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„The Credit Rating Market after the Financial Crisis and the Role of ‚Reputation‘: a Focus on the European Union“

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Abstract

The credit rating industry is one where its participants' position in the market is determined by reputation. The Big Three credit rating agencies (CRAs) hold a privileged position based on their existing reputations and the high costs of reputation building. I find in this study that despite the reputation of the Big Three being damaged following the financial crisis, this has had little effect on the market for ratings. This we find suggests a failure of the market to react to short-term reputational changes, thus rendering the reputation mechanism limited in its ability to hold rating agencies to account. By analysing post-financial crisis EU regulation on the CRAs, we find that despite a handful of small measures to decrease the concentration in the market; on the whole, they are limited in their effectiveness due to the fact that they do not focus enough on addressing the dearth of information which would allow investors and issuers to assess the quality of the rating agencies and the ratings themselves. This therefore, ignores the high costs of reputation building which leads to a concentrated market.

Der Kreditratingmarkt wurde von der Reputation der Ratingagenturen gebildet. Die „Big Three" der Ratingagenturen halten eine privilegierte Position im Markt aufgrund ihrer existierenden Reputationen und die höhen kosten von Reputationsentwicklung. Ich stelle fest, dass trotz einem Rückgang der Reputationen der Big Three nach der Finanzkrise, dies keine Wirkungen auf den Markt für Ratings hatte. Das deutet auf ein Marktversagen hin, wobei der Markt auf Reputationsänderungen kurzfristig nicht reagiert und dabei stellt es den Wert des „Repututions Mechanism" infrage. In meiner Analyse der EU Regelungen nach der Finanzkrise, stelle ich fest, dass die EU zu wenig sinnvollen Maßnahmen eingeführt hat, um die Konzentration des Markts zu verringern. Am wichtigsten fehlt transparente Information über die Qualität der Ratings und der Ratingprozesse selbst. Das heißt, wird das Problem der hohen Kosten von Reputationsentwicklung nicht ausreichend angesprochen.

Introduction

This thesis will explore the role of the Big Three credit rating agencies: Standard & Poor's (S&P), Moody's and Fitch in the financial system based on the idea that they act as gatekeepers to the global economy in that they act as an intermediaries for credit flows. Like accounting firms, they are deemed to play a crucial independent role in the financial system, providing information that allows the financial system to function effectively. However, following a number of high profile failings, in particular the global financial crisis, the gatekeeping role of the credit rating agencies has come into question. Whether that has had any effect on the market dominance of the Big Three will be explored in this paper.

This study is important for two key reasons. On the one hand, Credit Rating Agencies (CRAs) are extremely important to the global financial system. They act as an intermediary which allows for information on the creditworthiness of debt instruments to be spread quickly and clearly. They are independent third party organisations which have a stake in the stability of the financial system just as auditing firms and to a lesser extent, financial analysts. Their influence on global credit flows and subsequently the global economy as a whole challenges our understanding of where power lies in a financially interconnected world. They act as quasi-regulatory bodies but in turn are also accountable to national, sub-regional and international regulatory standards. With so much power concentrated in the hands of just three major CRAs, it is important to understand the market dynamics of the ratings industry.

On the other hand, this study is important simply because of how profitable the Big Three are. In 2016, Moody's recorded a revenue of $3.6bn with an operating margin of 45.5%[1], S&P Global 5.7% with an operating margin of 60%[2] (S&P Global Annual Report, 2016, p.22) and the Fitch Group recorded a total revenue of $1.2bn[3]. It is important to understand how competition works in the ratings industry as it gives a good indication as to the balance between regulation and market self-regulation. By particularly looking at

[1] Refers to 'Non-GAAP' financial measures (Moody's Annual Report, 2016: 2).
[2] Note that this is the whole S&P Group not just the ratings division.
[3] Note that this is the whole Fitch Group not just the ratings division.

competition and reputations we look to shed greater light on the industry after the financial crisis, particularly focusing on the European Union (EU).

There have been various studies which have focused on reputation and competition in the credit rating industry but there is thus far, little consensus. This paper will bring together the different aspects which underpin competitiveness in the credit rating industry and apply it to the evidence from the EU and subsequent EU legislation. In particular, the paper will explore the reputational mechanism which is widely accepted as being the key mechanism in holding the CRAs to account and is a key aspect of self-regulation or market regulation. This paper will explore whether despite the reputational damage encountered following the financial crisis, it has affected the Big Three and their market shares. If it has then it would provide support for the reputational mechanism and if not it would suggest that the credit rating industry and the success of market actors is not based on performance and thus there is a dearth of accountability.

For these reasons, my research questions are as follows:

1. How has the competitiveness of the credit rating industry been affected by the financial crisis?
2. How are EU legislations effective in addressing an oligopolistic structure defined by reputational capital?

I will try to explore whether there has been a notable drop in confidence in the Big Three whilst assessing what effect this has had on the CRAs themselves. This paper will examine the market for credit ratings to try to understand the Big Three's market position and whether there is a trend towards reduced concentration or in fact more. We will firstly look at the reputation of the Big Three. The first hypothesis being that that the Big Three possess a high reputation but that faith in their ability to judge credit risk has diminished since the global financial crisis. My second hypothesis is that the market share of the Big Three has not changed significantly since the financial crisis and similarly the revenue of the Big Three hasn't changed much either.

My third hypothesis is that financial rules and regulations created a situation in which the Big Three were shielded from competition and thus entrenched their dominance. However, we will expect that the EU has addressed these issues as well as proactively implementing regulations that encourage competition.

Chapter 1. Theoretical Framework

Theoretical Section I: What are credit agencies and what do they do?

In a very basic sense, a credit rating measures the relative risk that an entity - e.g. company - or transaction will fail to meet its financial commitments, such as interest payments and repayment of principal, within a fixed period of time (see: IMF, 2010; White, 2010). By doing this they are seen to play an important role in the global financial system and serve a vital purpose. By aggregating information about the creditworthiness of borrowers, including corporations, financial institutions, sovereign bodies and their related debt offering of securities, they allow borrowers access to global and domestic markets and to attract investment funds. In doing so they can be seen to add liquidity to markets (IMF, 2010).

The dominant literature (IMF, 2010; Amtenbrimk & Heine, 2013; Weber & Darbellay, 2008) suggests that CRAs through their provision of information, monitoring and certification services, affect the financial system specifically in a number of ways. Firstly, due to the fact that investors often know less than issuers about the elements that determine credit quality, credit ratings address the problem of what is known as “asymmetric information” (IMF, 2010, p.86) between debt issuers and investors. In this regard, CRAs provide “information services” that reduce information costs and according to the IMF “increase the pool of potential borrowers, and promote liquid markets” (IMF, 2010, p.86). By making information about default likelihoods and recovery rates of a security widely available, credit ratings limit what could be seen as a duplication of effort in financial markets. This allows uninformed investors to quickly asses the risk properties of thousands of individual securities using a single, recognisable scale (Becker & Milbourn, 2011), which in turn increases efficiency. Thus, so far so good. Because of the additional information that they provide to the system, they are often described as providing a “public good” (Masciandaro, 2011; Amtenbrink & Heine, 2013).

How are they presented?

Credit ratings are usually expressed in terms of alphabetical identifiers, ranging from AAA (most creditworthy) to D (least creditworthy). S&P and Fitch use AAA, AA, A, and BBB for "investment-grade" long-term credit risk, and BB, B, CCC, CC, C, and D for "speculative" long-term credit risk. To further distinguish and rank ratings, modifiers are attached to ratings within each of the broader classifications. Fitch and S&P use pluses and minuses (e.g., AA+ and AA-) and Moody's uses numbers (Aa1 and Aa3) (IMF, 2010; Moody's 2016, S&P 2016; Fimilac, 2016). If we look at some other rating agencies outside of the Big Three the rating scales are fairly similar. CERVED Group S.p.A. based in Italy – the fifth biggest EU rating agency[4] uses a rating scale of A1.1 to C2.1 (Cerved Rating Agency, 2014) and DBRS Ratings Limited – the fourth biggest rating agency in the EU – has a long term debt obligation scale like S&P and Fitch of AAA-D but without the modifiers (DBRS Ratings, 2013a) as well as rating scale for commercial paper and short term debt which ranges from R1-R5 with modifiers of high, middle and low (DBRS Ratings, 2013b). What is important to acknowledge is that not only are there some variations in the various rating scales but even the various rating levels are not comparable. For example, DBRS's AAA (top rating) is not directly comparable to Moody's Aaa (top rating). It is important to acknowledge that in the context of competition, these differences add to the difficulty in comparing judgements of the CRAs.

The CRAs get privileged access to information about the borrower (issuer) and they use considerable resources to make what they deem to be an accurate judgement. Their outlooks, monitoring and ratings are based on freely open information about the business financial situation of the issuer as well as private information including discussions with the members of the business itself (Micu et al., 2004). Besides that, a qualitative judgement is made by the CRA about the planning and quality of leadership of the borrower. There is no established best practice for rating the creditworthiness of issuers which makes any blanket regulation all the more difficult and is part of the reason that self-regulation is often preferred.

CRAs as 'gatekeepers'

[4] As of 2015.

CRAs could be considered alongside auditing firms and security analysts as gatekeepers of the financial system, that act as intermediaries for the benefit of investors (Walter & Daigler 2010). Dieter Kerwer (2010) argues that the criteria CRAs use to evaluate creditworthiness are in effect access rules for financial markets. High quality credit ratings – investment grade - will allow for unproblematic access to the most liquid capital markets whereas a low-quality one - speculative grade - assigns a junk bond status and will in effect exclude a bond from the most liquid markets. As has already been mentioned, the rating also has an influence on the cost of borrowing. It will be lowest for holders of the highest rating and will increase as the rating signals higher credit risks. This influence is because of the fact that large investors need to rely extensively on CRAs for screening in transparent capital markets. CRAs are thus de facto regulators of financial markets (Kerwer, 2010, p.462).

Their effect on the financial system

Credit ratings of course affect borrowing costs by their very nature by informing lenders of the likelihood that an individual borrower will default on its debt obligations. The lender will then adjust its interest rates accordingly. However, we can also observe that the choices of the CRAs have real economic effects beyond simply reflecting market sentiment. The IMF (2010, p.85) finds that sovereign ratings influence markets, particularly via credit warnings “outlooks,” “reviews,” and “watches” as well as credit ratings that cross the investment-grade threshold. This, the IMF (2010, p.105) describes as creating a “certification effects” which does not necessarily fully reflect the impact of marginal new information.

Jaramillo and Tejada (2011) find that the investment grade status reduces financing costs significantly by improving market expectation, i.e. how a market is perceived, and encouraging greater inflows. By using a panel dataset for 35 emerging market economies for the period 1997-2010, they find that reaching investment grade lowers sovereign spreads by 36 percent, which is above and beyond what is implied by simply macroeconomic fundamentals (Jaramillo & Tejada, 2011).

In their research into credit default swap (CRS) spreads, Iuliana Ismaelescu and Hossein Kazemi (2010, p.3) make the point that in an efficient market CDS spreads should not change in reaction to credit rating announcements. Based on the assumption that rating agencies rely on publicly available information to form their opinions, CDS spreads must already reflect this information. However, this is not the case as the effect of rating announcements is disproportionately high (Masciandaro, 2011).

Marian Micu et al. (2004) find in their analysis of the market for credit default swaps, significant effects on spreads from negative rating outcomes. These effects were particularly strong with negative observations and with downgrades, and less so with outlook changes. This is particularly prevalent in the way that individual rating changes affect spreads less in normal situations than rating changes from investment to speculative grade (Jaramillo & Tejada, 2011). In other words, if Standard & Poor's were to reduce a country's or a firm's credit rating from BBB- to BB+, the effects on bond yields would be greater than a change from AA+ to AA (both investment grade) or BB+ to BB (both non-investment grade). Almeida et al. (2014) find in their study into sovereign debt ceilings, that credit ratings affect borrowing costs of firms via the sovereign debt ceiling. The costs of borrowing rise disproportionately high for firms with a high rating in sovereigns which drop from investment to non-investment grade. This suggests that the ratings are interpreted differently, thus suggesting credit ratings go beyond simply reflecting market fundamentals.

Credit ratings don't just affect firms' borrowing costs but also the way they behave. This is because on the one hand firms want to access cheaper borrowing, and on the other, they deem a positive reputation to be a sign of good management. This is shown by Darren Kisgen (2006, p.1067-69) who finds that credit ratings have an impact on the capital structure decisions of the firm. He finds that ratings directly affect capital structure decisions by managers. He shows that firms near a rating change, issue approximately 1.0% less net debt relative to net equity annually as a percentage of total assets than firms not near a ratings change. He summarises that these results are consistent with managers being concerned with ratings-triggered costs (benefits) to the firm and the effects of

regulations on bond investors. Thus, we can see that the CRAs' ratings have real economic consequences for countries, firms and flows of capital.

Issuer pays model

Traditionally, CRAs earned their revenues from subscriber fees paid by investors but in the early 1970s, the CRAs changed their business models and started charging issuers for their rating services to avoid what was seen as free riding (Rousseau, 2009). This is decision is yet more justifiable bearing in mind technology like the internet makes the publication of information so easy. Nowadays, the larger CRAs derive most of their revenues from the fees charged to issuers, a system known as the issuer-pays model.

There are concerns that the existing issuer-pays model negatively distorts the quality of credit ratings because it creates a conflict of interests. Approximately 90 percent of rating agency revenues come from issuers who pay for ratings. Rating agency fees vary depending on the size and complexity of the issue. Partnoy (2006, p.69) finds that for corporate debt "the fees are in the range of 3 to 4 basis points of the size of the issue, with minimum amounts in the range of $30,000 to $50,000 and maximum amounts in the range of $300,000". For structured finance issues, fees range up to 10 basis points, and fees for complex transactions are substantially higher, up to $2.4 million (Partnoy, 2006, p.69).

As nearly all credit ratings are paid for by the issuer, it in turn gives the issuers incentives to look around for the best rating, something that is termed 'rating shopping'. This in turn encourages the rating agencies to inflate ratings in order to maintain and gain customers. This would not be a problem if the CRAs were properly incentivised to provide objective and accurate ratings. This is where reputation is considered to be an important mechanism.

Theoretical Section II – Reputation and Competition

Reputation Mechanism

Reputation is vital to the credit rating industry. The CRAs act as a third-party intermediary which allows investors to judge the creditworthiness of debt instruments and it allows issuers to show their own creditworthiness. Theoretically, reputation mechanisms operate to reduce information asymmetry between prospective buyers and sellers. The third party (in our case the CRA) facilitates a transaction, telling the buyer something the buyer could not trust the seller to disclose truthfully (Bonewitz, 2010). Importantly issuers cannot credibly signal their own credit risk due to the strong incentive (perceived) to misrepresent or withhold information. A CRA on the other hand receives a fairly small fee for each opinion it provides which is a small amount in comparison to the damage its reputation would suffer if it provided false opinions. As Paul Bonewitz claims (2010, p.399) “credit rating agencies are therefore trustworthy informational intermediaries because they cannot afford to give false signals”.

Furthermore, as they provide information on debt obligations which take a long time to reach maturity, they must show investors that their opinions can be trusted. As most investors are relying on the expertise of the CRA to assess the default risk of debt instruments, their views must be trusted otherwise, investors simply won’t trust them. This would mean higher borrowing costs for the issuer (Becker & Milbourn, 2010). In other words, by measuring the risk of future default, feedback about the accuracy of these ratings is slow and often imprecise. Because of this, CRAs value long term reputation in order to improve future business opportunities. Thus, if the CRAs are found to be providing low quality ratings, they may lose out on future business. This encourages them to provide high quality ratings (Baghai & Becker, 2016). Theoretically this should eliminate the problems associated with conflicts of interest in the issuer pays model.

Several mechanisms cause reputational sanctions. Firstly, as ratings are publicly disclosed and are accessible to investors, investors are able to compare ex post the ratings with the default rates of the issuer, making any rating failures obvious (Bai, 2010, p.265-66). Secondly, Bai (2010) notes the existence of information intermediaries, such as sell-side credit analysts who give their own judgements about the validity of a credit rating or a forecast of a credit rating change. This further exposes any rating failures of the CRA (Bai, 2010, p.266). Thus, it is important to recognise that it is disadvantageous

economically for the CRAs to provide poor quality ratings as there are mechanisms in place to expose them.

Moody's expresses its belief in the importance of reputation in its 2016 Annual Report, listing the exposure to reputation and credibility concerns as a major risk factor to its business.

> Moody's reputation and the strength of its brand are key competitive strengths. To the extent that the rating agency business as a whole or Moody's, relative to its competitors, suffers a loss in credibility, Moody's business could be significantly impacted. Factors that may have already affected credibility and could potentially continue to have an impact in this regard include the appearance of a conflict of interest, the performance of securities relative to the rating assigned to such securities, the timing and nature of changes in ratings, a major compliance failure, negative perceptions or publicity and increased criticism by users of ratings, regulators and legislative bodies, including as to the ratings process and its implementation with respect to one or more securities and intentional or unintentional misrepresentations of Moody's products and services in advertising materials, public relations information, social media or other external communications. Operational errors, whether by Moody's or a Moody's competitor, could also harm the reputation of the Company or the credit rating industry. Damage to reputation and credibility could have a material adverse impact on Moody's business, operating results and financial condition. (Moody's Annual Report, 2016, p.20-21).

This statement from Moody's which is also in line with the other Big Three is fairly explicit in the importance it places on reputation. This is in line with the reputational economic view and thus one would expect the CRAs to place reputational concerns above anything else and in doing so mean that rating quality remains high despite incentives to seek short term profits through providing inflated ratings. It is also interesting to note that in Moody's statement, they also acknowledge the importance of maintaining the high reputation of the industry as a whole, not simply vis-à-vis other competitors. This further suggests that the CRAs themselves are aware that they must uphold the integrity of ratings in order for them to exist in the first place.

Rousseau (2009) reiterates the importance of reputation in the ratings industry by stating that:

> *CRAs act as certifying agents by offering their reputation to supplement that of the issuer as a guarantee of quality. For prospective investors to be convinced of the accuracy of certification, the signal conveyed by CRAs must be credible itself.* (Rousseau, 2009, p.16)

She outlines three conditions which must be met for the above to function. The first being that the reputation capital of the agent giving the certification needs to be at stake. Meaning that incorrectly certifying an issue that is overvalued as accurately priced would affect that agent negatively and materially. The second condition stresses that "the value of the agent's reputational capital must be greater than the gains to be made from false certification" (Rousseau, 2009, p.16). The final condition is that it must be costly for issuers to purchase services from the certifying agents. Thus, she makes clear that the CRAs have "reputational capital at stake when they issue ratings" (Rousseau, 2009, p.16). In other words, if a CRA has a reputation for biased or poor quality analysis, then investors will not trust the value of the assigned ratings. If investors doubt the accuracy or independence of the ratings of a particular CRA, issuers will look for a more credible agency to signal their creditworthiness. Thus, the CRAs have an economic incentive to behave earnestly and carefully (Rousseau, 2009, p.43).

However, the fact that reputation is so important, creates a market that has as Fabian Amtenbrink and Klaus Heine (2013) describe as having the "characteristics of a natural oligopoly" (p.3) which is then "sustained and reinforced as a result of the large sunk costs of the reputational capital of CRAs" (p.3). This could be problematic if this oligopolistic market condition fails to hold the CRAs to account.

There are a number of arguments against the idea that reputation itself isn't a perfect balancing mechanism stemming from the fact as Partnoy (2009) argues, that in order for CRAs to function properly they must be able to "credibly pledge a loss of reputational and then monetary capital in the event they fail to perform their functions"(p.13).

Rousseau (2009) argues that investors do not differentiate the same reputational of debt instruments that fail for other reasons such as fraud, inaccuracy or simply bad luck, “investors only interact with the rating agencies’ through the default rate of the debt-instruments that are rated” (p.43). This problem is further compounded by the lack of transparency of ratings which makes it even more difficult to assess the contribution of the agency (Rousseau, 2009, p.43). Thus, contrary to the sanction mechanisms given by Bai (2010), the ability to compare ex post the ratings, is not that simple. This owes itself to the opaqueness of the rating process.

A further issue is herding. This is the process in which all the CRAs opinions converge and the various CRAs reach a consensus position as not to be caught out. A study by Andre Güttler (2009) into rating convergence of Moody’s and Standard & Poor’s during the period of January 1994 to December 2005 found Moody's ratings tracked those of Standard & Poor's in upgrades but not in downgrades. This herding only in upgrades suggests that herding cannot simply be attributed to similarities in the models and methodologies of the rating agencies, but rather by rating agencies' more positive or as Bai (2010) even puts it “relaxed attitude” (p.270) in delivering good news that pleases their clients and a somewhat more conservative attitude in delivering bad news. Importantly for Bai (2010), this upwards herding therefore makes it very difficult to detect rating inflation. This creates two major problems: on the one hand, it can be used by CRAs to cover up their failings and on the other, it makes it difficult for market participants to differentiate different rating agencies as they issue similar ratings (Rousseau, 2009, p.44). Thus, just like the lack of transparency, it is difficult to judge the reputation of the CRAs ex post. With less competition this problem is further compounded making the financial system more vulnerable to an overall underappreciation of default risk.

One final way in which rating quality could be compromised can occur due to the combining of ancillary services alongside the traditional rating of debt obligations. Issuers in theory could use their position as ancillary customers to leverage a better credit rating. This was certainly found to be the case with accounting firms which was uncovered following the Enron scandal in 2001 (Bai, 2010, p.269).

Rousseau makes it clear that she doesn't believe the reputational mechanism is fit for purpose. In her words "reputational pressures are currently insufficient to effectively discipline CRAs. Reputational pressures nonetheless do exist. Therefore, reform initiatives should take into account their influence and, to the extent possible, seek to enhance them" (Rousseau, 2009, p.45).

Theoretical Section III

What is competition?

The basic idea of competition is described clearly and efficiently by Amtenbrink and Heine (2013) when they claim that it "can generally be considered to mean that customers have a choice between different products and that suppliers are forced to sell their products at a price that generates no monopolistic rents" (p.8). This is what competition means in theory but in all industries, pure competition is rare. Competitive advantages can create monopolistic rents and intervention from regulatory bodies can distort the competitiveness of the market. In the ratings industry there is one firm specific advantage that is commonly regarded as most important: reputation. The competitiveness of the credit ratings market is therefore defined by reputation but at the same time the importance of reputation itself is dependent on a competitive market. Therefore, reputation is a competitive advantage in a competitive market, but less so in an uncompetitive one.

Competition and reputation are heavily interconnected as the reputational mechanism requires some degree of competition to encourage CRAs to produce high quality ratings.A competitive market leads to greater visibility of information about a number of things: prices being charged, the service quality being given and probably of greatest importance, performance (Amtenbrink & Heine, 2013). Moreover, the market offers a greater number of alternatives allowing actors to compare the different services offered. In other words, it is competition that makes the reputational mechanism work. If the CRAs are perceived to be providing poor quality ratings, in theory, in a competitive market the CRAs offering the better quality ratings would be deemed more attractive to issuers. For the CRAs to be concerned about losing customers through reputational damage, insurgent firms must be there to take their business.

For this reason, the European Union as well as other regulatory bodies argue that the increasing of competition is crucial for improving the credit rating industry. For that reason, regulations are deemed as important as on the one hand, regulations could maintain the dominant market position of the Big Three by erecting barriers to entry. On the other hand, regulations could be used by the legislative or regulatory bodies, to promote competition.

Certification Effect

The perceived good reputations of the CRAs creates a kind of certification effect. A number of studies have covered this "certification effect". In their investigation into the certification effect in the Japanese credit ratings agencies, Han and Pagano (2012) find that nonfinancial Japanese firms who acquire ratings from either Moody's or S&P from April 1998 to March 2009, benefited from an "average reduction in their yields of 5.2 basis points (bps) when compared with Japanese firms that hired only domestic ratings agencies" (p.851). These results lead Han and Pagano (2012) to suggest that global credit rating agencies are able to mitigate asymmetric information problems in Japanese debt markets by certifying the quality of credit information of issuers, through these rating agencies' stronger reputation.

What Han and Pagano (2012) show in their study is that in normal times Japanese firms can issue debt at a lower cost by obtaining ratings from Moody's and S&P than through domestic capital markets. We will come back to this study later on but it is important to acknowledge that Han and Pagano (2012) showed empirically that not only do good ratings lead to cheaper borrowing costs, i.e. lower yields; in fact, in good economic times ratings from the global well renowned credit rating agencies were seen as more reliable and therefore this was reflected in reduced borrowing costs.

Much of the literature on the credit rating market points towards an inherent fixing of the system with regulatory barriers which essentially provide the CRAs with a constant stream of business as well as creating significant barriers to entry. Credit ratings have for long time played a significant role in the marketing of fixed-income instruments to investors,

however, they have more pervasively found their way into various rules and regulations (IMF, 2010).

Frank Partnoy (2006) argues, that as gatekeepers, CRAs are rather unique. He claims that their role in the system is maintained on the one hand by regulations and on the other, by the lack of the threat of litigation (Partnoy, 2006). This view is echoed by Kratz et al. (2009) who argue that by incorporating credit ratings into their requirements, regulators in effect outsourced many regulatory functions to rating agencies and made credit ratings essential for issuers and a major part of regulations across a range of financial sectors. This leads them to claim that CRAs now play a vital role as de facto capital market gatekeepers despite their lack of liability and their reluctance to take on such a responsibility (Katz et al., 2009). It is important to acknowledge that this view of CRAs presents them as private quasi-regulators that in fact do not regulate, yet determine the conditions of the movement of capital.

This was especially true of central banks who tended to automatically incorporate ratings determining the securities that would be accepted as collateral in the provision of liquidity. Since 1973, credit ratings can be seen as explained by Rolf Weber and Aline Darbellay (2008) to have been included in various rules and regulations in various areas including securities, pension, banking, real estate, and insurance regulation. This is echoed by others like the Economist (2007) that claims historically the Big Three have been supported in their dominant market position by regulations and for that reason can be considered as being oligopolists (The Economist, 2007). They are referring to a consistent stream of income which is supported by the fact that the profits and shares of the Big Three continue to increase.

However, many scholars go even further viewing the regulations as not just helping to support a constant stream of income but rather to create barriers to entry. Frank Partnoy (2006) argues that this “cascade of regulations” (p.82) began after the credit crises of the early 1970s, when following the crisis, the U.S. Securities and Exchange Commission adopted broker-dealer net capital requirements in rule 15c3-1. This Partnoy (2006) mentions is the “first securities rule that formally incorporated NRSRO ratings” (p.82).

Frank Partnoy (2009) expands on his explanation of the historical context of the Big Three oligopoly by arguing that they were able to become powerful and hold what could be seen as “quasi-governmental power” (p.3), due to the use of NRSRO ratings for the fulfilment of particular regulatory requirements.

Katz et al. (2009) offer a rather simplistic comparison to the irrelevance of CRAs in the equities market due to the fact that they are not supported by regulation. In other words, they suggest that CRAs aren’t engaged in the securities markets because there are no regulations that exist to help maintain their dominant market positions.

An example given by the IMF (2010) of such regulations is the U.S. Federal Reserve’s Term Auction Lending Facility. This Lending Facility affirms that only asset-backed securities rated AAA/Aaa by two or more of the “major nationally recognized statistical rating organizations (NRSROs) are eligible for nonrecourse loans” (p.91). The IMF (2010) also provides an example of the European Central Bank (ECB) as similar. The ECB requires that marketable assets meet “high credit standards” (p.92) in order to be eligible as collateral. This would require at least one BBB- credit rating from one of the four accepted credit assessment institutions (IMF, 2010), i.e. CRAs. This is also the case with private sector contracting. A Securities and Exchange Commission survey in 2003, as reported by the IMF (2010), found that the majority of mutual funds, pension funds, insurance companies, private endowments, and foundations were using credit ratings to comply with internal laws and restrictions or investment policies that require certain minimum credit standards (IMF, 2010).

Bonewitz (2010) argues that the CRAs operate in a “regulatory regime” (Bonewitz, 2010, p.399) which allows certified rating agencies the power to sell cost-reducing and demand increasing regulatory compliance to issuers (Bonewitz, 2010, p.399). Weber and Darbellay (2008, p.6) in their analysis of banking regulations, argue that the barrier to entry that is created by the use of CRAs in regulations affects market forces in a way that rating agencies do not have to provide the best quality ratings. They (Weber & Darbellay, 2008) argue that the “ratings-dependent regulation alters incentives that the certified CRAs have to provide valuable information to the financial markets as investors rely on

the credit ratings notwithstanding the quality of the given information" (p.6). Thus, Weber and Darbellay argue that the value of a certified CRA's credit rating does consists not entirely of the credibility of the signal it sends investors, but rather only in its regulatory use. This creates a situation in which competitive pressures are of lesser importance (Weber & Darbellay, 2008). They give the example of financial institutions in the U.S. such as pension funds which are only allowed to purchase investment grade securities (Weber & Darbellay, 2008). They (2008) go as far to say that "issuers paying rating fees do not really purchase credibility with the investor community, but rather purchase a regulatory privilege" (p.7).

This argument touches on one of the keys questions, why don't the CRAs produce the best ratings possible? That is as Bonewitz (2010) claims; because reputation building is expensive as it requires the foregoing of short-term profit in favour of future gains (Bonewitz, 2010). There are many factors that can affect this balance including the rise and then fall of structured debt products, the continuing prospect of impending regulation, and the chance of increased competition (Bonewitz, 2010, p.405). Bonewitz (2010) argues that market factors combined with regulatory ones encourage the CRAs to seek short-term profit.

Additionally these rules arguably create a lack of precision as simply meeting regulatory needs is seen as more important than rating accuracy (Rousseau, 2009, p.39). In research into the NRSROs in the U.S., studies found that non-NRSROs are quicker to make rating changes. Non-NRSROs monitor and update ratings in a timelier manner than NRSROs, as NRSROs are more concerned with helping issuers comply with regulations than they are with bolstering their reputations with investors.

NRSROs are slower than non-NRSROs to downgrade ratings across the investment grade barrier since these downgrades harm NRSROs' reputation with issuers. (Bonewitz, 2010, p.405) This suggests that NRSROs are more concerned with serving the regulatory interests of issuers than providing purely new information (Bonewitz, 2010). This is highlighted by evidence that finds that NRSROs required more evidence to downgrade along the investment grade barrier, showing a distortion towards meeting regulatory

standards. An important point regarding the stability of the situation is that just as the reputational mechanism requires competition, a key to the market functioning properly is heterogeneity and if the system is distorted towards homogeneity, then it is more likely to produce negative outcomes like herding (Johansson, 2010).

Harry McVae (2010, p.707) highlights this point when he discusses the 'standardised approach'. He points towards how regulators have sought to harness the informational value attached to CRA ratings by 'enrolling' them, in effect, as what he terms 'surrogate regulators' which has seen ratings being used as a proxy for making regulatory decisions. This has led to regulators devising frameworks which enable regulated entities like banks to rely on external credit ratings to calculate risk exposures and in doing so meet capital adequacy requirements. He gives the example of the Basel Committee on Banking Supervision, which permitted banks to use ratings from certain accredited CRAs under Pillar 1 of the Basel II Accord. These rules themselves were incorporated into the legal rules as part of the EU's Capital Requirements Directive in 2006 (McVae, 2010, p.707).

EU Capital Requirements Directive

The EU Capital Requirements Directive, which effectively implemented the Basel II framework, provided for the use of external credit assessments to determine capital requirements applied to a bank or investment firm's exposure (Haan & Amtenbrink, 2011). The Basel Committee on Banking Supervision (BCBS) was assigned the responsibility of creating minimum standards for internationally active banks with the aim being to in assure greater stability and economic soundness in the banking sector. Minimum levels of capital were enshrined in Basel II which was approved in June 2004 (Weber & Darbellay, 2008). The Accord proposed two methodologies for calculating bank capital requirements. The first consisted of a standardised manner of measuring credit risk, supported by external credit assessments, like CRAs. The standardised approach being a portfolio of bank loans characterised by risk categories with the risk-weight associated based on the credit rating agencies' (CRAs) evaluation of the counterparty risk. The second methodology, termed the internal ratings-based (IRB) approach, allows for the bank to use its internal rating systems for credit risk. Weber and Darbellay note that under Basel II, the standardised

approach gave a prominent role to external credit ratings and can therefore be used as an example of the regulatory involvement of CRAs in the development of international capital standards (Weber & Darbellay 2008).

By enshrining explicit recognition from the CRAs into the financial markets, this 2004 regulation increased the importance of receiving a favourable credit rating (Weber & Darbellay, 2008). It wasn't until 2007, however, that the European Community incorporated these rules in the Capital Requirement Directive (CRD) which meant these rules and standards on capital measurements transposed into national law by the member states (Weber & Darbellay, 2008). The CRD therefore, is an example of how the European Union regulations incorporated external ratings and with that the credit rating agencies into their regulations. It is important for us then to analyse, to what degree these regulations still exist and whether they have the effect of creating a barrier to entry for other CRAs and in doing so, makes the ratings market in Europe less competitive.

However, the evidence of this is not conclusive globally with less regulation in Europe that favoured select CRAs like the nationally recognized statistical rating organization (NRSRO) in the U.S. It is true that the EU adopted the Basel II Accord in 2006 but the list of recognised CRAs was much greater. It would explain the constant stream of revenue which could distort incentives but not why in the EU there is such a high market concentration. In the EU, the main approach as detailed by the European Court of Auditors (2015) was self-regulation. This self-regulation was based on accepted best practices developed by the International Organisation of Securities Commissions (IOSCO) (European Court of Auditors, 2015). In 2006, the European Commission decided that light regulation, alongside self-regulation by the CRAs on the basis of the IOSCO standards, was sufficient to monitor and control the problems faced by the existing set of rules and regulations/non-regulations. CRAs were only to be regulated in specific areas, those being: insider trading and market manipulation, business of credit institutions or capital adequacy of credit institutions (European Court of Auditors, 2015). The Committee of European Securities Regulators (CESR) was instructed to monitor the compliance of the CRAs with the International Organization of Securities Commissions (IOSCO) standards which weren't specific to the EU, while the Commission was expected to continuously

monitor developments in the area. But, importantly there was no system which recognised licensed CRAs quite like in the U.S.

The 2008 financial crisis and the subsequent collapse in confidence of the predominant rules guiding the financial system led to discussion concerning the operation of CRAs. This led the Commission to launch in November 2008 a proposal to regulate credit rating agencies (European Court of Auditors, 2015) and since then the EU credit rating market has been more tightly regulated as we will analyse later on in the paper.

Competition and stability

It is important to understand the debate surrounding the effect of competition on rating quality which we have touched on already. Overall, there tends to be a tendency to promote competition as a way of improving credit ratings as we see from the EU. In 2011, EU Commissioner Michel Barnier stated that "credit rating agencies should follow stricter rules, be more transparent about their ratings" and that he wanted to "see increased competition in this sector," (BBC News, 2011).

Rousseau (2009) is amongst those scholars that see the lack of competition as problematic, describing the concentration in the CRA market as "worrisome" (p.39). She (2009) argues that insufficient competition "deprives" (p.39) the public of the checks on the quality and integrity of the rating process, which in turn leads to the established CRAs to neglect the quality of their ratings.

In a European Commission report in 2016, looking into the CRA market, the report does look at some ways in which a highly concentrated CRA market could have on financial stability. The report argues that high concentration in the market could have a negative influence if CRAs are seen to observe each other's actions and respond by giving similar opinions of creditworthiness of issuers. This as the EU Commission report points out, could promote pro-cyclicality (European Commission Report, 2016). However, the report argues that there is little evidence of what can be described as 'herding' among CRAs. The report argues that any such herding of opinions could be explained by several other

factors. Included amongst these are the fact that they have similar business strategies or that they are simply processing the same information in an indistinguishable way. Their summary is that, “given limited evidence, our view is that market concentration could drive increased risk, but that this is per se likely to be secondary to factors such as over-reliance, product complexity and others” (European Commission Report, 2016, p.8). At the same time the EU Commission report also indicates that the increasing number of new rating agencies in Europe in recent years, not reflected in overall market share, has not led to rating quality being reduced (European Commission Report, 2016, p.44).

One final argument which has yet to be considered is one raised by Rousseau (2009). She also argues that lack of competition negatively affects innovation, as well as the diversity of thinking and opinions. It is argued that underlying issues in the subprime mortgage market could have been identified better and communicated to the market better if there had been more competition (Rousseau, 2009, p.40). This argument is less easy to measure but it is in line with common thinking on competition. It arguably also lends support Bonewitz’s (2010) findings, that non-NRSROs react quicker than registered ones to implement rating changes. Smaller CRAs less concerned about regulations may be more likely to find more innovative rating solutions.

Contrary to claims that greater competition improves ratings, Bo Becker and Todd Milbourn (2010) in their research into the effect of greater competition on the CRA market, found that the increased market share of Fitch when it moved from an insurgent firm to a market leader in fact decreased the quality of ratings. They measure the period of 1997-2007 where Fitch issued less than one in ten ratings in 1997, but approximately a third of ratings by 2007. They found that firstly, ratings issued by S&P and Moody’s rose (moved closer to the top rating of AAA) as competition increased. Secondly, the ability of S&P and Moody’s ratings to explain bond yields decreased with competition meaning that credit ratings became less informative about the value of bonds. And thirdly, they find that the ability of firm-level ratings (i.e., issuer ratings) to predict default is lower when Fitch has a higher market share (Becker & Milbourn, 2010, p.496). They dismiss rating shopping - the searching for better ratings based on the issuer pays model - as a cause but argue the

case that increased competition may well affect the reputational mechanism as the CRAs because of the threat of losing future rent opportunities.

As has already been mentioned, reputation is important for CRAs because the feedback about the accuracy of these ratings is slow and often imprecise, creating a need to signal their value. Becker and Milbourn (2010) suggest that the reputational mechanism is negatively affected because increased competition reduces the opportunity for future rents. This therefore according to the authors, encourages rating agencies to focus on short term profit. This point is important not simply because it challenges the quality of ratings but that the effects of low future rents are more likely to disproportionately affect smaller CRAs who cannot afford to relinquish short-term profits for an uncertain future. Following this logic it is more likely that smaller CRAs would be more exposed to the pressure of securing short term rents. As already mentioned, this paper will not explore whether or not competition is good or bad for the quality of ratings, only that competition itself has the potential to affect the interactions of the actors involved.

Litigation

Generally, the threat to the CRAs from litigation is relatively low if one compares them to for example accounting firms. Partnoy points to the fact that in America, they lack exposure to civil and criminal liability and are even immune to prosecution for certain violations of securities law, including section 11 of the Securities Act of 1933 and Regulation FD. Furthermore, in the U.S., rating agencies have historically been rather unique in comparison to other gatekeepers due to the fact that their business model has been protected as they are considered to provide merely opinions which are themselves protected by the First Amendment (Partnoy, 2009).

The CRAs themselves do argue that they offer merely opinions and that firms should not rely solely on the ratings given by them (Partnoy, 2009, p.13). This may be true but it is difficult to deny that ratings don't take on more than a merely advisory role. This will be particularly apparent when we look at more complicated securities like collateralised debt obligations (CDOs) which are incorporated in investment guidelines and other important financial provisions (Partnoy, 2009). Later in the paper we will examine whether they are

also incorporated into EU legislation. If CRA judgements are only viewed as 'opinions' yet there are regulations which include references to ratings, there exists an inherent contradiction in the rules the govern the relationship between CRAs and market actors.

Aside from this point, it could also be argued that the idea that ratings can be viewed simply as mere opinions is rather neglectful bearing in mind the fact that they carry such a high degree of persuasive power that we have observed earlier. Donato Masciandaro (2011) shows this persuasive power when he looks at volatility following sovereign credit rating changes. He finds that negative rating disclosures have disproportionate effects on financial volatility than upgrades and he finds a link between the communication methods and this volatility.

Market Situation Today

As we have noted already, the Big Three dominate the credit rating market with for example a market share in Europe in 2015 of 92.85%[5]. It is widely accepted that increased competition would then help to re-establish the incentives important for quality ratings. The IMF (2010) argues that while there are few formal barriers for entering the market, the fixed costs are still very high given the information needs and the importance of company reputation. This, in the IMF's opinion stifles competition (IMF, 2010). Furthermore, with low interest rates following the financial crisis, the Big CRAs are continuing to record high profits due to high levels of borrowing. The Economist reported in 2015 that shares of Moody's were in fact up sixfold compared to 2009 (Economist, 2015). We can also confirm this by looking at the revenues of Moody's and S&P in recent years.

S&P

Due to limitations in access to data, we have had to abstract international revenue which encompasses revenue from all regions apart from the U.S. where S&P reports its highest revenue intake. There are obviously limitations to our assumptions but it does give an idea

[5] Own calculation of total market share in 2015 based on 2016 ESMA Competition Report (ESMA, 2016).

as to the general revenue intake of S&P ratings year-on-year. I find by looking at quarterly reports from 2011 to 2017 that S&P's international (excluding U.S.), revenue increased overall from $857 million in 2011 to $1.073 billion in 2016. From Figure 1 you can see that there was a 10% decrease in revenue in 2014 compared to 2015 but a 3% increase from in 2016 from 2015 meaning there is no continuation in the decline of revenue.

Moody's

If we look at Moody's turnover from the same period we see a similar picture.
Moody's revenue in the EMEA region from its investor division increased from $708 million in 2011 to $904,4 million in 2016. Like S&P it saw a reduction in revenues between 2014 and 2015 of 7% but revenue increased again by 3% thereafter. Moody's puts non-U.S. revenue decreases down to changes in FX translation rates coupled with declines in high-yield corporate debt and bank loan issuance in EMEA (Moody's Annual Report, 2015)

We must be careful when extrapolating from this data, as it does not take into account external factors, for example the effect of low interest rates on the attractiveness of borrowing, however, it is useful to note that there has been a clear increase in revenue since 2011 despite the perceived damage to the reputation of the CRAs in general and S&P in particular.

The financial crisis

The global financial crisis which had its roots in the sub-prime mortgage crash in the U.S. was seen to have exposed the failings of the credit rating agencies and their inadequacy in providing for the stability of the financial system to which their role as arbiters of credit risk required of them. This was particularly evident in the area of structured financial products as we have already mentioned but there was criticism levelled at the CRAs for underestimating sovereign debt obligations for example or the capital requirements of banks globally. A major example being the four-point downgrade of Greece's sovereign credit rating by Moody's in June 2010 which the IMF (2010) argues "caught the market off guard, with spreads widening significantly following the event" (p.103) leading some to argue that the CRAs are in fact making financial volatility worse.

It is well documented that disintermediation of the financial system brought substantial profits for the CRAs. The shift from bank based lending to capital market based lending, and the growth of speculative grade debt markets (Alp, 2013, p.5) were massively beneficial to the CRAs. This is particularly true of structured financial products which greatly increased from the year 2000 up to the financial crisis of 2007-08. For example, Moody's net income grew from $159 m in 2000 to $705 m in 2006, with 44% of its revenue in 2006 coming from its structured finance activities (Mathis et al., 2009).

Having designed a simple, readily understandable and cheap system for investors, it allowed investors to invest in international securities of which they were not directly familiar. Structured finance products offer several major advantages. First, the issuer can use it for balance sheet management, to reduce the need for regulatory capital and to manage portfolio risks. Second, the investors get access to tailored investments with a relatively high yield compared to similarly rated corporate debt. Finally, policymakers embraced the spread of risk, which was perceived to improve the overall stability of the system. (Johansson, 2010, p.4)

Importantly as Johansson (2014, p.4) argues, the higher degree of structural complexity compared to other securities makes it difficult for even a sophisticated investor to estimate the inherent credit risk. This makes the approval from the CRAs necessary as market actors see the CRAs as having a superior understanding of credit risk which comes from their reputations as responsible financial intermediaries. So in this sense, the whole market for structured financial products is credit rating driven.

Siegfried Utzig (2010) argues that as far as corporate and government bonds are concerned, this system proved reliable and enabled investors to easily and securely diversify their portfolios. This would appear to be fairly positive. However, it is the market for structured projects in contrast where the CRAs did more than simply reducing information asymmetries (Utzig, 2010). Structured debt securities are described by the Financial Times Lexicon (2017) as:

> *Complex debt instruments created to meet needs that cannot be met from traditional financial instruments available in the markets. Common examples include collateralised debt obligations (CDO) and asset backed securities (ABS). Structured debt securities have the potential to decrease risk, create liquidity, and increase yield, but they tend to have very high fees*. (Financial Times Lexicon, 2017)

Take CDOs for example and subprime mortgage loans in particular. The underlying finance for these subprime mortgage loans came through a process of securitisation and with it greater involvement of CRAs in their design. Throughout their earlier history, the CRAs mostly rated the bonds that were issued by corporations and government agencies. However, in the rating of mortgage-related securities, the rating agencies became very much involved in their design (White, 2010).

White (2010) describes how "subprime mortgage loans were combined into mortgage-related securities, which were then divided into a number of more-senior and less-senior tranches so that junior tranches would bear all losses before the senior tranches bore any" (p.220). He also describes how financial institutions created structured investment vehicles, "which borrowed funds by issuing short-term asset-backed commercial paper and then used the funds to purchase tranches of the collateralised debt obligations backed by subprime mortgages" (White, 2010, p.220). What is key to White's interpretation is that if then these mortgage-backed securities were to receive high credit ratings, then the asset-backed commercial paper could also receive a high credit rating. In doing so this made it cheaper to borrow. Importantly, the securitisation of these subprime mortgages was only able to succeed because of the favourable ratings given to the more-senior tranches (White, 2010).

Over time, CRAs increasingly focused on structured finance and new complex debt products, particularly credit derivatives. Frank Partnoy (2006, p.60) believes that by becoming so involved in the design of debt product they went from being "gatekeepers" of the financial system to "gate-openers". He attributes that in particular to their rating methodologies of collateralised debt obligations (CDOs). It is important in this paper to

understand that by being so involved, the CRAs became more accountable to their eventual collapse.

Alone, this is damaging for the reputations of the credit rating agencies but they were also slow to downgrade those securities as their losses became apparent (Lawrence, 2010). An example of this can be found in the 2010 IMF study (2010) which shows the overestimation of what turned out to be junk grade securities. Over three quarters of all private-label residential mortgage backed securities issued in the United States from 2005 to 2007 that were rated AAA by S&P were as of 2010 rated below BBB-. Those are clear outcomes which undermine the quality of S&P's credit ratings and its ability to arbitrate creditworthiness.

In the 2010 Dodd Frank reforms, the Senate and the House of Representatives were pretty clear in their admonishment of the CRAs and their role in the financial crisis. In Subtitle C, Section 931 it finds that:

> *In the recent financial crisis, the ratings on structured financial products have proven to be inaccurate. This inaccuracy contributed significantly to the mismanagement of risks by financial institutions and investors, which in turn adversely impacted the health of the economy in the United States and around the world. Such inaccuracy necessitates increased accountability on the part of credit rating agencies* (Dodd Frank Act, 2010, Subtitle C: Sec. 931)

Here we have a clear example of a legislative body explicitly describing the ratings of structured financial products as "inaccurate". If the reputation of the CRAs is based on their ability to judge the creditworthiness of debt obligations this clearly undermines that.

A further criticism of the consistency of the CRAs' can be found in the research by Aysun Alp (2013). She finds that between 1985-2002, there is a divergent pattern in investment grade and speculative grade rating standards. That being, the rating agencies tightened the standards for investment grade ratings, whilst relaxing the standards for speculative grade ratings (Alp, 2013). She then finds that around 2002, there is a change towards more stringent ratings in both investment grade and speculative grade rating categories.

This matters because as she finds for instance; a S&P AA rated 10 year maturity bond yield index is on the average 24 basis points lower than the A rated index between 1996 and 2007. Based on this difference, 1.5 notches tightening in standards between 2002 and 2007 translate into 12 basis points higher cost of debt for issuers (Alp, 2013, p.3). This also shows an inconsistency in the evaluations of default risk which undermines the soundness of their ratings.

She blames the issuer pays model in particular for the provision of more issuer-friendly ratings in order to attract further business in this fast growing asset class. She claims that because ratings are so important in determining the borrowing costs of firms, they try to manage credit ratings to their own advantage (Alp, 2013, p.16).

Transparency

The failure of the CRAs to provide accurate and useful information in the light of the financial crisis points what Amtenbrimk and Heine (2013) see as a more general problem of credit ratings concerning the transparency of their rating methodologies. They argue that informational asymmetries can be overcome by more transparency in the methods used by the CRAs (Amtenbrimk & Heine, 2013). This is based on the assumption that with extra information, investors would be in a better position to assess with greater accurately whether the ratings are properly adjudicating on risk. In doing so, this can help to create a more transparent and stable system. Importantly for this paper, transparency of the rating process could also trigger a better understanding of how the various CRAs work and therefore create more competition between CRAs (Amtenbrimk & Heine, 2013). The counter argument from many CRAs is that they fear that any disclosures of rating practices would lead to them losing their competitive advantage.

Gaps in the literature

Much of the literature focuses on how regulations distort the market and much of this focus is on nationally recognized statistical rating organizations (NRSROs) as it was the earliest and most recognisable regulatory license regime. However, this focus leads to the neglecting of other regions including the European Union which may show different tendencies. And thus, a universal understanding of the role of regulations on the industry

may be challenged by looking at a different region. This is important for acknowledging post-financial crisis regulations which certainly differed in the two regions.

Furthermore, there has been very little scholarly focus on the relation between the reputation damage of the global CRAs after the financial crisis and competition. The predominant focus has been on how the practices of the CRAs can be regulated rather than addressing the reputation mechanism which lies at the heart of the industry. Thus, this paper will try to address this.

Chapter 2. Methodology

Hypothesis One

This study will use a mix of different methodologies. Due to the restrictions on accessing such information and time constraints, measuring the reputation of the CRAs is very difficult. However, this study will analyse two existing studies which complement each other well. The first of these studies is by the 2014 CFA Report which is a questionnaire for investors. The CFA Report does not summarise or analyse its findings and therefore this paper will do that.

The second way to measure reputations will be the evaluation of existing literature. I found that Han et al.'s (Han et al., 2012) analysis of the post-financial crisis credit rating market in Japan offers a solid empirical grounding for the reduction in confidence in the credit ratings of the global CRAs. Although our focus is on Europe, in measuring the reputations I deemed it appropriate to use international data. This is because of the international scope particularly of the Big Three. If we find that the reputations of the Big Three CRAs have decreased globally but not in Europe, it may provide a further direction for future research. What I plan to achieve my combining both the CFA study and the research from Han et al., is to show in what way the reputation of the CRAs has been affected by the financial crisis. By using Han et al.'s study, I can isolate S&P and Moody's to show whether they have been affected differently to local CRAs by the crisis. Finally, to understand the specific situation in the EU and in particular how the CRAs, issuers and investors view reputation in the ratings industry we will analyse the 2016 European Commission Report which includes a survey of market participants in the EU.

Hypothesis Two

Measuring the market share of the Big Three in the EU will be quantitative analysis of European Securities and Market Authority Competition reports from 2012 – 2015. Using existing data on market share in the region and the different services that the various recognised CRAs provide we will develop a time series analysis which will enable us to see whether the market share of the Big Three in the European Union has decreased or increased. The major limitation of this is the short time-period that we have to analyse.

With only four years of data it is not possible to make conclusive assumptions about trends. Despite this, if we find that the market share of the Big Three has consistently increased or decreased, it is an indication of the short term affects of reputation damage. Finally, it is a good way of assessing the policies of the EU as they are aimed at addressing this data set. The market share data can be combined with the revenue data that we have already seen in an earlier chapter. The assumption being that if revenues remain high as well as market share, there is of course little reason to change.

Hypothesis Three

The third hypothesis will require the analysis of new legislation aimed at increasing competition in the market for credit ratings. We will focus on how competition fits within a perceived failure of the existing global regulatory regime. Andrea Miglionico (2014, p.198) claims that the recent financial crisis has revealed market and regulatory failure as well as the failure of the current legal regime for credit ratings. He claims that market forces alone have failed to reduce the regulatory use of credit ratings that has contributed to investors' undue reliance on ratings which has favoured the artificially high demand for highly rated financial instruments (Miglionici, 2014, p.199). Therefore, we will look how the European Union approaches regulating the CRAs bearing in mind its support for the issuer-pays model. We will address competition specifically as it is competition that is vital for the issuer-pays model to function effectively.

In this paper we are focusing on the European Union. This is in part because the regulations which were introduced after the financial crisis were domestic or regional in scope. That is to say that there have been no completely global reforms grounded in legislation. The Basel reforms were the most universal, however, they are still limited in their scope. Therefore, this paper will analyse EU Regulation No 462/2013 (termed Regulation on the Credit Rating Agencies), the Capital Requirements Directive 2013/36/EU and Eurosystem Regulations.

It is important at this point to acknowledge that the focus on just the European Union could be problematic. Because of the interconnected nature of global finance, it is certainly plausible that regulations in financial centres like the U.S. – most notably with the Dodd

Frank Act – may well affect the attractability and profitability of the Big Three in Europe. Unfortunately, this is a limitation that may need to be addressed in future research. However, as the core question of our research is focused on answering global questions, it does not undermine the core focus of the research.

The analysis will approach two questions: does EU policy actually support fragmentation of the market and if so, does recent legislation address this? Secondly, does the EU support policies which actively try to promote competition which it claims is a primary reason for post-crisis regulation of the credit rating industry. Both these questions will be applied to the EU regulation on the Credit Rating Agencies, the Capital Requirement Directive and the Eurosystem regulations.

Chapter 3. Empirical Evidence

Hypothesis One: Reputation of the Big Three

There have been few studies into how individual companies take the reputation of the Big Three into account when they choose to purchase bond ratings, although we can assume that firms choosing global credit rating agencies as opposed to domestic ones do see an advantage in choosing one of the Big Three. This is confirmed by Han & Pagano's (2012) study into the Japanese bond market which finds yields in normal times to be lower when an issuer obtains a credit rating from one of the global CRAs.

Although, we have some assumptions and statements in the literature criticising the CRAs ratings it is important to understand in which areas and to what degree the reputations of the CRAs have been damaged. We will start off with the CFA Institute survey and then we will look specifically at Han and Pagano's (2012) analysis which allows us to separate the reputational damage of the Big Three global CRAs and the reputation simply of CRAs in general.

CFA Institute Study

In June 2014, the CFA Institute – a global association of investment professionals[6]- carried out a study which in their words was "to get CFA Institute members' opinions on credit rating agencies' performance and accountability" (CFA Institute Survey, 2014). The methodology of the study was as follows; on 20 May 2014, 20,379 CFA Institute members with a primary investment practice of Fixed Income[7] were invited via email to participate in an online survey. The survey closed on 27 May 2014. 398 valid responses were received with a response rate of 2% and a margin of error of ± 4.6% (CFA Institute Survey, 2014).

[6] CFA Institute is a global association of investment professionals and offers the Chartered Financial Analyst (CFA) designation the Certificate in Investment Performance Measurement (CIPM) designation, and the Investment Foundations Certificate.

[7] According to HSBC "fixed income investments generally provide an established return on a fixed schedule" (HSBC Website, 2017). The most common are bonds and therefore are more suitable for the analysis of the credit rating business in which the use of credit ratings is more prominent.

One thing the study establishes is a clear decrease in trust towards the CRAs' ratings since the financial crisis. According to Figure 2 (CFA Institute Study, 2014), we can see that 67% of respondents agreed that they have become more cautious regarding how they use CRAs in their investment process as opposed to only 16% who disagree. Furthermore 62% of respondents continued to feel that pressure from issuers was encouraging CRAs to inflate ratings or refrain from downgrades as opposed to 18% who disagreed. Both responses would suggest that the CRAs' ratings are not completely trusted and that credit ratings in general lack credibility because of the pressure on credit rating agencies to inflate ratings. This should negatively affect the CRAs' rents but as we have seen, this has not been the case in terms of total revenue. In fact the revenues of the S&P, Moody's and DBRS have all increased.

Although a marginally higher percentage of respondents – 36% as opposed to 32% who responded neutrally and 31% who disagreed - agreed that the reliability of and quality of credit ratings has improved in response to the financial crisis, this is somewhat overshadowed by their responses to questions regarding the CRAs' and regulatory adjustment following the crisis. The respondents disagreed overall that CRAs have adjusted their procedures properly to address conflicts of interest and that adequate regulatory protections have ensured greater transparency of credit rating agency processes. Thus, although slightly more respondents agreed that CRAs had improved since the financial crisis than those who disagreed, a majority did not agree to this statement and in two key areas, i.e. conflict of interest and transparency, faith in the credit rating agencies is low. It must be noted that in terms of conflicts of interest, a 3% difference in those who agreed that the CRAs have appropriately addressed conflict of interest shortfalls is not a large gap and actually lower than the percentage of respondents who agreed that the reliability and quality of the credit ratings has improved since the financial crisis. Therefore, we can conclude that belief in the quality of the credit ratings is fairly low in part because of the fears investors have of conflicts of interest.

Although the results of the survey in figure 2 suggest that investors believe the CRAs have improved since the crisis, the majority of respondents do not agree to this and in the areas

of transparency and less so, conflicts of interest, investors faith in the value of credit ratings is low.

Figure 3 looks at the following question, 'which of the following factors, if any, has had the biggest positive impact on the reliability of credit ratings?' Globally with 24%, the removal of regulatory and statutory requirements for financial firms to rely on the ratings of CRAs came out on top followed by Dodd-Frank Act regulations (13%). The 21% response from the Europe, Middle East and Africa respondents is interesting[8]. It is lower than in any other region but as we will observe, the changes in European Union regulations appear to show very little change in regards to the regulatory and statutory requirements of financial firms. Although the percentage of respondents who noted changes to regulation in the Dodd Frank Act as having the biggest positive impact, was at 15% in the other two regions, it is notable that the EMEA region is much less at only 9%. On the one hand, this supports my assertion that one of the limitations of focusing on the EU may be that it overlooks the global nature of financial interactions as there were European respondents who see this as important. But on the other hand, the difference between the EMEA area and the other two regions suggests that there is a marked difference between the two markets and in particular the role that regulations play. It could be due to the fact that the European Union has a distinct regulations underlined by the European Markets and Securities Authority (EMSA). This, therefore validates a study of just the EU within a global context because of the differing regulatory context.

This is confirmed in Figure 3 by the fact that 23% of EMEA respondents saw increased regulation on credit rating agency processes through European Market Infrastructure Regulation (EMIR), Markets in Financial Instruments Directive (MiFID) and the Capital Requirements Directive IV (CRD IV) as having the biggest positive impact as opposed to only 12% globally.

If we look at Figure 3, in terms of reliability, increased competition from new agencies accounted for only 9% of respondents globally and even less in the EMEA area (6%).

[8] Although this encompasses not just the EU area, the respondent profile in Figure 3 shows that the majority of the respondents in this group are from EU countries CFA Institute Survey 2014).

Thus, the respondents predominantly support firstly regulation followed by competition as ways of increasing the reliability of credit ratings. However, it is important to note that the survey referred to competition from new agencies. That market concentration is not mentioned is interesting as it features so heavily in the analysis by the EU itself. This may be because investors themselves do not see over-concentration as a problem or that over-concentration itself is a result of regulation. Later when we look at specific EU policies we will assess whether the EU response reflects the views of investors themselves.

Figure 4 looks at the more specific regulatory processes which are needed to improve the reliability of the CRAs. Globally, changing the issuer-pays model comes out on top with 52% of respondents stating it, followed closely by increased transparency around the way ratings are established (50%). In the EMEA area the responses in favour of these changes is high, with 61% believing that a change to the issuer-pays model is necessary and 61% stating that increased transparency is important.

This is interesting because it appears that investors see less importance in increased competition to improve reliability as the EU itself who we will analyse later. However, the results in Figure 5 are somewhat contradictory, actually supporting the literature regarding conflict of interests.

As we can see from Figure 5, globally 60% of respondents are in fact of the belief that all rating agency models have conflicts of interest and it is therefore better to increase transparency and competition. In the EMEA this is also the case with 59% of respondents supporting this notion. How might we explain the contradiction that the majority of EMEA respondents believe that the issuer-pays model should be changed in order to improve reliability but that a majority also thinks that all models produce conflicts of interest which can be alleviated by increased transparency and greater competition?

In many ways this is where what is appropriate and what is ideal come into conflict. I would suggest that reliability is the ultimate goal of the CRA's ratings and that conflicts of interest are secondary and are often the reason for unreliable ratings. It could be the case as the literature suggests, that the issuer-pays model is unreliable because of the conflict of

interest but for other reasons as well. However, the other models also have issues of conflict of interest and cost. Therefore, we could argue that there is an acceptance here that the issuer-pays model is simply the most plausible model and therefore, the importance of transparency and competition are more important than the initial investor responses suggest.

The CFA Survey results are informative of the views of investors if not slightly contradictory particularly in the responses to questions involving changes in regulation and the business model of the CRAs. Two areas are important in addressing the focus of this paper. Firstly, the reputation of the CRAs in general has decreased substantially after the financial crisis and although the respondents cited some improvement, the perceived improvement of the quality of the CRAs' ratings has not increased much.

Secondly, we can conclude that the issuer-pays model is deemed inadequate by investors in that it undermines the reliability of credit ratings, but that when it comes to conflicts of interests, which is the biggest detriment to the reliability of ratings in the issuer pays model; investors see the model itself as less in need of changing but rather a focus on greater competition and transparency. This is rather inconclusive neither proving or disproving the need to remove the issuer pays model. It does however confirm that in the eyes of investors, competition is important.

Study from Han et al.

The CFA study gives an overall view of all CRAs from the perspective of investors. What it doesn't do is distinguish between the Big Three and other credit rating agencies. The second part of our first hypothesis is important because it distinguishes dissatisfaction with the quality of CRAs in general and those of the two biggest CRAs: S&P and Moody's. We can see from the CFA survey that the trust in the reliability of the CRAs' ratings is low and has decreased since the financial crisis generally. However, it could simply be argued that all credit rating agencies have had their reputations damaged by the financial crisis and not the Big Three in particular. This would then explain why the market for credit ratings is still oligopolistic.

It is observable due to their high profile, that the failings of the Big Three are more visible but that is not easily quantifiable. Han et al.'s study into the bond yields in Japan offers a good empirical example of how the reputations of the S&P and Moody's have been affected more than other CRAs with a more domestic or regional focus. We must quickly note the limitations of this study being that its focus is on Japan and it does not include Fitch Ratings. S&P and Moody's are the two biggest by some distance but we have tended to view the concentration of the market through the Big Three. We will assume from Becker and Milbourn's research (2011) into the effect of Fitch's growing market on the CRA industry, that Fitch's reputation enables it be a global certifying agent like S&P and Moody's. This is supported by the fact that Fitch itself has a market share that is greater than all of the other CRAs in Europe combined (excluding S&P and Moody's)[9].

As has already been mentioned in the literature review, Han & Pagano's study (2012) finds that in normal times, or in times of economic security, bond yields were lowest when Japanese companies used either Moody's or S&P. This confirms that investors valued the ratings of the Big Three higher than national rating organisations which in turn encourages validation from one of the global CRAs.

Figure 6 presents the mean and median yield spreads for bonds rated by each rating agency. (Han & Pagano, 2012, p.863). Panel A shows that while bonds by S&P have the lowest yield spreads with a mean of 0.352% and a median of 0.299%, those rated by the Japan Credit Rating Agency (JCR) and Rating and Investment Information (R&I) have the highest yield spreads with JCR's mean (0.523%) and median (0.414%) and R&I's mean slightly less at 0.517% and median of 0.415%. And if we look at them compared to Moody's we can see that they have the highest yield spreads during the entire sample period.

Interestingly, the crisis period shows role-reversal with the mean and median spreads of JCR and R&I being lower than those of S&P which was in normal times the CRA that

[9] *Calculated using ESMA (2016) Competition Report.*

produced the lowest median and mean spread yields. One can also see that the mean spread of bonds rated by JCR (0.416%) is also slightly less than that of Moody's (0.433%). This would initially support my hypothesis that within the context of a global reduction in the reputation of the CRAs, the Big Three have fared comparatively worse than other CRAs.

In Panel B of Figure 6, Han & Pagano (2012) compare mean and median yield spreads between global and domestic agencies with univariate *t*-tests in order to establish whether the average of the variable is statistically significant. They find that bonds rated by at least one global agency pay a significantly lower cost of debt with a mean of 0.502% and median of 0.405% than those rated by just Japanese agencies (mean = 0.554%, median = 0.437%) during the entire sample period. However, as one can see from the Figure 6, the benefits of receiving a rating from a global agency is nullified during the crisis period which again further supports the initial suggestion made in Panel A that the trust in the reputation of the global CRAs decreased as a result of the crisis.

Panel C of Figure 6 looks at pairs of rating agencies for the full sample and the crisis period, confirming Panel B. The mean spread of S&P (0.352%) is significantly lower than that of that of the domestic Japanese rating agencies and is lower than that of Moody's. Alternatively, Panel C shows that there are no significant differences in the mean and median spreads between JCR and R&I, R&I and Moody's, and JCR and Moody's during the entire period. According to Han et al. (2012) "these results are consistent with the conjecture that the financial crisis weakened the influence of global rating agencies due to the controversy surrounding these raters' role in the subprime credit securitization process" (p.864).

What could undermine Han et al.'s study (2012) is if individual firm characteristics were to influence bond yields relative to the CRA chosen. For example, it could be the case that only the most well run firms would choose the global CRAs as opposed to domestic ones which would explain the lower bond yields. They find as can be seen in Figure 7 - which shows the mean and median differences in firm characteristics between companies with global ratings and those with pure domestic ratings – "that Japanese firms with better

financial quality, a lower debt ratio, little foreign investor equity ownership, smaller overseas sales ratio, fewer ADR listings, and less systematic risk, look for ratings from the domestic agencies" (Han et al., 2012, p.873).

A key example of this, is that firms rated by only domestic agencies have greater mean and median return on assets and higher median working capital ratios than firms rated by at least one global agency. Moreover, the firms with a higher equity ratio are more likely to hire R&I and JCR than Moody's or S&P. On the other hand, in terms of size and foreign investor equity ownership, firms using the global agencies are larger in terms of assets and have greater foreign equity ownership than those rated by the domestic agencies.

Han et al. (2012), interpret these results as evidence that supports the idea that better firm quality decreases the probability of obtaining ratings from the global agencies because these types of firms are less likely to need the "certification effect" (Han et al.,2012, p.873) of receiving ratings from the global credit agencies. This as Han et al. point out, is because these firms have less need for the "certification effect" that is given to issuers that seek out ratings from the somewhat stricter global rating agencies.

The authors sum this up when they claim:

> *Overall, we conclude that firms applying for ratings from the global agencies have poorer firm quality, more financial leverage, less tangible assets and capital expenditures, and greater systematic risk. We can infer from these results that Japanese firms with a weaker financial profile are more likely to employ global raters to resolve informational asymmetries and reduce their interest expense when issuing yen-denominated domestic bonds*. (Han et al., 2012, p.875)

As we can see from the study by Han and Pagano (2012), there is a 'certification effect' which encourages firms to seek ratings from the global credit rating agencies even if as the authors show, they do not receive higher ratings. They show that the firm quality tends to lead to better quality firms receiving ratings from domestic firms whereas lesser quality firms but ones with greater assets and more international reach prefer the global CRAs.

Their evidence shows that ratings from the global CRAs (S&P and Moody's) were viewed as more reliable and therefore led to lower bond yields. This was very much the case leading up to the financial crisis, however, their evidence suggests that following the crisis, the 'certification effect' of the global credit rating agencies was reduced for Japanese firms.

We can infer then that the Big Three do possess at least during normal times a better reputation than domestic rating agencies. However, the crisis and the subsequent loss of confidence in the global CRAs has reduced the 'certification effect'. We would therefore expect less firms to issue credit ratings from the Big Three and to use domestic or other CRAs. It is important to acknowledge that Japan does have fairly large well renowned credit agencies and therefore we would expect the need for 'certification' would in fact be larger for firms in countries where the domestic rating agencies are less well renowned.

Here what is important to recognise for this study is that it isn't really important whether or not the Big Three are more guilty of malpractice than other CRAs, but rather that they are perceived to be by those that matter: investors. An area that is not covered by this paper but would also be useful for future research would be the effects of higher bond yields from the global CRAs on their customers. There is little evidence of this kind and it may be because on the whole investors do not often change CRAs due to the costs incurred in relationship building.

EU Commission Report 2016

To better understand reputation in the context of the EU we turn to the EU Commission Report of 2016. The EU Commission Report of 2016 gives a more specific and nuanced perspective of the attitude towards the CRAs in Europe. In its survey of market participants – i.e. CRAs, investors, corporate issuers, public CRAs, investors, corporate issuers, public issuers and regulators – the survey found the following to be important. According to the CRAs themselves the most important factors on which they compete are 1) industry experience, 2) quality of rating processes and 3) the CRA's relationship and reputation

amongst investors (European Commission Report, 2016, p.45). In contrast, the basis of competition presented by the CRAs was presented differently by issuers. From their perspective CRAs compete predominantly on, 1) the agency's reputation in the market and specifically amongst issuers and 2) the existing relationship with issuers and therefore the CRAs knowledge of the issuer. Additional but less important factors included geographical coverage, the agency's rating methodologies and to a lesser extent; cost. (European Commission Report, 2016, p.45). This echoes what we see in the Han et al.'s study (2012), when we look at normal times.

The survey found that public issuers and corporate issuers have similar views. The most important factor public issuers is the reputation of the as this enables them to reach a wider investor base (European Commission Report, 2016). This answer supports the fact that issuers use the global CRAs for certification effect but it also suggests that for public issuers, brand recognition is important in the debt raising process. This is of course heavily interlinked with the fact that reputations take a long time to build, but it also means that the market has a self-perpetuating trend in favour of the Big Three.

Other key factors noted in the survey include the agency's knowledge and expertise as well as the rating agency's methodologies. Corporate issuers and public issuers are alike in that cost was not seen to be of importance. This can be seen in the survey results which show that issuers would be 'very unlikely' (European Commission Report, 2016, p.45) to change the rating agency they are using in response to a 5–10 per cent price increase. This alongside the relatively high switching cost which was already mentioned, it is very unlikely that an issuer would switch rating agency (European Commission Report, 2016). This would support the suggestion that I made earlier regarding the Han et al. study, that high costs of relationship building may mean that investors are slow to change CRAs even if the yield increases make it less economical to do so.

Thus, it is fairly likely that any corporate or public issuer would see very little necessity in changing the CRA(s) that they are using. This could be a major obstacle for any attempt to encourage greater diversification in the market for credit ratings. Existing borrowers see little benefit in changing their CRAs and therefore this will create a continued concentration

in the market for credit ratings. Furthermore, it reduces the vulnerability of existing market leaders to losing business to insurgent firms and could in theory undermine the reputational mechanism.

As we have established, the reputation of the CRAs is developed over a long period of time. The report supports this and investors admit to being open to using alternative new CRAs if that said rating agency had a long track record of successful judgements (European Commission, 2016). However, the report makes clear that as yet investors tend not to trust the quality of ratings produced by smaller CRAs. This is due to not yet covering a full credit cycle as well as concerns around a lack of underlying process and predictability. In other words, rating from smaller agencies were perceived by the investors to be overly dependent on the analyst themselves. This of course means that the reliability of the smaller CRAs could not be trusted without additional expenditure from the investor (European Commission Report, 2016).

As noted earlier, smaller CRAs would need to invest heavily to overcome the reputational imbalance in the market. This would be difficult when with the future pay-offs are uncertain (European Commission Report, 2016). Just as the major CRAs have to make calculations of short-term profits and long-term reputational benefits, this is the case for smaller CRAs except they do not have the time to build their reputations. This is due to what the Commission describes as “investor scepticism” about whether smaller CRAs will have the patience and resources for this. This means as shown in the European Commission Report, that issuers take into account investor scepticism and this makes it difficult for the smaller CRAs to expand beyond their particular areas of advantage which could be geographic or certain specific service (European Commission Report, 2016) Furthermore, as the report states, “because CRAs’ fees account for a relatively small part of the total cost of raising debt, issuers are not very sensitive to changes in price” (European Commission Report, 2016, p.47). What we see here is a further validation of the importance of reputation. In a market where niche and cost advantages are so difficult to obtain, a natural oligarchy is likely.

A key point raised by the report is that factors affecting competition are by nature, structural:

> *Both reputation and wider coverage require time to be established. Moreover, even if investors were encouraged to learn the terminology and methodology used by new entrants, this will also take time. Finally, as emphasised by the issuers, establishing a relationship with a new CRA is very costly and time consuming. As such, issuers and investors suggested there is unlikely to be any significant change in terms of market concentration and reliance on the large CRAs* (European Commission Report, 2016, p.48).

Thus, there seems to be a degree of acceptance of the system as it is due to the required time it takes to establish reputation. The fact that the Big Three have such a wide geographical reach and provide an almost complete range of services it is very difficult for the smaller CRAs to take their market share. One of the things available to them could have been the ability to compete on price which is often the case with insurgent firms, or to create a new product, but the first is ineffective and could in fact negatively affect perceived quality, and the second is not that feasible within the CRA business.

Analysis of these three studies is useful when one combines their results. The CFA survey shows that a general consensus amongst the respondents think that the existing credit rating agency model is not reliable and that since the financial crisis, faith in the credit rating agencies has decreased. The issuer pays model is seen as problematic as it creates conflict of interests and there are two broad suggestions which the majority of respondents support to counteract this: regulations and competition. The latter is seen as particularly important in addressing the problem of conflict of interests which are inherent in any system of credit rating. When we look at the Han et al., study we see that this loss of faith in the CRAs is in fact greater in the global CRAs than national ones, and specifically S&P and Moody's. We have to be careful when making assumptions about the Japanese market and the rest of the world, however, due to the interconnected nature of global finance we can assume that the effects of the crisis are echoed in Europe as well. This is supported by the responses of the EMEA region in the CFA study. The European Commission Survey analysis gives us an insight into the case of the EU and particularly the nature of competition itself. Unable to compete on price or niche advantages, smaller

rating agencies find it difficult to gain a significant market share. This may explain the results of hypothesis two which we will now assess.

Hypothesis Two – Increased Competition

What is the ESMA market share calculation?

Having looked at the reputations of the CRAs and in particular Moody's and S&P, we will now see what effect if any this has had on the CRA market in the EU, if any at all. As of 2013, the European Securities and Markets Authority started to publish the market share of the different CRAs in Europe. They claim to do this for the following reason:

> *The CRA Regulation aims at increasing competition in the credit rating market by encouraging the recourse to smaller credit rating agencies. To this end, Article 8d of the CRA Regulation requires issuers or related third parties that intend to appoint at least two credit rating agencies for the credit rating of the same issuance or entity to consider appointing at least one credit rating agency with no more than 10% of the total market share, which can be evaluated by the issuer or a related third party as capable of rating the relevant issuance or entity, provided that there is a credit rating agency available for rating the specific issuance or entity. With a view to facilitating the above-mentioned evaluation by the issuer or a related third party, ESMA is required to annually publish on its website a list of registered credit rating agencies, indicating their total market share and the types of credit ratings issued, which can be used by the issuer as a starting point for its evaluation* (ESMA, 2013, p.4)

This shows that the ESMA has a clear aim of increasing competition in the credit rating market in the European Union (EU) by increasing the visibility of smaller credit rating agencies and encouraging the use of these CRAs. This is particularly true when the consideration is made to obtain an additional credit rating. The ESMA's calculation of market share is measured by taking the annual turnover generated from activities at the group level. This means for example, that all of Moody's separate national operations would be grouped together, although, it is possible that they could at times be competing with one another. The total turnover is calculated with respect to credit rating activities and

ancillary services (other services outside of their main business, i.e. consulting) generated by CRAs registered in the EU and the calculation for each year is based on that of the calendar year (ESMA, 2013).

Specifically, credit rating activities refer to the definition provided in Article 3(1)(a) of EU Regulation No 462/2013. They comprise of “opinions regarding the creditworthiness of an entity, a debt or financial obligation, debt security, preferred share or other financial instrument, or of an issuer of such a debt or financial obligation, debt security, preferred share or other financial instrument” (European Parliament and Council, 2013, Article 3:1,a). Regarding ancillary services, point 4, Section B of Annex I of the CRA Regulation No 462/2013 describes them as services that give market forecasts, estimates of economic trends, pricing analysis and other data analysis services.

As well as calculating market share, the ESMA (2015) report also lists the various rating types, including: corporate ratings, financial ratings, insurance ratings, sovereign ratings, structured finance ratings, and covered bonds ratings. It is important to understand what services the various CRAs provide as it may explain to a large degree their subsequent market shares. If the Big Three are covering all areas of creditworthiness, it would obviously make it more likely that they have larger market shares.

We should note that in 2015, the ESMA as noted in its own report (2015) provided Technical Advice to the European Commission on Competition, Choice and Conflicts of Interest in the Credit Rating Industry. This advice offered caution in the interpretation of market share results as “there is currently no one single EU market for credit ratings” (p.5). This means that the information just covers activity in the EU but does not recognise the globalised nature of financial transactions.

The ESMA (2015) finds that “there exists separate markets for credit ratings of different categories issued in different national markets within the EU as well as international markets” (p.5), which are used by global issuers and investors. What this shows is that some CRAs can have expertise in different types of ratings and be active in certain national markets without having a major presence in the EU overall (ESMA, 2015). For

this reason, the ESMA has included additional information in its 2015 market share calculation and encourages issuers and related third parties to consider this, before appointing CRAs (ESMA, 2015, p.5). But, this only includes a relatively small number of countries and certainly not every EU member state. Although we will observe the separate country data, it is difficult to use this as an example of the developments in CRA market as the range of data is so short.

Figure 8 looks at the credit rating industry in the EU and shows the market shares of the different CRAs from 2012-2015. The market share of the Big Three is shown separately and as a collective. As we can see in Figures 9 & 10, the market share of the Big Three actually increases during this time.

This at first glance would suggest that the reputational damage of the Big Three and EU policies, like the publishing of market share data, is not working and that there hasn't been a decrease in concentration in the credit rating industry. This could reflect an endorsement of the Big Three's reputation. However, when we break the Big Three down there are in fact variations amongst them.

It is noticeable that the rise of the Big Three's market share coincides with a rise in the market share of S&P whose market share has risen by 30.02% from 34.61 percent in 2012 to 45 percent in 2015. In comparison, the rest of the credit rating agencies (excluding the Big Three) saw their market share overall decrease by 45% from 13 percent in 2012 to 7.15 percent in 2015. The other Big Three CRAs Moody's and Fitch also saw their market shares decrease by 9.9% and 6.2% respectively. Although two of the Big Three have seen their market shares decrease, the fall in the market share of the rest is still greater. So what explains the growth in the market share of S&P, the fall in the market share of Moody's by 9.9% and the fall in the market share of the other CRAs relative to S&P in particular? There is no evidence to suggest that S&P came out of the crisis with its reputation faring particularly well, as we saw from the analysis of by Han et al. (2012). Unfortunately, it is difficult to establish why S&P's market share has increased in such a way and this is certainly a future area of research. Neither reports from S&P themselves or the ESMA give an idea as to why S&P's market share has increased in such a way. It

cannot be explained by acquisitions which in such a concentrated market would have little effect anyway.

This would support our previous suggestions, that improving reputations takes time and something that the smaller CRAs find difficult to do. However, if S&P's reputation is supposed to be damaged, the fact that it continues to increase its market share suggests one of two things. Firstly, it would suggest that the reputation mechanism has no short term effect, rendering it unsuccessful in the short term. This is not to deny that it may have long term effects. In our analysis of the EU regulations we will discuss this. The second suggestion is that a competitive system is completely irrelevant anyway because of the certification effect of credit ratings. The need for certification may go some way to explaining why the revenues of the Big Three have continued to rise since the crises. This would also infer that there is no drastic need for the CRAs to change their rating process.

The services they offer

The next part we will look at is the services they offer. Why is this important? It is obvious that the more services a CRA provides the more likely it is to appeal to a wider range of customers, however, in the case of competition there is a more important issue.
One of the most obvious reasons why the Big Three dominate the EU credit rating market is due to their ability to offer a wide range of services. This is important because it prevents smaller credit rating providers to carve themselves a niche within the market. As they can't compete on price the only thing left is reputation, which as mentioned already, takes a long time to build. The albeit short period of data that we have and the falling market share of the smaller CRAs suggests that they are failing to compete on reputation alone.

Again, we look at the EU competition reports to see which different services the CRAs provide. As is shown in Figure 11, the Big Three CRAs are the only rating agencies in the EU to offer all the listed sub-types of credit rating services from 2011-2015. However, from 2012 DBRS Ratings Limited also offered all of the services which include: corporate financial, corporate insurance, corporate non-financial, sovereign, sub-sovereign, public entities, supranational, structured finance and covered bonds.

The corporate non-financial sub-sector is covered by a large majority with 22 of the 26 European CRAs providing this service. This is followed by 13 out of 26 providing a corporate financial service. In all of the other services in 2015, less than half of the EU CRAs provided a service for. The supranational subsection is the least competitive with only 4 providing this service. However, this is a market that is relatively small and has so far been fairly stable. As DBRS Ratings explain, the rating of supranational institutions is very complicated as well as the fact that although there has been a proliferation of supranational institutions in the past couple of decades, they have not identified any incidents of default by them during the post-World War II era. The key reasons being that they typically feature stable earnings, high levels of capital, strong risk management practices, preferred creditor status and most importantly, the backing of sovereign shareholders (DBRS, 2017). Therefore, in this subsection, a concentrated market can be expected and is unlikely to affect the reputational calculations of the CRAs much.

This is also the case with only 5 of the CRAs providing for public entities and covered bonds. A similar interaction may be at play regarding public entities. Their backing by state sponsors and the fact they tend to be large and few in numbers, means that there is likely little incentive to enter this segment of the market as well as little access. Covered bonds on the other hand does show a tendency towards having too few CRAs engaged in this subsector. The EU itself argues that despite historically high resilience of these bonds, it does see it as important, reducing reliance on the CRAs (ECB, 2016, p.3)

Apart from covered bonds however, the market in terms of number of competitors is not particularly concentrated. Corporate financial (13), corporate insurance (9), corporate non-financial (22), sovereign ratings (10) and structured finance (10) although are not provided for by all CRAs, are covered for by a high number of competitors. Thus, competition in this regard isn't an immediate problem. Alongside this the number of sub-sectors being covered by CRAs in the EU has increased every year since 2011. With 67 sub-sectors covered in 2011, the 86 in 2015 represents a large increase in the diversity of different services offered by the different CRAs. Therefore, we can summarise that even if the market share of the non-Big Three has decreased, the number of services they are

providing has in fact increased, suggesting greater competition amongst the other agencies as they diversify their services. But even so, the fact that the Big Three already provide these services means getting a major foothold may be difficult.

Figure 12 created by the ESMA themselves shows how the market share in the different sub-sectors has developed from 2009-2014. Interestingly, in many cases the market leader in a certain sub-sector has appeared to increase its share whilst others have decreased. This would support my initial suggestion that the very involvement of one of the Big Three in every sector makes it difficult for smaller CRAs to gain a significant market share.

What we can see is a high concentration of turnover in the CRA market but the actual number of recognised CRAs is fairly high. This runs contrary to the likes of Bonewitz (2010) and Partnoy (2006) who argue that the dominance of the major CRAs is maintained by the major barrier to entry that is the recognition of CRAs in legislation. That is to say, the idea that a regulatory barrier essentially maintains the status quo in the EU ratings market is not reflected by the actual high number of recognised market participants. We can conclude that the recognition of ratings agencies in the EU is not a barrier to entry in any kind of way that reputation is, or the inability to exploit price advantages or niche services. The fact that there are a large number of recognised CRAs in the EU supports this.

This is particularly evident when one observes that more CRAs have been officially recognised by the EU since the financial crisis. The EU Commission Report of 2016 (European Commission Report, 2016) even notes that in terms of number of different agencies, the CRA market in the EU is fairly diverse. An interesting point raised by Bonewitz (2010) although he goes on to counter it, is that the very fact issuers choose the more prestigious rating agencies suggests in itself that simply following regulations may only represent a small incentive, if any at all. In the EU this appears to be the case.

Reputation based on duration

As has already been acknowledged in the theoretical section, CRAs must build up their reputations over time. This necessity is quite unique and is caused by the very nature of debt obligations. How is this reflected in the EU ratings market?

If we look at Figure 14, it is clear immediately that one of the features of the Big Three and particularly Moody's and S&P is their age in comparison to the other credit rating agencies. If we look at the EU credit rating market we can see a correlation between market share and age of firm. The average date of formation for all the listed CRAs in the EU is 1982 with the average formation of the Big Three being 1912 compared to the average date of formation of the other CRAs which is 1991.

Furthermore, if we remove the Economist Intelligence Unit which focuses purely on sovereign ratings and is not subject to the considerations of reputation from the issuer[10], the average date of formation for the other CRAs is 1994. Compared to the average founding date of the Big Three (1912), this clearly supports the literature which describes reputation building as a long process.

AM Best Europe-Rating Services Ltd. (AMBERS) which focuses on corporate financial and corporate insurance is the oldest of the other CRAs. Having been founded in 1899 it is even older than Moody's and Fitch but has remained focused primarily on insurance (A.M. Best Website, 2017). Also, it must be noted that Fitch Ratings was established as late as 1977, however, the group to which it is well known for dates back to 1914 under the name Fitch Publishing Company. Thus, by looking at the EU ratings market, we can support the theory that reputation that is built over time plays a big role in the CRA industry. This is important to acknowledge because to be addressed, regulatory bodies like the EU need to consider the long-term effects of reputation building.

Hypothesis Three: Regulations

The EU favours greater competition

[10] They do not provide issuer paid ratings.

In the literature, we find two major problems with the regulations that control the credit rating industry and its effectiveness. These are the issuer pays model itself and that of regulatory licensing. We will show in this paper that the European Union does not seek to change the issuer-pays system but seeks to improve in part by promoting greater competition. We will see that regulatory licensing exists but that in some areas it does create barriers to entry although not quite to the same degree as it is presented in the literature. We will also find that the EU promotes fragmentation of the market through certain initiatives which are limited in their effectiveness.

Overview of Regulation

We will establish how the EU tries to do this and we will assess how it addresses the following indicators which we have found to be important so far in our study. Firstly, we will look at what view the EU takes on regulatory licensing. Secondly, we will see to what degree the mandatory use of credit ratings are written into EU regulations. Thirdly, we will see what policies the EU has adopted in regard to the key non-regulatory barriers to entry; reputation building and the inability to compete on price in specific niches. Finally we will address how the EU attempts to make the market more competitive by supporting long term reputation building.

The regulations that we will assess will be the EU regulation the credit rating industry, Regulation No 462/2013 and alongside this Directive 2013/14/EU. According to the EU Commission, they made Regulation No 462/2013 “in order to strengthen the regulatory and supervisory framework for CRAs in the EU, to restore market confidence and increase investor protection” (European Commission Website, 2017). The European Commission describes how new EU rules were introduced in three steps: the first set of rules established a new framework for regulating the CRAs, introducing a form of regulatory oversight. This stipulated that CRAs must be registered and supervised by national regulators. The second step took place in 2011, with these rules being amended to take into account the creation of the European Securities and Markets Authority (ESMA), which supervised CRAs registered in the EU. The third step in 2013 was aimed at reinforcement with the aim being to support the rules and address weaknesses regarding sovereign

credit ratings (European Commission Website, 2017). We will focus on the 2013 regulation as it is the most up-to-date and it encompasses both the 2009 and 2011 proposals.

Although we are predominantly looking at regulations relating to our study, it is worth understanding what the 2013 regulation aimed to achieve more generally. In paragraph 1 of EU Regulation No 462/2013, the EU recommends the regulation "requires credit rating agencies to comply with rules of conduct in order to mitigate possible conflicts of interest, and to ensure high quality and sufficient transparency of credit ratings and the rating process" (European Parliament and Council, 2013a, Paragraph 1).

Issuer-pays model

Thus, following the sovereign debt crises the EU saw a need to address the issues regarding the issuer-pays model. This led in 2011 to the creation of the European Securities and Markets Authority (ESMA) and measures for greater supervision. Article 1 of EU Regulation No 462/2013 outlines the EU's aims for the regulation:

> *This Regulation introduces a common regulatory approach in order to enhance the integrity, transparency, responsibility, good governance and independence of credit rating activities, contributing to the quality of credit ratings issued in the Union and to the smooth functioning of the internal market, while achieving a high level of consumer and investor protection. It lays down conditions for the issuing of credit ratings and rules on the organisation and conduct of credit rating agencies, including their shareholders and members, to promote credit rating agencies' independence, the avoidance of conflicts of interest, and the enhancement of consumer and investor protection*. (European Parliament and Council, 2013a, Article 1)

Using what we have established so far, I will look to answer four questions regarding the EU's policy towards increasing competition in the credit rating industry. First, does the EU have a policy to remove barriers of entry to the market by removing CRA licenses? Second, what policies does the EU have to increase the awareness of, and encourage the use of alternative CRAs. Third, in what way does the EU support smaller CRAs to

overcome the competitive disadvantage that they face through perceived lesser reputation? Fourth, how does the EU make the ratings industry more transparent in a way that makes ex post judgement of the CRAs' performance easier?

Paragraph 2 of Regulation No 462/2013 outlines how the 2011 regulation highlighted the need to address the over-reliance on credit ratings. The most obvious way to reduce the reliance on CRAs would be to get rid of them entirely or at least not to enshrine their use in EU financial regulations. However, the EU states that:

> *In the medium term, further action should be evaluated to delete references to credit ratings for regulatory purposes from financial regulation and to eliminate the risk-weighting of assets by means of credit ratings. However, for the time being, credit rating agencies are important participants in the financial markets. As a consequence, the independence and integrity of credit rating agencies and their credit rating activities are of particular importance in guaranteeing their credibility vis-à-vis market participants, in particular investors and other users of credit ratings*. (European Parliament and Council, 2013a)

This is because the EU still deems the CRAs to have considerable impact on the public interest.

> *Credit ratings, unlike investment research, are not mere opinions about a value or a price for a financial instrument or a financial obligation. Credit rating agencies are not mere financial analysts or investment advisors. Credit ratings have regulatory value for regulated investors, such as credit institutions, insurance companies and other institutional investors. Although the incentives to rely excessively on credit ratings are being reduced, credit ratings still drive investment choices, in particular because of information asymmetries and for efficiency purposes. In that context, credit rating agencies must be independent and must be perceived as such by market participants, and their rating methods must be transparent and be perceived as such.* (European Parliament and Council, 2013a, Paragraph 9).

Barriers to Entry

In the EU, it is in fact the case that post-financial crisis regulations actually saw the introduction of EU-wide regulatory licenses. Paragraph Two of EU Regulation No 462/2013 dictates that "credit rating agencies are to be registered and supervised as their services have considerable impact on the public interest" (European Parliament and Council, 2013a, Paragraph 2). This sentiment is clearly outlined again in Article 4 which reiterates the need for regulatory licenses.

> *Credit institutions, investment firms, insurance undertakings, reinsurance undertakings, institutions for occupational retirement provision, management companies, investment companies, alternative investment fund managers and central counterparties may use credit ratings for regulatory purposes only if they are issued by credit rating agencies established in the Union and registered in accordance with this regulation* (European Parliament and Council, 2013a)

In other words, in complying with any EU law implemented by national legislation only those CRAs that are registered in the Regulation will be accepted. This is applicable to the rating agency business as a whole. Any firm established in the EU that is carrying out rating activities within the EU will be in breach of the CRA regulation and may be liable to being fined (ESMA Website, 2017). Thus, only those registered by the ESMA can legitimately compete in the ratings industry in the EU. Partnoy (2006) is very critical of this approach as he claims that they create:

> *Oligopolistic pressure and exacerbate rent seeking among already concentrated industries. They might be necessary when a regulator is unwilling to or cannot make substantive decisions on its own and the risk of market failure is sufficiently serious to justify the cost. But as a general matter, regulators should be very careful not to create regulatory licenses*. (p.95)

Thus, the EU's introduction of strict regulations regarding regulatory licenses would suggest then that the EU regulation far from diversifying the market, is in fact creating higher barriers to entry. However, as we can see from the number of competitors that we observed in hypothesis two, the actual registration process in the EU is not that exclusive. It is true that the ESMA decides which agencies are to be given licenses, but if we look at

the numbers of registered CRAs, the number is fairly high and has risen since the financial crisis. This would suggest that the licensing is not particularly stringent, or that it at least does not preserve licensing for just a small number of competitors.

Mandatory use of regulations

As already explained, the very existence of mandatory use of regulations not only distorts the incentives of CRAs to provide the best possible ratings due to a constant income stream, it also creates a barrier to entry by making certification more important than the rating quality itself. Therefore, in what way does the EU attempt to address this, if at all?

In the updated capital requirements directive, Directive 2013/36 / EU of the European Parliament and of the Council of 2013 (Article 71), the Parliament and Council acknowledges the failings of the previous CRDs based on the Basel Accord:

> *Directives 2006/48/EC and 2006/49/EC are one of the pillars upon which the overreliance on external credit ratings was built. This Directive should take into account the G-20 conclusions and the FSB principles for Reducing Reliance on external credit ratings. Institutions should therefore be encouraged to use internal ratings rather than external credit ratings even for the purpose of calculating own funds requirements*. (European Parliament and Council, 2013b, Article 71)

Despite the fact that the EU does not want to remove regulatory licenses completely, they can reduce the reliance on CRAs by removing mandatory use of the CRAs in their own regulations and particularly with its own institutions. Article 5b deals with the reliance on credit ratings by the European Supervisory Authorities and the European Systemic Risk Board. It states in Article 5b, paragraph 1 that:

> *The European Supervisory Authority (European Banking Authority) (EBA) established by Regulation (EU) No 1093/2010 of the European Parliament and of the Council (*), the European Supervisory Authority (European Insurance and Occupational Pensions Authority) (EIOPA) established by Regulation (EU) No 1094/2010 of the European Parliament and of the Council (**) and ESMA shall not refer to credit ratings in their*

> *guidelines, recommendations and draft technical standards where such references have the potential to trigger sole or mechanistic reliance on credit ratings by the competent authorities, the sectoral competent authorities, the entities referred to in the first subparagraph of Article 4(1) or other financial market participants.* (European Parliament and Council, 2013b, Article 5b, paragraph 1)

Paragraph 2 of Article 5b echoes this when it demands:

> *The European Systemic Risk Board (ESRB) established by Regulation (EU) No 1092/2010 of the European Parliament and of the Council of 24 November 2010 on European Union macro-prudential oversight of the financial system and establishing a European Systemic Risk Board (***) shall not refer to credit ratings in its warnings and recommendations where such references have the potential to trigger sole or mechanistic reliance on credit ratings*. (European Parliament and Council, 2013b, Article 5b, paragraph 2)

Therefore, we can see that the EU sees a number of areas where they try to address over-reliance on the CRAs even if they deem them to be on the whole very useful. The phrasing they use in both occasions is to avoid "sole" or "mechanistic" reliance on credit ratings by the authorities, entities or other financial market participants. It is clear that the EU has tried to address this issue of over-reliance but the wording makes it unclear. It is difficult in both cases to clearly decide when references have the potential to trigger sole or mechanistic reliance on credit ratings. However, the fact is that the regulation stipulates a removal of reference to credit ratings as to decrease reliance.

Eurosystem

We will now look at the Eurosystem which is the monetary authority of the euro area. It is made up of the European Central Bank and the national central banks of the Member States. Its main objective is maintaining price stability but it also aims to maintain financial stability as well as promote European financial integration (European Court of Auditors, 2015). As one of the EU's own institutions what we want to find out is whether the EU is using credit ratings which could affect the market constellation.

As described by the European Central Bank (2008), “the Eurosystem provides liquidity to the financial system through its monetary policy operations and provides credit to eligible counterparties, which must meet high credit standards” (p.41). These are based on The Eurosystem Credit Assessment Framework (ECAF) which ensure that the Eurosystem requirement of high credit standards for all eligible assets is met (European Central Bank, 2008). To make this credit assessment, the Eurosystem uses information from CRA ratings (European Court of Auditors, 2015).

The European Central Bank notes that in the assessment of the credit standard of eligible assets, the Eurosystem considers credit assessment information from one of four sources. These are: external credit assessment institutions (ECAI) - CRAs, national central banks’ in-house credit assessment systems, counterparties’ internal ratings based systems or third-party providers’ rating tools (European Central Bank, 2008).

One of the above is important for this study, namely the external credit assessment institutions, which are essentially the CRAs. The Eurosystem currently accepts ratings by only four CRAs. To have ratings accepted by the Eurosystem, the CRA must be registered or certified by ESMA as well as fulfil certain operational criteria and additionally provide a wide coverage of services and markets. The Eurosystem does currently accept two smaller CRAs as a rating tool provider, however, these tools are of not that high value for CRAs in comparison with the acceptance as an ECAI. To be selected as an ECAI, the rating agencies must be formally recognised by the EU supervisory authority for the euro area countries in which they will be used making the barrier to entry high (European Central Bank, 2008). Unsurprisingly, the four external credit assessment institutions include the Big Three plus DBRS which are all global CRAs.

In the European Court of Auditors own study (2015), they find based on their interviews with credit rating market participants, that smaller European CRAs consider registration as an ECAI with the Eurosystem as very important for the future development of their business. This is particularly the case when entering the credit rating market for structured finance because it is such a profitable market segment for the CRAs. We see, however, that the Eurosystem’s approach actually upholds what the European Court of Auditors

(2015) describes as a “two tier market structure” (p.21), in which small CRAs cannot compete on an equally with the large CRAs. The European Court of Auditors (2015) blames this in particular on the need for agencies to have ‘relevant coverage’ (p.21). We see therefore a significant barrier to entry for smaller CRAs in the EU.

Barriers to entry aside, we can also see here that the ECB by including CRAs into the Eurosystem, supplies the CRAs with a constant income stream. But, more importantly to this study. Admittedly, this only represents part of the CRA market, however, the fact that the European Council and Parliament reports strongly support a reduction in concentration in the CRA market yet one of the EU’s own institutions accentuates this, is somewhat of a contradiction. So when we look at barriers to entry we can see that despite efforts to reduce this, the EU regulations as a whole favour the Big Three rating agencies, even though licensing of CRAs in the EU is fairly relaxed.

Increase awareness of alternatives and stimulating competition

The first direct mention of stimulating competition can be found in paragraph 11 of the EU Regulation No 462/2013:

> *In order to increase competition in a market that has been dominated by three credit rating agencies, measures should be taken to encourage the use of smaller credit rating agencies. It has been the practice in recent times for issuers or related third parties to seek credit ratings from two or more credit rating agencies, and therefore, where two or more credit ratings are sought, the issuer or a related third party should consider appointing at least one credit rating agency which does not have more than 10% of the total market share and which could be evaluated by the issuer or a related third party as capable of rating the relevant issuance or entity*. (European Parliament and Council, 2013a, paragraph 11)

Here the EU directly challenges the concentration in the market which has seen the Big Three dominate the industry. The EU regulation proposes that when multiple credit ratings are sought, the issuer should consider appointing a credit rating agency which has a

market share of less than 10% (i.e. not Moody's, S&P and Fitch). Despite this, the language used "should consider" is advisory rather than authoritative.

The EU (European Parliament and Council, 2013a) also notes familiarity as a problem with the existing credit rating market. It argues that companies often simply become familiar with a certain CRA over time, creating a long-lasting relationship, causing the CRAs to be too sympathetic to the issuer. Thus, it suggests setting out a maximum duration of contractual relationship between the issuer and rater. This, it claims would "remove the incentive for issuing favourable credit ratings with respect to that issuer" (European Parliament and Council, 2013a, Paragraph 11). Additionally, it also argues that requiring the rotation of credit rating agencies as a normal and regular market practice should also mitigate the problem of the "lock-in effect", whereby firms simply stay with their existing CRA due to cost efficiency. The EU acknowledges that this rotation has positive effects on the credit rating market, as it would make new market entries easier as well as give existing credit rating agencies the opportunity to extend their business to new areas (European Parliament and Council, 2013a, Paragraph 11).

According to the regulation as given in paragraph 13 in the Regulation 462/2013 (European Parliament and Council, 2013a), there are important things to be taken into consideration. Firstly, frequent rotation could lead to increased costs for issuers and credit agencies because the costs of rating a new entity or financial instrument is normally higher than the cost of monitoring a credit rating that has already been issued (Paragraph 13). Furthermore, they admit to this possibly being difficult in certain sub-sectors claiming that "it takes a considerable amount of time and resources to get established as a credit rating agency, whether as a niche player or covering all asset classes" (Paragraph 13). In many ways they are admitting to one of the fundamental problems with addressing the issue of competition in the first place. The rotational policy can only really be truly effective if there are other suitable CRAs that can be rotated with the bigger rating agencies.

The European Commission Report (2016) makes the argument that the provision might in fact lead to some negative consequences. It points out that rotation policy could make it more difficult for analysts to gain experience, thus, causing a deterioration in ratings

quality. Furthermore, with more opportunities for smaller CRAs as additional rating agencies, the competition may make it difficult for smaller CRAs to get a foothold in the market due to the inability to gain experience.

They suggest that any implementation must be introduced gradually before possibly expanding the rotational policy. The EU Commission's (2013) proposal for this is to introduce the policy for re-securitisations only, which it admits is a limited source of bank funding. The suggestion in Paragraph 13 is that the Commission should review whether it is appropriate to maintain a limited rotation mechanism or to apply it to other asset classes as well.

The reason to address re-securitisation is due to the fact that the European securitisations market that has underperformed since the financial crisis, and it is therefore the one in which the need to address conflicts of interest is greatest. It is also easier to introduce the policy for such a sub-sector because when a re-securitisation is created the risk of knowledge being lost in the process of hiring a new CRA is not high. This means that the market is what the regulation states, "naturally open to competition and a rotation mechanism could be a driver for creating more dynamics in that market" (European Parliament and Council, 2013a, Paragraph 14). The European Parliament and Council (2013a), gives further justification by arguing that increased in different views, methodologies and perspectives that a regular rotation policy would bring, would help bring a greater diversity to the assessment of creditworthiness. If we look back to our description of what competition means, we defined 'choice' as an important factor. In this case, therefore, we see a clear policy that aims to increase the range of choice in the market, at least for one market sub-sector.

This leads to the addition of Article 6b into the EU Regulation and is reflected as the following: "where a credit rating agency enters into a contract for the issuing of credit ratings on re-securitisations, it shall not issue credit ratings on new re-securitisations with underlying assets from the same originator for a period exceeding four years" (European Parliament and Council, 2013a).

The article makes it clear in the fifth paragraph, that this does not apply to CRAs with less than 50 employees at group level involved in the provision of ratings and a turnover of less than EUR 10 million at group level (European Parliament and Council, 2013a, Article 6b, Paragraph 5). This would allow smaller CRAs to build relationships with issuers which is an important part of reputation building.

What is interesting about the EU suggestion of a rotational policy is that it deems the quality of all the credit ratings to be the same, provided a CRA is recognised. This may seem logical if the EU has recognised but is there an open EU measure of credit rating quality? It is clear then that the EU deems all of the rating agencies to be of comparable value, which of course is not reflected by their various market positions.

The 2016 European Commission Report (2016) raises the issue that the forceful selection of CRAs "beyond what otherwise would be chosen by issuers or valued by investors could lead to unintended consequences or limited effectiveness in promoting "true market entry"" (p.10). However, like we have acknowledged, it can also put greater competitive pressure on the CRAs by not allowing them to simply hold existing customers.

Thus, the rotational policy issued by the EU initially fairly tentatively is a sensible policy which addresses the issue of "lock-in" by forcing issuers to change additional rating agencies every four years in the market for re-securitisation. Its potential to increase the range of choice within the market for re-securitisations at least, would help to support greater competitiveness. fact that re-securitisations market is dominated by the Big Three makes this is a suitable policy for addressing the difficulty that smaller CRAs have in entering niche markets already covered by the Big Three.

In the literature, it is structured financial instruments that are seen as the biggest failing of the CRAs during the crisis. The complexity of these products means that it is very hard for outsiders to really understand the methodologies behind them and their true value. The European Parliament and Council (2013) answer to this is to encourage issuers to use at least two 'different' CRAs:

> *In order to regain confidence it would be appropriate to require issuers or related third parties to engage at least two different credit rating agencies for the provision of credit ratings on structured finance instruments, which could lead to different and competing assessments. This could also reduce the over-reliance on a single credit rating.* (Paragraph 28)

Here as we have seen earlier, the Commission views the diversity of opinions important, specifically the engagement with multiple CRAs to reduce the over-reliance on individual agencies. Here the wording is slightly stronger, "it would be appropriate to require" issuers to engage at least two different credit rating agencies. This of course would address over reliance but there is nothing to stop the issuers simply getting ratings from the other Big Three members.

These EU recommendations are covered in part by Article 8c which stipulates that an issuer intending to solicit a credit rating of a structured finance instrument must appoint at least two different credit rating agencies whose independence is not in any way compromised by group or shareholder structure (European Parliament and Council, 2013a, Article 8c). In the EU Commission's own report (European Commission Report, 2016), it finds that because of investors' "general preference towards large CRAs, as well as already established relationships between issuers and incumbent CRAs, the extent to which this provision would enable smaller CRAs to enter and/or expand is likely to be limited" (p.95), thus echoing our own suggestion that there would be nothing to stop the issuers simply getting ratings from the other Big Three members. Article 8d promotes the stimulation of competition by encouraging issuers to:

> *consider appointing at least one CRA with no more than 10% of total market share and "where the issuer or a related third party does not appoint at least one credit rating agency with no more than 10 % of the total market share, this shall be documented.* (European Parliament and Council, 2013a, Article 8d).

To support this, the regulation stipulates that the ESMA shall publish annually data outlining market share, which is the data that we looked at in hypothesis two.

Although, there is a clear encouragement to support the provision of market share information, there is no legally binding obligation to appoint a CRA with a smaller market share, thus nothing that forces issuers to appoint non-Big Three CRAs (European Parliament and Council, 2013a). This view is shared by the EU Commission report which argues that the effectiveness of Article 8d is diminished by the fact that small CRAs do not have a sufficient reputation among market participants to be voluntarily chosen by issuers to provide them with their second rating. It makes clear that, "at least in the case of corporate bonds, we expect this provision to have limited impact on market entry and expansion" (European Commission Report, 2016, p.96).

Providing information of bad ratings

To address the reputational imbalances is very difficult, as we have shown reputations are built over time in certain sectors. The Big Three have a fairly strong foothold in this regard. One way they could do this is improve ex post assessment of the quality of ratings and the agencies themselves and for punishing rating failings. The first one we will look at is transparency.

Transparency

In Article 35 of the EU Regulation regarding the Credit Rating Agencies it clearly states:

> *Where a credit rating agency has committed, intentionally or with gross negligence, any of the infringements listed in Annex III having an impact on a credit rating, an investor or issuer may claim damages from that credit rating agency for damage caused to it due to that infringement.* (European Parliament and Council, 2013a, Article 35a)

The following are the listed infringements under Annex III of the EU Regulation No 462/2013 (European Parliament and Council, 2013a): 1) "by not identifying, eliminating, or managing and disclosing, clearly or prominently, any actual or potential conflicts of interest that may influence the analyses or judgements of its rating analysts" (Annex III, Section 1: 19). 2) "by issuing a credit rating or rating outlook and not disclosing immediately that the credit rating or rating outlook is potentially affected by conflicts of

interest" (Annex III, Section 1: 20). 3) "by not immediately assessing whether there are grounds for re-rating or withdrawing an existing credit rating or rating outlook" (Annex III, Section 1: 21). 4) "By rating entities where the credit rating agency itself or any person holding, directly or indirectly, at least 5 % of either the capital or the voting rights of the credit rating agency, or being otherwise in a position to exercise significant influence on the business activities, provides consultancy or advisory services to that rated entity" (Annex III, Section 1: 22).

All the above could be considered as addressing the practices of the CRAs. There is a direct focus on addressing conflicts of interest as well as the CRAs taking responsibility for their own mistakes when known. However, it primarily focuses on acts whereby the CRAs have exploited or knowingly ignored areas in which the quality of their ratings have been compromised. It doesn't however account for negligence which would also make the CRAs further accountable for the quality of the ratings that they provide.

Point 42 focuses on methodology. It dictates that the CRAs must use the complete appropriate information available to them when making rating decisions whilst also using a consistent applicable methodology (European Parliament and Council, 2013a, Annex III, 42). There is an extra caveat in Point 62 relating to sovereign ratings which requires alongside the disclosure of the rating, a research report explaining assumptions.

> *The credit rating agency infringes the first subparagraph of Article 8(5a) by not publishing on its website the proposed new rating methodologies or the proposed material changes to the rating methodologies that could have an impact on a credit rating together with an explanation of the reasons for and the implications of the changes.* (European Parliament and Council, 2013a, Section II, 3b)

This focus on methodology encourages the avoidance of malpractice as well as consistency. As we can see there is a particular focus on addressing the practice of the CRAs and holding them to account in this way. The opportunity for litigation is there and is a distinct possibility when the CRAs knowingly commit acts of malpractice. However, what is missing is the threat of litigation or at least the publishing of incorrect opinions. As

we have already mentioned. One of the way that reputations can be judged is through the assessment ex post of defaults. There is no mandatory publishing of default rates to subsequent credit ratings which means that the asymmetry in information is maintained and investors are cannot judge rating quality. It is possible that the high profile nature of any infringements could be effective in addressing the reputational imbalances if the Big Three are seen to be frequent offenders of malpractice, but this would only highlight deliberate misdemeanours.

It is also worth noting that the maximum fine of EUR 750,000 for offences under Annex III is not a high sum for most CRAs and would disproportionately affect smaller CRAs. However, as reputations are so important to the ratings industry, it isn't the financial cost of such a fine that would damage market share, rather the reputational damage.

In its support of the issuer pays model the EU looks to mitigate conflicts of interest through monitoring and stricter regulations at an operational level. One example is company independence with the European framework introducing tougher rules on disclosure. Disclosure must, for example, be made regarding records of activities, certain important clients and names of companies from which the CRA receives more than 5 per cent of its revenues (Johansson, 2010, p.9)

A further way adopted by the EU relates to employee independence. The European regulation is also more extensive in relation to employee independence. Among the preventive rules, for example, is included a time limit of four (if a lead rating analyst) or five (if a rating analyst) years for the same analyst to be involved in the rating of the same company or products from that company (Johansson, 2010) as well as a prohibition for analysts to hold a key management position at a rated entity within a period of 6 months from the time of the rating (Johansson, 2010, p.9). This like rating rotation would help to break up familiarity which currently favours the incumbent CRAs.

Johansson describes the EU approach generally as a rule-based regime. He argues that a principle-based regime would actually be more effective primarily because of its flexibility. He argues that more specific, principles-based regulation results in a framework

that is more cost-effective, more efficient; and better suited for an oligopolistic market such as the rating industry (Johansson, 2010, p.11). They are cost-effective due to the cost of compliance and regulation which can cause the cost of rules to outweigh the benefits. He argues that a principle based system would enable the CRAs to decide how best to align their business objectives and processes based on specified regulatory outcomes. This he argues would be cheaper and just as effective. The third point, regarding the oligopolistic structure of the market refers to adjusting regulation based on size and different instruments that are being rated.

Ex Post

What is clearly missing is a systematic way of comparing rating quality based on the outcome of default rates. As reputation and expertise are such important measures that define the ratings market; a way of fostering competition would be to create an easy to understand score for CRAs which investors and issuers would be able to use. This is clearly missing at this stage.

Another way of doing this would be as the European Commission Report (2016) suggests, to create a harmonised credit rating scale for all CRAs. The idea behind this is that it would bring greater clarity and provide a more objective way of judging credit assessments. This would mean that market participants would be able to identify the quality of CRAs better and allow for newer CRAs to build their reputations vis-à-vis other small CRAs as well as the Big Three (European Commission Report, 2016, p.46). The fact that this kind of policy has not been introduced, leads me to conclude that the EU lacks a concrete plan to make the market more competitive by changing the long-term reputational balance of the market. As we have seen, the reputational mechanism has little short-term effect, therefore, the EU policy predominantly rests on the market self-correcting itself in the long term without much regulatory initiative.

How the regulations might negatively affect competition?

Johansson describes the EU approach generally as a rule-based regime. He argues that a principle-based regime would actually be more effective primarily because of its

flexibility. He argues that more specific, principles-based regulation results in a framework that is more cost-effective, more efficient; and better suited for an oligopolistic market such as the rating industry (Johansson, 2010, p.11). They are cost-effective due to the cost of compliance and regulation which can cause the cost of rules to outweigh the benefits. He argues that a principle based system would enable the CRAs to decide how best to align their business objectives and processes based on specified regulatory outcomes. This he argues would be cheaper and just as effective. The third point, regarding the oligopolistic structure of the market refers to adjusting regulation based on size and different instruments that are being rated. For our study, what is important is that regulations aimed at making the CRA market more accountable to EU law may in fact have the detrimental effect of reducing competition.

Fieldwork assessments from the European Commission (2016) found that many stakeholders worried about the proportionally high regulatory costs for small CRAs. The Report does find that where these costs have a so called “fixed element” (p.22), the costs are disproportionately high for small CRAs as they take a much larger share of overall revenues. It gives the example of the creation of an independent review board. An independent review board made up of full-time employees would impose a relatively high resource cost for smaller firms with the costs for a typical small CRA with around 20 employees, “accounting for around 15 per cent of salary expenditure” (p.22).

However, it should be noted that CRAs with fewer than 50 employees are excluded from certain costly provisions. Firstly, smaller CRAs must not implement independent members of its board. Secondly, they would not have to fulfil the requirement of an independent and permanent compliance function, i.e. in-house independent advisers. And finally, as noted before, they would not have to partake in the analyst rotation policy. Furthermore, supervisory fees are also disregarded for CRAs with revenues below €10 million (European Commission Report, 2016). The downside of this last provision is that it could actually deter CRAs from expanding beyond 50 employees as it may undermine the gains made from expansion. CRAs may then make a strategic decision to remain small and thus not offer the market additional choice (European Commission Report, 2016). This issue

in itself highlights the complexity between market and non-market regulation and how difficult it is to get the right balance.

A final way in which EU regulation may inhibit the expansion of smaller CRAs is the requirement for CRAs to inform rated entities before the formal release of ratings. This is due to the increased administration costs because it according the EU Commission Report (2016), makes it "more difficult to identify correct contracts". As unsolicited and investor-paid ratings are often a key way in which new CRAs try to enter markets and demonstrate their quality and skill, these kinds of administrative costs could make market entry more difficult, or block it entirely (European Commission Report, 2016). Thus, some of the regulations aimed to make the CRA market more transparent and secure is likely to have the side-effect of making it more difficult for smaller CRAs to compete.

Conclusion and recommendations

This paper has looked at the effect of reputation on the credit ratings industry and competition and whether the subsequent EU regulations properly address the issue of concentration in the market. The first hypothesis showed us that the reputations of the CRAs have decreased and too an even greater degree amongst the big global CRAs. Bearing in mind reputations are so important as a competitive advantage in the industry, one would expect high reputational damage to be reflected by reduced market share. However, in the EU this has not been the case. Since 2011, the market share of one of the Big Three, S&P has in fact increased with the drop in the market share of the other CRAs falling greater than the steadier decreases found with Moody's and S&P. I would infer from this that in the short term the reputational mechanism does not work in the EU. This could be because the Big Three are still seen as providing superior quality ratings and the fact that the relationship costs of establishing credit ratings are still high.

When we looked at the EU regulation specifically we found that regulations contrary to our expectations do not really present much of a barrier to entry as suggested by the likes of Partnoy in their focus on the U.S. market. We find that in the EU, there is actually a large number of registered CRAs even if the concentration remains high. However, it is in

the case of the Eurosystem regulations true, that the big international CRAs have an advantage in that the regulations determine that their ratings must be used.

In the most recent EU policy we see that the EU addresses competition and promotes less concentration in the market. Reputations, lack of opportunities and inability to be competitive on price all play a role in maintaining concentration in the market. It is of course difficult for the EU to do this as it is investors perception of quality that it is important. On the whole, the EU does little in this regard. The releasing of competition data and the rotation policy are sensible policies aimed at increasing competition. The rotational policy could help deal with the problem of the difficulty of developing a reputation in a niche market and the problem of the high costs of switching. By encouraging the rotation of CRAs in a four-year cycle, issuers will be forced to switch and this in turn will give smaller CRAs greater business opportunities. Importantly it increases the possibility of future profits, meaning smaller CRAs can make greater efforts to forgo short term financial opportunities in favour of reputation building. The releasing of competition data is a step forward in increasing transparency but this should also be supported by a form of ranking system in which the outcomes of individual debt obligations can be easily compared to their given ratings.

The lack of the latter suggestion points towards a major problem: there is no particular focus on reputation which is the determining feature of the market. By not establishing a standard post-rating system of analysis, it is too difficult for the smaller CRAs to prove the quality of their ratings vis-à-vis the Big Three. Furthermore, policies aimed at providing stability in fact add proportionally higher costs for smaller rating agencies. Overall, the EU policies do not go far enough.

We have found that the reputational mechanism is not effective in exposing the revenues of the CRAs to competition from better quality ratings. Thus, aside from accepting this market situation which may be deemed more stabile than any other the options of policy makers are quite limited within the issuer-pays framework. The likes of the European Commission have dismissed other business models and the CRAs themselves are reluctant to change it. Future research should focus on whether a system that relies on a

reputational mechanism can be truly effective even if the quality of the CRAs is high. Greater research is required but it should be acknowledged that the holding of the CRAs to account with their reputations is limited and it is yet unclear what act the CRA could commit in order for this mechanism to snap into action. Research into the effect on bond yields directly after high profile individual rating failures could be a start.

The European Union is trying to address the issue of competition and the over-reliance on credit ratings. However, it's actions are mixed and arguably do not always reflect its rhetoric. The EU should be honest regarding the short falls of the issuer pays model and that its policies reflect a tweaking of the system rather than any realignment of the market situation and the regulations that underpin it. The EU has implemented other policies which aim to regulate the CRAs. This has not been covered in this paper, but we suggest that the EU focuses on these rather than the illusion that they can regulate the CRAs better through greater competition and the reducing over-reliance.

If the issuer-pays model and its inherent conflicts of interest cannot be counterbalanced by the CRAs' need to protect reputations, then the system cannot be seen to work effectively. The EU regulations suggest that some of the system's deficiencies can be addressed through regulation but the inherent conflict of interest is not; due to the reputational mechanism being limited in its effectiveness.

This paper does not try to predict the future and is aware that disruptions of the industry through technology are possible. We only suggest that the existing market structure does not suggest that the prominence of the Big Three is under threat, at least in the short term, regardless of whether or not the reputation of the Big Three is damaged. If regulatory bodies like the EU wish to rely on the competition to mitigate the problem that is conflict of interests, then unlike the EU they should be honest about the effectiveness of measures to address concentration which is inherently rooted in perceived reputation built up over a long time. Future studies, should focus on long term reputation building as well as alternative market models to the issuer-pays one.

List of tables & graphs

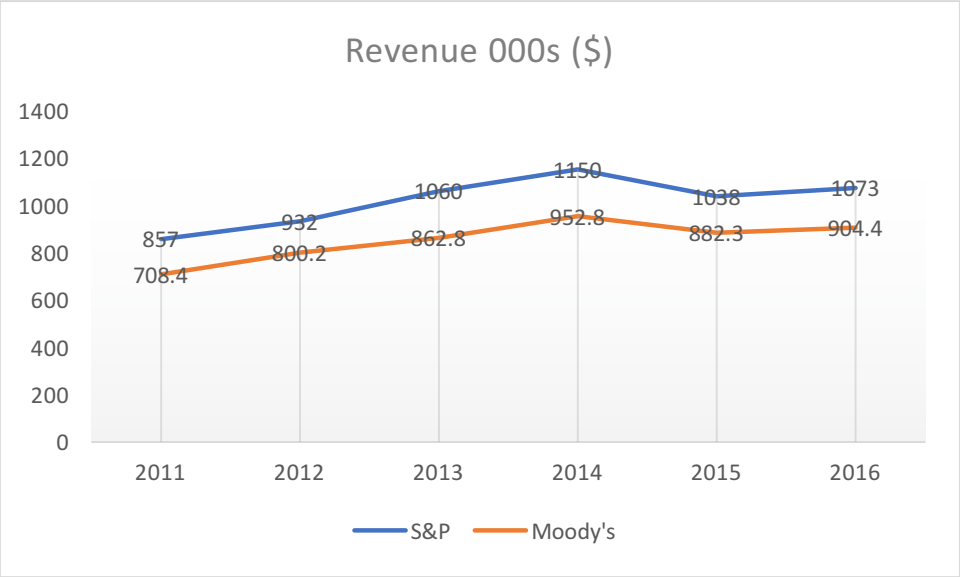

Figure 1:refers to S&P globally (non U.S) and Moody's EMEA.

Figure 1 shows the changes in revenue of S&P and Moody's between 2011 and 2016. Source: Made by the author, extracted from S&P Annual Reports 2011-2016 and Moody's Annual Reports 2011-2016

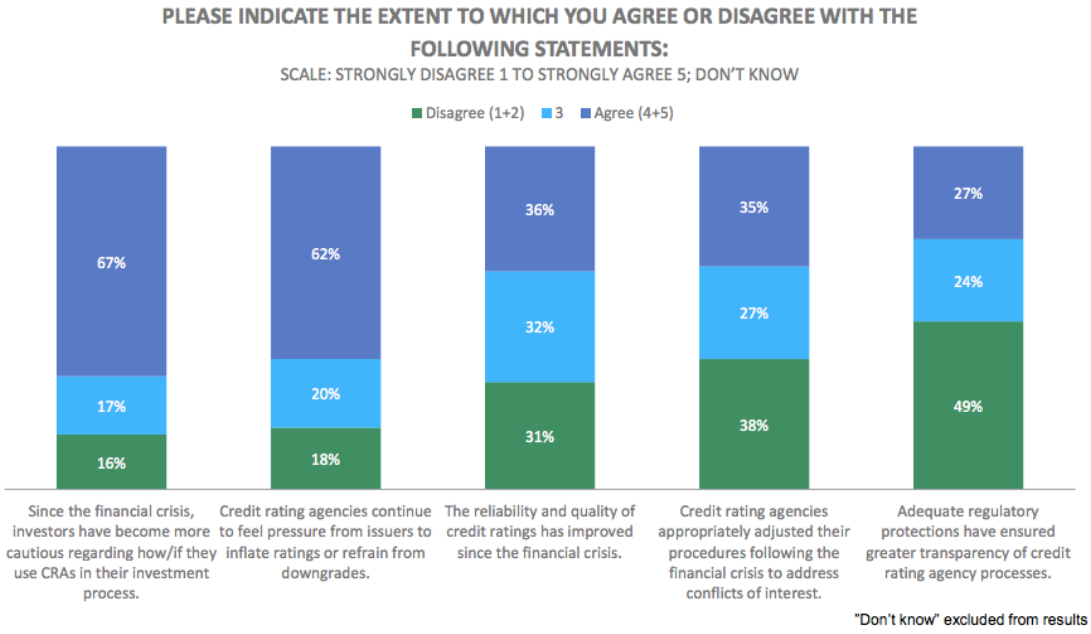

Figure 2 shows the responses to questions regarding the CRAs and the financial crisis. Source: CFA Institute Report 2014

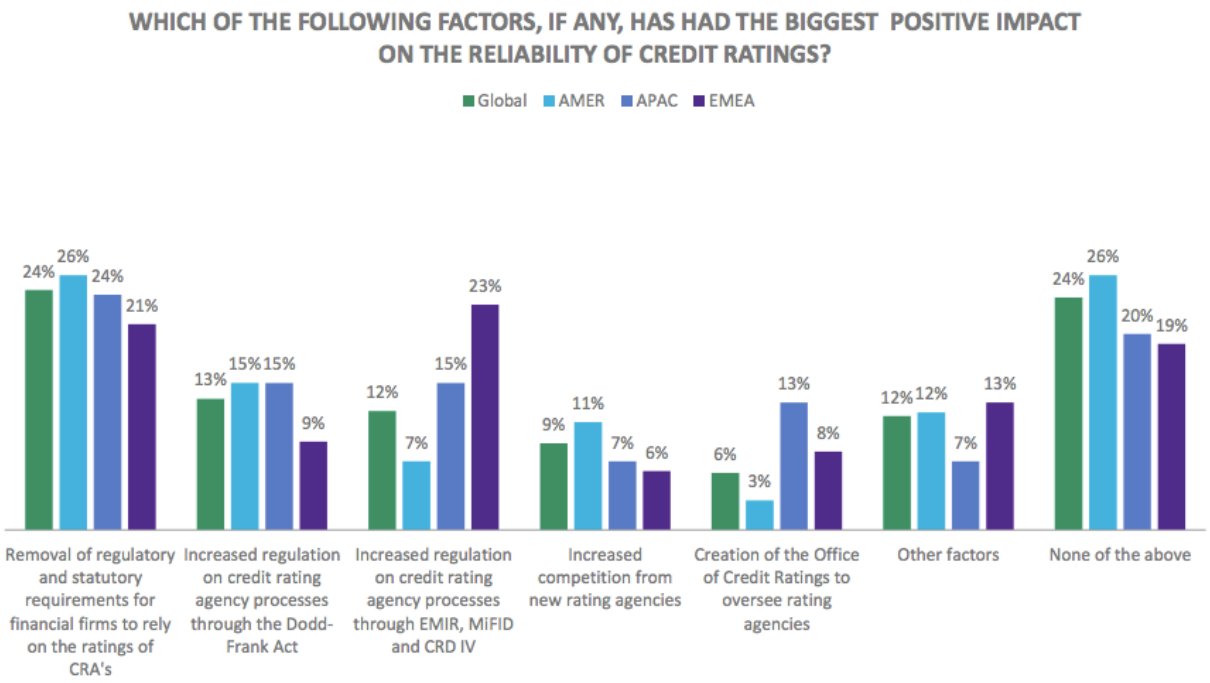

Figure 3 shows the responses to the question regarding which factors have had the most positive impact on the reliability of credit ratings. Source: CFA Institute Report 2014

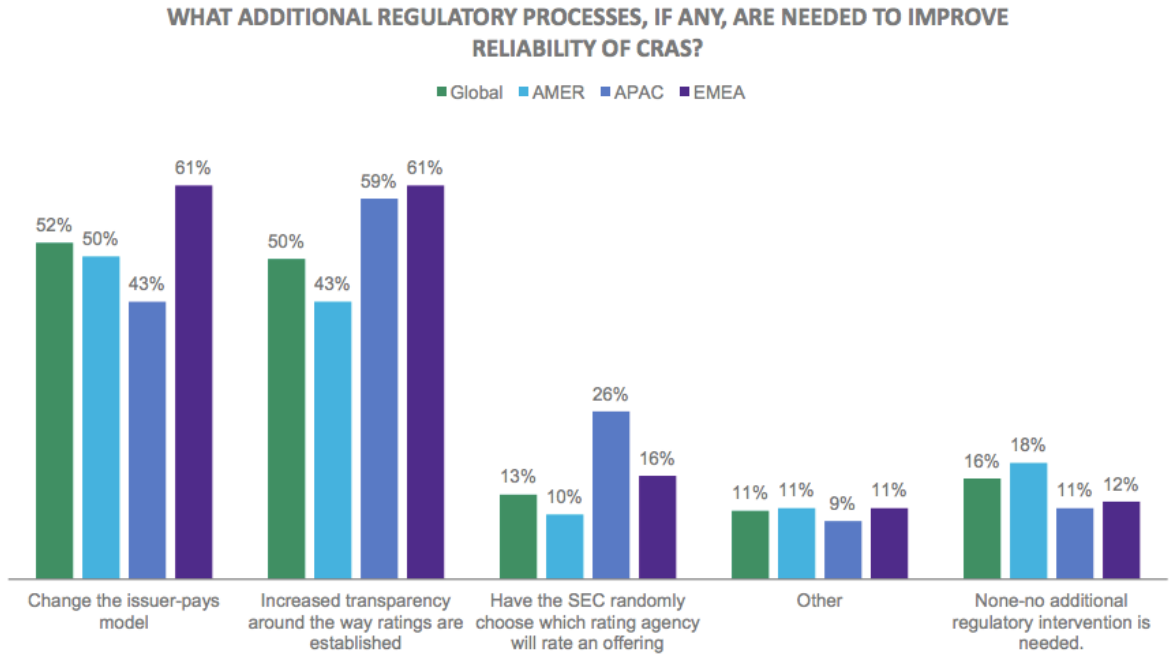

Figure 4 shows the responses to the question asking what additional regulatory processes are needed to improve reliability? Source: CFA Institute Report 2014

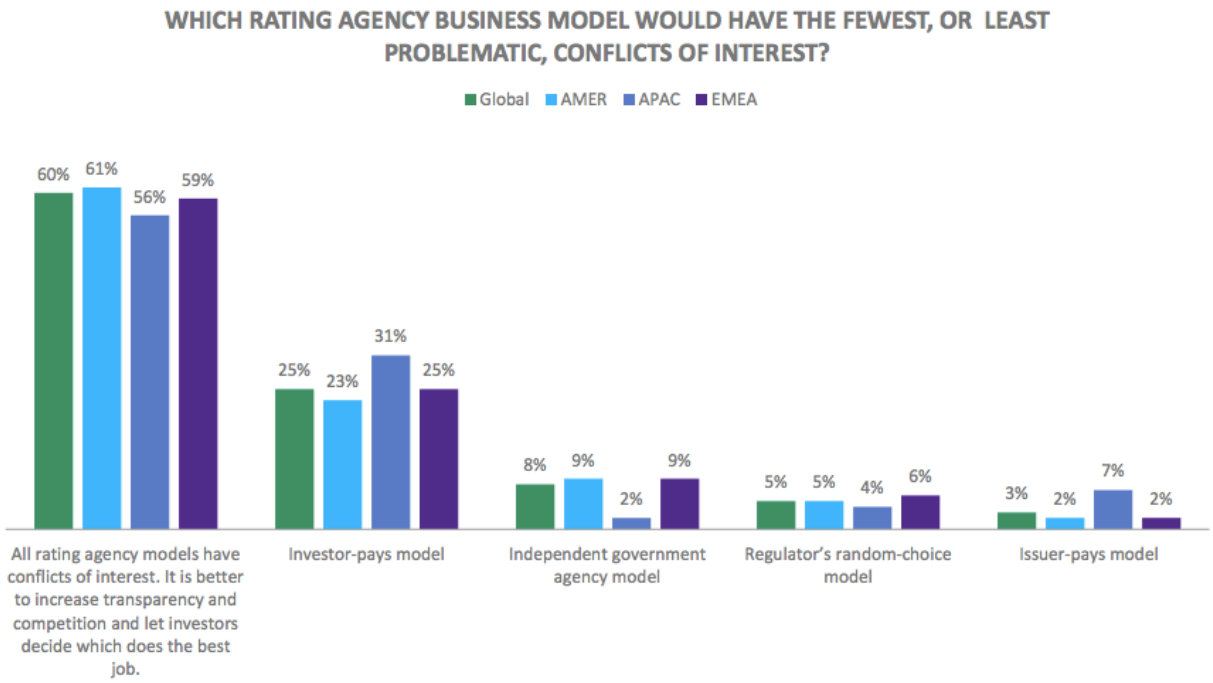

Figure 5 shows the responses to the question asking which business model would create the fewest conflict of interests? Source: CFA Institute Report 2014

Panel A. Mean and Media Yield Spreads

Agency	Entire Period			Crisis Period		
	N	Mean	Median	N	Mean	Median
R&I	3,073	0.517	0.415	257	0.444	0.396
JCR	1,838	0.523	0.414	160	0.416	0.385
S&P	966	0.352	0.299	116	0.477	0.442
Moody's	2,195	0.507	0.407	194	0.433	0.380

Panel B. Tests of Mean and Median Spread Differences between Domestic and Global Agencies

Agency	Entire Period			Crisis Period		
	N	Mean Spreads	Median Spreads	*N*	Mean Spreads	Median Spreads
Domestic agencies	1,220	0.554	0.437	72	0.440	0.418
Global agencies	2,305	0.502	0.405	214	0.439	0.384
t-value		(2.907)***			(0.024)	
z-value			(2.224)**			(0.331)

Panel C. Tests of Mean and Median Spread Differences between Rating Agencies

Agencies	Entire Period		Crisis Period	
JCR vs. R&I	*t*-value	(0.430)	*t*-value	(−0.919)
	z-value	(−0.121)	*z*-value	(−0.698)
Moody's vs. S&P	*t*-value	(8.456)***	*t*-value	(−1.191)
	z-value	(8.324)***	*z*-value	(−1.601)
R&I vs. Moody's	*t*-value	(0.692)	*t*-value	(0.375)
	z-value	(0.742)	*z*-value	(0.475)
JCR vs. Moody's	*t*-value	(1.004)	*t*-value	(−0.524)
	z-value	(0.762)	*z*-value	(0.210)
JCR vs. S&P	*t*-value	(9.090)***	*t*-value	(−1.659)*
	z-value	(8.693)***	*z*-value	(−1.786)*
R&I vs. S&P	*t*-value	(9.371)***	*t*-value	(−0.933)
	z-value	(9.227)***	*z*-value	(−1.268)

***Significant at the 0.01 level.
**Significant at the 0.05 level.
*Significant at the 0.10 level.

Figure 6 shows the mean and median yield spreads of the four credit rating agencies: S&P, Moody's, Japan Credit Rating Agency and R&I Rating and Investment Information over the entire period and during the crisis period. Source: Han et al. 2012

Table VII. Mean and Median Test Results for the Comparison of Firm Characteristics

All firm characteristics data except foreign investor stock ownership are acquired from the NEEDS database, and foreign investor stock ownership is obtained from the Japan Company Handbook. *N* is the number of firm-year observations for rated bonds. *t*-test (*t*-value) is used for the mean test, while the rank sum test (*z*-value) is used for median test. The definition of each variable is as follows. Equity ratio = total equity / total assets; Foreign equity ownership = percentage of stock owned by foreign investors; ROA = net income / total assets; Alpha = market model alpha; Beta = market model beta with the Nikkei Stock Index in Japan; Capital expenditure = total capital expenditure / total assets; Working capital = (total current assets – total current liabilities) / total assets; Overseas sales ratio = overseas sales / total sales.

	N	Mean	Median
Equity Ratio			
Global agencies	2,119	0.2320	0.2170
Domestic agencies	1,087	0.3304	0.3190
t-value		(−20.685)***	
z-value			(−18.030)***
Foreign Equity Ownership			
Global agencies	2,117	0.1530	0.1300
Domestic agencies	1,054	0.1182	0.0770
t-value		(8.314)***	
z-value			(13.148)***
ROA			
Global agencies	2,277	0.0154	0.0120
Domestic agencies	1,194	0.0223	0.0160
t-value		(−12.283)***	
z-value			(−11.730)***
Alpha			
Global agencies	2,268	0.0002	0.0000
Domestic agencies	1,178	0.2442	0.0001
t-value		(−1.389)	
z-value			(−3.129)***
Beta			
Global agencies	2,268	0.7103	0.7128
Domestic agencies	1,178	0.8938	0.6143
t-value		(−1.039)	
z-value			(4.804)***
Capital Expenditures			
Global agencies	2,279	0.0263	0.0213
Domestic agencies	1,201	0.0281	0.0154
t-value		(−1.652)*	
z-value			(1.868)*
Working Capital			
Global agencies	2,265	−0.0084	−0.0301
Domestic agencies	1,190	0.0612	0.0372
t-value		(−14.441)***	
z-value			(−11.171)***

(*Continued*)

Figure 7 looks at firm characteristics to ascertain the quality of the firms using local or global credit ratings. Source: Han et al. 2012

Market Share of Credit Rating Agencies in the EU (%)				
Registered Credit Rating Agency	2012	2013	2014	2015
AM Best Europe-Rating Services Ltd. (AMBERS)	0,72	0,72	0,79	0,93
ARC Ratings, S.A.	0,04	0,03	0,02	0,03
ASSEKURATA Assekuranz Rating-Agentur GmbH	0,3	0,26	0,21	0,21
Axesor S.A.	0,39	0,58	0,61	0,05
BCRA-Credit Rating Agency AD	0,02	0,03	0,02	0,02
Capital Intelligence (Cyprus) Ltd	0,16	0,13	0,12	0,14
CERVED Group S.p.A.	2,6	2,19	1,2	0,88
Creditreform Rating AG	0,49	0,53	0,5	0,5
CRIF S.p.A.	0,34	0,76	0,33	0,05
Dagong Europe Credit Rating Srl (Dagong Europe)	-	0,01	0,02	0,04
DBRS Ratings Limited	0,97	1,27	1,47	1,89
Economist Intelligence Unit Ltd	4,65	0,83	0,87	0,8
Euler Hermes Rating GmbH	0,2	0,24	0,2	0,21
European Rating Agency, a.s.	0,01	0,01	0.01	0.01
Eurorating Sp. Zo.o	-	-	0.01	0,01
Feri EuroRating Services AG	0,81	0,67	0,64	0,4
Fitch	17,66	16,22	16,8	16,56
GBB-Rating Gesellschaft für Bonitätsbeurteilung mbH	0,33	0,33	0,32	0,34
ICAP Group SA	0,77	0,75	0,55	0,12
INC Rating Sp. Zo.o	-	-	-	0.01
ModeFinance S.A.	-	-	-	0,05
Moody's	34,75	34,53	34,67	31,29
Rating-Agentur Expert RA GmbH	0.01	0.01	0.01	0.01
Scope Credit Rating GmbH	0,1	0,14	0,14	0,39
Spread Research SAS	0,09	0,09	0,11	0,09
Standard & Poor's	34,61	39,69	40,42	45
Big Three	87,02	90,44	91,89	92,85
Rest	13,00	9,58	8,12	7,15
Total	100	100	100	100

Figure 8 shows the market share of all registered CRAs in the EU from 2012 – 2015. Source: made by the author, extracted from ESMA Market Share Calculations 2013-2016.

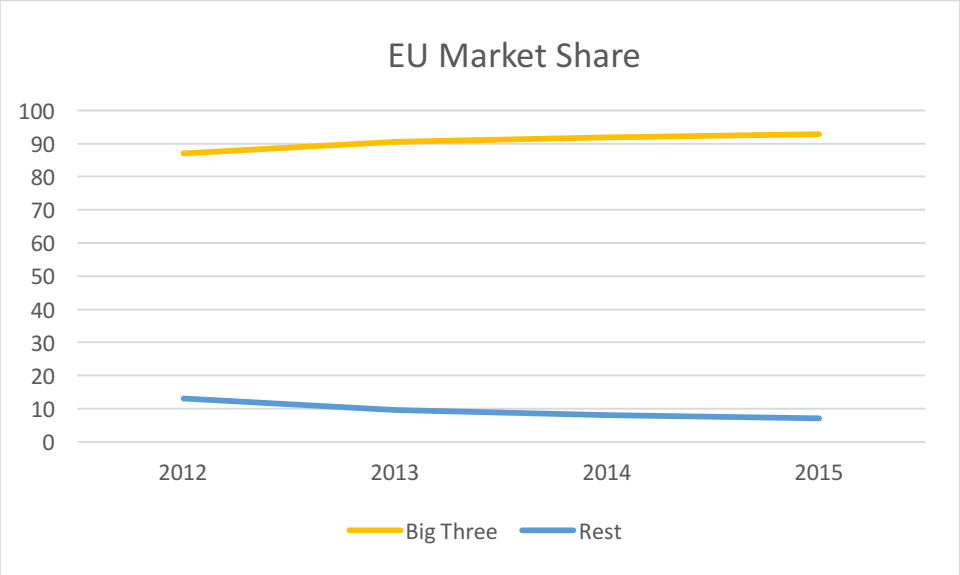

Figure 9 shows the market share % of the Big Three compared to the other CRAs between 2012-2015. Source: made by the author, extracted from ESMA Market Share Calculations 2013-2016.

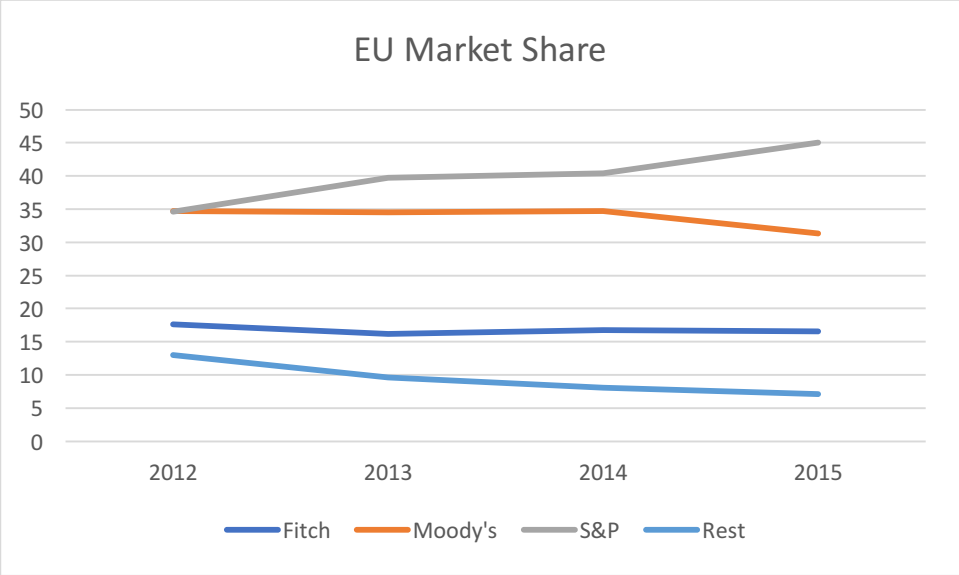

Figure 10 shows the market share % of the Big Three separately compared to the other CRAs. Source: made by the author, extracted from ESMA Market Share Calculations 2013-2016.

	2011									2012									2013									2014									2015								
ıg Agency	FI	IN	CO	SV	SS	PE	SN	SF	CB	FI	IN	CO	SV	SS	PE	SN	SF	CB	FI	IN	CO	SV	SS	PE	SN	SF	CB	FI	IN	CO	SV	SS	PE	SN	SF	CB	FI	IN	CO	SV	SS	PE	SN	SF	CE
Best Europe-Rating Services Ltd. (AMBERS)		X	X								X	X								X	X								X	X								X	X						
Ratings, S.A.			X							X		X									X									X	X									X	X				X	
KURATA Assekuranz Rating-Agentur GmbH		X									X									X									X									X							
or S.A.	-	-	-	-	-	-	-	-	-		X									X									X										X						X	
A-Credit Rating Agency AD	X	X	X		X					X	X	X		X					X	X	X		X					X	X	X	X	X					X	X	X	X	X					
al Intelligence (Cyprus) Ltd	X		X	X						X		X	X						X		X	X						X		X	X						X		X	X					
VED Group S.p.A.			X									X									X									X										X						
itreform Rating AG			X						X			X					X	X			X						X	X									X	X						X	X
S.p.A.			X									X									X									X										X						
ng Europe Credit Rating Srl (Dagong Europe)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X									X	X	X								X	X	X						
Ratings Limited	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
omist Intelligence Unit Ltd	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				X									X										X						
Hermes Rating GmbH	X		X							X		X							X		X							X		X								X		X					X	
pean Rating Agency, a.s.					X									X									X									X										X				
rating Sp. Zo.o*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X		X								X		X						
EuroRating Services AG				X									X						X		X	X						X		X	X							X		X	X				X	
*	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					X					
Rating Gesellschaft für Bonitätsbeurteilung mbH	X		X							X		X							X		X							X		X							X		X						
Group SA			X									X									X									X										X						
Rating Sp. Zo.o	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					X					
eFinance S.A.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			X							
dy's	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
g-Agentur Expert RA GmbH	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
e Credit Rating GmbH			X									X									X					X	X			X								X						X	
ad Research SAS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			X									X										X						
dard & Poor's	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Figure 11 shows the different credit rating sub-sectors that each CRA is engaged in. Source: made by the author, extracted from ESMA Market Share Calculations 2013-2016.

FI - corporate financial
IN - corporate insurance
CO - corporate non-financial
SV - sovereign
SS - sub-sovereign
PE - public entities
SN - supranational
SF - structured finance
CB - covered bonds

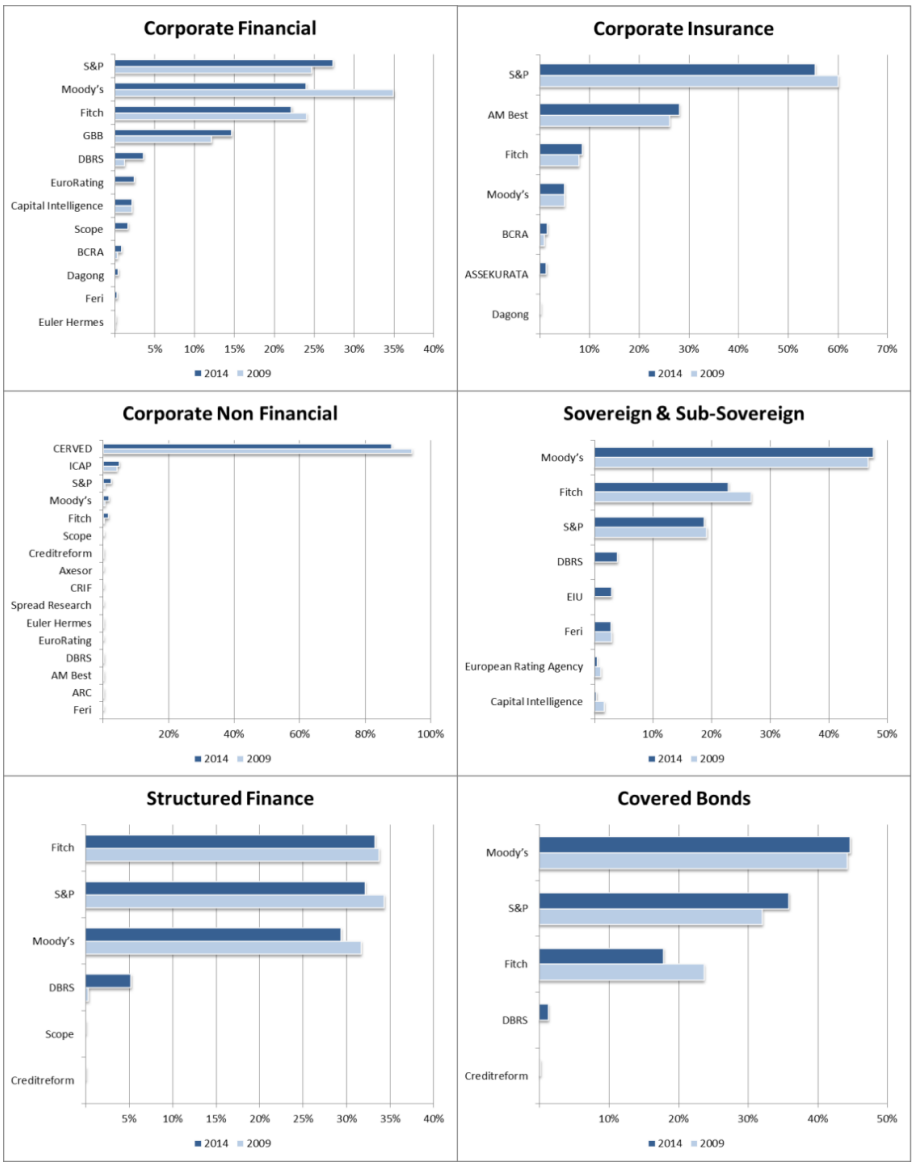

Figure 12 compares the market share of the specific sub sectors of 2009 and 2014. Source: ESMA Market Share Calculations 2013-2016.

Rating Agency	Date of Formation
AM Best Europe-Rating Services Ltd. (AMBERS)	1899
ARC Ratings, S.A.	1988
ASSEKURATA Assekuranz Rating-Agentur GmbH	1996
Axesor S.A.	1996
BCRA-Credit Rating Agency AD	2002
Capital Intelligence (Cyprus) Ltd	1982
CERVED Group S.p.A.	1974
Creditreform Rating AG	2000
CRIF S.p.A.	1988
Dagong Europe Credit Rating Srl (Dagong Europe)	2012
DBRS Ratings Limited	2010
Economist Intelligence Unit Ltd	1946
Euler Hermes Rating GmbH <website>	2001
European Rating Agency, a.s.	2001
Eurorating Sp. Zo.o*	2007
Feri EuroRating Services AG	2002
Fitch*	1977
GBB-Rating Gesellschaft für Bonitätsbeurteilung mbH	1996
ICAP Group SA	1964
INC Rating Sp. Zo.o	2014
ModeFinance S.A.*	2006
Moody's	1900
Rating-Agentur Expert RA GmbH	2013
Scope Credit Rating GmbH	2002
Spread Research SAS	2004
Standard & Poor's	1860
Average date of formation	**1982**
Average date of formation Big Three	**1912**
Average date of formation Others	**1991**

Figure 13 shows the date when the different CRAs were founded. Source: made by the author, extracted from ESMA Market Share Calculations 2013-2016

Bibliography

Almeida, H., Cunha, I., Ferreira, M, A. & Restrepo, F. (2014). The Real Effects of Sovereign Credit Rating Downgrades. *Research Paper*. pp.1-53.

Alp, A. (2013). Structural Shifts in Credit Rating Standards. *The Journal of Finance* 68.6. pp.2435-2470.

A.M. Best. (2017). About A.M. Best. Available at: http://www.ambest.com/about/. (Accessed 27 September 2017).

Amtenbrink, F & Heine, K. (2013). Regulating Credit Rating Agencies in the European Union: Lessons from Behavioural Science. *The Dovenschmidt Quarterly 2013*. No.1.pp. 2-15.

Baghai, R, and Becker, B. (2016). Reputation and Competition in the Credit Ratings Market-Evidence from Commercial Mortgage-Backed Securities. *Stockholm School Economics and CEPR.*

Bai, L. (2010). On Regulating Conflicts of Interest in the Credit Rating Industry (2010). *Faculty Articles and Other Publications.* Paper 3. Available at: http://scholarship.law.uc.edu/fac_pubs/3?utm_source=scholarship.law.uc.edu%2Ffac_pubs%2F3&utm_medium=PDF&utm_campaign=PDFCoverPages. (Accessed 21 September 2017).

Basel Committee on Banking Supervision. (2011) Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems. Available at: https://www.bis.org/publ/bcbs189.htm. (Accessed 29 November 2017).

BBC News. (2011). EU Targets Credit Rating Agencies. Available at: http://www.bbc.com/news/business-15739234. (Accessed 22 September 2017).

Becker, B & Milbourn, T. (2011). How Did Increased Competition Affect Credit Ratings?. *Journal of Financial Economics*. 101:3. pp.493-514.

Bonewitz, P, L. (2010). Implications of Reputation Economics on Regulatory Reform of the Credit Rating Industry. *William & Mary Business Law Review* 1.2. pp.390-430.

Bruner, C, M & Abdelal, R. (2005). To Judge Leviathan: Sovereign Credit Ratings, National Law, and the World Economy. *Journal of Public Policy* 25:2. pp-191-217.

Candace, A, C; Biglaiser, G & DeRouen, K. (2007). Sovereign Bonds and the "Democratic Advantage": Does Regime Type Affect Credit Rating Agency Ratings in the Developing World? *International Organization* 61.2. pp-341-65.

Carbone, D. (2010). The Impact of the Dodd-Frank Act's Credit Rating Agency Reform on Public Companies. *Insights: The Corporate & Securities Law Advisor*. 24.9. pp-1-7.

Cerved Rating Agency. (2014). Metodologia di Rating. Available at: http://ratingagency.cerved.com/sites/ratingagency.cerved.dev/files/CRA_MetodologiaRating_0.pdf (Accessed 21 September 2017).

CFA Institute. (2014). Credit Rating Agency Survey Results. Available at: www.cfainstitute.org/Survey/credit_rating_agency_survey_report.pdf. (Accessed 22 September 2017).

DBRS Ratings. (2013). Long Term Obligations Scale. Available at: http://www.dbrs.com/research/236754/long-term-obligations-rating-scale.pdf . (Accessed 21 September 2017).

DBRS Ratings. (2013). Commercial Paper and Short-Term Debt Rating Scale. Available at: http://www.dbrs.com/research/236749/commercial-paper-and-short-term-debt.pdf. (Accessed 21 September 2017).

DBRS Ratings. (2017). Methodology: April 2017. Available at: http://www.dbrs.com/research/308389/rating-supranational-institutions.pdf. (Accessed 27 September 2017).

Dodd-Frank Wall Street Reform and Consumer Protection Act 2010. S,931. Available at: http://www.cftc.gov/LawRegulation/DoddFrankAct/index.htm. (Accessed 16 November 2017).

Durbin, E & Ng, D. (2002). The Sovereign Ceiling and Emerging Market Corporate Bond Spreads. *Journal of international Money and Finance* 24.4. pp-631-49.

ESMA Website. *Credit Rating Agencies*. Available at: https://www.esma.europa.eu/supervision/credit-rating-agencies/supervision. (Accessed 29 November 2017).

ESMA. (2013). Credit Rating Agencies' 2012 Market Share Calculation According to Article 8d of the CRA Regulation. Available at: https://de.scribd.com/document/202037530/Esma-Cra-Market-Share-Calculation (Accessed 29 November 2017).

ESMA. (2014). Credit Rating Agencies' 2013 Market Share Calculations for the Purposes of Article 8d of the CRA Regulation. Available at: https://www.kpmgregulatoryscout.lu/~/media/Files/PDF/European%20Securities%20and%20Markets%20Authority/ESMA%20Reference%20document%202013_1933%20-%2017_12_2013.ashx. (Accessed 25 September 2017).

ESMA. (2015). Credit Rating Agencies' 2014 Market Share Calculations for the Purposes of Article 8d of the CRA Regulation. Available at: https://www.esma.europa.eu/sites/default/files/library/2015/11/2014-1583_credit_rating_agencies_market_share_calculation_2014.pdf. (Accessed 25 September 2017).

ESMA. (2016). Competition and Choice in the Credit Rating Industry Report. Available at: https://www.esma.europa.eu/sites/default/files/library/2016-1662_cra_market_share_calculation.pdf. (Accessed 22 September 2017).

European Central Bank. (2008). The Implementation of Monetary Policy in the Euro Area. Available at: https://www.ecb.europa.eu/pub/pdf/other/gendoc2008en.pdf. (Accessed 10 November 2017).

European Central Bank. (2013). The Use of Credit Claims as Collateral for Eurosystem Credit Operations. *Occasional Paper Series.* Available at: https://www.ecb.europa.eu/pub/pdf/scpops/ecbocp148.pdf. (Accessed 29 November 2017).

European Central Bank. (2016). Covered Bonds in the European Union – ECB Contribution to the European Commission's Public Consultation. Available at: https://www.ecb.europa.eu/pub/pdf/other/coveredbondsintheeu-ecbcontributiontotheecpublicconsultation2016en.pdf?638610528faffd3239719cbbd5e53b5c. (Accessed 27 September 2017).

European Commission Report. (2016). Study on the State of the Credit Rating Market: Final Report. Available at: https://ec.europa.eu/info/system/files/state-of-credit-rating-market-study-01012016_en.pdf. (Accessed 22 September 2017).

European Commission Website. *Regulating Credit Rating Agencies*. Available at: https://ec.europa.eu/info/business-economy-euro/banking-and-finance/financial-supervision-and-risk-management/managing-risks-banks-and-financial-institutions/regulating-credit-rating-agencies_en. (Accessed 29 November 2017).

European Court of Auditors. (2015). EU Supervision of Credit Rating Agencies – Well Established but not yet Fully Effective. Available at: https://www.eca.europa.eu/Lists/ECADocuments/SR15_22/SR_ESMA_EN.pdf. (Accessed 29 November 2017).

European Parliament. (2011). Euro Area Sovereign Debt Crisis and Rating Agencies. *Directorate General for Internal Policies Policy Department A: Economic and Scientific Policies.* Available at: https://www.guillermodeladehesa.com/files/0006.1325504340.JDHV5252ICGU8172KDTJ3313PVOZ3048.pdf. (Accessed 29 November 2017).

European Parliament and Council. (2013a). *EU Regulation No 462/2013*. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32013R0462. (Accessed 29 November 2017).

European Parliament and Council. (2013b). *Directive 2013/36/EU*. Available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:176:0338:0436:En:PDF. (Accessed 29 November 2017).

Financial Times. (2017). Definition of Structured Debt Securities. Available at: http://lexicon.ft.com/Term?term=structured-debt-securities. (Accessed 21 September 2017).

Fimilac. (2016). Fimilac Revenue Report 2016. Available at: http://hugin.info/143461/R/2076248/780800.pdf (Accessed 21 September 2017).

Gunter, T et al. (2011). Credit Rating Agencies: Part of the Solution or Part of the Problem? *Intereconomics* 46.5. pp.232-62.

Güttler, Andre. (2009). Lead-lag Relationships and Rating Convergence Among Credit Rating Agencies. *Research Paper 09-14* (London: European Business School).

Han, S, H; Pagano, M, S & Yoon, S, S. (2012) Rating Agency Reputation, The Global Financial Crisis, and the Cost of Debt. *Financial Management* 41.4. pp.849-84.

HSBC. (2017). What are fixed income investments?. Available at: https://www.us.hsbc.com/1/2/home/invest-retire/investments/fixed-income-products. (Accessed 16 November 2017)

International Monetary Fund. (2010). *World Economic and Financial Surveys Global Financial Stability Report Sovereigns, Funding, and Systemic Liquidity* Washington D.C: International Monetary Fund. pp.85-122.

Ismailescu, I & Kazemi, H. (2010) The Reaction of Emerging Market Credit Default Swap Spreads to Sovereign Credit Rating Changes. *Journal of Banking & Finance* 34.12. pp.2861-2873.

Jaramillo, L & Tejada, M. (2011). Sovereign Credit Ratings and Spreads in Emerging Markets: Does Investment Grade Matter?. *IMF Working Papers, March.* pp.1-17.

Johansson, T. (2010). Regulating credit rating agencies: The issue of conflicts of interest in the rating of structured finance products. *Journal of Banking Regulation,* 12.1. pp.1-23.

Katz J., Salinas E. & Stephanou C. (2009), Credit Rating Agencies: No Easy Regulatory Solutions. *World Bank Group, Financial Sector Vice Presidency, Crisis Response Note* No. 8.

Kerwer, D. (2005). Holding Global Regulators Accountable: The Case of the Credit Rating Agencies. *Governance* 18.3. pp.453-75.

Kisgen, D. (2006). Credit Ratings and Capital Structure. *The Journal of Finance* 61.3. pp.1035-1072.

Masciandaro, D. (2011). What If Credit Rating Agencies Were Downgraded? Ratings, Sovereign Debt and Financial Market Volatility. *Paolo Baffi Centre Research Paper* No.

2011-107. Available at SSRN: https://ssrn.com/abstract=1924859 (Accessed 21 September 2017).

Mathis, J., McAndrews, J. & Jean-Charles Rochet (2009) Rating the raters: Are Reputational Concerns Powerful Enough to Discipline Rating Agencies? *Journal of Monetary Economics* 56. pp.657-74.

McVae, H. (2010). Credit Rating Agencies, the Subprime Mortage Debacle and Global Governance: the EU Strikes Back. *International and Comparative Law Quarterly* 59.3. pp.701-30.

Micu et al. (2004). Preiseffekte von Rating-Meldungen: Untersuchungen am Markt für Credit Default Swaps. *BIZ-Quartalsbericht,* Juni. pp.63-75.

Miglionico, A. (2014). Market Failure or Regulatory Failure? The Paradoxical Position of Credit Rating Agencies. *Capital Markets Law Journal* 9.2. pp.194-211.

Moody's. (2011). Annual Report 2011. Available at: http://ir.moodys.com/investor-resources/annual-reports-and-proxy-statements/default.aspx (Accessed 21 September 2017).

Moody's. (2012). Annual Report 2012. Available at: http://ir.moodys.com/investor-resources/annual-reports-and-proxy-statements/default.aspx (Accessed 21 September 2017).

Moody's. (2013). Annual Report 2013. Available at: http://ir.moodys.com/investor-resources/annual-reports-and-proxy-statements/default.aspx (Accessed 21 September 2017).

Moody's. (2014). Annual Report 2014. Available at: http://ir.moodys.com/investor-resources/annual-reports-and-proxy-statements/default.aspx (Accessed 21 September 2017).

Moody's. (2015). Annual Report 2015. Available at: http://ir.moodys.com/investor-resources/annual-reports-and-proxy-statements/default.aspx (Accessed 21 September 2017).

Moody's. (2016). Annual Report 2016. Available at: http://ir.moodys.com/investor-resources/annual-reports-and-proxy-statements/default.aspx (Accessed 21 September 2017).

Partnoy, F. (2006). How and why credit rating agencies are not like other gatekeepers, *Working paper, University of San Diego*. pp.59-102.

Partnoy, F. (2009). Rethinking Regulation of Credit Rating Agencies: An Institutional Investor Perspective. *Working Paper, Council of Institutional Investors*.

Platt, E. 2016. Morningstar to Challenge Big-3 Credit Agencies. *Financial Times.* Available at: https://www.ft.com/content/456d6e1c-ceae-3ab9-a2fa-bcfe3dd7d68f (Accessed 29 November 2017).

Rousseau, S. (2009). Regulating Credit Rating Agencies after the Financial Crisis: The Long and Winding Road Toward Accountability. *Capital Markets Institute Research Paper.*

Schäfer, H. Transparenz von Unternehmensverantwortung mittels Ratings und Regulierungen sowie die Rolle des globalen Finanzsystems. *Finanzmarktakteure und Corporate Social Responsibility.* VS Verlag für Sozialwissenschaften. pp.177-192.

S&P Global. (2011). S&P Global Annual Report 2011. Available at: http://investor.spglobal.com/Annual-Reports/Index?KeyGenPage=1073751495 (Accessed 21 September 2017).

S&P Global. (2012). S&P Global Annual Report 2012. Available at: http://investor.spglobal.com/Annual-Reports/Index?KeyGenPage=1073751495 (Accessed 21 September 2017).

S&P Global. (2013). S&P Global Annual Report 2013. Available at: http://investor.spglobal.com/Annual-Reports/Index?KeyGenPage=1073751495 (Accessed 21 September 2017).

S&P Global. (2014). S&P Global Annual Report 2014. Available at: http://investor.spglobal.com/Annual-Reports/Index?KeyGenPage=1073751495 (Accessed 21 September 2017).

S&P Global. (2015). S&P Global Annual Report 2015. Available at: http://investor.spglobal.com/Annual-Reports/Index?KeyGenPage=1073751495 (Accessed 21 September 2017).

S&P Global. (2016). S&P Global Annual Report 2016. Available at: http://investor.spglobal.com/Annual-Reports/Index?KeyGenPage=1073751495 (Accessed 21 September 2017).

Stützle, I. (2011). Downgrade: Macht und Ohnmacht der Rating-Agenturen. *Rosa Luxemburg Stiftung. Standpunkte* 26.

Stuwe, A; Weiß, M & Philipper. (2012). *Ratingagenturen: sind sie notwendig, überflüssig, notwendiges Übel oder schädlich?* Bonn: Friedrich-Ebert-Stiftung, Zentrale Aufgaben.

The Economist. (2007). Measuring the Measurers. Available at: http://www.economist.com/node/9267952. (Accessed 21 September, 2017).

The Economist (2015). Rating Agencies: Undue Credit. Available at: https://www.economist.com/news/finance-and-economics/21652364-regulation-helping-very-firms-it-designed-tame-undue-credit. (Accessed 29 November, 2017).

Utzig, S. (2010). The Financial Crisis and the Regulation of Credit Rating Agencies: A European Banking Perspective. *ADBI Working Paper Series No. 188*.

Walter, E & Daigler, M. (2010). Gatekeepers Are The Key To Good Governance. *Forbes.* Available at: https://www.forbes.com/2010/06/21/shareholders-risk-gatekeepers-elisse-walter-leadership-governance-ethisphere.html (Accessed 21 September 2017).

Weber, R, H & Darbellay, A. (2008). The Regulatory Use of Credit Ratings in Bank Capital Requirement Regulations. *Journal of Banking Regulation* 10.1. pp.1-16.

White, L, J. (2010). Markets: The Credit Rating Agencies. *The Journal of Economic Perspectives* 24.2. pp.211-226.