 (Standard & Poor's Ratings Services, 2013b).

S&P also changed its analysis for banks, accounting for more uncertainty surrounding their performance and assigning more risk to structured finance instruments that are no longer on the bank's balance sheet (Packer & Tarashev, 2011). It also placed more importance on banks' systemic risk and concentrated on risk-adjusted performance (Packer & Tarashev, 2011).

D. Alternative Business Models

In the wake of the financial crisis and the obvious deficiencies of the CRAs' issuer-pays business model, many other business models garnered a lot of interest. They were researched and studied, notably by the SEC (in the context of NRSROs) and the European Commission, who discussed this topic in several publications (European Commission 2016a; European Commission 2016b; U.S. Securities and Exchange Commission, 2012). The U.S. Securities and Exchange Commission (2012) identified potential benefits of other business models such as the mitigation of conflicts of interest inherent in the issuer-pays model, increased accountability of CRAs to investors, the improvement of the quality of ratings, the promotion of competition, and increased market choice. Some commentators even called for a reinstatement of the investor-pays model which the CRAs had used until the 1970s (Cankaya, 2017).

This section discusses the feasibility of the reinstatement of the investor-pays model and explores five of the more prominent business models that received considerable research: the public model, the platform model, the skin-in-game model, the investor-owned model and the pay-for-performance model.

1. Investor-Pays Model

Proponents of the investor-pays model argue that it would solve the conflicts of interest inherent to the issuer-pays model. Furthermore, CRAs would be better equipped to respond to demand because they would know which debt instruments interest investors the most and so which ratings should be kept up-to-date. Therefore, ratings would be more informative and of higher-quality (European Commission, 2016a). Indeed, according to Gannon (2011), Egan-Jones, an investor-pays CRA, produces more accurate ratings than issuer-pays CRAs.

However, the model would still give rise to potential for conflicts of interest of a different nature; large investors who accounted for a considerable proportion of a CRA's revenue, could potentially exert pressure on the CRA if, for example, they favoured higher ratings in order to reduce their capital requirements (European Commission, 2016a).

Moreover, since ratings are only available to investors who pay, larger institutional investors could have an advantage over smaller investors because they have more resources. This could lead to free-riding by investors who could imitate investments made by informed investors or share rating publications between themselves, thus not paying for any ratings information yet reaping the rewards. Bai (2011) explained that this would result in reduced revenue for CRAs which in turn would hinder further expansion of their coverage or service offerings. Furthermore, ratings would be based solely on publicly available information, which would reduce their quality and accuracy (Bai, 2011). Bongaerts (2014) believed that the investor-pays model would also be less cost effective than the issuer-pays model and would not protect intellectual property.

2. Public Model

The public model, or government utility model as described by Coffee (2011), suggests that ratings would be produced by a government-sponsored CRA (European Commission, 2015). Fennell and Medvedev (2011) claim that the main argument in favour of this model is that ratings are a public good so they should be produced by a public CRA.

This model garnered a lot of attention in Europe, particularly after the European Union sovereign debt crisis of 2010, following which CRAs were again criticised (Scheinert, 2016). Many members of the European Parliament called for the introduction of a European public CRA prompting the European Commission to assess the impacts of its creation (Scheinert, 2016). However, no such CRA was ever created since the European Commission (2015b) decided that it would provide no new information in addition to that which already existed and concluded its impact assessment by stating: "A European creditworthiness assessment for sovereign debt seems neither proportionate nor appropriate at this stage, when analysed next to the needs of investors and the objective of eliminating over-reliance on external credit ratings" (p. 18). Scheinert (2016) explains the problems that could arise: availability of finance, potential lack of independence, potential conflicts of interest and possibility of legal action.

Fennell and Medvedev (2011) provide further clarification; a public CRA would need sufficient funds to sustain the rising demand for ratings and be able any fight legal action or pay fines if brought before a U.S. court. The authors all agree that although there would be no

more conflicts of interest between issuers and CRAs, a different conflict of interest could arise regarding sovereign and municipal bonds. It would also have to stay politically objective with regards to other sovereign nations and large companies in which there is government interest or that are politically favourable towards the government. In addition, it would need to guard against favouring certain ratings over others during different periods of economic cycles (Fennell & Medvedev, 2011). Furthermore, it could find itself at a disadvantage since it might lack credibility during the time it would take to build up a reputation among market participants (Scheinert, 2016; European Commission, 2016a).

A government-sponsored CRA could potentially reduce rating accuracy and quality since private and confidential information, that an issuer normally shares with a CRA in the context of the longstanding relationships they build, would be lost (European Commission, 2016a). Gannon (2011) and Fennell and Medvedev (2011) both theorise that research and financial innovation in the market would suffer. The public CRA could possess a competitive advantage over private CRAs with respect to regulatory rating benchmarking, hence prompting some CRAs to exit the market. The public CRA might also lack the capability or incentive to keep up with innovation. Deb et al., (2011) supported this point and believed that it would arise from the fact that it would not be motivated by profits. Moreover, in order to keep the benefits of a standardised ratings industry, international government coordination would be necessary (European Commission, 2016a).

Despite these many problems, Gannon (2011) does point out that costs of compliance and oversight procedures would be considerably reduced. Coffee (2011) even suggests that the model could be designed so as to be a benchmark against which to measure the performance of private CRAs. However, Fennell and Medvedev (2011) consider the public model to potentially be the most difficult to implement since it does not base itself on the use of existing CRAs.

3. Platform Model

The platform model is designed around the concept of placing an intermediary between the CRA and the issuer, hence mitigating conflicts of interest and the risk of rating shopping (European Commission, 2016a; U.S. Securities and Exchange Commission, 2012). The idea would be that when an issuer requires a rating, the platform would select the CRA to provide the rating. The issuer would then pay the platform who would in turn pay the CRA (Fennell & Medvedev, 2011).

The U.S. Securities and Exchange Commission (2012) viewed the platform model as an effective way to promote competition. According to the U.S. Securities and Exchange Commission (2012) it would allow smaller CRAs to increase their market share by increasing their exposure to market participants and enabling them to build a reputation for themselves. In turn, this would increase the number of issuers who would solicit their ratings for future issuances.

Both Fennell & Medvedev (2011) and the European Commission (2016b) recognised potential design problems in the selection process. For instance, if the selection process were too strict then CRAs could become more conservative with their ratings for fear of making a mistake and being removed from the platform. This would also result in higher capital requirements for regulated institutions. The European Commission (2016b) added that the selection process could have an adverse effect on innovation. If factors on which the selection process was based were known, then CRAs might exclusively focus on improving the factors that enable them to be on the platform at the expense of others that are less tangible such as innovation. However, if the selection process was random, CRAs would have no incentive to improve any factors whatsoever. This would result in decreased accuracy and quality of ratings. Fennell and Medvedev (2011) suggest that rewarding CRAs that have better track records by privileging them in the selection process could be a solution to this drawback.

Although the platform model posits the removal of issuer-CRA conflicts of interest and the risk of rating shopping, it would not be entirely risk free either. If the platform were public, then it would encounter the same conflicts of interest as the public model (European Commission, 2016b; Fennell & Medvedev, 2011). If there were only one private platform then it would constitute a monopoly and would hence have to stay independent from all market participants (European Commission, 2016b). Assuming that there were more than one private platform, then the model would run the risk of issuers platform shopping and choosing the platform that had CRA selection criteria that would be the most advantageous for them (European Commission, 2016b; Fennell & Medvedev, 2011). Additionally, rating shopping could still occur if not all CRAs were included on one platform. To illustrate, if the platform happened to be comprised of only small CRAs, since the CRA industry is reputation-based, issuers would be likely to solicit their ratings from the large well-known platform-independent CRAs (European Commission, 2016b). Finally, just like the public model, the platform model would reduce financial innovation. Structured finance products require a continuous exchange of information due to their complexity, which could be hindered by the platform resulting in less accurate credit ratings (European Commission, 2016b; Fennell & Medvedev, 2011).

This model garnered a lot of interest in the U.S. and was expected to be included in the Dodd-Frank Act under the Franken Amendment (Coffee, 2011; Fennell & Medvedev, 2011). The Franken Amendment introduced a Credit Agency Review Board that would choose the CRA for structured finance issuances (Coffee, 2011; U.S. Securities and Exchange Commission, 2012). Coffee (2011) explained that the issuer would still be at liberty to withdraw its rating request or solicit additional CRAs and the Credit Agency Review Board would be subject to oversight from the SEC. However, ultimately, the risk of moral hazard¹⁰ deterred the model's inclusion in the final version of the Dodd-Frank Act (Deb et al., 2011).

Fennell and Medvedev (2011) regarded this model as one of the easiest to implement because it would involve CRAs that already exist, and there would be no need to create a new entity. Coffee (2011) also believed this model to be a feasible response to mitigating conflicts of interest between issuers and CRAs and to ending rating shopping.

4. Skin-In-Game Model

The skin-in-game models would entail the payment of CRAs in the debt instruments that they rate (European Commission, 2016a). The European Commission (2016a) explained that CRAs would be required to hold the debt instruments until maturity; the riskier the debt instrument, the greater the share of the debt instrument they would be required to hold (European Commission, 2016b; Gannon, 2011; Rhee, 2013).

The objective would be to incentivise CRAs into producing accurate ratings and not overrate or inflate them (European Commission, 2016b; Rhee, 2013). By requiring them to hold the debt instrument until maturity, it would ensure that CRAs would be punished in the case of rating inflation, because if market participants were to discover it, the price would appropriately adjust downwards (European Commission, 2016b; Gannon, 2011).

Conflicts of interests with issuers could still arise if issuers were willing to pay the CRA a fee, for an inflated rating, which would compensate it for the consequent loss it could suffer from its debt instruments (European Commission, 2016b). CRAs might also be tempted to consistently underrate risky debt instruments so that they could then update their ratings in order to increase the value of the debt instruments (European Commission, 2016b; Gannon, 2011).

¹⁰ “The existence of intermediaries may lull other market participants into a false sense of security, causing them to rely on the intermediaries and seek out less information on their own” (Payne, 2014, p.22).

This model could impact rating models and methodologies since CRAs might start incorporating other aspects such as interest rate risk or liquidity risk, in addition to credit risk, into their methodologies (European Commission, 2016b; Gannon, 2011). In response to interest rate risk, CRAs might simply hedge their portfolios of debt instruments thus reducing the desired effect of the model (Rhee, 2013).

If this model were implemented, it would mean that the CRAs would suffer from reduced revenue until their first debt instruments mature. This would have a disproportionate impact upon smaller CRAs (Gannon, 2011).

5. Investor-Owned Model

In the investor-owned model, investors would own and control the CRA (U.S. Securities and Exchange Commission, 2012). The U.S. Securities and Exchange Commission (2012) specified that an investor board would be created, comprised of over 50% of the largest bond investors in the market; there would be a selection process which would ensure its independence and objectivity (U.S. Securities and Exchange Commission, 2012).

The U.S. Securities and Exchange Commission (2012) saw this model as a way to ensure accurate ratings because investors are implicated in the success of the CRA. Essentially, it would align investor and CRA interests. However, Whalen (2016) notes that it would require investor cooperation which could pose a problem. The U.S. Securities and Exchange Commission (2012) considered the creation of two investor-owned models, or one in addition to existing CRAs, as providing an increase in market choice and promoting diversity. Whalen (2016) even suggests that the issuer be required to solicit one of its ratings from the investor-owned CRA.

6. Pay-For-Performance

The pay-for-performance model would dictate that each CRA paid a fixed amount of its revenue to a common fund. This common fund would then be paid out to the best performing CRA. It is designed to create a financial incentive for CRAs to provide accurate ratings (European Commission, 2016a). This model would not be a complete overhaul of the current issuer-pays model, it would simply add an incentive for CRAs to produce high-quality ratings (European Commission, 2016b).

However, some smaller CRAs might feel discouraged because a rating mistake would carry more weight with regards to their overall performance than it would for a larger CRA.

Indeed, a larger CRA's rating mistake would have little effect on performance since it rates thousands of issuers and bond issues (European Commission, 2016b). In addition, the time frame for measuring performance would need to be chosen so that it would not be so distant that the incentive to perform well would be reduced, and not so near the accuracy of the rating would not be able to be assessed (European Commission, 2016b).

E. Feasibility of Alternative Business Models

Fennell and Medvedev (2011) remarked that considering the lack of due diligence and the over-reliance on ratings that investors exhibited during the financial crisis, it seems unlikely that their behaviour would have been any different if another model was the norm at the time. Moreover, because of regulatory requirements, many financial institutions also had an incentive not to perform any due diligence since it was advantageous to invest in high-grade securities which would diminish their capital requirements (Fennell & Medvedev, 2011). Fennell and Medvedev (2011) posit that CRAs were pressured by all sides of the market, not just issuers, to inflate ratings in the case of structured finance products, and that it would still have happened regardless of the business model in use. The CFA Institute's (2014) survey showed that two-thirds of respondents believe that all CRA business models incur conflicts of interest, hence the solution should focus more on increasing transparency and competition in the CRA industry and the investors should be free to choose the CRA that suits them (CFA Institute's, 2014).

A study conducted by Bongaerts (2014) on different options to the issuer-pays business model found that investor-pays, investor-produced, platform and skin-in-the-game models were unlikely to be successful if the CRAs were not prohibited from using the issuer-pays model. However, the European Commission (2016a) reported that ESMA conducted an analysis on alternative business models and concluded that flexibility regarding the choice of business model was important because each CRA should be able to choose the one that is best adapted to their market strategy.

Part V. The Current Credit Rating Agency Industry

Chapter 1. The Perpetual Oligopoly

A. The Credit Rating Agencies' Reputational Stronghold

The CRA industry is still highly reputational in nature. The European Commission's (2016b) study among public issuers revealed that they consider it to be the most important factor when choosing a CRA for the reason that it widens the pool of potential investors. They considered other important factors to be coverage, expertise and the quality of rating methodologies (European Commission, 2016b). They still assigned less importance to cost, which helps explain why high fees can still be charged by the Big Three (European Commission, 2016b). S&P also published a white paper on CRA business models in 2009 that corroborated the European Commission's findings. Key requirements when assessing CRAs emerged as: transparency, prevention of conflicts of interest, quality, breadth of coverage, market scrutiny and investor choice (Anonymous, 2009).

Coffee (2011) claimed the main barrier to entry in the CRA industry is reputation. He posited the Big Three benefitted from a first mover advantage since they are able to prove a more substantial track record. He defended his point of view by explaining the following; the Big Three have been dominant in Europe since their creation despite there being no use of CRAs in prudential regulation or no NRSRO-equivalent in Europe until 2004, and even though the number of NRSROs increased following the enacted of the CRARA in 2006, the Big Three still dominate in the U.S. (Coffee, 2011).

B. The Effect of Increased Regulation

The European Commission (2016b) considered that regulatory provisions constraining issuers in their choice of CRAs to those not valued by investors (for example, the requirement to appoint a CRA with less than 10% market share for a second rating), can, given the reputational nature of the CRA industry, lead to limited market entry and unintended consequences. It was this factor that led to the amplification of the regulatory barrier to entry. The U.S. Securities and Exchange Commission (2017) and the European Securities and Markets Authority recognised that attempts to increase competition through regulation had not been as successful as hoped (Cash, 2017). The increased regulatory burden resulted in increased compliance and administrative costs (European Commission, 2016b; U.S. Securities and Exchange Commission, 2017). For example, CRAs are now required to notify the issuer of a rating whether it was solicited or unsolicited (European Commission, 2016b). Gannon

(2011) explained that the additional costs constitute a disproportionately heavier burden on smaller or new CRAs than on the Big Three.

The European Commission (2016b) considered that it was likely that the process of exempting some small CRAs (conditional on employing fewer than 50 personnel) from certain provisions, such as analyst rotation and permanent compliance function requirements, although intended to mitigate the adverse effects of increased regulation, actually provided an incentive for smaller CRAs to stay small and hampered their expansion efforts. The European Commission (2016b) believed that despite these unintended consequences of regulation, it maintains competition within the CRA industry itself by maintaining competitive pressures on the Big Three. In addition, it recognised that demand for new CRAs is lacking because issuers do not want to have to bear the additional high costs of changing CRA.

Cash (2017) considered the current regulation to have one fundamental flaw; it fails to take into account that the CRA market is a ‘natural’ occurring oligopoly. Therefore, any artificial attempt to increase competition through regulation would not have the desired effect.

According to Lannoo (2011), the EU CRA registration process has not become a barrier to entry for further competition. Despite fears that it could potentially have an effect on competition similar to that of the NRSRO certification in the United States, there are 31 EU registered CRAs, as opposed to the 10 NRSRO CRAs, which illustrates the relative ease of the application process (Lannoo, 2011). However, the OECD (2010) and Lannoo (2011) noted that both the mandatory registration required to operate in Europe and the endorsement of credit ratings produced outside of the EU by an EU registered CRA, could possibly fragment global capital markets. The OECD (2010) believed that this could lead to a decrease in foreign activity in the European capital market, because foreign issuers will need to seek EU endorsement of their foreign ratings at the expense of European regulated financial institutions being unable to invest. The same applies to foreign CRAs who need to establish a local presence. This process could be costly for small foreign CRAs who might be discouraged or deterred from operating in Europe (OECD, 2010).

C. Competition and Market Share

Since 2008, the European Securities and Markets Authority (2017) and the U.S. Securities and Exchange Commission (2017) have published annual reports detailing market share among EU registered CRAs and NRSROs, respectively.

The European Securities and Markets Authority's (2017) most recent report on CRA market share based on the calendar year 2016 illustrated the continuous oligopoly of the CRA industry. It calculated market share for EU registered CRAs based on annual revenue (ratings revenue and ancillary services) and determined that the Big Three account for a total of 93.18% market share. S&P had the highest market share with 46.26%, followed by Moody's with 31.27% and Fitch with 15.65%. The fourth largest CRA in terms of market share was DBRS with 1.87%. All other CRAs had less than 1% (European Securities and Markets Authority's, 2017) (see appendix E for the full list of EU registered CRAs and their respective market shares).

Additionally, the European Securities and Markets Authority's (2017) determined that the Big Three were the only CRAs to have each issued a total of over 100,000 ratings in the EU. More than 50% of other CRAs issued up to 499 ratings in the EU (European Securities and Markets Authority's, 2017). Indeed, some of the small CRAs specialise in niche segments, such as INC Rating and European Rating Agency, who both provide ratings exclusively for the sovereign and public finance rating category and CERVED, ICAP, Spread Research and CRIF who provide ratings exclusively for the non-financial corporate rating category (European Securities and Markets Authority's, 2017) (see appendix F for an overview of types of credit ratings offered by EU registered CRAs).

The U.S. Securities and Exchange Commission's (2017) report on NRSROs for the fiscal year 2016 yielded similar results. They calculated a 94.4% share of total revenue for NRSROs (US \$5.9 billion) for the Big Three. S&P had the highest number of outstanding ratings with approximately 1.2 million, closely followed by Moody's with around 0.8 million, Fitch with 0.3 million, and DBRS with 0.04 million. They accounted for 48.9%, 34.2%, 13.3% and 1.8% of total outstanding ratings, respectively (see appendix g for the number of outstanding ratings by rating category for the fiscal year 2016)

The U.S. Securities and Exchange Commission (2017) also analysed industry concentration with the Herfindahl-Hirschman Index (HHI) Inverse, providing an indication of the level of competition in the CRA industry. The HHI Inverse represents "the number of firms with equal market share necessary to replicate the degree of concentration in a particular industry"¹¹. In other words, the lower the HHI Inverse, the more concentrated the industry and

¹¹ For example, if the HHI Inverse of an industry is three, then the concentration equals that of an industry where the entire market is evenly divided between three companies, each with a third market share (U.S. Securities and Exchange Commission, 2017).

vice versa¹². The U.S. Securities and Exchange Commission (2017) calculated the HHI Inverse at 2.67 which is highly concentrated. This number has steadily decreased from 2.99 in 2008. The decline was attributed to the increase in competition from smaller NRSROs in the ABS category where DBRS and KBRA have increased their market share to 21.2% and 17.3%, respectively. The European Commission (2016b) also noted this increase of competition in structured finance ratings among EU registered CRAs, and that corporate bond ratings competition had also increased.

Chapter 2. The Current Credit Rating Agency Business Model

A. The Issuer-Pays Model

The issuer-pays model still dominates despite its many flaws, and some authors such as Bai (2011), Fennell and Medvedev (2011) and Lannoo (2011) believe that the issuer-pays business model of CRAs will not change. The authors explain that it has certain advantages that other business models do not offer.

Firstly, the issuer-pays model eliminates the problem of free-riding, thus enabling CRAs to capture additional revenue. This allows them to increase their scope and coverage of the debt market, consequently reducing information asymmetry between issuers and investors (Bai, 2011; Fennell and Medvedev, 2011; Lannoo, 2011). Secondly, CRAs build longstanding relationships with issuers, providing them with additional confidential information that is not publicly available. Consequently, rating quality is higher than if it were based solely on publicly available information. Finally, ratings are made available simultaneously and free of charge to all market participants and to the public. This ease of access to rating information creates a level playing field and increases the amount of information in the market (Bai, 2011; Fennell and Medvedev, 2011; Lannoo, 2011).

B. Revenue and Profitability

Although the CRAs' revenue took a hit following the financial crisis, by 2010 the revenues of the Big Three were once again increasing (Fimalac, 2010; Moody's Corporation, 2010; The McGraw-Hill Companies, 2010). Moody's and S&P's total revenue from 2017 was US \$4.2 billion (US \$2.8 billion rating revenue) and US \$6.1 billion (US \$3.0 billion rating revenue), respectively (Moody's Corporation, 2018b; S&P Global, 2017b). Their 2017 profits margins

¹² An HHI Inverse of less than 4.0 is considered to be highly concentrated, between 4.0 and 6.67 represents a moderate concentration, and above 6.67 is unconcentrated (U.S. Securities and Exchange Commission, 2017).

were high; 43% for Moody's and 47% for S&P (Moody's Corporation, 2017; S&P Global, 2017).

However, Moody's and S&P have experienced a shift in revenue mix. Moody's and S&P's rating revenue from structured finance now accounts for less than 20% of total rating revenue (Moody's Corporation, 2018d; S&P Global, 2017b). Since the financial crisis, the number of structured finance issuances has considerably decreased and the U.S. Securities and Exchange Commission (2017) reported that ABS accounted for only 7.7% of outstanding ratings in 2017. Corporate finance is now the largest source of rating revenue for both Moody's and S&P, accounting for over 50% (Moody's Corporation, 2018d; S&P Global, 2017b).

The U.S. still accounts for just over 50% of revenue. However, disintermediation is still an ongoing trend in Europe. Indeed, from February 2018, 24% of the volume of debt outstanding was raised through non-financial corporate bonds as opposed to bank loans, which is twice the level it stood at in 2009. For comparison purposes, the U.S. currently has 51% of its volume of debt outstanding raised through non-financial corporate bond issues (Moody's Corporation, 2018c). Emerging markets have also seen a recent increase in demand for ratings and both Moody's and S&P continue to expand geographically (Moody's Corporation, 2018c; S&P Global, 2017b).

C. Persistent Problems

Partnoy (2017) considers that problems which caused CRAs to contribute to the financial crisis still exist today, due to what he calls 'regulatory stickiness'; reducing regulatory reliance on ratings is difficult because they are still hardwired into countless regulations. Coffee (2011) concurs, stating that reducing regulatory reliance should be incremental in order to avoid unintended consequences. Partnoy (2017) cites lack of accountability, simplistic rating methodologies and over-reliance on ratings as proof of 'regulatory stickiness'.

Despite legal accountability provisions incorporated into both European and U.S. regulation, the SEC's role in diminishing the potency of legal accountability provisions enacted by the Dodd-Frank Act, causes the CRAs' degree of accountability to remain low (Partnoy, 2017). Consequently, conflicts of interest continue to be likely to occur and CRAs still use the same defence they have always used: their ratings are merely opinions, thus they should be protected under the First Amendment (Pagano & Volpin, 2011; Rhee, 2013).

Partnoy (2017) added that an unexpected consequence of the SEC removing accountability provisions from the Dodd-Frank Act is that CRAs will not need to concern themselves with due diligence. As a matter of fact, proof of due diligence was established as a

reason to accept a CRA's request to dismiss a case brought to them before court (Partnoy, 2017). Since CRAs are no longer held accountable for this provision, the incentive for them to ensure due diligence has been conducted on the information provided to them by an issuer is much lower.

Partnoy (2017) considers rating methodologies to have remained simplistic despite their revisions and updates. For example, in the assessment of financial risk for corporate ratings, S&P does not use established analytical credit risk models; instead it calculates credit ratios and cash flow assessments (Standard & Poor's Ratings Services, 2013).

Partnoy (2017) also believes that CRAs are still not very transparent with regard to their methodologies. Analyst subjectivity is still present, not only in the assessment of qualitative factors, but also in the assessment of quantitative factors; to a certain degree this is due to financial policy or discipline being factored in for financial risk. He hypothesises that this could be in order to "preserve the capacity of rating agencies to avoid sudden upgrades and downgrades" (p. 1455).

The prevalence of ratings in regulation continues to contribute to investors' tendency to over-rely on ratings. In particular, smaller investors who do not have the resources to conduct their own credit risk assessments are more likely to over-rely on ratings (Hemraj, 2015). However, evidence provided by Jaballah's (n.d.) and Zhao et al.'s (n.d.) studies did suggest that, overall, investors have re-assessed their views regarding the quality of ratings and are now less likely to rely solely on ratings.

In addition, a recent study conducted by Davis (2016) for Bloomberg found evidence of rating inflation. They used Moody's own financial metrics formula for the six largest debt funded deals from January 2015 to June 2016¹³, and consistently found that Moody's ratings were higher than the rating which would have been expected to be assigned, if based on financial metrics. For example, he found that ABInbev had twice the amount of debt normally carried by an A3 rated company.

Chapter 3. The Continuous Existence of Credit Rating Agencies

One might wonder how it is that credit rating agencies continue to exist with profits higher than ever, despite their obvious failings in times of crises.

¹³ Anheuser-Busch Inbev's acquisition of SABMiller, Kraft's acquisition of Mondelez, Bayer's acquisition of Monsanto, Charter Communication's acquisition of Time Warner Cable, Dell's acquisition of EMC and Teva's acquisition of Actavis Generics (Davis, 2016).

Rhee (2015) offered three possible theories, that divide academics, as to the continued existence and prevalence of CRAs: (1) CRAs are providers of information that reduces information asymmetry present in debt markets; (2) CRAs offer ‘regulatory licences’ that unlock the doors to financial markets; and (3) CRAs are sorters of information that promote information use.

A. Credit Rating Agencies as Informational Providers

The first explanation of the continued existence of CRAs rests upon the theory of reputational capital; CRAs are gatekeepers that act as information intermediaries. In other words, CRAs reduce information asymmetry between issuers and investors. Rhee (2015) explained that this is a classic example of the ‘lemon’ problem: “borrowers know more about their creditworthiness than creditors, the latter will raise rates to protect against lower quality borrowers” (p. 163). Consequently, higher interest rates will cause high quality issuers to exit the market, and investors will be left with only ‘lemon’ issuers. CRAs solve this problem by providing investors with independent informational ratings and relying on reputational capital to ensure investor trust. Accordingly, if they break that trust by providing inaccurate ratings, their reputational capital will suffer (Hemraj, 2015).

B. Credit Rating Agencies as Sellers of ‘Regulatory Licences’

The second theory stems from the presence of credit ratings in regulation, which ultimately enables them to sell ‘regulatory licences’ to issuers so that they may access all markets and investors by complying with NRSRO-dependent regulation. Partnoy (1999, 2001, 2017) has argued strongly in its favour, believing it to be the only explanation for what he called the ‘ratings paradox’: despite being extremely profitable, CRAs provide little new information. Partnoy (2017) claimed that there is no other explanation for the continuing demand for ratings, since their informational content is lacking; this would indicate that they have failed in their role as informational providers. In addition, despite the reputational loss they suffered following the financial crisis, their profits did not equally suffer (Partnoy, 2017).

C. Credit Rating Agencies as Informational Sorters

Rhee (2015) suggested an alternative theory. He posited that information sorting and not information creation is a CRA’s main function in debt markets. As the debt market is far larger than the equity market, the amount of available information is vast. This information

needs to be sorted, a task that investors prefer to outsource to a third-party, in this case, CRAs. Not only does this benefit smaller investors who do not have the resources to perform the task, but it also enables all investors to concentrate their efforts on finding the best investment opportunities (Rhee, 2015). CRAs therefore promote the use of information and create a positive information effect by providing extensive coverage of the debt market. They categorise information, providing a standardised scale that promotes comparability (Rhee, 2015). He believes that the role fell on CRAs because they provide the best cost-effective solution to information sorting, they cover the entire debt market, the function is not easy to replicate, and they contribute to capital market efficiency. Accordingly, irrespective of whether regulators attempt to remove references of CRAs from regulation or not, CRAs will continue to exist (Rhee, 2015).

Conclusion

The 2008 financial crisis shed a light on the role CRAs played and the shortcomings of their issuer-pays business model. CRAs were responsible for fuelling the proliferation of subprime MBS and CDOs by providing them with inflated credit ratings. Inflated ratings arose because of inherent conflicts of interest in the issuer-pays model and the oligopolistic nature of the CRA industry. The reasons that contributed to inflated ratings are described below.

Firstly, CRAs offered consulting and advisory services to issuers on the potential ratings they would receive. This was based on the preliminary structures of their structured finance instruments, which enabled issuers to modify the structure in order to obtain the highest possible rating.

Secondly, the market for MBS issues was highly concentrated. Consequently, a threat from an issuer to take the business elsewhere would have significantly reduced a CRA's market share because it was the practice to solicit only one rating for structured finance products.

Thirdly, the increased competition in the CRA industry from Fitch, already a major player made the need to retain key issuer business and market share even more important than maintenance of reputation for the other CRAs.

These three reasons gave rise to the practice of rating shopping by issuers, and the CRAs succumbed to the issuers' pressure for high ratings since market share, and no longer reputation, became the key competitive factor in the CRA industry.

Following the financial crisis of 2008 and the realisation that it had been exacerbated by the significant role of the CRAs, the U.S. and the EU enacted CRA regulation which was aimed at providing a solution to the main problems that had become evident in the CRA business model and industry. These were conflicts of interest (inherent in the issuer-pays model), the historic lack of competition in the CRA industry linked to the importance of reputation which had contributed to high barriers to entry, the hardwiring of CRAs into many financial regulations, the lack of transparency regarding rating methodologies, and the general lack of regulatory oversight coupled with the lack of legal accountability.

The attempt to increase competition by means of regulation of the industry sought to resolve these industry characteristics. In order to increase visibility of smaller CRAs among market participants and to enable them to build a reputation and strong track record, ESMA facilitated the process of unsolicited ratings by creating a public database which provided a central record of all credit ratings. In an attempt to decrease barriers to entry, the EU exempted

smaller CRAs, under certain conditions, from some compliance costs which were perceived to be onerous. In addition, they required, on a 'comply or explain' basis, that in the case of structured finance instruments, the second rating be solicited from a CRA with less than a 10% market share.

In order to avoid potential conflicts of interest inherent to the issuer-pays business model, the EU regulation implemented rotation provisions, such as the analyst provision that dictates the length of time an analyst is permitted to work with an issuer and the duration a CRA is allowed to work on the re-securitisation of underlying collateral from the same originator. In addition, consulting and advisory services relating to potential rating outcomes were forbidden.

However, some regulatory provision actually had adverse effects on competition. Indeed, barriers to entry remain high and the CRA industry is still dominated by the Big Three who collectively hold over 90% of the market. Furthermore, the introduction of the EU registration process for CRAs wishing to operate in the EU has added an additional cost burden to small foreign CRAs which could dissuade them from operating in the EU.

Their issuer-pays business model was re-assessed and many alternative business models were suggested with objectives of eliminating conflicts of interest and increasing the quality of ratings. Models proposed were the public model whereby a government-backed CRA would produce ratings, the platform model whereby a platform would select the CRA to produce the credit rating, the skin-in-the game model whereby the CRA would be paid in the debt instruments it rates, the investor-owned model whereby investors would own and control the CRA and the pay-for-performance model whereby CRAs are paid from a common fund according to their performance.

Despite the considerable attention these models received, none have ever been implemented because each model has its own problems that could, for example, lead to different types conflicts of interest or even have an adverse effect on competition.

The issuer-pays model still remains the most widely-used business model, arguably because it offers advantages present in none of the others. Firstly, it enables the CRAs to build longstanding relationships with issuers which allows them access to confidential information that is not publicly available. This increases the quality of their ratings. Secondly, it eliminates the problem of 'free riding' enabling them to capture additional revenue which could be invested in increasing their coverage of the debt market. This problem of 'free riding' was the reason that CRAs were prompted to change their business model in the 1970s. Previously an

investor-pays model had been employed, however it proved to be unsustainable because ‘free riding’ prevented CRAs from maximising, and even decreased, their revenues. In today’s ever-expanding capital markets, maintaining a large coverage is a key competitive advantage in the CRA industry.

The CRAs’ reputation was also damaged following the crisis. Many market participants re-assessed their opinions regarding credit ratings’ accuracy and quality and reassessed their reliance on credit ratings. Financial institutions were also required to conduct their own internal credit risk assessments under Basel III, implemented in 2013.

The CRAs’ lack of legal accountability before the crisis provided an incentive for them to inflate ratings since they didn’t fear consequences. Legal and civil liability were introduced in the U.S. and EU, to serve as a deterrent to transgression. However, in the US, it was to a large extent nullified by subsequent decisions of the SEC. Furthermore, the CRAs still use the First Amendment as a defence against attempts to make them more legally accountable. The issue of CRAs’ legal accountability is a problem that continues to concern regulators.

Despite revisions to rating methodologies following the financial crisis, they still remain relatively simplistic, relying only on the credit ratings and cash flow assessments, and do not take into account analytical credit risk models.,

In the end, CRAs have not suffered a great loss of reputational capital and they are more profitable than ever. Their ratings continue to be needed because they are still engrained in numerous regulations which has provided them with a fixed source of income. Indeed, after seeing a decrease in revenue in 2008 and 2009, by 2010, the Big Three’s revenues were rising again; the CRA industry is still an oligopoly CRAs have seen a shift in revenue mix, and structured finance ratings no longer account for the majority of their revenue.

However, regulation has in the end had a limited effect on competition and in some cases it could have reinforced some barriers to entry. However, some small CRAs in both Europe and the EU have been able to gain some market share in niche segments such as ABS ratings and corporate ratings

Despite the weight of increased regulation on the CRAs operation, the limitations of the credit rating assessment mechanism, and the major flaws identified with their business model the importance of the CRAs’ role in the operation of financial markets has not diminished following the financial crisis. Their revenues and profits continue to increase and disintermediation in European and developing countries continues to grow.

However, in the future, CRAs could be faced with the need to account for new types of risk driven by problems arising from climate change. There is increasing use of renewable and less pollutant (green) sources of energy. This could decrease the demand for fossil fuel, leaving the fossil fuel companies with billions in stranded assets. At the expense of overestimating fossil fuel companies' creditworthiness, this risk aspect should be taken into account in CRAs risk models. In addition, it is likely that climate change will affect many sectors of industry, and States, in ways that are not yet fully understood. Changes to risk of this nature are likely to affect not only industry, but also potentially the political climate. It is likely that CRAs will need to develop improve their risk models in order to maintain and improve the accuracy of their credit ratings.

It is difficult to envisage a system which could effectively replace the manner in which CRAs facilitate the operation of financial markets, both from the perspective of issuers and investors. The growth of States' economies, and the growth of international financial markets, indicate that the importance and size of the public debt market will continue to increase. Consequently, CRAs it is expected that CRAs will continue to fulfill an essential and valuable role, and that their influence and power in the bond markets will be maintained.

The effect of the financial crisis of 2008 has not significantly changed their central role in financial markets. It remains incumbent upon regulators to create and maintain a regulatory environment which could successfully mitigate excessive market distortions or shocks, as occurred in the Financial Crisis of 2008, due to the credit rating service provided by CRAs. It is not clear that an effective regulatory environment has yet been established.

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Appendix A – Moody's' and S&P's Rating Scales

Moody's' and S&P's Rating Scales with Corresponding Rating Classification Definitions

	Moody's		S&P	
Investment grade	Aaa	Highest quality and subject to the lowest level of credit risk	AAA	Extremely strong capacity to meet financial commitments
	Aa	High quality and subject to very low credit risk	AA	Very strong capacity to meet financial commitments
	A	Upper-medium grade and subject to low credit risk	A	Strong capacity to meet financial commitments but somewhat susceptible to adverse economic conditions and changes in circumstances
	Baa	Medium-grade and subject to moderate credit risk (may possess certain speculative characteristics)	BBB	Adequate capacity to meet financial commitments but more subject to adverse economic conditions
Non-investment grade	Ba	Speculative and subject to substantial credit risk	BB	Less vulnerable in the near-term but faces major ongoing uncertainties to adverse business, financial and economic conditions
	B	Speculative and subject to high credit risk	B	More vulnerable to adverse business, financial and economic conditions but currently has the capacity to meet financial commitments
	Caa	Speculative of poor standing and subject to very high credit risk	CCC	Currently vulnerable and dependent on favourable business, financial and economic conditions to meet financial commitments
	Ca	Highly speculative and likely in, or very near, default with some prospect of recovery of principal and interest	CC	Highly vulnerable; default has not yet occurred but is expected to be a virtual certainty
	N.a.	[Moody's does not have a D category]	C	Currently highly vulnerable to non-payment and ultimate recovery is expected to be lower than that of higher rated obligations
	C	Typically in default and with little prospect for recovery of principal or interest	D	Payment default on a financial commitment or breach of an imputed promise; also used when a bankruptcy petition has been filed or a similar action taken

Appendix B – List of EU Registered CRAs and NRSROs

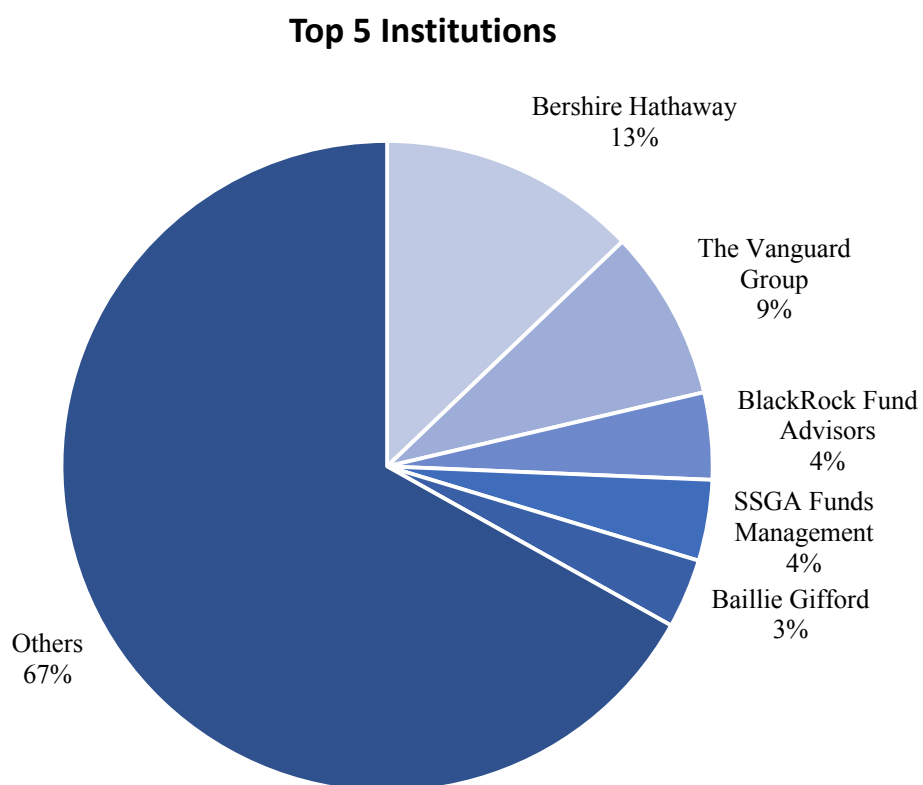
Credit rating agency	EU registered	NRSRO	Headquarters
A.M. Best			USA
ARC Ratings			Portugal
ASSEKURATA			Germany
Axesor Risk Management			Spain
BCRA-Credit Rating Agency			Bulgaria
Capital Intelligence Ratings			Cyprus
Cerved Rating Agency			Italy
Creditreform Rating			Germany
CRIF Ratings			Italy
Dagong Europe Credit Rating			Italy
DBRS Ratings			UK
Egan-Jones Ratings			USA
Euler Hermes Ratings			Germany
EuroRating			Poland
European Rating Agency			Slovakia
Fitch Ratings			UK
GBB-Rating			Germany
HR Ratings de México			Mexico
ICAP Group			Greece
INC Rating			Poland
Japan Credit Rating Agency			Japan
Kroll Bond Rating Agency			USA
modeFinance			Italy
Moody's Investor Service			UK
Morningstar Credit Ratings			USA
Nordic Credit Rating			Norway
Rating-Agentur Expert			Germany
S&P Global Ratings			Ireland
Scope Ratings GmbH			Germany
Spread Research			France
The Economist Intelligence Unit			UK

Registered

Not registered

Appendix C – Moody's Current Ownership Structure

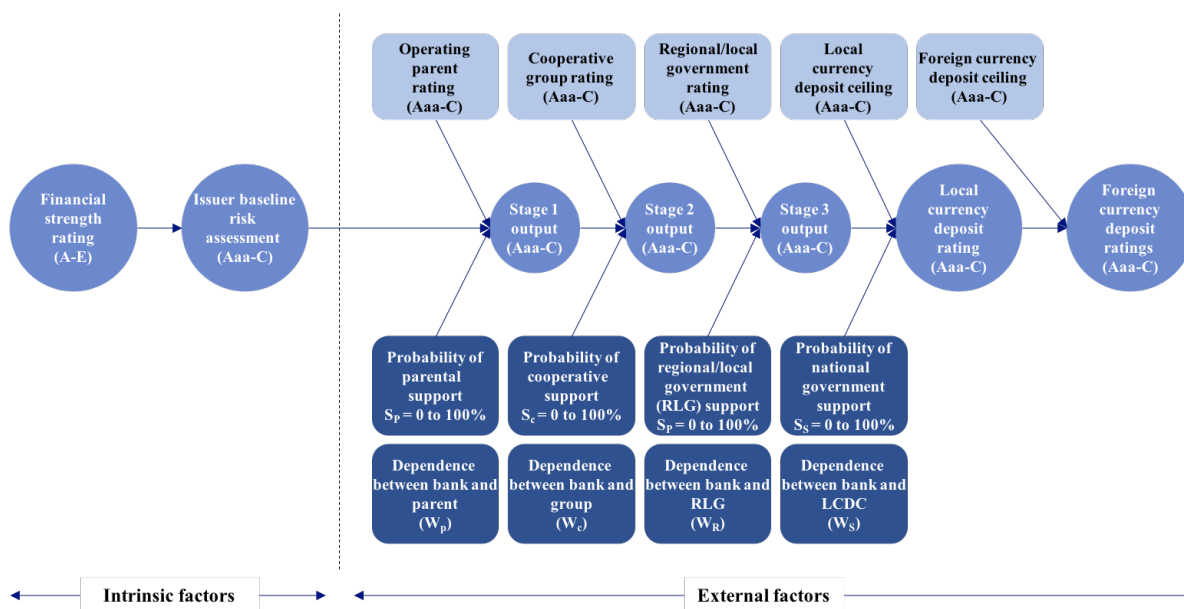
Moody's ownership structure as of 14 May 2018



Appendix D – Moody's' 2009 Bank Rating Methodology

Schematic overview of Moody's bank rating methodology in use in 2009

(Moody's Investors Service, 2007)



Appendix E – Market Share of EU Registered CRAs

Name of CRA	Market Share%
S&P Global Ratings	46.26
Moody's Investors Service	31.27
Fitch Ratings	15.65
DBRS Ratings	1.87
CERVED Rating Agency	0.97
AM Best Europe Rating Services	0.90
The Economist Intelligence Unit	0.69
CreditReform Rating	0.53
Scope Ratings	0.46
GBB-Rating	0.35
Assekurata	0.23
Euler Hermes Rating	0.22
Capital Intelligence Ratings	0.13
ICAP	0.12
ModeFinance	0.08
Spread Research	0.07
Dagong Europe Credit Rating	0.07
ARC Ratings	0.05
Axesor Rating	0.03
CRIF Ratings	0.03
BCRA Credit Rating Agency	0.02
EuroRating	0.01
INC Rating	<0.01
European Rating Agency	<0.01
Rating-Agentur Expert RA GmbH	<0.01
Kroll Bond Rating Agency	-
TOTAL	100

Appendix F – Types of Ratings Offered by EU Registered CRAs

Name of CRA	Corporate: Non-Financial	Corporate: Financial	Corporate: Insurance	Sovereign & Public Finance	Structured Finance
S&P Global Ratings					
Moody's Investors Service					
Fitch Ratings					
DBRS Ratings					
CERVED Rating Agency					
AM Best Europe Rating Services					
The Economist Intelligence Unit					
CreditReform Rating					
Scope Ratings					
GBB-Rating					
Assekurata					
Euler Hermes Rating					
Capital Intelligence Ratings					
ICAP					
ModeFinance					
Spread Research					
Dagong Europe Credit Rating					
ARC Ratings					
Axesor Rating					
CRIF Ratings					
BCRA Credit Rating Agency					
EuroRating					
INC Rating					
European Rating Agency					
Rating-Agentur Expert RA GmbH					
Kroll Bond Rating Agency					

Offered

Not Offered

Appendix G – Outstanding Ratings in 2016

NRSRO	Financial Institutions	Insurance Companies	Corporate Issuers	Asset- Backed Securities	Government Securities	Total Ratings
A.M.Best	N/R	7,537	1,359	18	N/R	8,914
DBRS	7,969	158	3,037	12,757	16,784	40,705
EJR	11,112	837	6,480	N/R	N/R	18,429
Fitch	44,965	3,188	17,848	39,981	197,543	303,525
HR Ratings	547	N/R	140	N/R	352	1,039
JCR	787	65	2,356	N/R	486	3,694
KBRA	705	5	1	5,561	63	6,335
Moody's	49,472	3,230	44,676	64,188	619,478	781,044
Morningstar	35	N/R	308	3,591	N/R	3,934
S&P	58,582	6,859	50,672	49,162	952,910	1,118,185
Total	174,174	21,879	126,877	175,258	1,787,616	2,285,804