WORKING PAPERS IN RESPONSIBLE BANKING & FINANCE

The Impact of Regulatory Changes on Rating Shopping and Rating Catering Behaviour in the European Securitisation Market

By *Nodirbek Karimov, Alper Kara, Gareth Downing,* and *David Marques-Ibanez*

Abstract: We examine whether rating shopping and rating catering behaviours, two sources of credit rating inflation, are still prevalent in the post-Global Financial Crisis (GFC) period after the introduction of new regulations regarding Credit Rating Agencies (CRAs) in the European securitisation market. Employing a large sample of 12,469 ABS tranches issued between 1998 and 2018, we examine the information content of yield spreads of ABS at the issuance and compare the pre- and post-GFC periods. We find that the regulatory changes have been effective in tackling conflicts of interest between issuers and CRAs in securitisation. Rating catering seems to have disappeared in the post-GFC period. However, our results show that rating shopping is still observed. Hence, the effectiveness of the regulatory changes has been limited. We also find that rating over-reliance might still be an issue, especially for investors of higher-quality ABS.

The impact of regulatory changes on rating shopping and rating catering behaviour in the European securitisation market

Nodirbek Karimov[a], Alper Kara[a,*], Gareth Downing[a] and David Marques-Ibanez[b]

[a] *Huddersfield Business School, University of Huddersfield, UK*

[b] *European Central Bank, Financial Research Division, Frankfurt, Germany*

Abstract

We examine whether rating shopping and rating catering behaviours, two sources of credit rating inflation, are still prevalent in the post-Global Financial Crisis (GFC) period after the introduction of new regulations regarding Credit Rating Agencies (CRAs) in the European securitisation market. Employing a large sample of 12,469 ABS tranches issued between 1998 and 2018, we examine the information content of yield spreads of ABS at the issuance and compare the pre- and post-GFC periods. We find that the regulatory changes have been effective in tackling conflicts of interest between issuers and CRAs in securitisation. Rating catering seems to have disappeared in the post-GFC period. However, our results show that rating shopping is still observed. Hence, the effectiveness of the regulatory changes has been limited. We also find that rating over-reliance might still be an issue, especially for investors of higher-quality ABS.

Keywords: Securitisation; asset-backed securities; credit rating agencies; rating shopping; rating catering; rating inflation; Europe

JEL classification: G21; G28

1. Introduction

The 2008 Global Financial Crisis (GFC) revealed serious weaknesses in the existing European Union (EU) rules on credit ratings, especially those for structured financial products such as asset-backed securities (ABS). The inherent complexity in the ABS market makes it extremely challenging for investors to conduct due diligence on such instruments, making credit ratings a vital source of information. Indeed, during the pre-GFC period, credit ratings were by far the greatest single factor considered by investors in determining ABS risks (Adelino, 2009; Coval et al., 2009b; Mählmann, 2012). It is well documented that many investors bought ABS without understanding the true risk exposure during this period (Bolton, Freixas and Shapiro, 2012; Kisgen and Strahan, 2010; Mählmann, 2012). Unfortunately, it is now clear that in the years preceding the financial crisis, credit rating agencies (CRAs) failed to completely capture the risks involved in ABS markets (European Commission, 2013). Throughout this period the quality of credit ratings progressively diminished (Ashcraft et al., 2010), as CRAs' adherence to standards weakened (Griffin and Tang, 2012), resulting in them awarding inflated ratings (Bolton et al., 2012). It is argued that credit ratings not reflecting the true risk levels was a fundamental weakness in the ABS processes in the pre-GFC period, and played a key role in the growing financial instability that eventually led to the crisis (Coval et al., 2009a; Benmelech and Dlugosz, 2010).[1]

The GFC has also revealed the existence of conflicts of interest, due to close business cooperation between CRAs and their clients (i.e. issuers), as one of the main explanations for rating inflation. Such behaviour created an environment for issuer banks to obtain the desired ratings. Empirical evidence shows that rating catering and rating shopping behaviour were prevalent in the securitisation market in the pre-GFC period (He et al., 2012; Efing and Hau, 2015). It is also argued that competition in structured financial markets inflicted pressure on CRAs to award inflated ratings in order to win over customers (Griffin et al., 2013). Competition among CRAs could diminish ratings quality in a so called 'race to the bottom' (Golan, Parlour, and Rajan, 2011) and promotes rating shopping by issuers resulting in rating inflation (Bolton et al., 2012). In addition, it is argued that CRAs are more likely to facilitate rating favours during financial market boom periods, when potential reputational damage is lower (Bar-Isaac and Shapiro, 2013) and when inestors are generally more trusting (Bolton et al., 2012).

---

[1] Some other prevalent problems identified were issuer banks' poor lending standards and monitoring (Dell'Ariccia et al., 2012; Kara et al., 2016), lax screening (Keys et al., 2010) and monitoring (Wang and Xia, 2014), and misreporting on underlying assets and information falsification of loan delinquency (Jiang et al., 2013; Pisskorski et al., 2015; Griffin and Maturana, 2016). Coupled with issuing banks' opportunistic behaviour, these factors fuelled the credit boom of the pre-GFC period (Ashcraft and Schuermann, 2009; Dell'Ariccia et al., 2012; Nadauld and Sherlund, 2013).

Against this background, this paper investigates the impact of the post-GFC regulatory changes in the European securitisation market on the phenomena of rating inflation. Following the GFC, EU regulators proposed a set of rules and guidelines as an initiative to revive a well-functioning securitisation market aimed at ensuring market confidence (EU Commission, 2018). In particular, tackling conflicts of interest between CRAs and issuer banks, commonly observed in the pre-GFC period, has been identified as one of the keys issues to be addressed. Accordingly, a set of measures has been introduced by the EU Commission to regulate and supervise CRAs. The new CRA regulation is introduced in three stages, with the first implemented in 2009, focusing on reducing conflicts of interest and improving rating methodologies. In 2011, in addition to the creation of European Securities and Markets Authority (ESMA), a regulatory and supervisory body for CRAs was introduced. Finally, in 2013, further amendments and an additional set of measures (i.e. CRA III) were introduced aiming at improving transparency and reducing rating over-reliance. Specifically, the new regulation required issuers of structured financial products to obtain credit ratings from at least two independent CRAs and make these public.

We examine whether rating shopping and rating catering[2] behaviours, two sources of rating inflation, have changed in the post-GFC period in the European securitisation market after the introduction of these new regulations. Employing a large sample of 12,469 ABS tranches issued between 1998 and 2018, we examine the information content of yield spreads of ABS at issuance and compare pre- and post-GFC periods. Initial yield spreads reflect all risks considered by investors when investing in ABS and any suspicion of conflicts of interest, such as rating shopping or rating catering, are found to be reflected in the initial price of the securities (He et al., 2012; Efing and Hau, 2015).[3] Following the literature, we utilise the existence of multiple ratings and rating agreements between CRAs to identify the existence of rating shopping and rating catering, respectively (Griffin et al., 2013; He et al., 2012; 2016).

We find that the regulatory changes have been effective in tackling conflicts of interest between issuers and CRAs in the structured finance market. Rating catering, which is a direct consequence of issuer and CRA collusion, seems to have disappeared after the introduction of these regulations. Investors who previously demanded higher spreads for rating agreements for a multiple rated tranche, did not consider the effect of rating harmony as a risk in the post-GFC period. Regarding rating shopping, we find that the effectiveness of the changes has been limited, potentially for two

---

[2] Rating catering is a broad term and it can involve rating shopping. In this study, we restrict its meaning to cases where ratings reported for ABS tranches are identical.

[3] There is ample empirical evidence showing the significant influence of credit ratings on yield spreads of ABS at the issuance (Fabozzi and Vink, 2012a; 2012b; He et al., 2012; 2016; Deku et al., 2019b; 20210).

reasons. First, rating shopping could also be an innate cause of rating processing and issuing procedure, as it is at issuers' discretion to report or suppress additional ratings. Second, the newly introduced *at least two ratings rule*, may not be enough to reduce rating shopping as ABS can also be rated by three or more CRAs. Additionally, we also find that rating over-reliance might still be an issue, especially for investors of higher-quality bonds. Even after the implementation of the new regulations, investors of triple-A rated ABS still seem to be reliant on the ratings.

We make several original contributions to the literature. The closest work to our research is the study of CDOs by Owlett and Yu (2016). They re-examine the rating shopping and rating catering phenomena in the US market by looking at the post-crisis period between 2009 and 2013. Using 622 CDO tranches, they also observe the existence of rating shopping and the diminishing of the rating catering. Although we also investigate the post-crisis period, our work is different in several ways. Firstly, our main focus is the EU's CRA Regulation and its effectiveness in reducing rating inflation and rating over-reliance. To the best of our knowledge, this paper is the first to examine the effectiveness of the EU's CRA regulatory changes on the investors' perception of rating inflation in the European ABS market. Our comparison of the pricing of ABS in the pre- and post-GFC period sheds light on the effectiveness of these newly introduced measures to tackle the conflict of interest between issuers and CRAs. This is important as investors' perception of CRAs and their confidence in them was key in the recovery of the European securitisation market. Furthermore, European securitisation market differs substantially from its US counterpart, making it important to test these relationships separately for the European context. For example, in the US, the development of the securitisation market was mainly driven by government-sponsored institutions such as Fannie Mae and Freddie Mac. In contrast, there are no such institutions present in the European market as it is mainly private (Kara et al. 2019). Hence, CRAs and issuer interactions are likely to be different in the latter. Also, our results cannot be attributed to the potential impact of government intervention via sponsored institutions. Furthermore, compared to the US securitisation market, which has been operational since early 1970s, the European market is relatively new, only reaching US volumes in the pre-GFC period of 2004 to 2006, and subsequently diminishing abruptly during the GFC. Hence, European investors' familiarity with these assets are relatively recent, which may lead to different dynamics in terms of their reliance on CRAs to assess ABS risks. Secondly, the coverage of our dataset is significantly wider both in terms of different products and time. We focus on a much larger dataset of over 12,000 tranches of ABS and MBS, capturing a much wider set of instruments beyond CDOs. We also cover a period of 15 years. Hence, the coverage and quality of our dataset constitutes significant addition to the literature and allows us to test the rating shopping and rating catering more authoritatively.

The remainder of the paper is organised as follows. The following section reviews the literature on securitisation concerning CRAs and conflicts of interest, and outlines the regulatory changes introduced in the post-GFC period. Section 3 describes the data and empirical models we utilised. In Section 4 we present the results, and Section 5 concludes.

2. Literature review and hypotheses development

2.1. Role of CRA in structured finance

CRAs are key contributors to narrowing information gaps between parties engaged in securitisation, primarily between the issuing banks and investors of ABS. CRAs present expert opinion on the potential credit risk of issued securities based on the collection and evaluation of various information about debt securities and their issuers. Ratings released by CRAs have a significant impact on the price of asset backed securities as empirical evidence shows that, among other factors, ratings' influence on the initial yield spread of asset backed securities are by far the greatest (Cuchra, 2005; Adelino, 2009; Fabozzi and Vink, 2012a; 2012b; He et al., 2012; 2016; Deku et al., 2019b; 2021). CRAs evaluation matters more for structured financial products, such as ABS, as these instruments are more complex and investors are exposed to a higher level of information asymmetries (Deku and Kara, 2017). ABS deals are often backed by a large pool of underlying diverse assets (such as mortgages, corporate bonds, car leases, credit card receivables etc.) and sliced into tranches (i.e., separate bonds) that may carry different risk levels, ratings, and seniority. Such complex structures are challenging even for sophisticated investors to conduct due diligence. The harder it is for investors to determine the true value of underlying assets, the greater the significance of CRA assessments becomes.

At the same time, it is argued that the increased importance of CRA evaluations can lead to incentive problems, and, therefore, the deterioration of their benchmark (Benmelech and Dlugosz, 2010; Bolton et al., 2012). As investors' reliance on CRAs increases, the pressure on CRAs on their evaluation performance reduces. Lack of adequate outside scrutiny by independent investors presents CRAs with opportunities to be more flexible in their evaluations. Furthermore, over-dependence on CRAs increases the volume of securitisation issuance, which in turn, increases the revenues of CRAs. The high returns generated from securitisation have led to conflicts of interest between CRAs and their clients (He et al., 2011; Griffin et al., 2013; Kraft, 2015), particularly when benefits outweigh the possible reputational costs for CRAs (Mathis et al., 2009; Becker and Milbourn, 2011; Bar-Isaac and Shapiro, 2013).

2.2. CRA during the pre-GFC period

A large body of literature examines how and why credit ratings, the most influential price determinants for securitised products, provided by CRAs during the pre-GFC period have been issued under loose standards. For example, Ashcraft et al., (2010) find that during the peak period of 2005 to mid-2007, the quality of the ratings issued for mortgage-backed securities (MBS) progressively diminished. Similarly, Griffin and Tang (2012) show that in evaluating CDOs' credit quality, CRAs made positive adjustments beyond their models. These adjustments have later led to severe downgrading of CDOs that had been initially rated as AAA.

Conflicts of interest between CRAs and issuers of securitised bonds can be viewed as one of the reasons for the diminishing quality of the ratings (He et al., 2011; 2012; Efing and Hau 2015). However, the main root causes of the deterioration in CRAs grading benchmark are thought to have stemmed from the issuer-pays model (Cornaggia and Cornaggia, 2013; Griffin et al., 2013; IMF, 2013) as well as rating overdependence due to regulatory purposes (Kisgen and Strahan, 2010; White, 2010; Mählmann, 2012).

Historically, CRAs have served as information intermediaries between sellers and buyers in financial markets. The costs of such services depended on the level of information asymmetry and operated under the investor-pays model. However, the conditions for the well-functioning of such services offered by CRAs started to falter after two key changes emerged in the last quarter of the previous century[4]. Firstly, ratings became ever more important as the Securities and Exchange Commission (SEC)[5] began heavily relying on CRA assessments for regulatory purposes (i.e. the investment mandates that highlight rating agencies as the main benchmark for investment eligibility) (SEC, 2008; Kisgen and Strahan, 2010; Bolton et al., 2012). Secondly, the shift from an investor-pays towards an issuer-pays model (White, 2010; Jiang et al., 2012). The price, or the initial yield spread, of ABS when they are first launched in the primary market are largely determined by the credit ratings assigned to them. However, thanks to the issuer-pays model, the costs related to the issuance of such ratings that make securities attractive to investors are actually paid by the issuers of the securities rather than investors (Cornaggia and Cornaggia, 2013). This, in turn, raises the possibility of inflated ratings being granted (Jiang et al., 2012).

---

[4] For further information on historical developments of CRAs see Partnoy (2009).
[5] The Securities and Exchange Commission is an independent body under the US government responsible for the supervision over the corporate sector, capital markets, the securities and investment instruments markets, and the protection of the investing public.

The literature argues that inflated ratings could be awarded for several reasons. Firstly, the financial crisis has revealed the existence of a conflict of interest between CRAs and their clients (i.e. issuers) as one of the main explanations for the rating inflation (He et al., 2011; 2012; Bolton et al., 2012; Efing and Hau, 2015). Post-GFC literature attempts to identify possible reasons to explain the parties' misbehaviour. In particular, the presence of strong business cooperation between CRAs and issuers of ABS is claimed to have led to inflated ratings being granted. Efing and Hau (2015), studying ABS and MBS issuances between 1999 and 2011, find that those issuers that kept strong securitisation business with CRAs received rating favours and that such rating inflation is more pronounced during the credit boom period as well as for complex products. Catering for customers' rating demands has also been observed between CRAs and their frequent customers. Faltin-Traeger (2009) shows that frequent issuers are likely to collaborate with the same CRAs as long as they are granted favourable ratings. Furthermore, the volume of the structured finance products being issued (Bolton et al., 2012), as well as the market share or size of the issuers of such financial instruments (He et al., 2012) were among the other motivations for CRAs to inflate the ratings.

Secondly, competition in the structured finance markets is observed to have inflicted pressure on CRAs to award inflated ratings in order to win over customers (Griffin et al., 2013), especially during the boom periods when possible damage to CRAs reputation was lower (Bar-Isaac and Shapiro, 2013). Bolton et al., (2012) also finds that competition among CRAs could diminish ratings quality in the so called '*race to the bottom*' (Golan et al., 2011). Bolton et al., (2012) demonstrate that competition promotes rating shopping by issuers, leading to rating inflation. They also show that during boom periods, when reputational damage to CRAs is lower[6] and when more investors are trusting, CRAs are likely to facilitate rating favours. Mathis et al. (2009) find that in the pre-GFC period, CRAs' truth-telling incentives were weakened by income when most of their business revenue came from assessing complex structured products. Relatedly, Frenkel (2015) suggests that reputational concerns are much lower in securitised in comparison to plain corporate bonds markets. He argues that fewer number of issuers, and higher frequency of issuances, in MBS and CDOs markets could explain rating inflation in those markets in contrast to corporate bonds market where there are many issuers with low issuance frequency.

Another reason for the issuance of inflated ratings can be explained by the phenomenon of '*rating shopping*'. Generally, issuers of securities can choose whether ratings given by CRAs should be made

---

[6] Reputational damage is lower as during booms getting caught for misleading investors by inflating ratings is lower (Bolton et al., 2012; Bar-Isaac and Shapiro, 2013).

public or not. For instance, if issuers are not satisfied with ratings presented, they can refuse the publication of the ratings. This in turn gives arrangers the option of seeking other CRAs for gaining a better rating. Even if CRAs were considered to have followed their actions in good faith, they may have struggled to cope with the rapid expansion of the market for securitisation. At the same time, the escalation in the complexity of the new instruments, along with inadequate risk measurement methods, have led to wider disagreements in the ratings granted by different CRAs. Wider discrepancies gave ABS issuers the opportunity to cherry pick the ratings to report. In other words, issuers were incentivised to *shop* for the highest ratings possible (SEC, 2008; Skreta and Veldkamp, 2009; OECD, 2010; He et al., 2012).

2.3. Regulatory changes in the European securitisation market post-GFC

To address and tackle the problems in securitisation markets, regulatory bodies have introduced new rules and regulations following the GFC as part of a broader reform of the financial system. In the Eurozone, the European Commission issued a draft on new securitisation regulation and changes to the capital requirements regulation, both emanating from the securitisation framework introduced jointly by BCBS and IOSCO. The main focus was to create simple, transparent and standardised (STS) securitisations. The underlying assets are required to be as 'simple' as possible; information available to potential buyers to be as 'transparent' as possible; while in order to ensure the structures are comparable they are to be 'standardised' (Deloitte, 2018).[7]

In order to restore market confidence and improve transparency, the EU has also taken action to regulate and supervise CRAs by implementing CRA Regulation that was implemented in three consecutive stages (EU Commission, 2018). The first stage was introduced in 2009, aimed at tackling conflicts of interest and improving the methodologies used by CRAs. Further amendments were implemented in 2011, which introduced new regulatory body ESMA to supervise CRAs. The last phase, CRA III, was implemented in mid-2013 and involves an additional set of measures on reducing transparency and rating over-reliance. Additionally, CRA III requires issuers of structured finance products to report at least two ratings obtained from independent CRAs. Critics of CRA regulations claim that these changes are not ambitious enough and argue that increasing the minimum number of required ratings to at least two may not solve the problems (Dauphin, 2013). In contrast, Fabozzi and Vink (2015), support the new EU rules and expect

---

[7] In order to be eligible to use the STS classification, main parties (i.e. originators, sponsors and SPVs) should meet the requirements set out in the new regulation, be located within the EU and be included in ESMAs STS list (EBA, 2014; Arthur Cox, 2018). Although investors can be more comfortable with STS designated products as their structure has gone through thorough examination, investors are still responsible to conduct due diligence.

multiple ratings to provide markets with useful information about the credit risks of a tranche.

2.4. Hypotheses development

Changes in CRA Regulation are designed to minimize conflicts of interest between CRAs and issuer banks in securitisation. Given that ratings are the dominant factor in determining the market value of securitised assets, tackling rating inflation is vital in reducing information asymmetries in the securitisation market. As mentioned above, rating inflation can be caused by rating shopping and rating catering (He et al., 2012; Griffin et al., 2013). Our main aim in this paper is to examine rating shopping and catering behaviour in the European securitisation market after new regulations were introduced.

2.4.1. Rating shopping

The number of ratings assigned to a tranche can help indicate the existence of possible rating shopping (Benmelech and Dlugosz, 2010; Bongaerts et al., 2012). For instance, a single rating suggests that shopping is more likely for a given securitisation transaction compared to a similar but double or triple rated transaction. The higher the difference in the number of ratings for a given ABS tranche, the greater the risk of rating shopping. Hence the new regulations could be effective in preventing agents from engaging in moral hazard. Alternatively, the impact of the new regulations could be limited when it comes to reducing rating shopping. This is because, firstly, the conflict of interest between securitisation parties is not necessarily the sole cause for the occurrence of rating shopping. For example, it can be regarded as a natural consequence of the process of obtaining and reporting ratings. Hence, CRAs could be reporting unbiased ratings, however, it is at the discretion of issuers to make them public (Skreta and Veldkamp, 2009). So while the regulatory changes can reduce conflicts of interest, and the *at least two ratings* rule can put issuers under pressure to disclose at least two ratings, it is still a possibility that issuers censor out the third rating.

Secondly, the effect of the CRA III requirement of obtaining ratings from at least two independent CRAs should be limited as the majority of securitisation deals are already rated by multiple CRAs, whilst single rated tranches make up only a small proportion of the market[8]. Even if the implementation has been successful, the rating inflation should disappear only between single and

---

[8] For instance, He et al. (2012) shows that only 20% of the MBS deals they studied had one rating, whereas more than 93% of AAA tranches, according to He et al (2016), had multiple ratings. Similarly, Griffin et al. (2013) using CDOs identifies less than 10% of AAA tranches had single rating.

multiple rated tranches. Meanwhile, tranches with dual ratings should still be liable for rating shopping in comparison to securities with triple CRA certifications.

Therefore, we argue that the effectiveness of the new rules when it comes to reducing rating shopping might be limited. In order to assess the possible effect of the new regulations, we examine the effects of possible issuer rating shopping on the initial market spread of ABS by comparing the pre- and post-regulatory changes. To do so, we follow the literature which shows that the information content of the initial market spreads[9] of ABS instruments are valuable (Adelino, 2009; Faltin-Traeger et al., 2010) and the biggest determinant of the launch spread are credit ratings (Cuchra, 2005; Fabozzi and Vink, 2012b). However, investors' consideration in setting the price for the structured products is not confined to CRA assessments alone. Empirical evidence shows that in assessing ABS risk, investors transcended the assigned credit ratings (Cuchra, 2005; Cuchra and Jenkinson, 2005; Adelino, 2009; Fabozzi and Vink, 2012a; 2012b; 2015; He et al., 2012; 2016; Fabozzi et al., 2017; Deku et al., 2019b; 2021). Investors considered various other factors such as the external credit enhancement and the quality of collateral (Fabozzi and Vink, 2012a, b), the possible rating shopping of originators (He et al., 2012; Fabozzi and Vink, 2015), the size of issuers and rating inflation (He et al., 2012), and the reputation of issuers, trustees and legal advisors (Deku et al., 2019b, 2021; Karimov et al, 2021). This strand of the literature shows that the issuance price of ABS is responsive to all available data, including the information on relevant parties involved in both the structural and transactional stages of securitisation.

At the outset, we examine single rated versus multiple rated securities. He et al. (2016) find that single rated tranches, in comparison to tranches with two or three ratings, signal rating shopping by issuers as pessimistic ratings are not reported by the issuers. Accordingly, we posit that if issuers' ability to shop for ratings is curbed then the spread of the securities should not reflect rating shopping. In other words, all else equal, the initial spread of a single rated security in comparison to a multiple rated security should not be significantly different from each other. Hence, we hypothesize that:

H1[0] – *Multiple rated ABS spread is not different from single rated ABS spread*
H1[1] – *Multiple rated ABS spread is different from single rated ABS spread*

---

[9] Initial market spread or spread is the compensation margin over relevant benchmark for the risks of the related structured security. The spread, set in basis points, is determined at an auction upon issuer's release of the ratings obtained for the bonds (Skreta and Veldkamp, 2009).

Secondly, we argue that requiring ratings from at least two independent CRAs could help reduce shopping; however, it may not eliminate it altogether, as the shopping theoretically should still exist between double versus triple rated bonds. Therefore, we hypothesize that:

H2₀ – Triple rated ABS spread is not different from double rated ABS spread
H2₁ – Triple rated ABS spread is different from double rated ABS spread

2.4.2. Rating disagreements

Issuers' incentive to shop for better ratings increases as the disagreement between CRAs evaluations widens. In addition, as CRAs use different methodologies to evaluate the credit risk of securities, complexity of deals might result in CRAs not assigning the same ratings (Griffin et al., 2013). Differing ratings from CRAs for a given ABS tranche might signal potential risk as inconsistency in risk assessment between CRAs may concern investors (He et al., 2012). In contrast, it can also be argued that rating disagreements could also be a positive signal, as it may indicate the absence of conflict of interest. Firstly, it shows that issuers are not suppressing lower ratings and reporting all ratings even though CRAs disagree. Secondly, it demonstrates that rating catering had not occurred *i.e.* issuer and CRAs did not collude to harmonize the ratings allocated for a security. Accordingly, we hypothesize that investors perceive rating disagreements as an indication of absence of conflicts of interest and demand lower spreads for such transactions. We therefore test the following hypothesis:

H3₀ – ABS spread is not affected by rating disagreement
H3₁ – ABS spread is affected by rating disagreement

In contrast, there could be an expectation of rating catering to disappear after the implementation of the new regulations, as such behaviour is a direct result of conflict of interest. Since new regulations aim to tackle conflicts of interest and improve CRA methodologies, investors may have more confidence in CRAs that they will adhere to their standards and issue unbiased ratings. We test the following hypothesis to see whether the response to potential rating catering has changed after the introduction of the new regulations:

H4₀ – ABS spread is not affected by rating disagreements after the new regulations
H4₁ – ABS spread is affected by rating disagreements after the new regulations

3. Data and methodology

3.1. Data sources

The data is obtained from Bloomberg, which provides detailed information on deal and tranche characteristics. We are primarily interested in major securitisation markets in Europe[10]. Our sample includes ABS and MBS deals issued in France, Germany, Italy, Ireland, Netherlands, Spain and the UK between 1998 and 2018. These countries are responsible for over 81% of all ABS issuance in Europe (Bloomberg, 2018). The key deal characteristics are: type of collateral, asset origin, pricing date, issue year, value of a deal, issuer nation, type of a deal, and issuer's identity. The key variable for each tranche is credit ratings assigned. In our sample we include securities that had been assessed at least once by a rating agency. Initially, we collected information on 18,399 tranches; however, some data were eliminated due to missing ratings and other key variables, such as the initial yield spread. As a result, the final sample in our study includes 12,469 tranches.

3.2. Empirical model

Following the literature on measuring the initial yield spread of structured finance securities (Cuchra, 2005; Fabozzi and Vink 2012a;b; He et al., 2012; Deku et al., 2019b), we specify the baseline model for a given tranche *i* as follows:

$$Spread_i = \beta_0 + \beta_1 L_i + \gamma' X_i + \varepsilon_i \quad (1)$$

Where, *Spread* is the fixed premium set in basis points over the relevant benchmark rate. The offer price and the market demand on risk premiums at the issuance are represented by the primary spread as reliable indicators (Cuchra, 2005; He et al., 2012; Fabozzi and Vink, 2012; 2015; Deku et al., 2021). *L* is a set of variables (Multiple ratings, CRA reported, Rating agreement) that we utilise interchangeably to capture the rating shopping and rating catering behaviour. *Multiple ratings* equals 1 if more than one credit rating is published by the issuer for a tranche, and 0 otherwise. Following, He et al. (2012), we use this proxy to test for the possible existence of rating shopping. *CRA reported* is a variable that indicates the number of ratings assigned for a given tranche. We employ two versions of this variable as *2 CRA reported* and *3 CRA reported*. The former takes the value of 1 if the tranches has two assigned ratings, and 0 otherwise. The latter takes the value of 1 if the tranches has three assigned ratings, and 0 otherwise. We utilise these variables to proxy rating

---

shopping and compare dual versus triple rated tranches. Each additional rating is informative and should reduce information asymmetry. However, if additional third CRA certification is lower than issuers' expected grade then it can be suppressed, signalling rating shopping. *Rating agreement* equals 1 if at least two of the total issued CRA certifications are identical, and 0 otherwise. We utilise this variable to capture rating catering. In this setting, we limit our sample to securities rated by at least two independent CRAs and also control for *Number of ratings* (equals values two or three) to capture possible risks that might arise due to rating shopping (He et al., 2012; 2016).

We use a set of variables (X_i) to control for various deal, tranche, issuer and macro characteristics. *Tranche credit rating* is utilised to control for the credit quality of the ABS tranches by assigned credit ratings. Structural and asset risks can be captured by ratings, which are the principal explanatory factor in yield spread (Fabozzi and Vink 2012a; b; Cuchra, 2005). Our data includes ratings reported by the three major rating agencies: S&P, Fitch and Moody's. We convert the ratings into factor variables by using a numerical point scale of 1 denoting (3A – the highest notch) down to 21 (C – the lowest notch) and we control for all rating categories. All the notches have been changed into numbers and the arithmetic mean of all the available ratings per security has been calculated. We classify AAA rated securities as prime and others as non-prime. *Size* is the natural logarithm of each tranche value and controls for liquidity (Whetten and Adelson, 2004; He et al., 2012; Efing and Hau, 2015; Deku et al., 2019b). *Weighted Average Life* is the tranche maturity in its logarithmic form (Cuchra, 2005; Adelino, 2009; Mahlmann, 2012; Efing and Hau, 2015; Deku et al., 2019b). *Issue Type* equals to 1 if a deal is MBS, and 0 if it is non-MBS ABS (Cuchra, 2005; Deku and Kara, 2017). *Market Area* captures the market where the issues is traded and indicates Domestic, Global or International in the dummy variable form. *Issuer Nation* are important in pricing of the securities (Cuchra, 2005; He et al., 2012; Fabozzi and Vink 2012b) and indicates the country where the ABS is structured. Macroeconomic conditions as well as legal systems in the country of origination can have a considerable impact on the performance of the ABS. *Guarantor* is a dummy variable and indicates whether external credit enhancement applies for a given ABS deal. Similarly, *Private Placement* is a binary variable and shows if sales of ABS tranches are conducted in public or private offering.

3.3. Descriptive statistics

Table 1 Panel A presents the summary statistics for selected variables included in our dataset. Yield spread at issuance, on average, is 128.72 basis points (bps) for the whole sample. Mean yield spread for least risky (AAA rated) securities are more than three times lower than for non-prime tranches.

Average size of tranche for the whole sample is approximately €300m. Average deal approximates €1.6 billion. The average credit for the entire sample lies between AA- and A+ and for non-prime tranches the average rating is A-. Panel B of Table 1 contains a summary of tranche rating distribution. In comparison to tranches rated by multiple CRAs, single rated tranches make up a little less than one-fifth of the entire sample. Over 80 per cent of the observations have credit ratings from at least two independent CRAs. For about 16% of the sample, we observe rating disagreements by CRAs. For non-prime issuances, the proportion increases to almost 26%. In Panel C, we present the distribution of tranche credit ratings. Prime quality issues account for almost 39% of the entire sample, where 4,806 ABS securities have been issued with the highest level of rating.

4. Regression results

The estimations of the regression models are rolled out progressively. We commence with the baseline regression for the aggregate data. This allows us to see the effects of the variables of interest on the initial market spread for the entire period. Next, we split the sample into two periods and examine the effects of possible rating shopping on the spread pre- and post-GFC. The former covers the period between 1998 and 2007 and the latter captures the post-implementation period of the new CRA III rule between 2014 and 2018. We exclude 2008 and 2009 as during the financial crisis period securitisation activity was stalled. We also exclude 2010 to 2013 as this period also displayed a sharp decline in ABS issuance, but more importantly, the new regulations only came into effect fully in the latter half of 2013. In subsequent regressions, we also split the sample based on risk levels, into prime and non-prime tranches, to examine if the effects of the selected variables change under different informational settings.

4.1. Results for the full period

In Table 2 we present the results for the entire sample period. In Column 1 we present results for the *Multiple ratings* and find that the coefficient of this variable is negative and statistically significant at 1% level. This result, supporting H1, shows that, on average, having at least two assigned ratings for a tranche reduces the initial yield spread by 14%. Such difference in the spread can be explained by the existence of rating shopping (Skreta and Veldkamp, 2009; Benmelech and Dlugosz, 2010). Investors demand a higher spread for single rated tranches in comparison to double or triple, because they may suspect that issuers shop for ratings and suppress unfavourable ones (He et al., 2012). In Column 2 we report results for the *CRA reported*. We find that coefficients of both *2 CRA reported* and *3 CRA reported* are negative and statistically significant. The negative relationship

indicates that the higher the number of ratings assigned to a security the lower the spread demanded by investors. These findings support our H2. Economic interpretation of our results is that initial yield spreads of tranches rated by three CRAs are, on average, 37% lower than tranches with a single rating. For tranches with two CRAs this difference is 9%. The results indicate that each added certification from independent CRAs is informative and reduces information gaps. In Column 3 we present the results for *Rating agreement* and find a positive and statistically significant coefficient for this variable. The result, supporting H3, indicate that investors suspect rating catering and deem ABS riskier if at least two CRAs report the same rating. This result is in line with Griffin et al. (2013) which argues that issuers, instead of supressing unfavourable ratings, collaborate with CRAs to obtain tailored credit ratings that are higher and identical (Griffin et al., 2013). We find that suspicion of rating catering increases initial yield spreads by 15%. It is plausible to argue that from an issuer viewpoint, each additional rating should add value and reduce information asymmetries. Hence, issuers are incentivised to report the highest possible rating and ensure each additional rating matches the desired level. However, such behaviour may be suspected as rating favours by investors. At the same time, in Column 3, we also control for rating shopping behaviour using *Number of ratings*. We find that the coefficient for this variable is negative and statistically significant. This result shows that investors find additional CRA certification informative, and less suspicious of rating shopping, as they ask for a lower spread for such issues.

4.2. Results for sub-periods

In Table 3 we present the results for the boom (between 1998 and 2007) and post-regulation (between 2014 and 2018) periods. The latter captures the period after the new CRA III regulations were introduced in the European financial markets. For the period before-GFC, we find all our key variables to be significant. These findings are in line with the main arguments that multiple ratings reduce information asymmetries (*Multiple Ratings* in Column 1), suspicion of rating shopping is lower if more ratings are reported (*2 CRA reported* and *3 CRA reported* in Column 2), and CRA rating agreements may increase the risk of rating catering (*Rating agreement* in Column 3).

However, our findings change strikingly for the post-regulation period (Columns 4 to 6). Firstly, we do not find *Multiple ratings* to be significant (Column 4). This shows that in the post-regulation period, the presence of multiple ratings is not considered to be a risk reducing factor for ABS. Hence, we can argue that the new regulations introduced may have increased trust in CRAs and reduced the suspicion of rating inflation, due to rating shopping behaviour. We examine the rating shopping phenomenon in more detail in Column 5 by comparing two and three CRA rated versus single rated tranches. We find that the coefficient of *2 CRA reported* is insignificant, showing that

the initial yield spread of double rated tranches is no different from single rated ones. On the other hand, we find that *3 CRA reported* is statistically significant and has a negative sign. It seems that triple rated tranches are still deemed to be less risky by investors in comparison to single rated tranches. In unreported results we have also compared triple rated traches against double rated ones excluding single rated ones, and find a similar result. Overall, our results show that investors still view the possibility of rating shopping after the introduction of new CRA regulation. In Column 6 we report an insignificant coefficient for *rating agreement* for the post-regulation period. This result, supporting H4, shows the disappearance of the suspicion of rating catering after the introduction of the new regulation. This is in line with Owlett and Yu (2016), who also report similar results for the US CDO market and confirm the continuation of rating shopping, but argue that rating catering has diminished. We interpret our findings as a direct consequence of regulatory changes in reducing conflicts of interest in European securitisation markets. Rating catering is the direct consequence of collusion between CRAs and issuer banks, as the two could agree on inflating and harmonizing the ratings given by different CRAs. All in all, our results suggest that the new stricter regulatory measures have been effective in tackling conflicts of interest and reducing rating inflation caused by rating catering.

4.3. Prime versus non-prime ABS

We split the sample into two groups according to risk categories – as prime (AAA) tranches and non-prime (non-AAA) tranches – to examine whether our results differ depending on investors' risk preference. We present results in Table 4 Panel A for the period before 2008 (Columns 1 to 7) and Panel B for the post-regulation period (Columns 1 to 7). For the pre-GFC period, we observe that the coefficients of all our variables of interest are similar in terms of direction of signs and significance. These results show that in the pre-crisis period, investors' perception of rating inflation due to rating shopping and catering was similar, regardless of the risk they took. Having said that, it is worth to note that the coefficients of *Multiple ratings*, *2 CRA reported* and *3 CRA reported* are larger for prime tranches. Hence, investors seem to be more wary of potential rating shopping for triple-A rated bonds. This is in line with what has been observed in the performance of triple-A ABS during the crisis as pre-GFC forecast of triple-A defaults were found to be largely underestimated in comparison to actual defaults. Another argument here is that, as suggested by Adelino (2009), less sophisticated (or less informed) investors are more likely to invest in triple-A securities, hence they are more reliant on CRAs' signalling of quality.

The results in Panel B for the post-regulation period are considerably different between prime and non-prime tranches. For the post-regulation period we find that all of the key variables are

significant for the prime tranches sample (Columns 1 to 3). Hence, even after the introduction of new regulation in the post-GFC period, investors of the top quality (or least risky) tranches still attach importance to the number of CRAs assigned to a security. The presence of more credit ratings reduces the initial yield spreads, which also signals potential worries about rating shopping. Additionally, these findings can also be interpreted, as argued by Adelino (2009), that investors of prime tranches are still more reliant on ratings and higher insensitivity of AAA securities to various information.

In contrast, for the post-regulation period shown in Panel B of Table 4, we observe that results are different for the non-prime sample. We find that the coefficient of *Multiple ratings* is insignificant, suggesting that rating shopping is not suspected by investors of these securities. Similarly, the *2 CRA reported* and *3 CRA reported* are also insignificant, supporting our earlier finding that investors do not consider rating shopping as a risk factor for non-prime tranches. We find that the coefficient of *Rating agreement* is insignificant, showing that the possibility of rating catering was not considered as an influencing factor by investors for non-prime tranches. These results show that CRA regulation has been effective in tackling conflicts of interest, or at least restored investor confidence, that ratings reported are not unreasonably inflated. Investors of riskier assets, who are more informed, seem to have confidence in the changes implemented by the European authorities to tackle conflicts of interest and regulate CRAs.

4.3. Robustness checks with a uniform sample

In the results presented above, we control for issuer country; however, there is a possibility that not all country-specific characteristics might be captured in our estimations. In this section we re-estimate our models using a uniform sample, restricted to UK observations only, to evaluate the robustness of our results. The UK is the largest issuer nation for the structured bonds in Europe and it accounts for roughly half of the entire sample used in our study. We present the results of our baseline model for the whole period in Table 5, for pre- and post-regulations sub-periods and for prime and non-prime sub-samples in Table 6. Overall, the results for the UK sample are consistent with the results for the whole European sample, confirming the robustness of our results.

4.4. Robustness check with propensity score matching

For the purpose of evaluating the robustness of the outcomes we also employ propensity score matching (PSM), which enables us to assess the effects of the key variables that we are concerned with on the yield of the securities. More importantly, we rely on PSM to address the potential self-

selection bias in our estimations. Self-selection might be a concern in analysing the impact of the new measures and investors' response with regard to the rating inflation. In other words, if there is systematic difference on the initial spread of single versus multiple rated tranches regardless of the two periods (*i.e.,* the spread of tranches of those deals which were consummated pre- and post-periods), then the results obtained from comparing the impact of the changes can be misleading. Accordingly, if the spread of the securities on average were to be different in two cases, then it might be possible that the difference is more the result of self-selection than it is the consequence of the changes. In an ideal world, it would have been easier having identical ABS securities for both periods and then compare the means of their spreads. As we are not able to have the same securities, we are in need of a substitute that can be a counterfactual case for a given security. A possible choice to proxy counterfactual for *Before 2008* (the period when changes were implemented) would be observations of the *After 2013*. We then generate our 'control' group using the substitutes. Formation of the control group is implemented using the PSM technique (Rosenbaum and Rubin, 1983) as the propensity score can help reduce the issues related to matching. In order to compare the *After 2013* and *Before 2008* periods, PSM enables us to match the sample we have that is similar, as far as the key characteristics are concerned, to those which might affect the price of a security. Notably, the control unit of *Before 2008* is composed of a sample of securities with characteristics that are the closest to *After 2013*. If the unobservables from the two matched groups are presumed to be indifferent, or that they have no significant impact on the result, then the differential noted in the price (Δ*Spread*) of a security can be associated with the treatment effect i.e. regulatory changes. Our inference is restricted, as a result of matching, to the sample of *After 2013* and matched *Before 2008* periods. For a given tranche *i,* the effect of the treatment (*After 2013*) δ_i is the difference between potential outcomes of the treated and control units, denoted as follows:

$$\delta_i = \Delta Spread_{1,i} - \Delta Spread_{0,i} \qquad (2)$$

The average treatment effect for the treated (ATET) is the effect of regulatory changes implemented over the sample unit is defined as:

$$ATET = E\big(\Delta Spread_{1,i} - \Delta Spread_{0,i}\big| r_i = 1\big) \qquad (3)$$

where, $r_i = 1$ denotes the treated for tranche *i*, while $r_i = 0$ denotes matched tranche *i*, without treatment. Matching is performed based on the propensity score, which is a function of the initial spread and the tranche observable characteristics:

$$P(X_i) = \text{Pr}(r_i = 1|X_i), with\ (0 < p(X_i) < 1 \tag{4}$$

First, the propensity score $P(X_i)$ is computed with a probit model in which regressors X_i include key tranche and deal characteristics while the dependant binary variables equal one for *Multiple ratings CRA reported* and *Rating agreement*, and 0 otherwise. Following Dehejia and Wahba (2002), treated and non-treated tranches are matched with the nearest-neighbour method, which matches securities with the closest propensity scores.

We report the results of PSM in Table 7. For *Multiple ratings*, the average treatment effect on the treated (ATET) is negative and significant for the whole period as well as before the GFC. However, this relationship between multiple ratings and spreads disappears after the crisis. This result is in line with the earlier findings suggesting that regulatory changes have reduced investors' suspicion of rating inflation and increased trust of CRAs. ATET for *CRA reported (2 vs 1)* displays a similar pattern, where it is negative and statistically significant for the whole period and before the crisis, but insignificant after the crisis. This result supports our earlier findings, that in the post-regulation period single and double rated tranches' initial yield spreads are not different from each other. However, for *CRA reported (3 vs 2)* we still observe a significant ATET for the period after 2013. Confirming our earlier findings, investors regard triple rated ABS tranches less risky in comparison to double rated tranches. ATET for *Rating agreement* is positive and significant for the whole as well as pre-GFC period, supporting our findings that investors were concerned about rating catering. However, it is not significant for the post-regulation period, indicating the disappearance of investors' suspicion of rating catering. Overall, the results obtained from PSM show that our findings are robust against potential self-selection bias.

5. Conclusion

Several regulatory changes were introduced in Europe following the GFC aimed at tackling conflicts of interest between issuers and CRAs in the ABS market. Utilising a sample of 12,469 ABS issued between 1998 and 2018 in the European market, this paper examined whether these changes have had any impact on rating inflations caused by rating shopping and rating catering phenomena.

We find that these changes have been effective in tackling conflicts of interest between issuers and CRAs in the ABS market. Rating catering, which is a direct consequence of issuer and CRA collusion, seems to have disappeared after the introduction of regulations. Investors who demanded higher spreads previously for rating agreements for a multiple rated tranche, did not consider the effect of rating harmony as a risk in the post-GFC period. Regarding rating shopping, we find that the effectiveness of the changes has been limited potentially for two reasons. First, rating shopping could also be an innate cause of rating processing and issuing procedure, as it is at issuers' discretion to report or suppress additional ratings. Second, the newly introduced *at least two ratings rule,* a regulation that has a direct impact on rating shopping behaviour, may not be enough to reduce rating shopping, as ABS can also be rated by three or more CRAs. Additionally, we find that rating over-reliance on CRAs might still be an issue, especially for investors of high-quality bonds. Even after the implementation of the new regulations, investors of triple-A ABS still seem to be reliant on the ratings.

Overall, our findings suggest that investors' perceptions of potential conflicts of interest between CRAs and ABS issuers have changed in the post-GFC period after the introduction of regulations. Also, we find that European initiatives have been effective in reducing rating inflation as rating catering is not reflected in the prices of the ABS issuances in the post-regulation period. As for rating shopping and rating over-reliance, we propose that a further set of measures might be needed as these issues appear to be still present in the market to a certain degree.

Declarations

The authors declare that they have no conflict of interest or competing interests.

References

Adelino, M. (2009). Do investors rely only on ratings? The case of mortgage-backed securities. *Job Market Paper*. MIT Sloan School of Management and Federal Reserve Bank of Boston

Ashcraft, A. B., & Schuermann, T. (2009). *Federal reserve bank of New York staff reports:* Understanding the securitization of subprime mortgage credit. Retrieved from: https://www.newyorkfed.org/medialibrary

Ashcraft, A., Goldsmith-Pinkham, P., & Vickery, J. (2010). MBS Ratings and the Mortgage Credit Boom. *Federal Reserve Bank of New York Staff Reports, no. 49* , . Retrieved from https://www.newyorkfed.org/medialibrary

Bar-Isaac, H., & Shapiro, J. (2013). Ratings quality over the business cycle. *Journal of Financial Economics, 108*(1), 62-78. doi:10.1016/j.jfineco.2012.11.004

Becker, B., & Milbourn, T. (2011). How did increased competition affect credit ratings? *Journal of Financial Economics, 101*(3), 493-514. doi:10.1016/j.jfineco.2011.03.012

Benmelech, E., & Dlugosz, J. (2010). The credit rating crisis. *NBER Macroeconomics Annual, 24*

Bolton, P., Freixas, X., & Shapiro, J. (2012). The credit ratings game. *The Journal of Finance (New York), 67*(1), 85-111. doi:10.1111/j.1540-6261.2011.01708.x

Bongaerts, D., Cremers, K. J. M., & Goetzmann, W. N. (2012). Tiebreaker: Certification and multiple credit ratings. *The Journal of Finance (New York), 67*(1), 113-152. doi:10.1111/j.1540-6261.2011.01709.x

Cornaggia, J., & Cornaggia, K. J. (2013). Estimating the costs of issuer-paid credit ratings. *The Review of Financial Studies, 26*(9), 2229-2269. doi:10.1093/rfs/hht041

Coval, J. D., Jurek, J. W. and Stafford, E. (2009a), "Economic Catastrophe Bonds." *American Economic Review,* Vol. 99, No.3: pp. 628-666.

Coval, J., Jurek, J. and Stafford, E. (2009b), "The Economics of Structured Finance." *Journal of Economic Perspectives,* Vol. 23, No.1: pp. 3-25.

Cuchra, M. F. (2005), Explaining Launch Spreads on Structured Bonds. *Discussion Paper.* University of Oxford

Cuchra, M. F. & Jenkinson, T. (2005), Security Design in the Real World: Why are Securitization Issues Tranched? *Working Paper.* University of Oxford.

Dauphin, F. (2013). *CRA III and the over-reliance on rating in question.* Allenovery. www.allenovery.com

Deku, S. Y., & Kara, A. (2017). *Securitization: Past, present and future,* Palgrave Macmillan.

Deku, S. Y., Kara, A., & Zhou, Y. (2019a). Securitization, bank behaviour and financial stability: A systematic review of the recent empirical literature. *International Review of Financial Analysis*, 61, 245-254. doi:10.1016/j.irfa.2018.11.013

Deku, S. Y., Kara, A., & Marques-Ibanez, D. (2019b). Trustee reputation in securitization: When does it matter? *Financial Markets, Institutions & Instruments, 28*(2), 61-84. doi:10.1111/fmii.12106

Deku, S. Y., Kara, A., & Karimov, N. (2021). Do investors value frequent issuers in securitization? *Review of Quantitative Finance and Accounting, 57*(4), 1247-1282. doi.org/10.1007/s11156-021-00977-2

Dell'Ariccia, G., Igan, D. and Laeven, L. (2012), "Credit Booms and Lending Standards: Evidence from the Subprime Mortgage Market." *Journal of Money, Credit and Banking,* Vol. 44, No.2-3: pp. 367-384.

EBA (European Banking Authority). (2014). *EBA Discussion Paper on simple standard and transparent securitisations.* European Banking Authority. https://www.eba.europa.eu/

Efing, M., & Hau, H. (2015). Structured debt ratings: Evidence on conflicts of interest. *Journal of Financial Economics, 116*(1), 46-60. doi:10.1016/j.jfineco.2014.11.009

European Commission. (2013). *New rules on credit rating agencies* (CRAs) frequently asked questions MEMO/13/13. https://ec.europa.eu/commission/presscorner/detail/de/MEMO_13_13

European Commission. (2018). *Regulating credit rating agencies.* Retrieved from https://ec.europa.eu/

European Datawarehouse. (2018). *The European ABS Market and its Development*. Retrieved from https://eurodw.eu/

Fabozzi, F. J. and Vink, D. (2012a), "Determinants of Primary Market Spreads on U.K. Residential Mortgage-Backed Securities and the Implications for Investor Reliance on Credit Ratings." *Journal of Fixed Income*, Vol. 21, No.3: pp. 7-14.

Fabozzi, F. J. and Vink, D. (2012b), "Looking Beyond Credit Ratings: Factors Investors Consider In Pricing European Asset-Backed Securities." *European Financial Management*, Vol. 18, No.4: pp. 515-542.

Fabozzi, F. J. and Vink, D. (2015), "The information content of three credit ratings: the case of European residential mortgage-backed securities." *European Journal of Finance*, Vol. 21, No.3: pp. 172-194.

Fabozzi, F. J., Nawas, M. E., & Vink, D. (2017). Exploring rating shopping for european triple a senior structured finance securities. Finance Research Letters, 20, 35-39. doi:10.1016/j.frl.2016.08.013

Faltin-Traeger, Oliver, 2009, Picking the right rating agency: Issuer choice in the ABS Market, *Working paper*, Columbia Business School.

Faltin-Traeger, O., Johnson, K. W., & Mayer, C. (2010). Issuer credit quality and the price of asset backed securities. *The American Economic Review, 100*(2), 501-505. doi:10.1257/aer.100.2.501

Frenkel, S. (2015). Repeated interaction and rating inflation: A model of double reputation. *American Economic Journal. Microeconomics, 7*(1), 250-280. doi:10.1257/mic.20110077

Golan, L., Parlour, C., & Rajan U. (2011). Competition, quality, and managerial slack. *Working Paper*, University of Michigan. http://dx.doi.org/10.2139/ssrn.1787061

Griffin, J. M., & Tang, D. Y. (2012). Did subjectivity play a role in CDO credit ratings? *The Journal of Finance (New York), 67*(4), 1293-1328. doi:10.1111/j.1540-6261.2012.01748.x

Griffin, J. M., Nickerson, J., & Tang, D. Y. (2013). Rating shopping or catering? an examination of the response to competitive pressure for CDO credit ratings. *The Review of Financial Studies*, 26(9), 2270-2310. doi:10.1093/rfs/hht036

Griffin, J. M. and Maturana, G. (2016), "Who Facilitated Misreporting in Securitized Loans?" *Review of Financial Studies*, Vol. 29, No.2: pp. 384-419.

He, J., Qian, J., & Strahan, P. E. (2011). Credit ratings and the evolution of the mortgage-backed securities market. *The American Economic Review, 101*(3), 131-135. doi:10.1257/aer.101.3.131

He, J. J., Qian, J. Q. and Strahan, P. E. (2012), "Are All Ratings Created Equal? The Impact of Issuer Size on the Pricing of Mortgage-Backed Securities." *The Journal of Finance*, Vol. 67, No.6: pp. 2097-2137.

He, J. J., Qian, J. Q. and Strahan, P. E. (2016), "Does the Market Understand Rating Shopping? Predicting MBS Losses with Initial Yields." *Review of Financial Studies*, Vol. 29, pp. 457-485

Jiang, J., Stanford, M., & Xie, Y. (2012). Does it matter who pays for bond ratings? historical evidence. *Journal of Financial Economics, 105*(3), 607-621. doi:10.1016/j.jfineco.2012.04.001

Jiang, W., Nelson, A. A. and Vytlacil, E. (2013), "Liar's Loan? Effects of Origination Channel and Information Falsification on Mortgage Delinquency." *Review of Economics and Statistics*, Vol. 96, No.1: pp. 1-18.

Kara, A., Marques-Ibanez, D. and Ongena, S. (2018), "Securitization and credit quality in the European Market." *European Financial Management*, forthcoming. Published first online. DOI: 10.1111/eufm.12168

Kara, A., Marques-Ibanez, D. and Ongena, S. (2016), "Securitization and lending standards: Evidence from the European wholesale loan market", *Journal of Financial Stability*, Vol. 26: pp.107-127

Karimov, N., Kara, A., & Downing, G. (2021). The impact of legal advisor-issuer cooperation on securitization pricing. *Financial Markets, Institutions & Instruments, 30*(5), 167-199. doi.org/10.1111/fmii.12153

Keys, B. J., Mukherjee, T., Seru, A. and Vig, V. (2010), "Did Securitization Lead to Lax Screening? Evidence from Subprime Loans." *The Quarterly Journal of Economics,* Vol. 125, No.1: pp. 307-362.

Kisgen, D. J., & Strahan, P. E. (2010). Do regulations based on credit ratings affect a firm's cost of capital? The Review of Financial Studies, 23(12), 4324-4347. doi:10.1093/rfs/hhq077

Kraft, P. (2015). Do rating agencies cater? evidence from rating-based contracts. *Journal of Accounting and Economics, 59*(2-3), 264-283. doi:10.1016/j.jacceco.2014.09.008

Mählmann, T. (2012). Did investors outsource their risk analysis to rating agencies? evidence from ABS-CDOs. *Journal of Banking and Finance, 36*(5), 1478-1491. doi:10.1016/j.jbankfin.2011.12.015

Mathis, J., McAndrews, J., & Rochet, J. (2009). Rating the raters: Are reputation concerns powerful enough to discipline rating agencies? *Journal of Monetary Economics, 56*(5), 657-674. doi:10.1016/j.jmoneco.2009.04.004

Nadauld, T. D. and Sherlund, S. M. (2013). "The impact of securitization on the expansion of subprime credit." *Journal of Financial Economics,* Vol. 107, No.2: pp. 454-476.

Owlett, R. H. and Yu, F. (2016). "A re-examination of rating shopping and catering using post-crisis data on CDOs. " *Economics Letters,* Vol. 147, pp. 164-167. doi.org/10.1016/j.econlet.2016.08.031

Partnoy, F., 2009. Overdependence on credit ratings was a primary cause of the crisis. Proceedings of the 2008 International Banking Conference: "The First Credit Market Turmoil of the 21st Century", World Scientific Publishers.

Petersen, M. A. and Rajan, R. G. (2002). "Does Distance Still Matter? The Information Revolution in Small Business Lending." *The Journal of Finance,* Vol. 57, No.6: pp. 2533-2570.

Piskorski, T., Seru, A. and Witkin, J. (2015). "Asset Quality Misrepresentation by Financial Intermediaries: Evidence from the RMBS Market." *Journal of Finance,* Vol. 70, No.6: pp. 2635-2678.

Securities and Exchange Commission. (2008). *Summary Report of Issues Identified in the Commission Staff's Examinations of Select Credit Rating Agencies.* Retrieved from http://sec.gov

Skreta, V., & Veldkamp, L. (2009). Ratings shopping and asset complexity: A theory of ratings inflation. *Journal of Monetary Economics, 56*(5), 678-695. doi:10.1016/j.jmoneco.2009.04.006

Wang, Yihui, & Xia, Han. (2014). Do Lenders Still Monitor When They Can Securitize Loans? *The Review of Financial Studies*, Volume 27, Issue 8, 1 August 2014, Pages 2354–2391, https://doi.org/10.1093/rfs/hhu006

White, L. J. (2010). Markets: The credit rating agencies. *The Journal of Economic Perspectives, 24*(2), 211-226. doi:10.1257/jep.24.2.211

White, L. J. (2019). Using the tools of industrial organisation to illuminate the credit rating industry. The Japanese Economic Review, 70(3), 367-374. doi:10.1111/jere.12238

Table 1

Panel A: Summary statistics of selected variables

Variable	Type	Freq.	Mean	Median	Std. Dev
Price - Spread (basis points)	Prime	4,806	52.64	30	91.08
	Non-Prime	7,663	176.44	105	192.50
	Total	12,469	128.72	65	172.05
Weighted Average Life (Years)	Prime	4,806	32.65	30.44	26.15
	Non-Prime	7,663	31.92	29.74	26.34
	Total	12,469	32.20	30.41	26.27
Credit Rating	Prime	4,806	1	1	0
	Non-Prime	7,663	7.11	6	3.49
	Total	12,469	4.76	3	4.04
Number of Ratings	Prime	4,806	2.14	2	0.68
	Non-Prime	7,663	1.99	2	0.64
	Total	12,469	2.04	2	0.66
Tranche value (million EUR)	Prime	4,806	649.72	352.07	1,017.32
	Non-Prime	7,663	72.59	30.79	209.50
	Total	12,469	295.03	54.58	710.45
Deal Value (million EUR)	Prime	4,806	1,981.66	849.6	3,558.65
	Non-Prime	7,663	1,392.33	629.48	2,417.84
	Total	12,469	1,619.36	688.21	2,924.73

Panel B: Tranche ratings distribution

No. of ratings	Prime	Non-Prime	Total	Percentage
Single rating				
1 CRA reported	824	1,629	2,453	19.67%
Multiple ratings				
2 CRA reported	2,503	4,507	7,010	56.22%
3 CRA reported	1,479	1,527	3,006	24.11%
Total	4,806	7,663	12,469	100%
Percentage	38.54%	61.46%		

Rating agreement	Prime	Non-Prime	Total	Percentage
0		1,566	1,566	15.63
1	3,982	4,468	8,450	84.37
Total	3,982	6,034	10,016	100%
Percentage	39.76%	60.24%		

Panel C: Tranche rating distribution by grades

Credit ratings	Freq.	Credit ratings	Freq.
Prime			
AAA	4,806		
Non-Prime			
AA+	228	BB	570
AA	1,575	BB-	214
AA-	284	B+	27
A+	388	B	79
A	1,686	B-	160
A-	237	CCC+	6
BBB+	167	CCC	5
BBB	1,434	CCC-	13
BBB-	480	CC	1
BB+	108	C	1
Total			12,469

Table 2

The effect of multiple ratings on initial market spread of ABS tranches

This table presents OLS regressions output for the logarithm of initial market spread of European issued ABS tranches on number of ratings, collateral as well as deal and tranche level characteristics. Securities issued between 1998 till July 2018 are included in the sample. Multiple ratings is a dummy variable that takes the value of 1 if a tranche is assigned at least two ratings, while single rated tranches equal 0. CRA reported is the rating assigned to a tranche assessed by CRAs. Rating agreement is a dummy variable that takes the value of 1 if reported ratings for a tranche are the same, otherwise 0. Number of ratings of a tranche is employed to address possible rating shopping. Liquidity is controlled for by using Size which is the logarithm of tranche face value denominated in euros. Weighted Average Life is the natural logarithm of tranche maturity that is conditional on the prepayment expectations. Issue Type classifies the type of assets underlying deal tranches. Issuer Nation is used to control for country specific characteristics where tranche issued. Guarantor is a dummy variable that is equal to 1 if there is external credit enhancement for tranches, otherwise 0. Tranche Credit Rating is the rating reported for a tranche at launch. Issuer characteristics are addressed by controlling for each Issuer. Collateral Nation and Market area are geographic locations where the collateral originates and where deal tranches are targeted for, respectively. Year is a factor variable and it indicates the year of issuance of a tranche. ***, ** and * indicate significance levels at 1%, 5% and 10% respectively.

	(1)		(2)		(3)		(4)	
Multiple ratings	-0.1379***	(0.0331)						
2 CRA reported			-0.0899***	(0.0329)				
3 CRA reported			-0.3725***	(0.0418)				
3 vs 2 ratings					-0.2562***	(0.0273)		
Rating agreement							0.1475***	(0.0258)
Number of ratings							-0.2758***	(0.0276)
Size	-0.0001***	(0.0000)	-0.0001***	(0.0000)	-0.0002***	(0.0000)	-0.0002***	(0.0000)
Weighted Average Life	0.0004	(0.0004)	0.0003	(0.0004)	0.0010**	(0.0004)	0.0009**	(0.0004)
MBS	-0.2813***	(0.0231)	-0.2178***	(0.0223)	-0.2124***	(0.0245)	-0.1988***	(0.0245)
Issuer Nation								
France	-0.2480**	(0.1040)	-0.3560***	(0.1055)	-0.4092***	(0.1206)	-0.3978***	(0.1204)
Germany	-0.1398*	(0.0714)	-0.1605**	(0.0694)	-0.1116	(0.0684)	-0.1099	(0.0674)
Italy	0.0040	(0.0955)	-0.0703	(0.0904)	0.0071	(0.1112)	0.0189	(0.1086)
Netherlands	0.0551	(0.0519)	0.0125	(0.0523)	0.0735	(0.0504)	0.0739	(0.0505)
Ireland	0.0890	(0.0613)	0.0361	(0.0616)	0.0303	(0.0624)	0.0356	(0.0605)
Spain	-0.4568***	(0.1175)	-0.5329***	(0.1144)	-0.4206***	(0.1390)	-0.4118***	(0.1358)
Guarantor	-0.3822***	(0.0917)	-0.3866***	(0.0915)	-0.3949***	(0.1081)	-0.4033***	(0.1077)
Private Placement	-0.0006	(0.0272)	-0.0176	(0.0263)	-0.0202	(0.0280)	-0.0217	(0.0280)
Controlled for								
Tranche Credit Rating	Yes		Yes		Yes		Yes	
Issuer	Yes		Yes		Yes		Yes	
Collateral Nation	Yes		Yes		Yes		Yes	
Market Area	Yes		Yes		Yes		Yes	
Year	Yes		Yes		Yes		Yes	
Obs.	12,469		12,469		10,016		10,016	
Adjusted R²	0.713		0.720		0.767		0.760	

Table 3

The effect of multiple ratings on initial market spread of ABS tranches before 2008 and after 2013

This table presents OLS regressions output for the logarithm of initial market spread of European issued ABS tranches, issued before 2008 and after 2013, on number of ratings, collateral as well as deal and tranche level characteristics. Securities issued between 1998 till July 2018 are included in the sample. Multiple ratings is a dummy variable that takes the value of 1 if a tranche is assigned at least two ratings, while single rated tranches equal 0. CRA reported is the rating assigned to a tranche assessed by CRAs. Rating agreement is a dummy variable that takes the value of 1 if reported ratings for a tranche are the same, otherwise 0. Number of ratings of a tranche is employed to address possible rating shopping. Liquidity is controlled for by using Size which is the logarithm of tranche face value denominated in euros. Weighted Average Life is the natural logarithm of tranche maturity that is conditional on the prepayment expectations. Issue Type classifies the type of assets underlying deal tranches. Issuer Nation is used to control for country specific characteristics where tranche issued. Guarantor is a dummy variable that is equal to 1 if there is external credit enhancement for tranches, otherwise 0. Tranche Credit Rating is the rating reported for a tranche at launch. Issuer characteristics are addressed by controlling for each Issuer. Collateral Nation and Market area are geographic locations where the collateral originates and where deal tranches are targeted for, respectively. Year is a factor variable and it indicates the year of issuance of a tranche. ***, ** and * indicate significance levels at 1%, 5% and 10% respectively.

Before 2008

	(1)		(2)		(3)		(4)	
Multiple ratings	-0.2064***	(0.0409)						
2 CRA reported			-0.1525***	(0.0409)				
3 CRA reported			-0.3981***	(0.0474)				
3vs2 CRA reported					-0.2520***	(0.0262)		
Rating agreement							0.1722***	(0.0283)
Number of ratings							-0.2741***	(0.0263)
Size	-0.0003***	(0.0000)	-0.0003***	(0.0000)	-0.0002***	(0.0000)	-0.0002***	(0.0000)
Weighted Average Life	0.0003	(0.0005)	0.0003	(0.0005)	0.0010**	(0.0005)	0.0010**	(0.0005)
MBS	-0.3322***	(0.0267)	-0.2678***	(0.0256)	-0.2482***	(0.0265)	-0.2391***	(0.0263)
Guarantor	-0.6887***	(0.1176)	-0.6858***	(0.1143)	-0.6091***	(0.1198)	-0.6198***	(0.1186)
Private Placement	0.0198	(0.0321)	-0.0027	(0.0312)	-0.0025	(0.0310)	-0.0021	(0.0308)
Obs.	8,502		8,502		7,368		7,368	
Adjusted R²	0.712		0.719		0.753		0.755	

After 2013

	(1)		(2)		(3)		(4)	
Multiple ratings	-0.0329	(0.0410)						
2 CRA reported			-0.0167	(0.0422)				
3 CRA reported			-0.2951***	(0.0835)				
3vs2 CRA reported					-0.2996***	(0.0764)		
Rating agreement							-0.0109	(0.0314)
Number of ratings							-0.2976***	(0.0769)
Size	-0.0002**	(0.0001)	-0.0001*	(0.0001)	-0.0000	(0.0000)	-0.0000	(0.0000)
Weighted Average Life	0.0003	(0.0006)	0.0003	(0.0006)	0.0000	(0.0007)	0.0000	(0.0007)
MBS	0.0398	(0.0408)	0.0644	(0.0401)	-0.0062	(0.0540)	-0.0092	(0.0564)
Guarantor	0.0245	(0.0544)	0.0266	(0.0600)	0.0272	(0.0498)	0.0276	(0.0497)
Private Placement	0.1078***	(0.0414)	0.1049**	(0.0411)	0.0808	(0.0530)	0.0811	(0.0529)
Obs.	2,184		2,184		1,746		1,746	
Adjusted R²	0.811		0.814		0.841		0.841	

All regressions in Panels A and B control for

Tranche Credit Rating	Yes	Yes		Yes
Issuer	Yes	Yes		Yes
Issuer Nation	Yes	Yes		Yes
Collateral Nation	Yes	Yes		Yes
Market Area	Yes	Yes		Yes
Year	Yes	Yes		Yes

Table 4

The effect of multiple ratings on initial market spread of prime and non-prime ABS tranches before 2008 and after 2013

This table presents OLS regressions output for the logarithm of initial market spread of European issued prime and non-prime ABS tranches, issued before 2008 and after 2013, on number of ratings, collateral as well as deal and tranche level characteristics. Securities issued between 1998 till July 2018 are included in the sample. Multiple ratings is a dummy variable that takes the value of 1 if a tranche is assigned at least two ratings, while single rated tranches equal 0. CRA reported is the rating assigned to a tranche assessed by CRAs. Rating agreement is a dummy variable that takes the value of 1 if reported ratings for a tranche are the same, otherwise 0. Number of ratings of a tranche is employed to address possible rating shopping. Liquidity is controlled for by using Size which is the logarithm of tranche face value denominated in euros. Weighted Average Life is the natural logarithm of tranche maturity that is conditional on the prepayment expectations. Issue Type classifies the type of assets underlying deal tranches. Issuer Nation is used to control for country specific characteristics where tranche issued. Guarantor is a dummy variable that is equal to 1 if there is external credit enhancement for tranches, otherwise 0. Tranche Credit Rating is the rating reported for a tranche at launch. Issuer characteristics are addressed by controlling for each Issuer. Collateral Nation and Market area are geographic locations where the collateral originates and where deal tranches are targeted for, respectively. Year is a factor variable and it indicates the year of issuance of a tranche. ***, ** and * indicate significance levels at 1%, 5% and 10% respectively.

Panel A: Before 2008

	Prime (1)	Prime (2)	Prime (3)	Non-Prime (4)	Non-Prime (5)	Non-Prime (6)	Non-Prime (7)
Multiple ratings	-0.3682*** (0.0608)			-0.1309*** (0.0442)			
2 CRA reported		-0.3088*** (0.0611)			-0.0843* (0.0441)		
3 CRA reported		-0.5665*** (0.0666)			-0.3042*** (0.0534)		
3vs2 CRA reported			-0.2496*** (0.0382)			-0.2380*** (0.0290)	
Rating agreement							0.1697*** (0.0293)
Number of ratings							-0.2756*** (0.0296)
Size	-0.0003*** (0.0000)	-0.0002*** (0.0000)	-0.0002*** (0.0000)	-0.0012*** (0.0002)	-0.0012*** (0.0002)	-0.0006*** (0.0002)	-0.0006*** (0.0002)
Weighted Average Life	0.0013** (0.0006)	0.0010* (0.0006)	0.0018*** (0.0006)	-0.0004 (0.0006)	-0.0003 (0.0006)	0.0004 (0.0006)	0.0004 (0.0006)
MBS	-0.3020*** (0.0346)	-0.2245*** (0.0349)	-0.2102*** (0.0362)	-0.3409*** (0.0286)	-0.2895*** (0.0276)	-0.2698*** (0.0283)	-0.2563*** (0.0279)
Guarantor	-1.1103*** (0.1748)	-1.0857*** (0.1725)	-1.0133*** (0.1840)	-0.2647** (0.1314)	-0.2769** (0.1269)	-0.2113* (0.1269)	-0.2292* (0.1186)
Private Placement	0.0232 (0.0392)	0.0037 (0.0380)	0.0136 (0.0387)	0.0205 (0.0362)	-0.0027 (0.0356)	-0.0102 (0.0344)	-0.0107 (0.0340)
Obs.	3,194	3,194	2,801	5,308	5,308	4,567	4,567
Adjusted R²	0.388	0.402	0.384	0.676	0.684	0.732	0.737

Panel B: After 2013

	Prime (1)	Prime (2)	Prime (3)	Non-Prime (4)	Non-Prime (5)	Non-Prime (6)	Non-Prime (7)
Multiple ratings	-0.1822*** (0.0549)			0.0267 (0.0427)			
2 CRA reported		-0.1480*** (0.0551)			0.0321 (0.0433)		
3 CRA reported		-0.4509*** (0.0937)			-0.1926 (0.1956)		
3vs2 CRA reported			-0.2915*** (0.0854)			-0.2390 (0.2359)	
Rating agreement							0.0075 (0.0320)
Number of ratings							-0.2442 (0.2367)
Size	-0.0001 (0.0001)	-0.0000 (0.0000)	0.0000 (0.0000)	-0.0007*** (0.0002)	-0.0008*** (0.0002)	-0.0003*** (0.0001)	-0.0003*** (0.0001)
Weighted Average Life	0.0021 (0.0013)	0.0020 (0.0013)	0.0015 (0.0015)	-0.0002 (0.0005)	-0.0002 (0.0005)	-0.0004 (0.0004)	-0.0004 (0.0004)
MBS	-0.0803 (0.0787)	-0.0171 (0.0793)	-0.0902 (0.0948)	0.0894** (0.0353)	0.0916*** (0.0352)	0.0669 (0.0429)	0.0702 (0.0464)
Guarantor	-0.0982 (0.1331)	-0.1180 (0.1558)	0.0303 (0.0965)	0.0513 (0.0425)	0.0516 (0.0424)	0.0254 (0.0437)	0.0251 (0.0435)
Private Placement	0.0396 (0.0817)	0.0345 (0.0809)	0.0205 (0.0965)	0.1196*** (0.0338)	0.1176*** (0.0339)	0.1111*** (0.0394)	0.1107*** (0.0392)
Obs.	638	638	551	1,546	1,546	1,195	1,195
Adjusted R²	0.329	0.350	0.333	0.809	0.810	0.850	0.849

All regressions in Panels A and B control for

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Issuer/Year	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
Collateral/Issuer Nation	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
Market Area/ CRA	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes

Table 5

The effect of multiple ratings on initial market spread of UK ABS tranches

This table presents OLS regressions output for the logarithm of initial market spread of ABS tranches issued in UK on number of ratings, collateral as well as deal and tranche level characteristics. Securities issued between 1998 till July 2018 are included in the sample. Multiple ratings is a dummy variable that takes the value of 1 if a tranche is assigned at least two ratings, while single rated tranches equal 0. CRA reported is the rating assigned to a tranche assessed by CRAs. Rating agreement is a dummy variable that takes the value of 1 if reported ratings for a tranche are the same, otherwise 0. Number of ratings of a tranche is employed to address possible rating shopping. Liquidity is controlled for by using Size which is the logarithm of tranche face value denominated in euros. Weighted Average Life is the natural logarithm of tranche maturity that is conditional on the prepayment expectations. Issue Type classifies the type of assets underlying deal tranches. Guarantor is a dummy variable that is equal to 1 if there is external credit enhancement for tranches, otherwise 0. Tranche Credit Rating is the rating reported for a tranche at launch. Issuer characteristics are addressed by controlling for each Issuer. Collateral Nation and Market area are geographic locations where the collateral originates and where deal tranches are targeted for, respectively. Year is a factor variable and it indicates the year of issuance of a tranche. ***, ** and * indicate significance levels at 1%, 5% and 10% respectively.

All sample

	(1)		(2)		(3)		(4)	
Multiple ratings	-0.1925***	(0.0460)						
2 CRA reported			-0.1304**	(0.0453)				
3 CRA reported			-0.4170***	(0.0574)				
3vs2 CRA reported					-0.3155***	(0.0377)		
Rating agreement							0.1807***	(0.0367)
Number of ratings							-0.3388***	(0.0383)
Size	-0.0002***	(0.0000)	-0.0002***	(0.0000)	-0.0002***	(0.0000)	-0.0002***	(0.0000)
Weighted Average Life	0.0009*	(0.0005)	0.0011**	(0.0005)	0.0019***	(0.0005)	0.0018***	(0.0005)
MBS	-0.4255***	(0.0347)	-0.3300***	(0.0331)	-0.2484***	(0.0357)	-0.2289***	(0.0361)
Guarantor	-0.2153	(0.2749)	-0.1247	(0.3135)	-0.1717	(0.3713)	-0.1946	(0.3740)
Private Placement	-0.0053	(0.0386)	-0.0244	(0.0367)	-0.0477	(0.0388)	-0.0509	(0.0388)
Obs.	6,318		6,318		5,486		5,486	
Adjusted R²	0.769		0.777		0.812		0.813	

Before 2008

	(1)		(2)		(3)		(4)	
Multiple ratings	-0.2116***	(0.0613)						
2 CRA reported			-0.1474**	(0.0609)				
3 CRA reported			-0.4265***	(0.0735)				
3vs2 CRA reported					-0.3241***	(0.0370)		
Rating agreement							0.2212***	(0.0457)
Number of ratings							-0.3493***	(0.0373)
Size	-0.0004***	(0.0000)	-0.0004***	(0.0000)	-0.0003***	(0.0000)	-0.0003***	(0.0000)
Weighted Average Life	0.0003	(0.0007)	0.0006	(0.0007)	0.0019***	(0.0007)	0.0018***	(0.0006)
MBS	-0.4864***	(0.0420)	-0.3761***	(0.0411)	-0.3027***	(0.0418)	-0.2938***	(0.0413)
Guarantor	-0.5112*	(0.2862)	-0.4787*	(0.2571)	-0.5167	(0.3963)	-0.5516	(0.4023)
Private Placement	0.0189	(0.0436)	-0.0116	(0.0416)	-0.0319	(0.0424)	-0.0309	(0.0419)
Obs.	4,280		4,280		3,810		3,810	
Adjusted R²	0.752		0.761		0.789		0.792	

After 2013

	(1)		(2)		(3)		(4)	
Multiple ratings	-0.0263	(0.0514)						
2 CRA reported			-0.0091	(0.0527)				
3 CRA reported			-0.3174***	(0.0937)				
3vs2 CRA reported					-0.3317***	(0.0887)		
Rating agreement							-0.0286	(0.0352)
Number of ratings							-0.3267***	(0.0895)
Size	-0.0001	(0.0001)	-0.0001	(0.0001)	-0.0000	(0.0001)	-0.0000	(0.0001)
Weighted Average Life	0.0008	(0.0007)	0.0008	(0.0007)	0.0005	(0.0008)	0.0005	(0.0008)
MBS	-0.0679	(0.0533)	-0.0343	(0.0531)	0.0140	(0.0588)	0.0055	(0.0619)
Guarantor	-0.0109	(0.1186)	-0.0724	(0.1140)				
Private Placement	0.0158	(0.0577)	0.0259	(0.0569)	0.0546	(0.0634)	0.0556	(0.0631)
Obs.	1,451		1,451		1,245		1,245	
Adjusted R²	0.817		0.822		0.838		0.838	

Table 6

The effect of multiple ratings on initial market spread of prime and non-prime UK ABS tranches before 2008 and after 2013

This table presents OLS regressions output for the logarithm of initial market spread of prime and non-prime ABS tranches issued in the UK before 2008 and after 2013, on number of ratings, collateral as well as deal and tranche level characteristics. Securities issued between 1998 till July 2018 are included in the sample. Multiple ratings is a dummy variable that takes the value of 1 if a tranche is assigned at least two ratings, while single rated tranches equal 0. CRA reported is the rating assigned to a tranche assessed by CRAs. Rating agreement is a dummy variable that takes the value of 1 if reported ratings for a tranche are the same, otherwise 0. Number of ratings of a tranche is employed to address possible rating shopping. Liquidity is controlled for by using Size which is the logarithm of tranche face value denominated in euros. Weighted Average Life is the natural logarithm of tranche maturity that is conditional on the prepayment expectations. Issue Type classifies the type of assets underlying deal tranches. Guarantor is a dummy variable that is equal to 1 if there is external credit enhancement for tranches, otherwise 0. Tranche Credit Rating is the rating reported for a tranche at launch. Issuer characteristics are addressed by controlling for each Issuer. Collateral Nation and Market area are geographic locations where the collateral originates and where deal tranches are targeted for, respectively. Year is a factor variable and it indicates the year of issuance of a tranche. ***, ** and * indicate significance levels at 1%, 5% and 10% respectively.

Panel A: Before 2008

	Prime (1)	Prime (2)	Prime (3)	Non-Prime (4)	Non-Prime (5)	Non-Prime (6)	Non-Prime (7)
Multiple ratings	-0.4285*** (0.0999)			-0.1351** (0.0627)			
2 CRA reported		-0.3599*** (0.1020)			-0.0760 (0.0618)		
3 CRA reported		-0.6355*** (0.1097)			-0.3434*** (0.0796)		
3vs2 CRA reported			-0.2816*** (0.0570)			-0.3352*** (0.0408)	
Rating agreement							0.2362*** (0.0475)
Number of ratings							-0.3779*** (0.0417)
Size	-0.0004*** (0.0000)	-0.0003*** (0.0000)	-0.0003*** (0.0000)	-0.0012*** (0.0003)	-0.0012*** (0.0003)	-0.0005*** (0.0001)	-0.0005*** (0.0001)
Weighted Average Life	0.0021** (0.0008)	0.0020** (0.0008)	0.0030*** (0.0009)	-0.0006 (0.0008)	-0.0001 (0.0008)	0.0014* (0.0008)	0.0011 (0.0007)
MBS	-0.4722*** (0.0559)	-0.3433*** (0.0592)	-0.3137*** (0.0604)	-0.4845*** (0.0438)	-0.3897*** (0.0435)	-0.3085*** (0.0430)	-0.2938*** (0.0417)
Guarantor	0.1909 (0.2080)	0.1310 (0.1597)	0.0260 (0.1238)	-1.0367*** (0.3539)	-0.9365** (0.3793)	-1.9307*** (0.1449)	-2.0084*** (0.1441)
Private Placement	-0.0082 (0.0547)	-0.0264 (0.0528)	-0.0468 (0.0536)	0.0350 (0.0482)	-0.0007 (0.0463)	-0.0213 (0.0460)	-0.0201 (0.0452)
Obs.	1,565	1,565	1,431	2,715	2,715	1,431	2,379
Adjusted R²	0.428	0.445	0.411	0.724	0.735	0.411	0.7899

Panel B: After 2013

	Prime (1)	Prime (2)	Prime (3)	Non-Prime (4)	Non-Prime (5)	Non-Prime (6)	Non-Prime (7)
Multiple ratings	-0.2537*** (0.0734)			0.0489 (0.0551)			
2 CRA reported		-0.2219*** (0.0744)			0.0522 (0.0553)		
3 CRA reported		-0.5428*** (0.1214)			-0.1829 (0.2354)		
3vs2 CRA reported			-0.3279*** (0.1064)			-0.2890 (0.2459)	
Rating agreement							-0.0600 (0.0375)
Number of ratings							-0.2460 (0.2421)
Size	-0.0000 (0.0001)	0.0000 (0.0001)	0.0000 (0.0001)	-0.0007** (0.0004)	-0.0007** (0.0004)	-0.0003** (0.0001)	-0.0003** (0.0001)
Weighted Average Life	0.0025 (0.0016)	0.0023 (0.0016)	0.0020 (0.0018)	0.0000 (0.0005)	0.0000 (0.0005)	-0.0003 (0.0004)	-0.0003 (0.0004)
MBS	-0.1137 (0.0968)	-0.0351 (0.1022)	-0.0209 (0.1140)	-0.0197 (0.0413)	-0.0157 (0.0417)	0.0386 (0.0441)	0.0099 (0.0486)
Guarantor	-0.1368 (0.2139)	-0.2326 (0.2173)					
Private Placement	-0.0051 (0.1088)	0.0164 (0.1104)	0.0409 (0.1197)	0.0619 (0.0409)	0.0615 (0.0411)	0.0909** (0.0422)	0.0946** (0.0415)
Obs.	410	410	369	1,041	1,041	876	876
Adjusted R²	0.212	0.245	0.219	0.811	0.812	0.844	0.845

All regressions in Panels A and B control for

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Issuer/Year	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
Collateral/Issuer Nation	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
Market Area/ CRA	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes

Table 7

The effect of multiple ratings on initial market spread of ABS tranches

The table reports the average treatment effect on the treated (ATET). It reports the propensity score matching (PSM) results of ATET on the initial market spread, $\Delta Spread$ of ABS tranches. The average treatment effect of securitisation on $\Delta Spread$ is estimated as the difference between control groups' $\Delta Spread$ and that of matched groups'. Three main variables of interest are reported. PSM has been conducted for ABS tranches of the whole sample as well as before and after the crisis for each variable. ***, ** and * indicate significance levels at 1%, 5% and 10%respectively.

	ATET	Number of observations
Multiple ratings		
Whole period	-10.1250***	12,514
Before 2008	-14.7092***	8,540
After 2013	22.6140	2,184
CRA reported (2 vs 1)		
Whole period	-10.4057**	9,501
Before 2008	-10.3810*	5,853
After 2013	15.4603	2,103
CRA reported (3 vs 2)		
Whole period	-17.5656***	10,029
Before 2008	-16.8690***	7,381
After 2013	-19.2646*	1,746
Rating agreement		
Whole period	10.1920*	10,029
Before 2008	7.4696**	7,381
After 2013	-0.3318	1,746

Recent CRBF Working papers published in this Series

Second Quarter | 2024

24-013 **Marta Degl'Innocentia, Marco Frigeriob, and Si Zhou:** The Fear Factor: How Mafia Influences Firms' Performance.

24-012 **Lora Dimitrova and Margaret Fong:** Executive Visibility in SPACs: A Worthwhile Investment or a Futile Pursuit?

24-011 **Giuseppe Cappelletti, David Marques-Ibanez, Alessio Reghezza, and Carmelo Salleo:** As Interest Rates Surge: From Funding to Lending.

24-010 **Parinitha (Pari) Sastry, David Marques-Ibanez, and Emil Verner:** Business as Usual: Bank Climate Commitments, Lending, and Engagement.

24-009 **Yuji Honjo, Arito Ono and Daisuke Tsuruta:** The Effect of Physical Collateral and Personal Guarantees on Business Startups.

24-008 **Sonny Biswas, Kostas Koufopoulos, and Anjan Thakor:** Can Information Imprecision Be Valuable? The Case of Credit Ratings.

24-007 **Stefano Colonnello and Mariela Dal Borgo:** Raising Household Leverage: Evidence from Co-Financed Mortgages.

First Quarter | 2024

24-006 **Angela Gallo and Min Park:** Financing Green Transition.

24-005 **Pejman Abedifar, Hossein Doustali, and Steven Ongena:** Marketplace Lending: A Resilient Alternative in the Face of Natural Disasters?

University of St Andrews
Scotland's first university

600 YEARS
1413 – 2013