Three Essays in Securitisation Pricing

Nodirbek Karimov

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Copyright Statement

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Declaration

A version of Chapter II has been presented at several domestic and international conferences, including: Huddersfield Business School Conference 2019; 9th International Conference of the Financial Engineering and Banking Society (FEBS 2019), Vietnam Symposium in Banking and Finance (VSBF 2019), Republican Scientific Conference at the University of Economics in Tashkent 2020, and British Academy of Management Conference 2020 (received best full paper award). Also, a version of the chapter has been published in Financial Markets, Institutions and Instruments (volume 30, issue 5, pages 167-199, 2021).

A version of Chapter III has been presented at British Academy of Management Conference 2021. A version of the chapter is currently under consideration for submission in an academic journal for publication.

Abstract

This thesis combines various aspects of securitisation literature mainly focusing on the European securitisation market and consists of three empirical studies in securitisation pricing. In the first empirical study (Chapter II), we study the information content of ABS yield spread at origination. Previous studies demonstrate that agents within the chain of securitisation process can influence investor decisions in evaluating the price of ABS bonds and potential risks associated with such products. Legal advisors, one of the main parties who are actively involved in the set up and the selling of ABS bonds, are significant omission in the literature. The main objective of this study is determining the value of legal advisors through investor perspective in structured finance. Our findings indicate that legal advisors who had past partnership with issuers had positive impact on ABS transactions. Investors seem to have valued such experience as they have demanded less spread for those bonds.

The second empirical study aims to compare the boom and recovery periods of structured finance in relation to conflict of interest. Similar to the US, European Union has introduced several measures to improve transparency and tackle incentive problems. Credit Rating Agency (CRA) regulation, as part of the same initiative, has been implemented in three phases to strengthen regulation and supervision over rating agencies. The aim of this study is to investigate the effectiveness of such measures in tackling conflicts of interest. Our analyses reveal that the new rules have been effective in reducing conflicts of interest between rating agencies and issuers. However, we also find that issues such as rating shopping and rating over-reliance are still present to a certain degree. We conclude the chapter with our policy recommendations that might help in further improving the securitisation market in the EU.

The final empirical study examines the global securitisation market, including the US and the EU. This chapter highlights the significance of financial intermediaries in securitisation. The key purpose of this study is to investigate possible determinants of service fees received by ABS bond issuers. Financial intermediation is crucial in reducing information asymmetry in capital markets, particularly so in the market for structured bonds. Based on our estimations we find that top-tier investment banks are compensated better for the services they provide in comparison to less reputable banks. This positive relationship between issuer reputation and their service fee could be explained by a 'premium fee - superior quality' equilibrium[1]. We also find the initial yield spread of ABS bonds can be an influential factor in evaluating issuers' service charge.

[1] Klein and Leffler (1981); Chemmanur and Fulghieri (1994).

List of Abbreviations

ABCP	Asset Backed Commercial Paper
ABS	Asset Backed Security
BCBS	Basel Committee on Banking Supervision
BIS	Bank for International Settlements
BoE	Bank of England
CDO	Collateral Debt Obligation
CLO	Collateral Loans Obligation
CMBS	Commercial Mortgage Backed Security
CRA	Credit Ratings Agencies
EBA	European Banking Authority
EC	European Commission
ECB	European Central Bank
ECOBATE	European Conference on Banking and the Economy
EPRS	European Parliamentary Research Service
ESMA	European Securities and Markets Authority
EU	European Union
EUR	Euro
EURIBOR	Euro Interbank Offered Rate
FANNIE MAE	Federal National Mortgage Association
FDIC	Federal Deposit Insurance Corporation
FREDDIE MAC	Federal Home Loan Mortgage Corporation
GFC	Global Financial Crisis
GSE	Government Sponsored Enterprise
IMF	International Monetary Fund
IMR	Inverse Mills Ratio
IOSCO	International Organization of Securities Commissions
IPO	Initial Public Offering
LIBOR	London Interbank Offer Rate
MBS	Mortgage Backed Security
M&A	Mergers and Acquisitions
NABL	National Association of Bond Lawyers

NAO	National Audit Office
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
PSM	Propensity Score Matching
RMBS	Residential Mortgage Backed Security
S&P	Standard and Poor's
SEC	Securities and Exchange Commission
SIFMA	Securities Industry and Financial Markets Association
SPV	Special Purpose Vehicle
STS	Simple Transparent and Standardised
UK	United Kingdom
US	United States
USD	United States Dollar

CHAPTER I: Introduction

Securitisation had once been praised as a financial innovation that would facilitate efficient risk redistribution and further improve stability in the financial system. This mechanism has transformed the traditional 'originate to hold' banking model into a new 'originate to distribute' model which enabled banks to sell otherwise illiquid assets and transfer risks and hence improve their lending capacities with newly acquired funds. Benefits brought by securitisation into the capital markets also include the availability of new debt instruments in the market. On the one hand, it allows investors to diversify their portfolio, and, on the other hand originators can benefit from new source of funding while offloading certain risks. These bonds, if they are of high quality with high ratings, can satisfy the demands of investors who otherwise invest in government bonds (Bank of England and ECB, 2014). Moreover, securitisation had significant impact in the development of other sectors of economy such as market for mortgages (Gabriel and Rosenthal, 2006). For instance, it was important in boosting home ownership in the US through government agencies as Fannie Mae and Freddie Mac (Kolari et al., 1998). Whereas, in United Kingdom's (UK) privatisation initiative the government has utilised securitisation techniques. They raised capital by issuing structured debt instruments in building several hospitals for example (World Bank, 2004). Despite having a damaging impact on the financial stability during Global Financial Crisis (GFC), securitisation is also thought to be significant in supporting central banking (Bank of England and ECB, 2014). During expansionary monetary policy, for instance, high quality securitised bonds can help in the transmission of the changes when usual lending mechanism are weakened.

Securitisation is a financial procedure that involves the structuring of tradeable debt instruments out of otherwise non-tradeable financial assets (i.e. contractual debt, loans, receivables etc). Securities could be backed with mortgage loans (commercial or residential), student loans, auto/equipment loans and leases, credit card debts, corporate loans and bonds and others.

The initial stage of structuring requires the pooling of eligible assets and then the resulting portfolio is conveyed to an independent conduit SPV (Special Purpose Vehicle). The SPV is a bankruptcy remote entity meaning the assets received by SPV are immune from any potential risks that might be faced by the originator. In the final stage, the pool of collateral will be tranched into different classes of tradeable securitised bonds with varying risk levels. The risk levels of such bonds can depend on a number of factors such as underlying assets, seniority of tranches, credit enhancement etc. Senior tranches are high-quality bonds with triple-A ratings, and they are considered to bear no default risks. Whereas junior tranches have the highest default probabilities, and they are often not rated.

There are several types of structured bonds that are available for investors. Securitised debt instruments can be categorized based on collateral, risk transfer, tenure or cash flow (Deku & Kara, 2017). Generally, all the securitisation instruments are asset backed and therefore these products can all be referred to as Asset Backed Securities (ABS). However, the term Mortgage-Backed Security (MBS) is often used for securities that are backed by mortgages. Also, securities that are to be redeemed within a year period is referred to as commercial paper or Asset Backed Commercial Paper (ABCP).

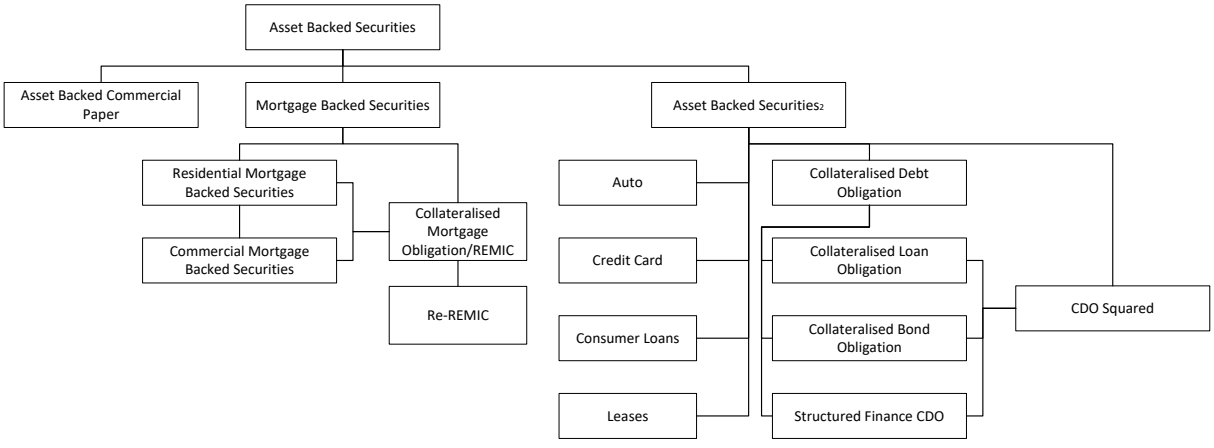

Figure 1.1 Structured finance products
Source: Deku and Kara, 2017

Securitisation emerged in the US around 1970s and early transactions involved securitising mortgage loans. Soon the level of sophistication of the

process grew as it began to involve a wide range of assets. At the end of 2006, the size of the global ABS markets totalled at almost $11 trillion (Bank of England, 2007). It could be said that the rise of the market for structured products were gradual until 2000 and the years preceding the GFC (Global Financial Crisis) of 2007-2009 can be characterised as the boom of the world securitisation markets. As the crisis unfolded, however, it became apparent that the exponential rise of the market was accompanied by misalignment of interests by parties involved within securitisation process (Ben-David, 2011; Bolton et al., 2012; Carrillo, 2013; Efing and Hau, 2015). The shortcomings also included over-reliance on rating agencies and their gradings, and greater opacity in relation to the underlying assets and program structures (Boot and Thakor, 1993; Coval et al., 2009a; Kisgen and Strahan, 2010; Mählmann, 2012).

Market demand for structured finance products halted abruptly following the revelations during the crisis period. To remedy the flaws in the securitisation chain and to improve transparency several measures and initiatives were implemented by policymakers. Given its benefits to the real economy, the EU for instance, proposed the revival of a better regulated market by concentrating on the issuance of high-quality securitised bonds and restore investor confidence (ECB, 2011; Bank of England and ECB, 2014). Although its pre-crisis peak has not been attained the annual global issuance of such instruments has been around one trillion in recent years (S&PGlobal, 2019). Approximately 95% of total global issuances until recently have been accounted for by the US and EU securitisation markets (S&PGlobal, 2020).

Post-crisis literature provides explanations for the unsustainable expansion of securitisation markets and investigates the flaws within securitisation chain. One strand studies bank behaviour over the years leading up to the crisis. During boom periods banks behave more aggressively when demand for loans increases and this is what has been observed by Dell'Ariccia et al. (2012). They analyse the US subprime mortgage market and find lenders to have relaxed their lending standards as a result there was decline in loan denials. Other similar studies also report weakened incentive in bank

screening processes over the pre-GFC period (Keys et al., 2010; Purnanandam, 2011; Nadauld and Sherlund, 2013; Jiang et al., 2014). They argue that to a certain extent the deterioration of lending might had been exacerbated by banks' securitisation practices.

Other studies look into the behaviour of participants within securitisation process. A large literature recognizes the existence of serious agency problem between originators and end-investors over the boom period. Along the securitisation chain third party originators (brokers) (Jiang et al., 2014), intermediary banks (Pisskorski et al., 2015), underwriters and originators (Griffin and Maturana, 2016) and borrowers (Garmaise, 2015) are all blamed to have misreported, underreported, overrated, and even falsified information at the issuance of structured instruments (Ben-David, 2011; Carrillo, 2013). Nonetheless, the major culprits are deemed to be the credit rating agencies (CRAs) that assess the quality and risk levels of structured debt instruments. They were at the centre of incentive problems and criticised for the issuance of inflated ratings. In the run-up to the crisis the quality of ratings began to diminish (Ashcraft et al., 2010; Griffin and Tang, 2012). The failure of the credit rating models later led to severe downgrades of previously high-rated products. One of the causes for the quality deterioration is believed to be the result of conflict of interest. Rating favours were granted to issuers who had good business relations with CRAs (Efing and Hau, 2015), who were large issuers (He et al., 2012), or had high volume issues (Bolton et al., 2012).

The competitive nature of the industry could have also led to the relaxing of the risk measurement methods. In order to increase their client base CRAs could have been incentivised to issue favourable ratings (Becker, 2011; Bolton, 2012). Also, CRAs have been under pressure to issue higher ratings owing to the *issuer-pays* model (Cornaggia and Cornaggia, 2013; Griffin et al., 2013 IMF, 2013). ABS issuers buy the preliminary rating grades only if they are willing to publish them, otherwise they are not required to pay the rating agencies. Therefore, CRAs would be more willing to satisfy the needs of issuers who can cherry pick the grades attained for ABS securities. As a result, there were wide disagreements in the ratings issued by different rating agencies

fuelling the shopping for ratings by ABS issuers (SEC, 2008; Skreta and Veldkamp, 2009; OECD, 2010).

To address the shortcomings of securitisation markets, major financial institutions around the globe have introduced several regulatory changes[2]. Implemented measures aimed at ensuring more transparency especially regarding the underlying assets of ABS securities and stricter supervision over rating agencies. Tackling these two critical issues can help restore investor confidence in the securitisation market. In the US, the market for structured finance products has quickly bounced back to its pre-crisis levels (BIS, 2014; Bank of England and ECB, 2014). Initially the market was driven by government backed agencies and later the non-agency issuers have also demonstrated recovery. Unlike the US, the European ABS markets have witnessed sluggish recovery and never reached pre-crisis levels.

Despite the fact that the EU structured debt instruments performed much better during the financial crisis than the US issued ABS, the recovery of the securitisation market has been very slow in the former (Bank of England and ECB, 2014). The European Commission has introduced a set of measures to re-establish the market and exploit its benefits. The changes implemented closely follow the framework established jointly by Basel Committee on Banking Supervision (BCBS) and IOSCO. The EU's immediate reaction in relation to rating agencies was to implement stricter supervision over CRAs. CRA Regulation has been implemented in three phases to tackle conflict of interest, rating overreliance, improving methodologies and better regulation over agencies (EU Commission, 2018). In a broader scale, new simple, transparent and standard (STS) framework has been proposed (EBA, 2014a). STS securitisation market is aimed at ensuring the issuance of high-quality ABS bonds in the market. In order to qualify the structured finance products should meet the required criteria. These proposals are important in enhancing

[2] US Securities and Exchange Commission - SEC (2011; 2014); International Organization of Securities Commissions - IOSCO (2012); Bank for International Settlements - BIS (2014); European Banking Authority - EBA (2014a; b) – for more on regulatory reforms.

investor confidence in the market and re-establishing a safer and better functioning securitisation market.

Given this background, this thesis primarily examines the pricing of securitised debt instruments which have complex structures. Investors in such financial products are faced with significantly greater information asymmetry than investors in conventional bond markets (Ashcraft and Schuermann, 2009; Coval et al., 2009a). Informational disadvantage can make it very challenging to assess the credit risk and therefore the true value of structured bonds at origination. Consequently, over the years leading up to the financial crisis some investors outsourced their risk evaluation tasks to CRAs rather than performing due diligence on complex deals (Brennan, 2009; Mählmann, 2012). Meanwhile those investors who did undertake independent credit analysis beyond CRAs' gradings were sensitive to all the available information in regard to ABS deals (Adelino, 2009; Faltin-Traeger et al., 2010; Fabozzi and Vink, 2012a; b; He et al., 2012; 2016; Deku et al., 2019b; 2021).

Investor perception is vital in determining the market yield spread of ABS instruments at origination. The initial yield spread contains all the information that end-investors are aware of. One of the important factors in determining yield spread is ratings assigned by CRAs. In fact, it is by far the largest contributing factor to the level of the spread demanded by investors (Cuchra, 2005; Adelino, 2009). In addition to ratings the spread can reflect three broad areas of risks considered by investors: asset related, structural, and risks related to third parties in ABS structuring (Fabozzi and Vink, 2012a). This thesis closely relates to the strand of literature that investigate the information content of ABS yield spread at issuance. Particularly, we explore the effects of key agents in relation to information asymmetry through the lens of investors.

1.1. Aims and Objectives

The motivation for this research thesis emanates from the literature on the pricing of structured finance products at origination. Particularly, we focus on the significance of key agents along the securitisation chain in bridging informational gap between originators and investors of ABS securities. In determining the price of such products, investors incorporate all information they deem necessary in mitigating potential risks. Therefore, the initial market spread of structured debt instruments contains all information accessible by buyers. Academic studies which investigate the information content of ABS prices find that key parties engaged in the structuring can have an impact on the market spread of ABS bonds at issuance. For instance, Cuchra (2005) studies over 5,000 European issued ABS securities and examines the relation between pricing and the number of arrangers involved in securitisation. The research concludes that additional number of arrangers adds value and possibly credibility to the transaction. Hence, investors find such transactions attractive and the yield spread they demand is lower. Faltin-Traeger et al. (2010) find that ABS spread is lower for securitisation deals when the same party acts as originator and as trustee. The authors claim that this occurrence helps reduce the risk of conflict of interest between two parties. The study employs US issued ABS securities and covers 13-year period till financial crisis. The value of ABS issuers and their role in reducing information asymmetry is investigated by He et al. (2012). It is based on MBS tranches issued in the US between 2000 and 2006. They find that during the boom of 2004-2006 MBS sold by large issuers were considered to be riskier than the ones issued by smaller issuers. They explain this by investors' awareness of possible conflict of interest between issuers and CRAs. For non-boom periods the initial yield spread of MBS issued by small and large issuers are not significantly different.

As far as the participants in securitisation are concerned, legal advisors, as one of the crucial agents in the setup and the selling of securitised bonds, are yet to be studied in this context. Legal advisors deliver legal opinion on a number of matters following due diligence they undertake at initial stage. The

responsibilities of a legal team engaged in securitisation include liaising with rating agencies, drafting prospectuses[3] and ensuring the compliance of transactions with the existing rules and regulations. One of the key features of securitisation process involves the reassignment of asset ownership from originator to a conduit SPV (Special Purpose Vehicle). Legal opinion provided on the true sale nature of the asset transfer ensures that SPV is the legal owner of the assets underlying securitised bonds and it is a bankruptcy remote entity. In other words, the SPV and its assets are immune from the originator even if the latter goes into administration (Fabozzi and Kothari, 2008; Ayotte and Gaon, 2011; Schwarcz, 2013; Pinto and Alves, 2016; Hughes, 2017).

Given their significance we aim to examine how markets perceive legal advisors' role in reducing information asymmetry in complex ABS environment. One way to do this is to study the reputation of legal advisors. In financial services industry the involvement of reputable parties is often seen to have a positive impact on the quality of the service they provide (Chemmanur and Fulghieri, 1994; Puri, 1999; Livingston and Miller, 2000). For instance, in bonds market (Fang, 2005) and M&As (Golubov, 2012) top-tier investment banks are observed to provide high quality services for their clients as they try to maintain their reputation. In relation to structured bonds, recent studies on European issued MBS find that yield spread is sensitive to the reputation of trustees (Deku et al, 2019b) and issuers (Deku et al., 2021) involved in securitisation. Both studies find that investor place greater value on reputable agents in reducing information asymmetry when it is difficult to assess risk. Similarly, we examine the value of reputation of legal advisors engaged in ABS structure from investor perspective. In addition, we study the possible impact of previous partnership between legal and issuing entities. The literature shows that past experience between parties can be an important factor (James, 1992; Yasuda, 2005; Burch et al., 2005; Wang and Whyte, 2010). Further, we assess whether the number of legal advisors

[3] The main selling document that details all the vital information regarding the agreement, structure, parties involved etc.

recruited for a securitisation program can have an effect in determining ABS spread.

In studying the pricing of securitised bonds, the role of rating agencies is immense. Rating agencies are key in bridging the informational gap between originators and investors in securitisation. Generally, CRAs are by far the most important third party in reducing information asymmetry between originators and investors of securitised bonds. Therefore, it is not surprising that the yield spread of such bonds at origination is largely determined by CRA gradings (Adelino, 2009; He et al., 2012). Nonetheless, the GFC has revealed that the quality of ratings issued has progressively diminished over the boom period and intensified prior to the onset of the crisis (Ashcraft et al., 2010; Benmelech and Dlugosz, 2010; Bolton et al., 2012). CRAs' misbehaviour and their inadequate risk measuring methods have led to the loss of investor confidence in the ABS market. To restore investor confidence and transparency in ABS market the EU has introduced CRA Regulation which is aimed at strengthening supervision over rating agencies.

We aim to examine the effectiveness of the new set of measures adopted in tackling incentive problems between CRAs and issuers. The new changes have been implemented mainly to address two issues. One of them is rating shopping by issuers of structured assets which can lead to rating inflation or rating catering (Skreta and Veldkamp, 2009; Griffin et al., 2013). Studies demonstrate that investors were aware of inflated ratings issued by CRAs and it was reflected in ABS spread (He et al., 2012; Efing and Hau, 2015). The other issue is the excessive reliance of investors on CRA ratings. Rating overdependence can be due to naiveness of investors, limited resources to perform due diligence or owing to financial regulations that set ratings as the key benchmark (Boot and Thakor, 1993; Kisgen and Strahan, 2010; White, 2010; Mählmann, 2012). We analyse the significance of CRA rating and the credibility of their evaluations in securitisation through investor perspectives. Specifically, we study the issues of rating shopping and rating catering, as well as investor overreliance on ratings.

Another key financial intermediary in the structuring of ABS securities is the issuer and our final objective is to examine the pricing of issuer service. Structured bonds are considered to be quite complex financial instruments for many investors to fully comprehend (Deku and Kara, 2017). In comparison to traditional bonds there is considerably greater informational gap in ABS markets. Therefore, originators require the service of financial intermediaries in bridging this gap between them and end-buyers. Moreover, issuers are generally more specialised to securitise than originators of securitisation deal and are equipped with better expertise. Similarly, in terms of selling and promoting the issues to investors they are in better position as they have access to wider investor audience.

Theoretical models accentuate the three most crucial features of financial intermediation as lower transactional costs (Benston and Smith, 1976) lower information opacity (Leland and Pyle, 1977) and most importantly increased information production (Campbell and Kracaw, 1980). Academic works on the pricing of intermediary service find that main factors that impact the compensation level include size of transaction as well as intermediaries' monitoring, marketing and certification functions which are proxied by certain issue characteristics (Rogowski and Sorensen, 1985; Gande et al., 1999; Altinkilic and Hansen, 2000; Roten and Mullineaux, 2002; Butler, 2008). The pricing of intermediary service has been studied in markets for bonds (Livingston and Miller, 2000; Butler, 2008), IPOs (James, 1992; Chen and Ritter, 2000; Hansen, 2001; Koda and Yamada, 2018) and mergers and acquisitions (Rau, 2000; Golubov et al., 2012). We extend the literature by investigating the role of financial firms acting as intermediaries in securitisation. Specifically, we attempt to identify the key determinants in the pricing of services provided by ABS issuers.

1.2. Research Questions

Several important questions are addressed in this thesis work. First, we explore the value of legal advisor reputation engaged in structing ABS deals from the investor's perspective. We rely on the information content of initial yield spreads in measuring investor perception[4]. Second, we examine the effects of previous partnerships between legal and issuing entities. We look into how investors perceive past cooperation between the two parties in mitigating possible risks. Third, the number of legal advisors recruited for a securitisation program is examined. We are interested in finding out whether additional number of legal advisors can send a positive signal to investors about the structure. Fourth, we investigate the effectiveness of CRA Regulation introduced in Europe to tackle incentive issues between CRAs and their clients. Specifically, we focus on the issues of rating shopping and rating catering[5]. Number of ratings attained for ABS tranche is used to determine the influence of rating shopping on yield spread, whereas rating disagreement is used to define the relation between rating catering and yield spread. Fifth, we investigate the impact of CRA Regulation in reducing the issue of investor over-reliance on credit ratings. Rating dependence occurs when investors outsource their risk assessment task to CRAs (Mählmann, 2012) and excessively rely on CRA assessments which can be observed in ABS spread (Adelino, 2009; He et al., 2012). Sixth, the pricing of services provided by financial intermediaries in securitisation is studied. We investigate the determinants of issuer service charge in global ABS markets. One of the key factors of interest in this study is the reputation of issuers. The literature on the valuation of intermediary service is divided on the effects of reputation. Some find positive relation between reputation and fee (Puri 1999; Fang, 2005; Kollo and Sharpe, 2006; Esho et al., 2006; Golubov et al., 2012) while others report negative relation (James, 1992; Livingston and Miller, 2000; Iannotta and Navone, 2008). Within the context of securitisation, we review the impact of reputation on the compensation received by issuers for their

[4] Cuchra, 2005; Fabozzi and Vink, 2012a; b.
[5] Skreta and Veldkamp, 2009; Griffin et al., 2013.

service. Seventh, our analyses also cover the impact of initial yield spread on the issuer service charge. In addition, given that ABS bonds are unique and present special characteristics, the effects of other ABS issue-specific attributes on issuer fee are also considered. Finally, our study period stretches over 20 years and it allows us to analyse the pre and post GFC periods. This helps us understand the overall changes that took place in ABS market.

1.3. Contributions of the Thesis

The contribution this thesis represents to the securitisation literature encompasses various aspects of the field. The first empirical chapter (CHAPTER II) explores the pricing of structured assets and the value of agents within the securitisation chain in relation to information asymmetry. Particularly, we focus on the importance of legal advisors engaged in the structuring of ABS programs through the investor viewpoint. The spread of securitised bonds at issuance can reflect investor perception on the role of certain agents in mitigating risks. One of the key contributions of this chapter is that for the first time in the securitisation literature we attempt to study the value of information regarding legal advisors in structured finance. Our study can be an important addition to the existing literature that examines the information content of ABS pricing and the value of other parties such as managers (Cuchra, 2005) originators (Faltin-Traeger et al., 2010), issuers (Deku et al., 2021), trustees (Deku et al., 2019b) and rating agencies (Adelino, 2009; He et al., 2012). We are the first ones to examine how investors perceive the reputation and experience of legal advisors, and their previous long-term partnership with issuers in relation to information asymmetry. Also, we investigate the number of legal advisors engaged in the structure, to find out the possible added value from additional advisors. Given their role in structured finance, legal advisors' significance is considerable. They can help reduce information asymmetry between issuers and investors of complex structured bonds, thus assist market participants in setting appropriate prices for the financial instruments. ABS investors are sensitive to available information, and they become more vulnerable when there is increased risk

and when it is difficult to assess risk. To protect investors against various risks and to create safer and transparent securitisation markets it is vital to understand the role of agents within securitisation chain. This in turn can help regaining lost investor confidence in the European ABS markets. Secondly, for over 10,000 ABS tranches we have manually collected information on legal entities from prospectuses. Our data is unique to the literature as it covers just over two-decade period making it one of the largest. Thirdly, the literature on securitisation largely concentrates to the US securitisation market where government backed agencies are major players. We contribute to the literature by examining structured finance in Europe where private firms are the driving force of the market and which lacks academic attention. Last but not least, to the best of our knowledge our study is the first to look at the pre and post-GFC periods in Europe. Comparing the boom versus recovery periods of securitisation can shed light on the changes in the market and the effectiveness of various implemented measures to improve investor confidence, transparency, conflict of interest.

The second empirical chapter (CHAPTER III) of this thesis focuses on the issues of conflict of interest between CRAs and their clients, and rating overdependence. This chapter contributes to the literature in number of ways. Firstly, to the best of our knowledge, we are the first ones to examine the effectiveness of the CRA regulatory changes in the EU following the GFC. Investors' perception of CRAs and their confidence are crucial in the recovery of the securitisation market which is why the CRA regulation has been implemented. Comparing the ABS market before and after the crisis could inform us on the effectiveness of the introduced measures. Secondly, our findings could enrich securitisation literature that concentrates on conflict of interest and rating agencies. We explore rating inflation and rating shopping phenomena which were the consequences of inappropriate actions of CRAs and their clients. Looking at the recovery period of European securitisation market helps us to understand the current situation regarding the issues and propose possible policy implications. The CRA Regulation is intended to better regulate CRAs and to tackle incentive issues. Therefore, policy implications

can be obtained from the outcome of this study. Mainly, we find that measures are not very effective in eliminating rating shopping and therefore suggest that stricter rules might be needed from the policy makers that require originator and issuer firms to follow. Moreover, our study suggests that EU's strict supervision over CRAs has been effective in terms of reducing conflict of interest between CRAs and their clients in securitisation. Improved investor perception of rating agencies indicates that market participants feel ratings offered by CRAs are unbiased and reliable. European securitisation market could benefit from such change as it can attract more investors to the market who have been wary of complicated ABS bonds. Our study also reveals the current state of ABS market in relation to investor reliance on ratings. The market's dependence on rating grades is of course not the same as it was before the financial crisis. However, it should be noted that for the highest quality tranches the rating assessment still continues to be highly important. This also can urge the relative bodies for more actions so that less informed market participants are protected. Another unique aspect of this chapter to the literature is that we have attained more than 12,000 European ABS tranches for our analysis. Our sample stretches over 20-year period covering both boom and recovery periods of securitisation market. The data we use is unique in regard to its size making it one of the largest in the academic literature that focuses on EU structured finance.

The final chapter of this thesis extends our study into the roles of financial firms acting as intermediaries in securitisation. We identify the key determinants in the pricing of services provided by ABS issuers. The valuation of intermediary services in the US capital markets have been widely studied. The studies particularly concentrate on the debts and equities markets[6]. Meanwhile, in relation to mortgage and asset backed securities there is a gap in the literature. One of the main contributions of this chapter is that, to our knowledge, this is the first study to examine the determinants of issuer service fee for ABS and MBS markets. This is important, because the output we

[6] For example, (James, 1992; Chen and Ritter, 2000; Livingston and Miller, 2000; Hansen, 2001; Yeoman, 2001; Roten and Mullineaux, 2002; Burch et al., 2005; Fang, 2005; Yasuda, 2005; Butler, 2008; Wang and Whyte, 2010; Golubov et al., 2012).

obtain can help explain the quality of services provided by ABS issuers to the originators and investors. Because issuers are the financial intermediaries between originators and investors the quality of service they provide should determine the compensation they receive for their service. The determinants of fee can identify those aspects where intermediaries are key, and in general what ABS originators demand from them and which aspects they value. Secondly, our study is unique to the securitisation literature as we are the first ones to employ global sample for our investigations. A total of 34,499 global ABS tranches are used making it also one of the largest in the field. Moreover, our findings on the impact of intermediary reputation on fees can be a useful addition to the ambiguous literature on the topic. Although the theoretical literature is unanimous, empirical studies show mixed results on the relation between fee and reputation. Further, our result suggests that prestigious intermediary firms with strong market presence are paid premium fees for their services as they can offer high quality service to the market. This can incentivise issuers to try to provide high quality services and ensure their reputation is maintained in the securitisation market. In a broader sense, this can improve the quality of financial instruments being offered in the market and hence attract more investors to the market as there are still many who are not confident due to its recent history. Finally, unlike previous studies we study additional factors as potential determinants of issuer service charge. Given that structed bonds have certain unique characteristics, we investigate the possible effects of factors such as initial market spread, originator type, issue type, issuer nation, number of credit ratings in addition to ratings attained for a tranche and other control variables.

1.4. Data

The estimations of the first two empirical chapters are based on a unique dataset obtained from Bloomberg. The original sample consists of 18,399 European issued ABS and MBS tranches. Our primary focus is seven largest European countries who are major players in the market, accounting for over 80 per cent of total issuance between 1998 and 2018 (Bloomberg, 2018). These seven issuer nations include France, Germany, Italy, Ireland,

Netherlands, Spain and the United Kingdom. The key features of each transaction are value of a deal, collateral, type of a deal, asset origin, issuer identity, issuer nation, year of issue, and pricing date. Also, we use key tranche level characteristics such as initial spread, credit ratings, tranche value and date of maturity.

Some part of the data has been eliminated from the original sample owing to the missing key variables. In the first empirical chapter, for example, information regarding legal entities were missing for the large part of the sample. For over 10,000 ABS tranches we went through deal prospectuses and manually collected the missing information. Moreover, missing information on issuer identity and maturity were also singly filled in through prospectuses available in Bloomberg. As a result, the analysis of the chapter is based on a final sample of 6,624 tranches. Similarly, owing to the missing observations on certain issue characteristics, the final sample of 12,469 ABS securities have been used in the estimations of the second chapter.

The third empirical chapter utilises the original collection of 44,219 global ABS securities. The data include securitised bonds issued between 1997 and 2018 in the two biggest securitisation markets of the world, namely the US and Europe. Until recently the shares of the two markets in terms of the global annual issuance (around 95%) and the global securitisation outstanding (around 98%) almost accounted for the total global structured issuances[7] (SIFMA[8], 2020; S&PGlobal, 2020). The US sample extends from September 1997 till November 2017, and it consists of asset and mortgage-backed securities issued both by government and non-government agencies. The European data covers the period over January 1998 and June 2018 and consists of seven major issuer nations. Each observation in the sample reports the main features of a given structured issues including single tranche characteristics such as credit ratings, tranche size, initial yield spread, service fee, maturity etc. Also deal level characteristics as deal size, issuer, issuer nation, collateral type, issuer year maturity and others. Any observation with

[7] In China since 2014 securitisation market has been expanding strikingly in terms of annual issuance, accounting for around 30% of annual total issuance globally (S&PGlobal, 2020).
[8] Securities Industry and Financial Markets Association in the United States.

missing values for crucial tranche characteristics had been excluded. As a result, the total final sample is 34,499 securitised bonds. Out of these 21,680 are issued in the US market and 13,319 bonds are issued across the seven European countries.

1.5. Methodology

In measuring the information content of initial yield spread of ABS tranches, we refer to the pricing models employed by the structured finance literature[9]. For initial calculations we rely on OLS (ordinary least squares) estimators on our pooled cross-section dataset. Standard errors are clustered at deal level as tranches within a given securitisation deal are not independent from each other. In the first empirical chapter our dependent variable is the initial spread. For floating rate securities, initial spread is set on issuance date and measured in basis points (bps) as fixed premium over relevant benchmark. Yield spread at issuance is considered to be more reflective of market demands on risk premiums than secondary spread. The key variables are the reputation of legal advisor and previous partnership between legal and issuing entities which proxied by market share and the number of past cooperation respectively. Meanwhile, in the second empirical chapter the dependent variable is the same, but the key variables are rating disagreement and number of ratings. For the purposes of performing robustness evaluations on the initial results, we also utilise a more uniform sample. Running regressions on a more uniform sample allows to control for possible country-specific characteristics. In addition, the first chapter also includes robustness evaluations on the outcomes through PSM (propensity score matching) estimation technique.

In our estimations in the final empirical chapter, we have employed several calculation techniques. We model issuer fee as a linear function of all the possible explanatory variables in line with the literature on the pricing of financial services[10]. The dependent variable is service fee received by ABS

[9] Fabozzi and Vink, 2012a; b; He et al., 2012; Deku et al., 2019b.
[10] Livingston & Miller, 2000; Fang, 2005; Esho et al., 2006; Iannotta and Navone, 2008.

issuers which is measured as a percentage of the size of an ABS tranche. Intermediary banks deduct the fee from the gross proceeds of the sale. Whereas the key variables are issuer reputation (measured by market presence) and initial market spread of ABS tranches. Initially, OLS regression analysis of global ABS issuer fee and that of subsamples are conducted. As mentioned earlier, the standard errors are clustered at deal level. However, the findings we obtain might suffer from simultaneity and self-selection biases. In order to address the issue of simultaneity we rely on two-stage least squares model. Meanwhile, we refer to Heckman's selection model in correcting for potential selection problem (Heckman, 1979; Li and Prabhala, 2007; Wooldridge, 2010).

1.6. Main Findings

The key findings of the first empirical chapter (CHAPTER II) summarise investors' perception of legal advisors engaged in the structuring and the selling of ABS bonds. Our study reveals that investors attach value to previous partnership between legal advisors and issuers. They find such issues to be less risky and therefore demand lower yield spread. We also find that the magnitude of past cooperation is perceived to be important. When we compare prime (AAA rated) and non-prime (non-AAA rated) tranches, we find that the past collaboration becomes even more valuable. This indicates when there is an increased risk, investors are likely to rely more on the available information. This finding can be useful in restoring the better functioning securitisation markets. Investor confidence in past collaboration between legal advisors and issuing teams shows that ABS transactions are considered to be less risky when the issuing and legal entities have established presence in the market. Further, over the post-GFC period we find that investors appreciate past cooperation more than they did during the pre-crisis period. Regarding reputation of legal advisors, we observe some evidence that when transactions involve reputable legal advisors, investors seem to perceive issues from such transactions to be less risky. Overall, the results we obtained demonstrate that legal teams engaged in ABS structuring are perceived to be more reliable perhaps than other agents. In creating simple, transparent and

standardised structured bonds research studies on the role of lawyers can be a useful additional guide. When it comes to the number of legal advisors engaged in ABS issuance, the market spread of securitised bonds does not seem to reflect that information at origination.

We have drawn some interesting insights following the analysis of the results in Chapter III (second empirical chapter). First of all, we observe that the implementation of the new regulations has been effective in tackling conflict of interest. The results suggest that rating catering which is the direct consequence of CRA-issuer collusion has disappeared over the recovery phase. The spread of ABS bonds does not seem to reflect investor caution regarding rating disharmony. This is very important, as CRA-issuer collusion is probably the biggest issue in securitisation which also led to the loss of investor confidence for the market. Secondly, in relation to rating shopping, we notice the effectiveness of the introduced rules has only been partial. This highlights the fact that rating shopping is not solely driven by conflict of interest. But it is also an innate cause of rating processing and issuing procedure, that it is at issuer bank's discretion to report or suppress additional ratings. Thus, we propose that if issuers of ABS bonds are required to publish ratings from three independent CRAs it can possibly help eliminate shopping altogether. This also helps to ensure that CRAs do not engage in issuing rating favours in the future as they would be less worried about losing clients over inferior ratings. In addition, we find that the issue of rating over dependence still exists. This is especially true for investors of high-quality bonds. Over the recovery phase, the investors of prime ABS bonds are still heavily reliant on the ratings attained for such bonds. Overall, the new measures help in eliminating the conflict of interest, however, the issues of rating shopping and rating over-reliance are still present to a certain extent. This can signal a positive outlook to the future of securitisation in Europe as the improved market perception of CRAs can bring more investors into the market who might still be wary of conflict of interest in the market. At the same time, it is important to note that further set of measures are still needed

from policymakers if they are to improve the securitisation market in the region.

The final empirical chapter (Chapter IV) yields few important outcomes regarding factors that can impact on how much issuers receive for their service in securitisation. First of all, the reputation of investment banks engaged in securitisation does have an influence on their service charge. Top-tier banks appear to have received higher payments than less reputable banks over the study period. The results were similar for global sample and for the US sample. After the application of Heckman's correction technique, we have obtained similar outcomes for the European sample, as well. The findings indicate that reputable issuers provide better, high quality service to their clients (originators) and investors. And this in turn will result in higher service pay. We have proposed an annual league table for ABS issuers based on which the issuers would be paid. This change could incentivise issuers to maintain their reputation and therefore maintain their level of service. Meanwhile, less prestigious issuers could be incentivised to improve the level of service they provide. Secondly, we find that initial yield spread and issuer fee are in negative relationship. This can indicate that the amount of compensation received by investment bank is often higher if they can obtain better yields. The result is observed for the US securitisation market whereas for the EU market it was not significant. Other additional factors such as originator and issue types were also significant highlighting their importance in the evaluations of service payment. We observe the effect of all the remaining variables that are often included in the literature to be in line with the results obtained in those studies.

1.7. Structure of the Thesis

The following chapters of the thesis present the empirical analysis on the European and globally issued securitised debt instruments. Chapter II is the first empirical chapter which investigates the value of legal advisors in securitisation. The impact of new regulatory changes on the ABS market and the effectiveness of the introduced measures in tackling incentive issues in

the EU is detailed in the following Chapter III. Our third empirical chapter which explores the determinants in evaluating the intermediary service fee is presented in Chapter IV. The final chapter of the thesis summarises the key findings of the thesis.

CHAPTER II: The Value of Legal Advisors in Securitisation

2.1. Introduction

Securitisation and the issuance of asset-backed securities (ABS) has grown tremendously over the last four decades, making them a systematically important part of the financial system. Their systematic significance became apparent during the 2007-2009 Great Financial Crisis (GFC), where ABS markets were central to the contagion of the crisis from the US housing market to the global financial system. ABS are complex financial instruments, with significant information asymmetries prevalent in the securitisation process. As a result, it is often challenging to accurately assess the risks involved.

In the aftermath of the GFC literature provided extensive empirical evidence on the negative effects of securitisation on bank risk taking and financial stability (see Kara et al., 2019 for an extensive survey). These studies show that investors, buying the end product of a complicated processes involving various counterparties, are exposed to various risks including opportunistic behaviour by securitising banks relaxing their lending standards (Keys et al., 2010; Dell'Ariccia et al., 2012; Nadauld and Sherlund, 2013), inadequate bank monitoring of underlying loans post-ABS issuance (Petersen and Rajan, 2002; Kara et al., 2016), misreporting of assets in the securitisation pools (Piskorski et al., 2015; Griffin and Maturana, 2016) and from falsified declarations of borrowers whose loans are securitised (Jiang et al., 2014; Griffin and Maturana, 2016). Rating agencies, which often investors rely on heavily, also underestimated the risk embedded in ABS bonds (Coval et al., 2009a; b; Brennan et al., 2009; Richardson and White, 2009) and inflated the ratings (Efing and Hau, 2015).

Nevertheless, empirical evidence also shows that investors transcended assigned credit ratings, not relying solely on them, in assessing ABS risks. They considered the seniority of tranches, external credit enhancement and the quality of collateral (Fabozzi and Vink, 2012a; b), possible rating shopping

(He et al., 2012; Fabozzi and Vink, 2015; Fabozzi et al., 2017), the size of issuers and rating inflation (He et al., 2012), highly rated issuers (Gorton and Souleles, 2007), and the reputation of issuers and trustees (Deku et al., 2019b; 2021). These findings demonstrate that the initial yield spread (i.e. price) of ABS at the issuance, although heavily influenced by the ratings, is responsive to all available information. Furthermore, they show that the initial yield spread of ABS reflect information regarding the different relevant parties (such as the issuers, trustees, rating agencies) involved in both the structural and transactional stages of securitisation.

Although various counterparties' impact on the securitisation process have been examined, one significant omission of the literature is the *legal advisors*. Legal advisors play a crucial role in structuring ABS deals by providing and managing the full legal process, assisting in structuring the ABS and selling the securities to investors (NAO, 2016). More importantly, they offer investors legal advice on the *true sale* of the transaction or *bankruptcy remoteness* of the issuer Special Purpose Vehicle (SPV) from the originator (Fabozzi and Kothari, 2008). Given their critical responsibility in the securitisation process, it is important to elucidate legal advisors influence on the securitisation pricing process, and in particular, the value investors attach to legal advisors when pricing the risks of structured bonds. Building on the aforementioned literature, in this chapter we investigate the value of legal advisors to investors in securitisation issuance and look at three issues. First, we examine how investors perceive previous long-term partnerships between a legal advisor and an issuing entity. Second, we examine whether investors see experienced (or reputable) legal advisors as a valuable counterparty. Third, we study whether the number of legal advisors participating in structuring an ABS deal matters for the perceived risk of the deal.

We test our arguments by examining the information content of yield spreads of ABS at issuance, following the literature (Fabozzi and Vink, 2012a; b; 2015; He et al., 2012; Deku et al., 2019b; Deku et al., 2021). At the marketing stage, issuers (or underwriters) set a provisional price based on investor sentiment. Investors indicate the price they are willing to pay as well as the

corresponding volume. To ensure that the issue is well subscribed to, issuers are diligent to avoid overpricing (Choudhry, 2011). Hence, we investigate investors' perception of legal advisors by examining the impact of legal advisor attributes on yield spreads at the pricing stage. Our data includes a final sample of 6,624 ABS tranches from seven major European countries (France, Germany, Italy, Ireland, Netherlands, Spain and the UK) covering over the period of 1998 to 2018. ABS issued in these markets constitute over 80% of all ABS volume in the European market during this period. We hand collect key variables regarding legal advisor identity from deal prospectuses. We employ cross-sectional regressions controlling for a battery of other factors such type of collateral, asset origin, issuer's identity, credit rating of the deal amongst others.

We find that investors value previous cooperation between issuers and legal advisors. The results suggest that past collaboration between issuer and legal advisors is perceived as a positive sign by the market and thus reflected in the prices of the securities. Moreover, as the risk increases, the importance of the relationship is seen to have strengthened. This is especially noticeable when prime tranches of a deal are compared to non-prime securities within a deal. In terms of the overall securitisation market before and after the crisis, due to plunging confidence like in previous literature, the relationship in our model becomes weaker after 2009. Regarding the market share of the legal advisors, we find some weak evidence that investors value the market presence of legal advisor for riskier ABS.

Our contribution to the literature is threefold. Firstly, for the first time in the literature, we examine whether ABS investors value information regarding the legal advisors engaged in securitisation programs. Although the impact of various counterparties – such as issuers, trustees, rating agencies – are considered by the literature, the possible impact of legal advisors in relation to prevalent information asymmetries is unknown. Given their role in structuring financial instruments, drafting deal prospectuses and reviewing asset transfer, their significance is considerable. Legal advisors can help reduce information asymmetry between issuers and investors of complex

structured bonds, thus assist market participants in setting appropriate prices for the financial instruments. Secondly, we study the market share of legal advisors as a factor in securitisation and examine whether it is reflected in the initial price of ABS. Investors' reaction to the information regarding legal advisors when information asymmetry is high could unveil their importance. The literature confirms that when assessing ABS risks, investors consider factors such as the volume of the issues, the size of the issuers, reputation of issuers and reputation of trustees. In a similar vein, we examine the possible effect of market share of legal advisors in mitigating risk. Thirdly, we also contribute by examining whether having the same legal advisor for the issuer and the manager in an ABS issuance affects yield spreads. This might occur if such an arrangement signals any moral hazard risk to investors, in a similar way that a close relationship between issuers and credit ratings agencies observed in the pre-GFC period, which witnessed increased risk appetite among the parties involved in structuring complex bonds and created opportunities for conflict of interest. Cautious investors must have considered all information. Therefore, it is possible that the number of legal advisors employed could be seen as risk mitigating factor, or vice versa, as two counterparties hiring same legal advisor could signal a negative message to the market. In addition, for over 10,000 ABS tranches we have manually collected information on legal entities from deal prospectuses. Our data is unique to the literature as it covers just over two-decade period making it one of the largest.

The rest of this empirical chapter is structured as follows. The next section explains the role of legal advisors in securitisation and Section 2.3 describes the data and methodology employed in the study. Section 2.4 presents the results obtained, and finally Section 2.5 provides the concluding remarks.

2.2. Literature Review and Hypothesis Development

2.2.1. Legal Advisors' Role in Designing ABS Contracts

Securitisation is a multiparty and multistage transactional process and has different stages involving various complex legal processes completed by the legal advisors. Alongside with rating agencies, servicer and financial advisors, legal advisors are considered as the additional parties engaged in securitisation transactions. The role of legal firms in structured finance can be defined as assisting in 'structuring the securitisation and selling the securities to investors' (NAO, 2016, p.8). Their main tasks involve drafting deal prospectuses and asset sale and purchase agreements, developing agreements on the transfer of the underlying assets, and offering legal advice on the 'true sale' or 'bankruptcy remoteness' of the transaction (Fabozzi and Kothari, 2008; NAO, 2016; Deloitte, 2018). They also provide legal opinion on the asset pool transfer and coordination with rating agencies. While making sure transaction complies with all the regulations, legal advisors also need to ensure that the requirements of issuers and investors are met. Therefore, issuers may also need legal advisors' guidance when they turn to securitisation as a strategy of financing, risk transferring, or balance-sheet loan reduction etc. Similarly, CRAs, before issuing their ratings, consider various possible legal risks in a deal, different scenarios on the existence of the assets, legal issues regarding asset isolation, SPV and so on (S&P, 2013; Fabozzi and Vink, 2012b). For instance, legal risks could include the possibility that underlying assets cease to exist due to documentary defect, or assets become unenforceable due to minor fouls in mandatory legislative requirements (S&P, 2013).

One or several legal advisors can be required in a transaction to carry out the documentation on issues such as allocating the benefits, duties and risk distribution between the parties involved. Issues related to the collection and disbursement of receivables, insurance, liquidity, financial statements and other reporting as wells as provisions on default related matters come in many forms and have different impact on different parties. Although standard terminology is often used in such provisions, the risks or the consequences

for the parties can considerably change due to possible different manners of expressions on a given matter (NABL, 2014) and the inclusions of many exceptions (Hughes, 2017).

In structured finance, in particular with off-balance sheet financing, the concept of *true sale* is essential. Hence, the most crucial feature of securitisation is that the originator of the receivables and the ABS issuing entity (i.e. SPV) are legally separated. In other words, SPVs should be independent entities who are also bankruptcy remote i.e. if the originator goes bankrupt the SPVs are immune (Ayotte and Gaon, 2011; Schwarcz, 2013). It is this aspect of ABS that makes the resulting financial instruments particularly appealing to investors. In order to ensure that an SPV's obligations are secure, even in the case when the parent company goes bankrupt, CRA and investors are in need of legal opinions confirming the true sale of a transaction or that it is bankruptcy remote (Fabozzi and Kothari, 2008). On the one hand, investors do not have to worry about the financial state of the originating company, as they can only assess the performance of the collateral underlying the securities. Therefore, it is not unusual to see cases of an originating company having its credit rating downgraded, whilst at the same time its securitised products maintain high ratings due to various credit enhancements (Lupica 1998; Fabozzi and Vink, 2012b). On the other hand, prospective buyers need assurance that the assets have been transferred from the originator to an SPV as a true sale and that they are bankruptcy remote (Schwarcz, 2002; 2003; Fabozzi and Kothari, 2008). If the legal wording on the issue is not clearly expressed and capture the complexities of a particular transaction, it can cause significant problems to the investors of the relative securities. Moreover, if the originator goes bankrupt, any legal weakness in the structure can be used to reverse the transferred assets back to the bankrupt owner (Lupica, 1998). The deal prospectus usually details all the main aspects of the transaction. However, such complex document often consists of hundreds of pages and drafted in legal terminology. Therefore, it is extremely challenging for a non-sophisticated investor to grasp the underlying context fully. Hence, legal

opinions provided by legal advisors are crucial as they assure the transaction as a legal sale, that the assets are sold to a separate entity (i.e. SPV), and this entity is the legal owner of the assets (Pinto and Alves, 2016; Hughes, 2017). It is also essential that each party seeks legal advice to make sure that they obtain the best alternatives for themselves, and are, thus, protected from possible legal risks. Overall, the legal aspects of securitisation are important, and they can have significant influence on the price of structured finance issues (Lupica 1998; Schwarcz 2005). Hence, assurance of true sale (or bankruptcy remoteness) and other legal aspects of a securitisation contract can influence the initial pricing of ABS.

2.2.2. Importance Of Legal Opinions in ABS Transactions

Views on legal opinions are contradictory in the literature. On one hand, it is argued that in structured finance transactions, legal opinions are predominantly "third party legal opinions" (Schwarcz, 2005), i.e. although an originator or an issuer is the client of an outside law firm, the opinions provided to the clients are often to the benefit of third parties such as investors or rating agencies. These opinions effectively reduce information asymmetry among the parties involved in a transaction (Schwarcz, 2005). On the other hand, it is also argued that legal opinions in securitisation cannot be relied upon by ultimate beneficiaries, such as the investors, as these opinions are addressed towards a client (i.e. the originator or the issuer) and thus should not be relied upon by the third parties (Carabellese, 2018).

It is argued that in securitisation it is historically uncommon to see downgrades as a result of legal matters (Fabozzi and Vink, 2012b). Schwarcz (2005, p.6) further supports the view that legal opinions provided on the bankruptcy remoteness of an entity are not 'inherently deceptive or illegal', nor is there any proof that lawyers had intention to mislead market participants (Schwarcz, 2003). It is also emphasized that legal advisors, in evaluating ABS transactions, do not assess the 'business wisdom'. Yet their involvement in structured finance helps third parties (i.e. investors) to

understand the externalities[11] and reduce information asymmetry among different parties engaged in the transaction (Schwarcz, 2005).

These positive notions in securitisation concerning the legal aspects and the involved legal opinion providers may be perceived as an assurance by investors that SPVs are immune from insolvency and therefore can be valued by them when this is the case. Ayotte and Gaon (2011) confirms how valuable insolvency protection can be for investors. They investigate the case of US company LTV Steel that was on the verge of bankruptcy filing, in which a bankruptcy court ruled that the securitised assets of the company could be used by the company for its ongoing operations, invalidating the true sale of the underlying assets. The authors assessed the implications of the decision on the price of other ABS products issued by non-depository institutions that can be similarly challenged by bankruptcy courts[12]. They observe a significant increase in the initial spread of ABS instruments issued by non-depository issuers after the court's decision as it increased the risks of structured bonds and weakened creditor protection.

Overall, the literature in securitisation seems to suggest it is highly unlikely that legal opinions are deceptive towards any parties and thus the legal advisors, are highly unlikely to be affected by moral hazard. Nevertheless, as far as we know, research that negates the existence of collusion between legal advisors and issuers and/or any other parties is non-existent. Legal advisors engaged in a securitisation deal are often hired by issuers, but there are many cases when managers also hire their own legal advisors. One of the essential aspects of their involvement in securitisation is that they contribute to reduce information asymmetry by providing legal opinion. Although hired by issuers and/or managers, legal opinion rendered by legal advisors serve for the benefit of potential buyers of structured bonds as they intend to draft the detailed legal elements of the underlying asset pool (Wood, 2019). Therefore,

[11] Possible costs incurred by investors due to misleading legal opinion by legal firms, e.g. weakly drafted legal opinion on the true sale.

[12] Issuances by insured depository institutions cannot be judged by bankruptcy courts as they were governed by Federal Deposit Insurance Corporation (FDIC) which guarantees insolvency protection of ABS issuances (Ayotte and Gaon, 2011).

the more detailed and clear the prospectus they develop the lower the information asymmetry between opposite sides of the transaction. Legal opinion also contributes to the ratings assigned to structured bonds as it is utilised as part of CRAs assessment prior to issuing ratings (S&P, 2013; Fabozzi and Vink, 2012b). A note of caution, however, is expressed by Carabellese (2018) to ultimate beneficiaries of legal opinion, reminding potential buyers of ABS securities that legal opinions are issued by the request of the issuers.

Moreover, given the fact that ABS markets are profitable, legal firms were also active and willing to participate in securitisation processes. Interestingly, due to the complex nature of structuring ABS deals, law firms preferred to be involved with familiar programs (Lupica, 1998). For instance, the consultants of legal and financial advisory firms often guide their clients towards securitisation programs which they are most familiar with. The author claims that after completing one transaction, advisory firms are likely to engage in similar financial programs as they would have established the knowledge and the skills. Yet, the author highlights the possibility that these law firms might have engaged with similar deals due to their lucrative nature.

2.2.3. Factors Impacting on ABS Pricing Beyond Credit Ratings

The initial yield spread (or the launch price in the primary market) of ABS reflects the risk premium that investors demand (Fabozzi and Vink, 2012b). Considering investors overwhelmingly relied on ratings agencies' assessments in pricing securities[13], the price of ABS products reflects mainly the risks evaluated by credit rating agencies (CRAs). Generally, these are risks related to the collateral, cashflow and credit enhancement by third parties (Fabozzi and Vink, 2012a; 2012b). Due to the complex nature of structured financial products, the ratings of CRAs are more important in determining price than they are for standard corporate bonds, where risks are often tied into a single company's performance and investors can look at the financial stability of the issuing entity (He et al., 2012). This makes it easier to obtain the various

[13] Evidenced by a number of studies including Cuchra (2005), Adelino (2009), Coval et al. (2009b), Skreta and Veldkamp (2009), Partnoy (2009), Kisgen and Strahan (2010), and Mahlmann (2012).

filings reported by public companies in consistence with governing regulations. In the case of ABS securities, however, it is not as straightforward as the securitisation process requires the pooling of credit sensitive assets (such as bank loans). These are then tranched into securities of different risk levels that are legally separated from the parent company and sold to an independent entity, the SPV. The SPV then sells the securities to investors. In contrast to corporate bonds, the structuring of a securitisation program for many investors is not just a complex process, but one in which there is increased asymmetric information and moral hazard (Coval et al., 2009a; Ashcraft and Schuermann, 2009; Keys et al., 2010).

Although the complexity has made investors heavily reliant on CRAs, the literature suggests ratings were not sufficient, and investors incorporated several other factors when pricing structured securities at issue (Adelino 2009; Skreta and Veldkamp, 2009; Ashcraft et al., 2010). Cuchra (2005) argues that there is systematic difference on how rating agencies and investors assess certain aspects of securitisation transactions. He provides empirical evidence that investors consider factors that are not included in CRAs' assessments such as market placement and factors partly examined by CRAs such as creditors' rights. He concludes that market liquidity, the number of underwriters involved in a transaction, the legal regime and the jurisdiction of a country - particularly, the credit friendliness of a nation when it comes to 'true sale' and true ownership of the assets transferred from the originator - were all considered by investors and reflected on ABS spread at launch. Similarly, Fabozzi and Vink (2012a, 2012b) also argue that although collateral and credit enhancement aspects of an ABS transaction are assessed by the CRAs, investors went beyond these factors in assessing the risks of the bonds. He et al. (2012, 2016) argue that investors were aware of the possibility that conflict of interest could exist in ABS transactions and, thus, demanded a higher spread on the bonds. Their findings suggest that bonds issued by 'big issuers'[14] were granted inflated ratings (He et al., 2012), whereas the

[14] "Big issuer" refers to the market size of the issuer, i.e. the issuer is among the top 10% of the market share distribution for a given year (He et al., 2012).

number of ratings assigned to a bond was seen as a sign for rating shopping[15] (He et al., 2016). Reputation of the trustees (Deku et al., 2019b) and issuers (Deku et al., 2021) are also found to be influential factor beyond the credit ratings when investors price ABS. These studies conclude that investors value trustee and issuer reputation especially when risk assessment is challenging.

Following this literature, we posit that the legal advisors' involvement can also impact on ABS initial yield spreads, reflecting investors sentiments about the legal risks of the deal. We explain our arguments in the next section.

2.3. Hypothesis Development

Whilst most of the major actors involved in ABS structuring have been criticised for some form of misbehaviour, the existing literature has somewhat neglected the possibility that legal parties might have also been acting unfairly (Schwarcz, 2002; 2005; Fabozzi and Vink, 2012b). However, the lucrative nature of ABS markets could make investors cautious of all the parties involved, including the legal advisors and the opinions they provide. Because the potential for conflicts of interest is higher if the issuer and manager hire the same legal advisor to complete a deal. A transaction consummated by two different legal advisory teams should worry investors less than a deal where a single legal team is in charge of legal structuring. As stated earlier, the most crucial legal issue regarding an SPV is that it should be treated as an independent bankruptcy-remote entity. Assets moved from parent company to SPV should be treated as true sale, not a loan. Otherwise, legal weakness in the isolation of assets could result in assets being transferred back to the parent firm if it goes bankrupt. Therefore, a single advisory firm hired by two parties at different ends of a transaction could be more susceptible to representing one party more than the other, or let go certain legal weaknesses, or at the worst, might collude with both parties in structuring a transaction.

[15] Authors concluded that a (below AAA) single-rated tranche compared to ones with multi ratings were seen as a riskier bond, as investors perceived it as a sign for rating shopping. That is, issuers shopped for better ratings and undesirable ratings were never published.

In contrast, when two legal advisory teams each work for the benefit of their clients, the possibility of collusion is reduced.

Investors who demanded higher yields when they suspect collusion between issuers and CRAs, are similarly likely to demand compensation for potential collusion between issuers and legal advisors. Alternatively, if investors did not see the legal aspects of securitisation as a potential risk, then the spread should not be affected. Therefore, we can hypothesize:

***H1*$_0$** - *Initial yield spread is not affected when an issuer and a manager seek legal advice from the same law firm*

***H1*$_1$** - *Initial yield spread is affected when an issuer and a manager seek legal advice from the same law firm*

Another aspect to consider is the relationship between legal advisors and issuers. If market participants do not view the legal part of a transaction as risk, then past cooperation between legal advisors and issuers could be viewed as a positive sign, since previous experience is likely to be highly valued when structuring complex ABS programs (Lupica, 1998). On the other hand, if investors are cautious about legal advisors, past links between them and issuers could signal a negative message, as longer partnerships can make parties more susceptible to conflict of interests:

***H2*$_0$** - *Initial yield spread would not be affected if an issuer and all the legal advisors involved have had previous cooperation*

***H2*$_1$** - *Initial yield spread would be affected if an issuer and all the legal advisors involved have had previous cooperation*

The literature reveals the reputation of involved parties can be an influential factor in the ABS spreads. In particular, studies find that reputable issuers and trustees in securitisation markets are valued by security buyers, and this effect is reflected in the initial market spread of the ABS bonds. For instance, the lagged market share of issuers has been used as proxy for the reputation of issuers (Deku et al., 2021) and the reputation of trustees (Deku et al., 2019b). In the latter study, the authors find that as the risk becomes more

difficult to assess, and when information asymmetry is highest, trustee reputation (i.e. trustees with larger market share) helps mitigate risk and is thus reflected in lower yield spreads. Meanwhile, Deku et al. (2021) find that the reputation of issuers has in fact had a negative impact on the initial market spread of MBS bonds. A study by Fang (2005) that examines banks engaged in underwriting finds that reputation (based on market share) enables them to obtain lower yields and charge higher fees. However, He et al. (2012) find that investors demanded higher yields for the securities issued by 'big' issuers. They conclude that issuers with a higher market presence during the housing boom of 2004 to 2006 were perceived by investors to have inflated credit ratings due to their size and influence.

In line with the literature, we also use the lagged market share of legal advisors to assess the reaction of the markets to this information. In particular, we examine whether investors regard the reputation of legal advisors as an influential factor and its possible reflection on initial spreads. This will allow us to identify whether the reputation of legal advisors can help reduce the information gap between buyers and sellers of structured bonds. We hypothesize, that

***H3*$_0$** - *Initial yield spread is not affected by the market share of legal advisor*

***H3*$_1$** - *Initial yield spread is affected by the market share of a legal firm*

2.4. Data and Methodology

2.4.1. Data Sources

The data is obtained from Bloomberg, which provides detailed information on deal and tranche characteristics. However, for most of the deals the data for issuers' and managers' legal advisors are not reported. In order to fill in the missing information, we checked the availability of prospectus for each of those deals, and by going through each of the documents, we manually collected legal advisor firms' identity. Similarly, other missing characteristics such as issuer identity as well as maturity dates have all been singly filled in through deal prospectuses that are available in Bloomberg.

Our sample includes European ABS and MBS deals over the last two decades. The European securitisation market is the second biggest in the world and although the damage caused by financial crisis was not as severe as it was in the US, the recovery of the market has been sluggish (EPRS, 2015). Therefore, in order to exploit its potential benefits, there has been a growing sentiment in recent years by EU policymakers to revive the 'well-functioning' securitisation markets. Creating healthy securitisation market requires regulatory bodies to introduce stricter rules to avoid increased information asymmetry and conflict of interest between parties while protecting investors and creating more transparent environment. We study how investors perceived legal advisors engaged in European ABS markets, namely their role in mitigating risk.

We are primarily interested in major securitisation markets in Europe. Our data includes ABS and MBS deals issued France, Germany, Italy, Ireland, Netherlands, Spain and the UK markets between 1998 and 2018. These countries are responsible for the issuance of over 81% of all the issued ABS securities in the continent (Bloomberg, 2018). The key characteristics are type of collateral, asset origin, pricing date, issue year, value of a deal, issuer nation, type of a deal, issuer's identity, issuer's legal advisor identity, manager's legal advisor identity. Furthermore, for each tranche of a deal we collect the assigned credit ratings, value of the tranche as well as the maturity date.

Initially, we collected information on 18,399 tranches in total, however, 8,180 tranches are eliminated due to missing key variables for these securities. We went through the prospectuses for most of the deals to fill in the missing data. We have checked each deal individually and collected the missing data for all the securities. However, for some of the deals we were not able to find prospectus either because they were not reported, or they never existed. Therefore, we had to further exclude the ABS tranches for those deals. As a result, the final sample in our study consists of 6,624 ABS tranches with over 1,000 deals.

2.4.2. Empirical Model

Following the literature on measuring 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 applied to describe the initial spread yield for a given tranche i as follows:

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

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 indicator (Cuchra, 2005; He et al., 2012; Fabozzi and Vink, 2012; 2015; Deku et al., 2019a). L is a set of five variables (*Same Advisor*, *Past Collaboration*, *Collaboration Magnitude1, Collaboration Magnitude2* and *Market Share*) that we utilise interchangeably to capture the legal advisor related factors. *Same Advisor* equals to 1 if in a given deal a legal advisor of an issuer and a legal advisor of a manager are the same entity, and 0 otherwise. The percentage of the deals where the law firms are the same is 23%. *Past Collaboration* is the variable used to describe past cooperation. It is a dummy variable that equals to 1 if an issuer and two legal firms (issuer and manager legal firms) have cooperated in previous ABS deals, and 0 otherwise. The data shows that entire sample is almost equally divided between the two. *Collaboration Magnitude1* is the variable we utilise to test for the effects of past collective links between two parties (i.e. the issuers and legal advisors) on the price. *Collaboration Magnitude1* indicates the number of past cooperation between an issuer and the issuer's law firm. We calculate the number of all previous collaboration between two parties who have had worked together in the past. By measuring *Collaboration Magnitude1* we would like to find out how investors perceived the magnitude of familiarity between issuer and legal advisor. *Collaboration Magnitude2* is the variable we utilise to test for the effects of prior collaboration between three parties (i.e. issuer, issuer's legal and manager's legal advisors) on the price. Similar to *Collaboration Magnitude1*, *Collaboration Magnitude2* is also a measure of familiarity however between three parties. We measure it by using the number of all previous collective cooperation between issuer, issuer's law firm and

manager's law firm. *Collaboration Magnitude2* could help us understand how investors reacted to dynamics of prior experience between issuer, issuer's legal advisor and manager's legal advisor. *Market Share* indicates the possible changes in initial spread due to legal firm's market presence. In measuring market share, we follow the same intuition as in Deku et al., (2019b; 2021) and He et al. (2012). *Market Share* is a dummy variable and takes the value of 1 for a given year if a law firm accounts for at least 5% of the total market volume in previous year, and 0 otherwise. Market volume for a given firm is estimated as the ratio of the number of deals completed by the legal advisor to the number of all the deals in one year period. The same method has been used for both issuer's and manager's legal advisors.

We use a set of variables (X_i) to control for various deal, tranche, issuer and macro characteristics. *Number of ratings* is a variable used to indicate the number of ratings reported for each tranche. We use it to control for rating shopping by issuers (He et al., 2012). Rating shopping occurs when an issuer decides to publish only the highest ratings received and ignore lower rates thus it influences rating agencies to issue inflated ratings (Skreta and Veldkamp, 2009; He et al., 2012). This phenomenon increases the risk of securities thus the price of securities demanded by investors (He et al., 2012; 2016). Reporting all the ratings are not a requirement, but the availability of all the three CRAs' ratings makes investors more comfortable who might otherwise suspect the issuers of supressing negative ratings. Liquidity has been controlled for by using the natural logarithm of each tranche value, labelled *Size* (Whetten and Adelson, 2004; He et al., 2012; Efing and Hau, 2015; Deku et al., 2019b). We have also included the tranche maturity in its logarithmic form (following the intuition in Cuchra, 2005; Adelino, 2009; Mahlmann, 2012; Efing and Hau, 2015; Deku et al., 2019b), indicated as *Weighted Average Life*. Potential risks related to the underlying ABS securities are controlled for by the variable *Issue Type* (Cuchra, 2005; Deku and Kara, 2017). *Market Area* captures the market where the issues are traded and indicates Domestic, Global or International in the dummy variable form. *Issuer Nation* is important in the pricing of the securities (Cuchra, 2005; He

et al., 2012; Fabozzi and Vink, 2012b) and indicates the country where the securitisation programs are structured. Macroeconomic conditions as well as legal systems in the country of origination can have a considerable impact on the performance of the ABS. The dummy variable *Guarantor* is employed which 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. *Tranche Credit Rating* is utilised to control for the credit quality of the ABS tranches by assigned credit ratings. Our data includes ratings reported by the three big rating agencies: S&P, Fitch and Moody's. We have converted the ratings issued by the Big Three into factor variables. By using numerical point scale of 1 denoting (3A – the highest notch) down to 21 (C – the lowest notch) we try to control for every single rating. All the notches have been changed into numbers and arithmetic mean of all the available ratings per security has been calculated. According to Fabozzi and Vink (2012a) structural and asset risks can be captured by ratings. Although the ratings are undoubtedly the biggest explanatory factor in yield spread (Fabozzi and Vink, 2012a; b; Cuchra, 2005), investors have been very much cautious in the ratings reported. We classify 1 (AAA) rated securities as prime class securities while the rest as non-prime class. *Issuer Reputation* is a dummy taking the value of 1 if, for a given year, an issuer has been involved with at least 5% of all the issuance in the market in previous year, and 0 otherwise. We follow Deku et al. (2019a) in constructing this variable. Market volume for a given firm is estimated as the ratio of the number of deals completed by an issuer to the number of all the deals in one-year period. Dummy variables for each issuer (*Issuers*) allows us to control for issuer specific omitted variables effect. *Collateral Nation* controls the country of origination for the assets underlying ABS. We control for time effects (*Time*) using dummy variables indicating each quarter. One of the benefits of pooled cross-sectional data is that the sample size can be improved which in turn can lead to more accurate estimators as long as the relationships in estimation are stable over time. In order to relax this notion and allow temporal variation we employ time dummy (Wooldridge, 2013). Also, the introduction of year dummy variables is important as the

impact of macroeconomic factors across time can be captured (Peterson, 2009).

CRAs adopt different techniques and yardsticks in assessing the ABS securities. While the risk evaluation can be carried out at deal and/or tranche levels, any deal specific assessment revisions lead to deal-wide rating changes. Hence, it is likely that tranches of a given deal are not independent from each other (Deku et al., 2019b). According to Adelino (2009), ratings revisions on multiple tranches are often carried out about same time. Thus, in order to mitigate correlation of errors we cluster standard errors at deal level (Deku et al., 2019b; Cuchra, 2005). Following the literature on measuring initial yield spread of structured finance securities we employ OLS regression model in our study (Cuchra, 2005; Fabozzi and Vink 2012a; b; He et al., 2012; Deku et al., 2019b). It is possible that the findings we obtain might suffer from self-selection bias and this might render our OLS estimates unreliable. To address the issue of selection bias we refer to propensity score matching (PSM) model.

2.4.3. Robustness Checks

For the purpose of evaluating the robustness of the outcomes, we employ PSM method. This enables us to assess the effects of the three variables that we are concerned with on the yield of the securities. The issue of potential selection bias, when a sample from a population is not random, might be a concern in analysing the effect of having the same legal advisory team in structuring a deal on the prices of the tranches of those deals. If there is systematic difference on the initial spread of tranches regardless of the number of legal advisors, deals that were consummated under one legal advisory team versus deals where more than one legal team is involved, then the results obtained from comparing the impact of the number of legal advisors on the price 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 the result of self-selection than it is the number of legal advisors. What aim to find whether the price of a security would change if a deal carried out by one legal advisory team were to be engaged by

more advisors. As we are not able to have the same ABS security in two cases, we are in need of a substitute that can be counterfactual case for a given security. Possible choice to proxy counterfactual for *Same Advisor* would be where the legal advisor team are not the same. We then generate our 'control' group using the substitutes. Formation of the control group is implemented using PSM technique (Rosenbaum and Rubin, 1983) as the propensity score can help reduce the issues related to matching.

In order to compare the *Same Advisor* and non-*Same Advisor*, PSM enables us to match the sample we have that are similar as far as the key characteristics are concerned those which might affect the price of a security. Notably, the control unit of non-*Same Advisor* is composed of sample securities with characteristics that are as close as possible to *Same Advisor*. 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 ($\Delta Spread$) of a security can be associated with the treatment effect i.e. having *Same Advisor*. Our inference is restricted, as a result of matching, to the sample of *Same Advisor* and matched non-*Same Advisor*. For a given tranche i the effect of the treatment (having same legal advisor) δ_i is the difference between potential outcomes of the treated and control units, denoted as follows:

$$\delta_i = \Delta Spread_{1,i} - \Delta Spread_{0,i} \tag{2}$$

The average treatment effect for the treated (ATET) is the effect of having same legal advisor over the sample unit is defined as:

$$ATET = E\left(\Delta Spread_{1,i} - \Delta Spread_{0,i} \middle| r_i = 1\right) \tag{3}$$

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 propensity score which is a function of initial spread and tranche observable characteristics:

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

First, propensity score $P(X_i)$ is computed with probit model in which regressors X_i include key tranche and deal characteristics while the dependant binary variable equals one for *Same Advisor* and 0 otherwise. Following Dehejia and Wahba (2002), treated and non-treated tranches are matched with nearest-neighbour method which matches securities with the closest propensity scores. Similarly, the other variables of interest *Market Share* and *Past Collaboration* were also tested by the PSM approach.

2.4.4. Descriptive Statistics

We present descriptive statistics for all variables in Table 2.1. The percentage of the deals where the issuer and the manager have the *Same Advisors* are 21%. In 55% of the deals, issuer, issuer's legal advisor and manager's legal advisor cooperated together in the past (*Past Collaboration*). Average number of previous cooperation between an issuer and its legal advisor is 2.3 and 1.5 deals (*Collaboration Magnitude1 and Collaboration Magnitude2* respectively). The mean of the initial yield spread is 129 basis points for the entire sample. On average, the deals are over €1.6bn while the mean value for each tranche is at around €280mn.

Table 2.1 Descriptive Statistics

Variable	*N*	*Mean*	*Median*	*Std.Dev.*	*%*	*No. of Entities*
Spread (basis points)	7,391	129	68	161		
Weighted Average Life (Years)	10,073	33	30	27		
Tranche Credit Rating	8,443	5	3	4		
Number of Ratings	10,219	2	2	1		
Number of Tranches	10,219	5,111	5,111	2,951		
Tranche value (million EUR)	10,202	281	52	704		
Deal Value (million EUR)	10,162	1,655	670	3,008		
Issuers (total)	10,219					740
Issuer Legal Advisor (total)	10,219					127
Manager Legal Advisor (total)	10,219					84
Collaboration Magnitude1	9,259	2.3		4		
Collaboration Magnitude2	9,259	1.5		4		
Past Collaboration = 0	4,182				45	
Past Collaboration = 1	5,077				55	
Same Advisor = 0	8,071				79	
Same Advisor = 1	2,148				21	
Market Share = 0	2,278				22	
Market Share = 1	7,874				78	

The average rating for the securities is between AA- and A+, whereas the median is AA. Securities in the sample are issued by 740 different issuing entities, while 127 (Issuer) and 84 (Manager) legal advisors have been responsible for legally structuring the deals. In Table 2.2 we present the distribution of tranches for the full sample by the assigned credit ratings. Overall, 8,443 tranches have been rated by at least one of the three CRAs. The securities rated as AAA (prime securities) constitutes the largest number of tranches in per notch terms, followed by AA, A and BBB rated tranches, respectively.

Table 2.2 Tranche Rating Distribution

Tranche Credit Ratings	*N*	*Tranche Credit Ratings*	*N*
Prime			
AAA	3,247		
Non-Prime			
AA+	154	BB	369
AA	1,169	BB-	104
AA-	240	B+	23
A+	244	B	52
A	1,087	B-	92
A-	170	CCC+	4
BBB+	122	CCC	3
BBB	968	CCC-	8
BBB-	292	CC	17
BB+	75	C	3
Total	8,443		

In Table 2.3, the summary statistics by each issuing country have been presented. As it is clear from the table, the UK is responsible for the issuance of the majority of asset backed securities. Overall, the country has issued more than 5,400 ABSs and each deal has averaged above €2bn. The least number of securities have been produced by France, 212 tranches averaging at €280m have been issued by French SPVs.

Table 2.3 Summary statistics per issuing country

Issuer Nation	Variable	N	Mean	Median	Std.Dev	p75
France	Price - Spread (basis points)	165	90.2	50	107.2	100
	Weighted Average Life (Years)	207	29.4	19	28.5	38.6
	Tranche Credit Rating	180	3.8	3	3.6	6
	Number of Ratings	212	1.5	2	0.8	2
	Number of Tranches	212	5208	6008	3321	8067
	Tranche value (million EUR)	212	280.9	72.5	531.9	379.1
	Deal Value (million EUR)	212	775.7	459.1	840.8	900.1
Germany	Price - Spread (basis points)	402	137.1	70	162.1	180
	Weighted Average Life (Years)	482	24.1	10.2	27.7	32.5
	Tranche Credit Rating	433	5.4	5	4.1	9
	Number of Ratings	489	1.7	2	0.9	2
	Number of Tranches	489	5503	5310	3193	8305
	Tranche value (million EUR)	489	197.1	40.3	458	116.8
	Deal Value (million EUR)	489	935.9	633.3	1220	1000
Italy	Price - Spread (basis points)	528	71.3	48	78.6	87.5
	Weighted Average Life (Years)	615	30.1	24.9	23.7	37.2
	Tranche Credit Rating	553	3.9	3	3.3	6
	Number of Ratings	652	1.7	2	0.9	2
	Number of Tranches	652	6056	6944	3242	9211
	Tranche value (million EUR)	649	439.6	128.8	844.2	475.7
	Deal Value (million EUR)	624	1272	761.5	1512	1462
Netherlands	Price - Spread (basis points)	1056	144.3	80	167.8	190
	Weighted Average Life (Years)	1416	38.1	32.6	29.1	49.6
	Tranche Credit Rating	1248	4.7	3	3.9	8
	Number of Ratings	1441	1.7	2	0.9	2
	Number of Tranches	1441	5499	5678	3092	8249
	Tranche value (million EUR)	1441	360.8	45.8	932.8	280.9
	Deal Value (million EUR)	1431	1699	905.7	2668	1596
Ireland	Price - Spread (basis points)	624	159.7	100	181.4	202.5
	Weighted Average Life (Years)	1405	24.3	12.3	26.6	32.5
	Tranche Credit Rating	784	4.9	3	4.1	7
	Number of Ratings	1410	0.9	1	0.9	2
	Number of Tranches	1410	4962	4969	2593	6810
	Tranche value (million EUR)	1409	161.7	32	521.5	91.5
	Deal Value (million EUR)	1406	631.8	332.5	1191	592.4
Spain	Price - Spread (basis points)	472	64.1	40	76.2	70
	Weighted Average Life (Years)	528	39.5	33.7	20.7	43.2
	Tranche Credit Rating	521	4.9	3	4.8	9
	Number of Ratings	529	1.7	2	0.7	2
	Number of Tranches	529	6101	7097	2545	8191
	Tranche value (million EUR)	528	358.9	66.9	731.6	357.5
	Deal Value (million EUR)	529	1403	1143	1221	1737
United Kingdom	Price - Spread (basis points)	4144	135.6	72	168.9	175
	Weighted Average Life (Years)	5420	33.9	30.4	27.1	40.9
	Tranche Credit Rating	4724	4.6	3	4	8
	Number of Ratings	5486	1.9	2	0.9	3
	Number of Tranches	5486	4800	4802	2902	7158
	Tranche value (million EUR)	5474	271.3	56.8	670.7	255.6
	Deal Value (million EUR)	5471	2073	726.3	3671	1686

2.5. Regression Results

The regression models we employ are estimated progressively. Initially, the results of the aggregate ABS sample are provided. In this way, we aim to find out the effects of the main variables we are looking at on the spread for the whole sample over the full two-decade period. We then present the estimations for the prime and non-prime tranches of the same sample. By separating prime and non-prime securities we aim to examine how investors reacted to the least risky bonds in comparison to the rest. As the literature shows, triple-A bonds can yield different results when compared to non-prime ones (Adelino, 2009; Mahlmann, 2012). Further, we split the full sample into MBS and ABS and estimate the models separately for each sample. Lastly, we investigate the effects of legal firms over the pre- and post-crisis periods as the securitisation markets changed dramatically after the crisis as well as investors' trust in the market.

2.5.1. Whole Sample

The results for the whole sample are presented in Table 2.4. We employ the key variables, i.e. *Same Advisor, Past Collaboration, Collaboration Magnitude1* and *Collaboration Magnitude2* separately and estimation results are displayed in Columns 1 to 4, respectively. We find that the coefficient of *Same Advisor* is not significant, suggesting investors are indifferent as to whether or not the legal advisors are the same institution for both the manager and issuer. The possibility of collusion between parties does not seem to be a worry for investors, confirming $H1_0$. This result can also be interpreted that investors do not see legal advisors acting unlawfully in case they work for both parties of the securitisation deal. The number of legal advisors involved in a transaction does not seem to have an impact on the 'true sale' nature of the securitisation transactions. This result also confirms Schwarcz (2005) arguments that lawyers did not intentionally deceive or provide deceptive legal opinions, whilst investors did not see legal teams to engage in conflicts of interest.

Table 2.4 The effect of legal advisors on initial market spread of ABS tranches

This table demonstrates OLS regressions of initial market spread of European issued ABS tranches on legal advisor, deal and tranche-level as well as collateral characteristics. The sample consists of tranches issued from 1998 to July 2018. Same Advisor is a dummy variable that takes the value of 1 if manager and issuer legal advisors are the same legal advisors, otherwise 0. Past Collaboration is a dummy variable that takes the value of 1 if both legal advisors and issuer have all cooperated in the past, otherwise 0. Collaboration Magnitude1 is the number of previous cooperation between issuer legal advisor and the issuer. Collaboration Magnitude2 is the number of past cooperation between both legal advisors and issuer. Market Share is a dummy variable that takes the value of 1 for a given year if the legal advisor accounts for at least 5% of the market share for previous year, otherwise 0. Number of ratings assigned for a given tranche is used to control for possible rating shopping. Size of each tranche (in $ millions) is employed to control for liquidity. Weighted Average Life is tranche's maturity conditional upon the prepayment expectations. Issue Type classifies the type of issuance i.e. the underlying assets for a tranche within a deal. Market Area where tranches of a deal is targeted for. Issuer Nation is the country where a tranche is issued. Guarantor indicates whether external credit enhancement applies for a given ABS deal. Tranche Credit Rating is the initial rating assigned for a tranche. Issuer Reputation is a dummy that takes the value of 1 is the issuer accounts for at least 5% of the market for previous year. Issuer of each deal has been controlled for. Collateral nation is where the collateral originates. Time is factor variable indicates issuing period quarterly. ***, ** and * indicate significance levels at 1%, 5% and 10%respectively.

	(1)		(2)		(3)		(4)		(5)	
Same Advisor	2.3119	(5.4934)								
Past Collaboration			-11.7638***	(3.2221)						
Collaboration Magnitude1					-6.3967***	(2.0135)				
Collaboration Magnitude2							-5.9139***	(2.2181)		
Market Share									3.6019	(4.8464)
Number of Ratings	-14.8354***	(2.8628)	-13.3403***	(2.9668)	-12.7289***	(3.0786)	-13.4377***	(3.0044)	-15.3274***	(2.8706)
Size	-0.0041**	(0.0018)	-0.0041**	(0.0019)	-0.0044**	(0.0018)	-0.0041**	(0.0019)	-0.0041**	(0.0018)
Weighted Average Life	-0.0325	(0.0599)	-0.0271	(0.0612)	-0.0265	(0.0612)	-0.0322	(0.0611)	-0.0283	(0.0595)
Issue Type										
Mortgage-backed	-27.2893***	(3.7274)	-26.1592***	(3.7336)	-26.1190***	(3.7585)	-26.6137***	(3.7989)	-27.3061***	(3.7190)
Market Area										
Domestic	-50.4851	(31.8344)	-53.6933*	(30.8549)	-55.9202*	(33.2949)	-55.9291*	(32.7090)	-46.6917	(33.0336)
Global	-30.3466***	(6.7271)	-26.8785***	(7.3310)	-23.8621***	(7.7868)	-24.1878***	(7.2165)	-30.7871***	(6.7824)
International	6.1047	(6.5551)	15.8289**	(6.6602)	18.8373**	(7.4680)	15.9859**	(7.3450)	5.4831	(6.6121)
Issuer Nation										
France	-48.5576***	(9.4177)	-55.9063***	(10.1115)	-53.3653***	(9.2164)	-55.0577***	(9.7081)	-47.7337***	(9.5827)
Germany	-29.1114*	(15.6607)	-29.9095*	(15.6994)	-30.9508**	(15.5179)	-30.2377*	(15.7403)	-27.6966*	(15.7940)
Italy	-29.5355*	(17.3356)	-29.6281	(18.3267)	-32.1944*	(17.6630)	-31.4502*	(18.0656)	-28.5107	(17.6052)
Netherlands	-8.5805	(8.1971)	-12.8180	(8.3295)	-11.9187	(8.2288)	-11.5466	(8.1495)	-7.9109	(7.9844)
Republic of Ireland	-2.5532	(10.6849)	-2.7267	(11.2052)	-3.4690	(11.0799)	-3.1294	(11.2318)	-1.7817	(10.8583)
Spain	-43.4801**	(16.9943)	-30.6244*	(17.8676)	-32.0257*	(17.2784)	-30.7002*	(17.7499)	-40.6544**	(17.1266)
Guarantor	-3.8748	(8.5781)	-4.6447	(8.6566)	-5.9937	(8.4151)	-5.4294	(8.4508)	-3.6005	(8.5565)
Private Placement	-6.9474*	(3.5987)	-7.5119**	(3.6296)	-7.6170**	(3.6197)	-6.9466*	(3.6082)	-6.7855*	(3.5144)

Tranche Credit Rating									
AA+	4.4420	(5.6075)	5.7695	(5.7328)	5.8055	(5.6524)	5.1935	(5.6879)	5.1256	(5.5511)
AA	29.6135***	(2.9534)	29.8605***	(3.0860)	29.6311***	(3.0766)	30.0179***	(3.0921)	29.4720***	(2.9605)
AA-	32.8662***	(6.2716)	30.9075***	(6.1987)	30.4857***	(6.3703)	30.3560***	(6.3274)	32.9185***	(6.2736)
A+	61.5423***	(5.6105)	62.3306***	(5.6511)	62.4654***	(5.6222)	62.3232***	(5.6548)	61.8721***	(5.6204)
A	62.8464***	(2.9601)	63.1795***	(3.0623)	62.9078***	(3.0728)	63.1475***	(3.0460)	62.6947***	(2.9767)
A-	100.0003***	(9.4960)	100.0007***	(9.6672)	99.8876***	(9.7385)	100.6735***	(9.6882)	100.1090***	(9.4899)
BBB+	127.7012***	(12.1093)	126.5949***	(11.9643)	126.5122***	(12.0011)	126.5347***	(12.0244)	127.6651***	(12.1256)
BBB	124.8357***	(4.3926)	125.2837***	(4.5313)	124.8985***	(4.5663)	125.4620***	(4.5197)	124.7310***	(4.3981)
BBB-	158.4961***	(7.7425)	159.9801***	(7.7830)	159.7860***	(7.7692)	159.8991***	(7.7999)	158.4350***	(7.7388)
BB+	334.0000***	(29.1532)	330.8731***	(29.5424)	330.4086***	(29.6385)	331.1161***	(29.6962)	334.2499***	(29.0423)
BB	336.6871***	(7.4956)	336.8188***	(7.5717)	335.8830***	(7.5735)	336.1380***	(7.5722)	336.5905***	(7.4959)
BB-	351.4338***	(16.8908)	357.0314***	(16.7056)	356.8142***	(16.7993)	357.2277***	(16.6436)	351.2374***	(16.8410)
B+	277.9808***	(32.0576)	279.1109***	(31.9303)	277.8468***	(31.6368)	278.0666***	(32.0054)	277.3210***	(32.0176)
B	506.3667***	(33.7264)	507.2173***	(33.7674)	506.5056***	(33.8434)	507.0051***	(33.7369)	506.3083***	(33.7096)
B-	510.0742***	(11.4241)	509.8920***	(11.5758)	508.5543***	(11.5449)	509.1919***	(11.5948)	509.8441***	(11.4270)
CCC+	275.6079***	(83.2151)	277.9581***	(82.0895)	279.0352***	(80.5084)	274.5966***	(84.8028)	276.2754***	(83.5949)
CCC	264.3948***	(31.3318)	265.6768***	(28.5615)	267.2918***	(28.4625)	263.8862***	(29.7017)	264.3801***	(31.1056)
CCC-	328.4209***	(39.2490)	325.9456***	(41.8202)	325.5436***	(41.2192)	328.6266***	(41.6334)	328.6526***	(39.4754)
CC	404.2060***	(19.7252)	403.5654***	(21.0828)	403.4836***	(21.6672)	402.5519***	(22.4176)	404.3989***	(19.7803)
C	330.6106***	(31.5121)	332.2113***	(31.5824)	331.9678***	(31.4168)	333.9542***	(30.7666)	330.7861***	(31.3628)
Controlled for										
Issuer Reputation	Yes		Yes		Yes		Yes		Yes	
Issuer	Yes		Yes		Yes		Yes		Yes	
Collateral Nation	Yes		Yes		Yes		Yes		Yes	
Time (in Quarters)	Yes		Yes		Yes		Yes		Yes	
Obs.	6,624		6,368		6,368		6,368		6,624	
R^2	0.748		0.748		0.748		0.748		0.748	

The coefficient of *Past Collaboration* is negative and statistically significant at 1% level. This result shows that investors ask for lower returns if the issuer and the legal advisors have had an experience of working together in the past, confirming $H2_1$. For such deals initial yield spreads are, on average, 12 bps lower in comparison to deals where there is no previous working relationship between the issuer and legal advisors. Hence, investors value a previous working relationship and believe that such relationships will produce less risky securities, perhaps due to the increased complexity in securitisation markets. A similar result is also reported by Liu (2015), who examines the effect of past relationship between the issuer and underwriter on pricing of municipal bonds. The study finds that familiarity between the two main actors in underwriting process has a positive impact on pricing and it lowers interest costs. The work concludes that investors' valuation of such deals to be less risky could be due to the accumulation of soft information between parties, experience, comfort and trust that has been built through previous collaboration.

The magnitude of the past relationship is captured with *Collaboration Magnitude1* and *Collaboration Magnitude1* in Columns 3 and 4, respectively. We find that both *Collaboration Magnitude1* and *Collaboration Magnitude2* have negative relationship with *Spread* and their coefficients are statistically significant at 1% level. These results, confirming $H3_1$, show that investors deemed ABS bonds to be less risky if the issuer and its legal advisor have an experience of working together in the past. The spread of deals where the issuer and legal advisors were working together for the first time is, on average, 6 bps higher than deals where the two actors have a past working relationship. Similar to above results, lower yields could be explained by the fact that investors possibly saw past cooperation as a positive sign as it can help building knowledge, expertise and trust between the two parties (Liu, 2015). The magnitude of the relationship here also implies that the more the two have worked together in the past, the lower the price.

Market Share, used as a proxy for the legal advisor's reputation, did not yield any significant result, suggesting that market participants did not see the

reputation of legal advisors as an influential indicator in reducing information asymmetry in securitisation deals. It can also suggest that market presence of legal advisors do not make any significant difference in terms of the bankruptcy remoteness of a given transaction. Our finding is not in line with He et al. (2012) who find that in ABS structuring the market presence of issuers is influential factor and it is positively related to the initial yield spread. *Number of ratings* is negative and statistically significant. This shows that investors value an ABS tranche that is rated by more than one rating agencies. This finding is in line with the rating shopping argument (Skreta and Veldkamp, 2009; He et al., 2012; 2016; Deku et al., 2019b; 2021), that issuers choose to submit only the highest ratings they receive, and they conceal the lower rates. As far as the Tranche *Credit Rating* is concerned, the outputs in all the five columns are all significant at 1% level. It is clear from the table, that positive gradual increase in spread is followed as the rating per tranche goes down. Approximately, 20 bps is added on the spread for each downgraded notch.

The coefficient of *Issue Type* indicates that mortgage backed securities are seen as less risky by the market comparing to the rest of the ABS products. Negative significant values in all the four models show that at issuance, MBS securities offer about 27 bps less yield spread to buyers than other ABSs. Unlike *Weighted Average Life,* information regarding the *Size* of ABS deals is valued by the market. Although the coefficients are significant, they are relatively small. In all of the specifications, the spread is reduced by less than a percent of a basis point. Minimal reflection of the size of tranche in the price implies that in ABS markets there is a minimal relation between the size of tranches and the spread.

Interestingly, *Time* (in quarters) is in consistence with (Deku et al., 2019b), shows that there was a significant decline in market spreads for ABS in the years leading up to the crisis. This can be due to the fact that the increased complexity in the boom period led to the under-pricing of the securities.

2.5.2. Prime Versus Non-Prime Tranches

The least risky prime tranches of ABS bonds are rated as AAA and investors perceive these assets as the safest. In Table 2.5, we present estimations where the sample is split as prime in Panel A and non-prime in Panel B. Similar to the results for the whole sample, we find that *Same Advisor* is not significant regardless of the riskiness of the bonds. *Past Collaboration* is negative in both categories; however, the statistical significance drops to 10% for the prime sample and remain 1% for the non-prime sample. In addition, the size of the coefficient is much larger for the non-prime sample (-18 bps) in comparison to prime sample (-4 bps). This suggests that investors value previous cooperation between the issuers and legal advisors more as the risk increases. For both samples *Collaboration Magnitude1* and *Collaboration Magnitude2*, the coefficients are negative and statistically significant, but at different levels. Investors seem to value previous cooperation between the issuers and legal advisors regardless of the risk level of the bonds. *Market Share* is insignificant for both sub-samples, which confirms that the market presence of legal advisors are not of importance to investors.

Other factors, such as *Number of ratings* and the *Size* of tranches are negative and significant in all specifications. It should be noted that markets have attached higher values for both variables when there is an increased risk. Negative coefficients for both are higher (in absolute value) for non-prime instruments. *Issue Type* is non-significant for AAA bonds, while in non-AAA rated instruments, investors demand about 41 bps less spread for MBS in comparison to ABS. These results further confirm that when the risk is higher investors try to assess all possible information and price them in ABS yield spread at origination.

Table 2.5 The effect of legal advisors on initial market spread of prime and non-prime ABS tranches

This table demonstrates OLS regressions of initial market spread of European issued prime and non-prime ABS tranches on legal advisor, deal and tranche-level as well as collateral characteristics. The sample consists of tranches issued from 1998 to July 2018. Same Advisor is a dummy variable that takes the value of 1 if manager and issuer legal advisors are the same legal advisors, otherwise 0. Past Collaboration is a dummy variable that takes the value of 1 if both legal advisors and issuer have all cooperated in the past, otherwise 0. Collaboration Magnitude1 is the number of previous cooperation between issuer legal advisor and the issuer. Collaboration Magnitude2 is the number of past cooperation between both legal advisors and issuer. Market Share is a dummy variable that takes the value of 1 for a given year if the legal advisor accounts for at least 5% of the market share for previous year, otherwise 0. Number of ratings assigned for a given tranche is used to control for possible rating shopping. Size of each tranche (in $ millions) is employed to control for liquidity. Weighted Average Life is tranche's maturity conditional upon the prepayment expectations. Issue Type classifies the type of issuance i.e. the underlying assets for a tranche within a deal. Market Area where tranches of a deal is targeted for. Issuer Nation is the country where a tranche is issued. Guarantor indicates whether external credit enhancement applies for a given ABS deal. Tranche Credit Rating is the initial rating assigned for a tranche. Issuer Reputation is a dummy that takes the value of 1 is the issuer accounts for at least 5% of the market for previous year. Issuer of each deal has been controlled for. Collateral nation is where the collateral originates. Time is factor variable indicates issuing period quarterly. ***, ** and * indicate significance levels at 1%, 5% and 10%respectively.

Panel A: Prime (AAA) – Least Risky

	(1)		(2)		(3)		(4)		(5)	
Same Advisor	-3.2189	(2.9447)								
Past Collaboration			-4.4242*	(2.5684)						
Collaboration Magnitude1					-6.5245***	(1.5806)				
Collaboration Magnitude2							-5.0450***	(1.6008)		
Market Share									1.2465	(2.5992)
Number of Ratings	-10.7500***	(2.0806)	-9.6834***	(2.1947)	-8.3391***	(2.2241)	-9.3396***	(2.1930)	-10.6079***	(2.1067)
Size	-0.0031***	(0.0012)	-0.0030**	(0.0012)	-0.0032***	(0.0012)	-0.0030**	(0.0012)	-0.0032***	(0.0012)
Weighted Average Life	0.0067	(0.0514)	0.0007	(0.0528)	-0.0032	(0.0519)	-0.0028	(0.0520)	0.0066	(0.0515)
Issue Type										
Mortgage-backed	-3.2277	(2.7763)	-2.8543	(2.9328)	-2.2902	(2.8187)	-2.7070	(2.8515)	-3.2421	(2.7794)
Guarantor	-10.4492*	(5.5561)	-12.1406**	(5.6601)	-13.6485**	(5.5635)	-13.2420**	(5.5774)	-10.7723*	(5.4984)
Private Placement	-5.3961**	(2.6954)	-5.8073**	(2.6993)	-6.3900**	(2.7161)	-5.5995**	(2.6944)	-5.5684**	(2.6777)
Controlled for										
Tranche Credit Rating	Yes		Yes		Yes		Yes		Yes	
Issuer/Issuer Reputation	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Collateral/Issuer Nation	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Market area/Time	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Obs.	2,533		2,437		2,437		2,437		2,533	
R^2	0.556		0.554		0.561		0.557		0.556	

Panel B: Non-Prime (Non-AAA) – More Risk

	(1)		(2)		(3)		(4)		(5)	
Same Advisor	3.0219	(7.9543)								
Past Collaboration			-17.7515***	(4.3147)						
Collaboration Magnitude1					-5.1463*	(2.7760)				
Collaboration Magnitude2							-6.1546*	(3.1891)		
Market Share									1.1370	(6.6846)
Number of Ratings	-17.6613***	(3.7176)	-14.8872***	(3.8556)	-15.3261***	(4.0517)	-15.5868***	(3.9617)	-18.0075***	(3.7352)
Size	-0.0325***	(0.0085)	-0.0347***	(0.0090)	-0.0350***	(0.0089)	-0.0338***	(0.0090)	-0.0325***	(0.0085)
Weighted Average Life	-0.0164	(0.0767)	-0.0064	(0.0782)	-0.0075	(0.0785)	-0.0136	(0.0785)	-0.0133	(0.0761)
Issue Type										
Mortgage-backed	-41.4976***	(5.0852)	-39.8416***	(5.0880)	-40.5754***	(5.2040)	-40.8229***	(5.2234)	-41.5031***	(5.0375)
Guarantor	-11.9577	(15.8347)	-10.8885	(15.6701)	-13.2997	(15.3017)	-12.8054	(15.2252)	-11.6623	(15.6911)
Private Placement	-10.7934**	(4.9478)	-11.3235**	(4.9621)	-11.1424**	(4.9648)	-10.5899**	(4.9633)	-10.6401**	(4.8348)
Controlled for										
Tranche Credit Rating	Yes		Yes		Yes		Yes		Yes	
Issuer/Issuer Reputation	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Collateral/Issuer Nation	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Market area/Time	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Obs.	4,091		3,931		3,931		3,931		4,091	
R^2	0.763		0.764		0.762		0.762		0.763	

2.5.3. MBS Versus Non-MBS Tranches

Although MBS is a sub-category of ABS, their risk level is considered to be lower, mainly due to the quality of the underlying collateral. For this reason, we divide our sample into two groups as MBS and non-MBS and examine the relationship between our key variables and the yield spread separately for each sample. We present the results for non-MBS in Panel A of Table 2.6 and MBS in Panel B. Similar to previous results, the variable *Same Advisor* is insignificant for both non-MBS and MBS bonds. This can indicate that even when the risk levels of the relevant tranches are different the information investors have on the transaction, in relation to the number of legal advisors, does not help in increasing nor mitigating the risk. Nor this has any impact on investor perception on the true sale of ABS transactions. We find that the coefficient of *Past Collaboration* for the non-MBS sample is negative and statistically significant at 5% level (Column 2). However, for MBS this variable is not significant. Our results show that when the risk is higher and difficult to assess, such as in the case of non-MBS, familiarity between issuers and legal advisors seems to reduce the potential risks envisaged by the investors. We find that *Collaboration Magnitude1* is only significant in the non-MBS sample and insignificant in MBS sample. *Collaboration Magnitude2* is not significant in both groups. These results provide some evidence that as risk increases past cooperation between the issuers and legal advisors becomes more important.

Similar results are observed for the *Number of ratings* as in the previous table. The coefficients for the variable under the ABS columns are about twice as much as they are under MBS specifications. It again indicates that investors are aware of the issue of rating shopping and that they take into account such information in evaluating structured bonds at issuance. And they are more sensitive to such information when the risk is higher for the securities.

Table 2.6 The effect of legal advisors on initial market spread of ABS and MBS tranches

This table demonstrates OLS regressions of initial market spread of European issued ABS and MBS tranches on legal advisor, deal and tranche-level as well as collateral characteristics. The sample consists of tranches issued from 1998 to July 2018. Same Advisor is a dummy variable that takes the value of 1 if manager and issuer legal advisors are the same legal advisors, otherwise 0. Past Collaboration is a dummy variable that takes the value of 1 if both legal advisors and issuer have all cooperated in the past, otherwise 0. Collaboration Magnitude1 is the number of previous cooperation between issuer legal advisor and the issuer. Collaboration Magnitude2 is the number of past cooperation between both legal advisors and issuer. Market Share is a dummy variable that takes the value of 1 for a given year if the legal advisor accounts for at least 5% of the market share for previous year, otherwise 0. Number of ratings assigned for a given tranche is used to control for possible rating shopping. Size of each tranche (in $ millions) is employed to control for liquidity. Weighted Average Life is tranche's maturity conditional upon the prepayment expectations. Issue Type classifies the type of issuance i.e. the underlying assets for a tranche within a deal. Market Area where tranches of a deal is targeted for. Issuer Nation is the country where a tranche is issued. Guarantor indicates whether external credit enhancement applies for a given ABS deal. Tranche Credit Rating is the initial rating assigned for a tranche. Issuer Reputation is a dummy that takes the value of 1 is the issuer accounts for at least 5% of the market for previous year. Issuer of each deal has been controlled for. Collateral nation is where the collateral originates. Time is factor variable indicates issuing period quarterly. ***, ** and * indicate significance levels at 1%, 5% and 10%respectively.

Panel A: ABS (More Risk)

	(1)		(2)		(3)		(4)		(5)	
Same Advisor	-0.2639	(7.5690)								
Past Collaboration			-8.3520**	(4.2295)						
Collaboration Magnitude1					-10.6463***	(2.7822)				
Collaboration Magnitude2							-5.0154	(3.6311)		
Market Share									-6.9508	(6.9833)
Number of Ratings	-21.7712***	(4.3514)	-20.3698***	(4.6171)	-20.0641***	(4.5851)	-20.4044***	(4.6316)	-21.3246***	(4.4270)
Size	0.0026	(0.0041)	0.0022	(0.0040)	0.0024	(0.0040)	0.0025	(0.0041)	0.0027	(0.0041)
Weighted Average Life	0.0047	(0.0788)	-0.0220	(0.0819)	-0.0228	(0.0796)	-0.0155	(0.0804)	-0.0037	(0.0775)
Guarantor	18.9982*	(10.5892)	16.5560	(10.7207)	13.6088	(10.5599)	16.6141	(10.8219)	18.5839*	(10.3555)
Private Placement	-6.8362	(5.0447)	-7.6252	(5.0399)	-7.6171	(4.9662)	-6.9397	(5.0001)	-6.8373	(4.9195)
Obs.	2,859		2,746		2,746		2,746		2,859	
Controlled for										
Tranche Credit Rating	Yes		Yes		Yes		Yes		Yes	
Issuer/Issuer Reputation	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Collateral/Issuer Nation	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Market area/Time	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Obs.	2,859		2,746		2,746		2,746		2,859	
R^2	0.835		0.836		0.867		0.836		0.835	

Panel B: MBS (Less Risk)

	(1)		(2)		(3)		(4)		(5)	
Same Advisor	-3.6293	(6.1876)								
Past Collaboration			-4.6779	(3.7130)						
Collaboration Magnitude1					-0.3808	(2.4677)				
Collaboration Magnitude2							-3.3125	(2.6396)		
Market Share									10.8184*	(5.5459)
Residential dummy	-10.2764***	(3.9410)	-9.9550**	(3.9502)	-10.4354**	(4.1144)	-10.2067**	(4.0188)	-10.0426**	(3.9328)
Number of Ratings	-11.4798***	(3.4296)	-11.3257***	(3.3832)	-11.6196***	(3.5354)	-11.0165***	(3.3905)	-11.9957***	(3.3704)
Size	-0.0052**	(0.0021)	-0.0053**	(0.0022)	-0.0053**	(0.0021)	-0.0053**	(0.0022)	-0.0054**	(0.0021)
Weighted Average Life	0.0222	(0.0884)	0.0375	(0.0895)	0.0299	(0.0887)	0.0301	(0.0892)	0.0219	(0.0878)
Guarantor	-19.1759	(27.8259)	-19.5128	(27.6960)	-19.7974	(27.6700)	-20.9032	(27.4401)	-20.9338	(26.9139)
Private Placement	-8.1685*	(4.4488)	-9.3226**	(4.4924)	-9.0060**	(4.4910)	-9.1145**	(4.4430)	-8.0842*	(4.3635)
Controlled for										
Tranche Credit Rating	Yes		Yes		Yes		Yes		Yes	
Issuer/Issuer Reputation	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Collateral/Issuer Nation	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Market area/Time	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Obs.	3,765		3,622		3,622		3,622		3,765	
R^2	0.674		0.672		0.672		0.673		0.675	

2.5.4. Pre- and Post-Crisis Periods

It is argued that during the boom period (between 2004 and 2007) leading up to the GFC, issuers were increasingly involved in riskier lending practices reducing the quality of ABS issued. There is also evidence that demonstrates the increase in wide-spread moral hazard in the creation of ABS securities. To examine whether investors have changed their perception regarding the riskiness of these securities in the light of the catastrophic losses they faced after the GFC, we estimate our models by splitting the sample into two periods, before and after the financial crisis of 2007-2009. We present our results in Table 2.7 for pre-GFC period (1998 – 2008) in Panel A and post-GFC period (2010 – 2018) in Panel B. We find that the results are not different from the results we reported for the baseline model and also between these pre- and post-GFC periods. Particularly, the coefficients for the variable *Same Advisor* are not statistically significant for both periods. *Past Collaboration, Collaboration Magnitude1* and *Collaboration Magnitude2* are all statistically significant and have negative relationships with the initial yield spreads. However, one difference we observe between the two periods is the larger coefficients, roughly doubling, in the post-GFC period for *Past Collaboration, Collaboration Magnitude1 and Collaboration Magnitude2*. These results show that investors started to attach even more value to close working partnership between issuers, managers and legal advisors.

One significant observation is that the coefficient for *Market Share* is negatively significant for the pre-crisis period while after the crisis it turned positive. The negative coefficient implies that investors valued securitisation deals carried out by legal advisors with higher market presence over the pre-crisis period. Initial market spread for the tranches of these deals was 9 bps lower than the others, indicating that the risk for these issues was perceived to be lower. Deku et al. (2019b) also find that market presence can be an

Table 2.7 The effect of legal advisors on initial market spread of ABS tranches issued before and after the financial crisis

This table demonstrates OLS regressions of initial market spread of European ABS tranches issued before and after the financial crisis on legal advisor, deal and tranche-level as well as collateral characteristics. The sample consists of tranches issued from 1998 to 2008 (before crisis) and from 2009 to July 2018 (after crisis). Same Advisor is a dummy variable that takes the value of 1 if manager and issuer legal advisors are the same legal advisors, otherwise 0. Past Collaboration is a dummy variable that takes the value of 1 if both legal advisors and issuer have all cooperated in the past, otherwise 0. Collaboration Magnitude1 is the number of previous cooperation between issuer legal advisor and the issuer. Collaboration Magnitude2 is the number of past cooperation between both legal advisors and issuer. Market Share is a dummy variable that takes the value of 1 for a given year if the legal advisor accounts for at least 5% of the market share for previous year, otherwise 0. Number of ratings assigned for a given tranche is used to control for possible rating shopping. Size of each tranche (in $ millions) is employed to control for liquidity. Weighted Average Life is tranche's maturity conditional upon the prepayment expectations. Issue Type classifies the type of issuance i.e. the underlying assets for a tranche within a deal. Market Area where tranches of a deal is targeted for. Issuer Nation is the country where a tranche is issued. Guarantor indicates whether external credit enhancement applies for a given ABS deal. Tranche Credit Rating is the initial rating assigned for a tranche. Issuer Reputation is a dummy that takes the value of 1 is the issuer accounts for at least 5% of the market for previous year. Issuer of each deal has been controlled for. Collateral nation is where the collateral originates. Time is factor variable indicates issuing period quarterly. ***, ** and * indicate significance levels at 1%, 5% and 10%respectively.

Panel A: Before Crisis

	(1)		(2)		(3)		(4)		(5)	
Same Advisor	-0.4322	(5.1299)								
Past Collaboration			-10.4180***	(2.4738)						
Collaboration Magnitude1					-5.4355***	(1.2948)				
Collaboration Magnitude2							-4.6787***	(1.7366)		
Market Share									-8.9758**	(4.5308)
Number of Ratings	-18.4396***	(2.5648)	-16.9333***	(2.6206)	-16.1153***	(2.6481)	-16.6131***	(2.6657)	-17.6923***	(2.4779)
Size	0.0008	(0.0017)	0.0016	(0.0018)	0.0012	(0.0017)	0.0013	(0.0017)	0.0008	(0.0017)
Weighted Average Life	0.0248	(0.0533)	0.0269	(0.0559)	0.0326	(0.0562)	0.0227	(0.0558)	0.0112	(0.0528)
Issue Type										
Mortgage-backed	-23.6538***	(3.5057)	-21.3672***	(3.4404)	-21.7934***	(3.4554)	-22.3792***	(3.5319)	-23.6884***	(3.4067)
Guarantor	-16.5604*	(9.5553)	-16.9377*	(9.1759)	-17.5473*	(8.9543)	-17.5358*	(9.0223)	-15.8054*	(9.2123)
Private Placement	0.9197	(3.4143)	0.7545	(3.2892)	0.7650	(3.3043)	1.6077	(3.2732)	0.5533	(3.1789)
Controlled for										
Tranche Credit Rating	Yes		Yes		Yes		Yes		Yes	
Issuer/Issuer Reputation	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Collateral/Issuer Nation	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Market area/Time	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Obs.	4,335		4,117		4,117		4,117		4,335	
R^2	0.751		0.756		0.756		0.755		0.751	

Panel B: After Crisis

	(1)		(2)		(3)		(4)		(5)	
Same Advisor	-16.8619	(10.6852)								
Past Collaboration			-21.4243***	(6.4396)						
Collaboration Magnitude1					-14.3899***	(4.1607)				
Collaboration Magnitude2							-9.5775*	(5.3082)		
Market Share									25.7537**	(10.6592)
Number of Ratings	7.8080	(8.7842)	11.6273	(8.6439)	12.8971	(8.6308)	9.3474	(8.5294)	5.3285	(8.2311)
Size	-0.0039	(0.0054)	-0.0048	(0.0058)	-0.0055	(0.0055)	-0.0052	(0.0057)	-0.0045	(0.0055)
Weighted Average Life	0.0368	(0.1230)	0.0634	(0.1270)	0.0398	(0.1251)	0.0437	(0.1254)	0.0564	(0.1250)
Issue Type										
Mortgage-backed	-13.9376*	(7.3733)	-14.5466*	(7.5897)	-13.2718*	(7.4077)	-14.4293*	(7.5211)	-14.7470*	(7.5131)
Guarantor	-2.8300	(19.6577)	8.8202	(24.6722)	-0.1446	(22.0894)	3.1286	(21.0360)	-5.6030	(18.7026)
Private Placement	-9.8892	(6.7595)	-11.7836*	(6.8138)	-11.3037*	(6.7089)	-11.2927*	(6.7085)	-10.8328	(6.7713)
Controlled for										
Tranche Credit Rating	Yes		Yes		Yes		Yes		Yes	
Issuer/Issuer Reputation	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Collateral/Issuer Nation	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Market area/Time	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Obs.	1,721		1,684		1,684		1,684		1,721	
R^2	0.801		0.801		0.802		0.799		0.802	

influential factor on initial market spreads. Examining European MBS data for pre-crisis period, they find that reputable trustees (trustees with higher market presence) lead to lower spreads being demanded by investors for structured bonds.

The positive coefficient for *Market Share* after the crisis can be explained by the loss of trust in the ABS markets and its actors altogether. These results suggest that during boom period when information asymmetry is the highest, investors valued legal advisors with higher market share and might have perceived that they could help mitigate risk to certain extent.

Table 2.8 The effect of legal advisors on initial market spread of prime and non-prime ABS tranches issued before and after the crisis

This table demonstrates OLS regressions of initial market spread of European ABS on legal advisor, deal and tranche-level as well as collateral characteristics. Reported are the coefficients of main variables of interest for prime and non-prime tranches before and after the financial crisis. The sample consists of tranches issued from 1998 to 2008 (before crisis) and from 2009 to July 2018 (after crisis). ***, ** and * indicate significance levels at 1%, 5% and 10%respectively.

Panel A	**Before Crisis**	
	Prime (AAA)	**Non-Prime**
Same Advisor	0.4629	-1.7954
Past Collaboration	-1.8400	-14.1821***
Market Share	-1.2446	-12.5615*
Panel B	**After Crisis**	
	Prime (AAA)	**Non-Prime**
Same Advisor	-9.3338	-10.8396
Past Collaboration	-16.9288**	-23.2386***
Market Share	9.4732	14.2261

Table 2.8 compares prime and non-prime securities over the pre- and post-GFC periods. Note that in this table we do not report the full regressions, but only the relevant coefficient in each regression. In Panel A, showing the results for the pre-GFC period, we find that *Same Advisor* does not yield significant coefficients for both specifications. *Past Collaboration* and *Market Share* are both non-significant for prime securities. Whereas, for riskier non-prime tranches both variables have negative and significant coefficients. This shows

that information regarding *Past Collaboration* and *Market Share* becomes valuable only when the traded securities are of high risks. In Panel B of Table 2.8 we report the post-GFC results and find that only *Past Collaboration* is significant both for prime and non-prime securities, indicating that in the post-GFC period investors started to value past relationships also for the least risky ABS. This is plausible as many prime, AAA rated, securities have failed during the GFC which may have made investors more vary of the quality of these securities.

The following Table 2.9 presents the results for MBS vs ABS tranches issued over pre-crisis period followed by post-crisis securities. We have obtained similar results to Table 2.8 that the first *Same Advisor* variable is not statistically significant for all specifications.

Table 2.9 The effect of legal advisors on initial market spread of non-MBS and MBS tranches issued before and after the crisis

This table demonstrates OLS regressions of initial market spread of European ABS on legal advisor, deal and tranche-level as well as collateral characteristics. Reported are the coefficients of main variables of interest for ABS and MBS tranches before and after the financial crisis. The sample consists of tranches issued from 1998 to 2008 (before crisis) and from 2009 to July 2018 (after crisis). ***, ** and * indicate significance levels at 1%, 5% and 10%respectively.

	Before Crisis	
	MBS	**Non-MBS**
Same Advisor	-1.5422	1.5192
Past Collaboration	-5.2071**	-13.5955***
Market Share	0.1697	-15.6147**
	After Crisis	
	MBS	**Non-MBS**
Same Advisor	-25.8822	-19.4995*
Past Collaboration	-20.6000**	-5.0914
Market Share	15.8373	26.4694**

While *Past Collaboration* and *Market Share* yielded negative significant coefficients for riskier ABS tranches. Regarding MBS securities, the coefficient for *Past Collaboration* is lower and for *Market Share* it is not significant. It further supports our assumption that as the risk becomes higher market participants value previous partnership and market presence of securitisation

actors leading to lower yield spreads. The second part of Table 2.9 displays almost similar results as in the second part of the Table 2.8.

2.5.5. Robustness Check with PSM

For robustness check we have employed the PSM approach as it has the potential to address self-selection bias. Results, average treatment effect on the treated (ATET), are reported in Table 2.10. We find that ATET are negative and statistically significant for *Same Advisor*. Unlike OLS results obtained previously, the significant coefficient here could indicate the possible issue of selection bias. This result can suggest that ABS investors valued transactions that involved a legal team that represented both managers and issuers in securitisation. One possible explanation for such relation could be that one legal team representing two sides rather than two legal teams defending the rights of two sides might help reduce information asymmetry. As in the latter case legal advisors might try to defend their clients' position in the transaction and therefore unintentionally increase information asymmetry. The coefficient is stronger for pre-crisis period while after crisis it is not significant. This shows that following the crisis market became less sensitive to such information as it became clear to investors that during the peak there was an increased conflict of interest in securitisation market as a whole.

Meanwhile, the variable *Past Collaboration* confirms our earlier results with OLS estimations. The numbers are significant and negative. These coefficients suggest that investors value previous cooperation between issuers and legal advisors and demand lower spread for such issuances as an indication of reduced risk. Bigger market presence of a legal advisor was also appreciated by ABS buyers. Our proxy variable for reputation *Market Share* yielded positive significant result for the whole period. However, in line with OLS results, once we look at the pre and post crisis periods separately we notice the market's reaction to the information has been different. Pre-crisis period unveils the importance of legal advisor reputation in reducing information asymmetry. Investors demanded 18 bps less spreads for ABS transactions which involved reputable legal advisors. Whereas the coefficient turns positive

after the crisis. It might be explained by the fact that investors lost their confidence in the ABS market after the crash of housing market.

Table 2.10 The effect of legal advisors on initial market spread of ABS tranches

The table demonstrates the average treatment effect on the treated (ATET). It reports the propensity score matching (PSM) results of ATET on the initial market spread, Δ*Spread* of ABS tranches. The average treatment effect of 74ecuritization on Δ*Spread* is estimated as the difference between control groups' Δ*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.

	Number of matched controls			
	One	Two	Four	Number of observations
Same Advisor				
Whole period	-15.7920**	-17.7193***	-18.5403***	6624
Before Crisis	-18.1389***	-11.2870**	-12.8596***	4335
After Crisis	-14.5990	-17.8022*	-31.4979***	1721
Past Collaboration				
Whole period	-10.5530**	-9.5964***	-7.7831***	6368
Before Crisis	-7.5020**	-7.1934**	-7.4249***	4117
After Crisis	-14.9437**	-13.7665**	-13.0504**	1684
Market Share				
Whole period	19.1809**	14.2141*	17.7708**	6624
Before Crisis	-17.9638*	-10.0801	-8.3721*	4335
After Crisis	33.4277*	39.1617***	43.1317***	1721

2.5.6. Robustness Check with a Uniform Sample

Even though we control for country specific factors in various ways, there is a possibility that our results could be affected by legal environment that is not captured in our analysis. Hence, we check robustness of our results by utilising a more uniform sample of the UK securitisation market only. The UK is the largest ABS issuer in the EU, and in our sample it represents a little over half of the entire tranches. All the tables of regression outputs for the UK tranches are in the Appendix section.

The baseline models for the UK reflects similar results to the above regressions for the entire data sample. However, as Table 2.11 (in Appendix) shows, *Same Advisor* has been accepted as an influential factor by investors. In contrast to PSM output, the coefficient is a positive number which we

assume it to be influenced by potential issue of selection bias. Positive 18bps significant at 10% level indicates that investors perhaps saw security programs conducted by one legal firm in the UK as risky and demanded higher yields. Possible risk to be considered by investors might have been the true sale aspect of securitisation programs as legal advisors can have a direct influence on this part of a deal thus potentially affect the risk levels of a program. It is also possible that the legal system in the UK is different than in other EU states and therefore we are observing positive coefficient. The variable *Past Collaboration*, on the other hand, is negative and statistically significant at 1%. Similarly, variables that capture the dynamics of past cooperation *Collaboration Magnitude1 and Collaboration Magnitude2* also presented similar results to the baseline model in Table 2.4. Investors demanded lower spreads for securities issued by the team who have had cooperated previously.

Due to increased complexity in securitisation markets investors might have valued previous team experience between issuer and legal teams. *Market Share* is significant and the coefficient of almost 16 bps is negative. This can indicate that unlike in the entire sample, where seven EU countries are included, in UK the market share of legal advisors is valued by investors.

Regarding different risk levels, the results for Prime and Non-Prime tranches reported in Table 2.12 and ABS and MBS tranches in Table 2.13 yielded similar results. *Same Advisor* coefficients are not significant while familiarity variables showed significant negative results. The results also confirm that as the risk increases the value of previous cooperation became greater. These results are in consistence with the previous outcomes obtained for the entire data. Only exception is reputation of legal advisors as the coefficients for *Market Share* negative and significant for Non-Prime and ABS tranches. It suggests that legal advisor reputation was valued by investors especially when the risks are higher.

Table 2.14 exhibits the results for UK ABS tranches issued before and after the financial crisis of 2007-2009. Not surprisingly, we have obtained similar results as in Table 2.7. The outcome of the regressions demonstrates that the

number of legal advisors is not valued by investors of structured bonds before and after the crisis. Past cooperation variables are negative and significant, suggesting their importance in reducing information asymmetry. Reputable legal advisors were valued by investors before the crisis yet, their importance in mitigating risk has faded after the crisis.

The rest of the variables as *Number of Ratings, Size, Weighted Average Life, Issue Type and Credit Rating* all produced very similar results to the ones obtained in previous regression for the entire dataset.

2.6. Conclusion

Legal advisors play a crucial role in structuring ABS by providing information on the legal process, assisting in structuring the deal and selling the securities to investors, developing contracts for the portfolio, and offering legal advice on the 'bankruptcy remoteness' of the transaction. In this empirical chapter, we have investigated the influence of legal advisor on the securitisation process. In particular, we have examined how the structure of the legal advisory team and their previous working relationships are perceived by investors buying these securities. We have utilised a final sample of 6,624 ABS tranches issued in seven European countries between 1998 to 2018.

We find that investors value previous cooperation between issuers and legal advisors. The results suggest that past collaboration between issuer and legal advisors is perceived as a positive sign by the market and thus reflected in the prices of the securities at origination. Moreover, we observe that when the level of risk increases, the importance of the relationship is seen to have strengthened. This is especially noticeable when prime tranches of a deal are compared to non-prime securities within a deal. In terms of the overall securitisation market before and after the crisis, due to plunging confidence like in previous literature, the relationship in our model becomes weaker after 2009. Regarding the market share of the legal advisors, we find some weak evidence that investors value the market presence of legal advisors especially for riskier ABS.

CHAPTER III: CRA Regulation and Rating Inflation in European Securitisation Market

3.1. Introduction

The Global Financial Crisis (GFC) of 2007-2009 has exposed the underlying problems in securitisation which were not apparent to many market participants before. Although different actors were engaged in the issuance of structured bonds, credit rating agencies (CRAs) were key in the valuation of structured finance assets. These financial products were attractive to investors as they had high returns in comparison to the risk levels based on CRA assessments. Investors' excessive reliance on CRAs, whose ratings had been inflated, intrigued them into investing on what later became known as toxic assets (Coval et al., 2009a; Benmelech and Dlugosz, 2010). As a result, billions of dollars of losses were sustained by financial markets around the globe while confidence in CRAs and demand for structured securities almost faded in the immediate aftermath of the crisis (Coval et al., 2009b; Mählmann, 2012).

The world's second largest market for securitisation, after the US, is in the European Union. Following the GFC the recovery of the European securitisation market, which is largely driven by private market forces, has been slow-moving. In contrast, in the US, where government agencies are also actively involved in issuing securitisation transactions, the damage was greater, yet it bounced back quickly. Given the benefits of asset-backed securities (ABS) markets to financial system, there has been growing support towards its quick recovery in Europe (EPRS, 2015).

EU policymakers have been proposing a new set of rules and guidelines as an initiative to revive well-functioning securitisation market aimed at ensuring market confidence especially by strengthening CRA supervision (EU Commission, 2018). Following the busy days of the market in the pre-GFC period, when information asymmetry and conflict of interest were at their peak, creating transparent environment and investor protection was central

in the recovery phase. The introduction of stricter rules by regulatory bodies is expected to create a healthy market. In particular, the involvement of CRA in the securitisation process and their close link with the issuer banks before the GFC has been identified to be problematic in creating transparent and robust securities for investors. Consequently, tackling conflict of interest between CRAs and their clienteles and improving rating methodologies have become one of the central issues that needed to be addressed. In response, set of measures has been introduced by the EU Commission to regulate and supervise CRAs (EU Commission, 2018).

CRAs play crucial role in reducing information gap between ABS issuers and investors. CRA certifications contain professional assessment on the underlying assets of structured finance instruments. Accordingly, each CRA certification obtained by ABS deals is expected to be highly informative. Securitised bonds are more complex in comparison to traditional bonds and presents investors with higher risks (Deku and Kara, 2017). When information asymmetry is high CRA evaluations become even more important. Hence, ratings are by far the greatest single factor considered by investors in determining initial yield spread of securitised assets (Cuchra, 2005; Adelino, 2009). However, over the pre-GFC period quality of ratings progressively diminishes (Ashcraft et al., 2010) as the agencies' adherence to their standards weakens (Griffin and Tang, 2012) and they award their clients with inflated ratings (Bolton et al., 2012). Their misbehaviour, especially over the credit boom, intensifies conflict of interest with issuers of securitised bonds and allows issuer banks to shop for the desired ratings (He et al., 2011; 2012; Efing and Hau, 2015). Criticisms grow against rating agencies following the sudden deterioration of creditworthiness of highly rated poor-quality ABS securities in 2007 and 2008.

Failure of CRAs risk assessments and issuance of inflated ratings has led EU to adopt new regulations to better regulate and supervise CRAs in order to tackle conflict of interest and restore investor confidence (EU Commission, 2018). The new CRA Regulation was introduced in three stages with first implemented in 2009 that focuses on reducing conflict of interest and

improving rating methodologies. Further amendments were implemented in 2011 in addition to the creation of European Securities and Markets Authority (ESMA) a regulatory and supervisory body for CRAs. Final step CRA III was implemented from mid-2013 and introduces further amendments and additional set of measures aimed at improving transparency and reducing rating over reliance. It also specifically requires issuers of structured finance products, if they seek to obtain STS classification[16], to attain certifications from at least two independent CRAs and to make them public[17]. In this empirical study, we attempt to examine the possible impact of the post-GFC changes on European ABS market. We will review pre- and post-GFC periods and examine the possible existence of rating inflation in structured finance markets. For that we will investigate two phenomena that might cause rating inflation: rating shopping and rating catering[18].

Information content of ABS initial yield spread reflects all the possible risks investors consider at the issuance of such securities. When market suspects possibility of conflict of interest it will be reflected in the price of the securities. Rating inflation was contained in the spreads, for instance, when investors suspected CRAs' unfair treatment of issuer banks, rating favours and rating shopping (Bolton et al., 2012; He et al., 2012; Efing and Hau, 2015). Similarly, we aim to gauge the information content of yield spread of securitised assets at issuance. We examine pre and post GFC periods and would like to find out whether the regulatory changes have had any impact on investor perception of CRAs.

Investors' perception of CRAs and their confidence is key in the recovery of the securitisation market which is why the CRA regulation has been implemented. Comparing the ABS market before and after the crisis could shed light on the effectiveness of the introduced measures. To the best of our knowledge, we are the first ones to examine the effectiveness of the CRA

[16] STS classification is explained in later section.

[17] Although 'at least two ratings' rule does not necessarily apply to all the issuers in the market, the benefits of obtaining STS classification means many would apply for such certification as such transactions could help attract investors.

[18] 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.

regulatory changes after the crisis. Our findings might enrich securitisation literature that concentrates on conflict of interest and rating agencies. Also, possible policy implications can be obtained from the outcome. Furthermore, the size of the structured finance market in the US is by far the greatest in the world. Therefore, the securitisation literature predominantly focuses on the US market (Deku et al., 2019). Meanwhile, the next largest market receives very little attention from the academic world. Our research study can be a valuable addition to the growing academic works on European securitisation.

For our study we employ 12,469 ABS tranches issued across seven different European countries between 1998 and 2018. They are major issuers in the continent and are responsible for more than 80% of the total issuance (Bloomberg, 2018). We run ordinary least squares regressions on our pooled cross-section dataset. Securities within a deal are not independent from each other and this issue is addressed by clustering standard errors at deal level (Cuchra, 2005; Adelino, 2009). Inflated ratings can be issued either due to rating shopping or rating catering. The key variables we use to examine rating shopping are *Multiple ratings* and the number of *CRA reported*. The difference in the number of ratings assigned to a given tranche can help identify the existence of rating shopping (He et al., 2012; 2016). *Rating agreement* is the variable we use to explain rating catering. We restrict the definition of rating catering to cases when multiple certifications issued for a tranche obtained from independent agencies agree. We compare pre- and post-GFC periods to examine both phenomena.

We find that the new rules are effective in addressing the issue of rating catering and only partially effective in reducing rating shopping. Unlike rating shopping, rating catering is solely driven by conflict of interest and therefore CRA Regulation might have been effective. While, rating shopping can occur as a result of moral hazard, it is often a natural consequence of obtaining and reporting ratings. Even if CRAs do not engage in collusion, it is at issuer banks' discretion to disclose or suppress obtained ratings. So, issuers can be pressured to publish at least two ratings, but they can still shop for better

ratings and censor out the third unfavourable rating. Additionally, we also find that rating over-reliance might still be an issue in securitisation market. Especially, investors of triple-A rated bonds are still seemed to be overly dependent on the ratings.

The remainder of this chapter is organised as follows. The following section reviews the literature on securitisation concerning mainly CRAs and conflict of interest; also, it outlines the regulatory changes and develops our hypotheses. Data sample and empirical model we use, and summary statistics are all detailed in Section 3.3. Section 3.4 contains regression outcomes and their interpretation. Concluding remarks are presented in the final section.

3.2. Literature Review

3.2.1. Role of CRA in Structured Finance

CRAs are key contributors in narrowing information gap between parties engaged in securitisation, primarily between the issuing banks and potential buyers. Their main task involves the collection and thorough evaluation of various information about debt securities and the issuers of the securities. Following rigorous analysis, CRAs present expert opinion on the potential credit risks of issued securities. Credit related assessment released by CRAs has a significant impact on the price of asset backed securities. The literature finds 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).

Information asymmetry is considered to be higher in securitisation markets than in markets for much simpler traditional bonds (Deku and Kara, 2017). Traditional bonds are issued by governments and publicly traded companies, where issuers are required to release extensive information under relevant regulations. Therefore, CRAs are more likely to be accurate on performing risk assessment on such simpler bonds as investors and analysts could detect abnormal ratings when there is an abundance of information (White, 2019). Unlike plain vanilla bonds, structured bonds are complex financial

instruments, thus there exists a higher level of information asymmetry in the market for such instruments. Therefore, the role of CRAs is crucial as they can help mitigate risk by reducing information gap between issuers and buyers. Bonds structured in securitisation market are composed of very large volume of underlying assets (such as mortgages, corporate bonds, car leases, credit card receivables etc.). In addition, structured transaction deal is sliced into tranches that carry different risk levels. Considering each tranche is sold as a separate product, the ratings are assigned on each tranche of different seniority. The unique characteristics of structuring make it challenging even for sophisticated investors to conduct due diligence on this type of structured finance instruments. The harder it gets to investors to determine the true value of underlying assets and hence securities, the greater the significance of CRA assessments becomes. 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 the agencies increases, the pressure on CRAs on their evaluations reduces. Because a lack of outside scrutiny by independent investors presents CRAs with more flexibility in their measurements. Meanwhile, overdependence on CRAs increases the volume of securitisation issuance and the revenues of CRAs. High returns generated from securitisation business have led to conflicts of interest between CRAs and their clienteles (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).

3.2.2. CRA During the Pre-GFC Period

A large body of literature examines how and why the ratings, the most influential price determinants for securitised products, provided by CRAs have been issued under loose standards. Ashcraft et al., (2010) examining mortgage-backed securities (MBS) market find that during the peak of 2005 and mid-2007 quality of the ratings progressively diminished. Similarly, Griffin and Tang (2012) study collateralized debt obligations (CDOs) and show that in evaluating CDOs' credit quality CRAs made positive adjustments

beyond their models. The authors observe that these adjustments have later led to severe downgrading of CDOs that had been 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 cause of the deterioration in CRAs grading benchmark is thought to have stemmed from 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 investor-pays model. However, the conditions for the well-functioning of such services offered by CRAs started to falter after two key changes that took place in the last quarter of the previous century[19]. One of them was that ratings became ever more important as SEC[20] 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). While the second was the shift from an investor-pays towards an issuer-pays model (White, 2010; Jiang et al., 2012). The price, or the yield spread, of asset backed securities when they are first launched in the primary market are largely determined by the ratings assigned to them. However, thanks to issuer-pays model, the costs related to the issuance of such ratings by rating agencies 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). The literature argues that inflated ratings could be awarded for several reasons.

Firstly, financial crisis has revealed the existence of conflict of interest between CRAs and their clients (i.e. issuers) as one of the main explanations

[19] For further information on historical developments of CRAs see Partnoy (2009).
[20] Securities and Exchange Commission an independent body under the US government.

for the rating inflation (He et al., 2011; 2012; Bolton et al., 2012; Efing and Hau, 2015). Post-crisis 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 bonds is claimed to have led to inflated ratings being granted. Efing and Hau (2015) study ABS and MBS issuances between 1999 and 2011 and find that those issuers that kept strong securitisation business with agencies received rating favours. They further observe that rating inflation is more pronounced especially during the credit boom period as well as for complex bond deals. 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. Further, 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 they were offering.

Secondly, competition in the structured finance markets is observed to have inflicted pressure on the CRA to award inflated ratings in order to win over their customers (Griffin et al., 2013); especially during booms, when possible damage to CRAs reputation is 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, Parlour, and Rajan, 2011). Bolton et al., (2012) demonstrate that competition promotes rating shopping by issuers and therefore leads to rating inflation. They also show that during boom periods, when reputational damage to CRAs is lower[21] and when more investors are trusting, CRAs are likely to facilitate rating favours. Mathis et al., (2009) employ residential mortgage-backed securities (RMBS) over 2000 and 2008 and examine whether reputational concerns could discipline CRAs' behaviour. They find that when the majority of CRAs business revenue comes from assessing complex structured debts then CRAs' truthtelling incentives

[21] 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)).

are weakened by the income. Frenkel (2015) suggests that reputational concerns are much lower in securitised bonds markets unlike markets for plain corporate bonds. He argues that fewer number of issuers and their frequency in MBS and CDOs markets could explain rating inflation in those markets in contrast to corporate bonds market where large number of issuers exist and most of them issue only once.

Another reason for the issuance of inflated ratings can be explained by the phenomenon of 'rating shopping'. Generally, issuers or underwriters of securities can choose whether ratings given by CRAs can be made public or not. If issuers are not satisfied with ratings presented, for instance, they can refuse the publication of the ratings, in which case they do not have to pay CRAs for their service. This in turn gives arrangers the option of seeking other rating firms for gaining a better rating. Even if CRAs were considered to have followed their actions in good faith, they have struggled to cope with 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 issuers of ABS products opportunity to cherry pick the ratings they want 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).

3.2.3. Regulatory Changes in Securitisation

In order to address and tackle the problems in securitisation markets, regulatory bodies have taken initiatives to come up with new rules and regulations following the crisis as part of a broader reform in the financial system. These changes in regulation have been broad and covered various aspects in structured finance and they are still continually updated. International Institutions such as Basel Committee on Banking Supervision (BCBS) and International Organisation of Securities Commissions (IOSCO) as well as federal agencies such as U.S. Securities and Exchange Commission (SEC) and European Securities and Markets Authority (ESMA) have been

continually working on improving securitisation markets and creating more appealing and safer securities.

In Eurozone, after the crisis, the market for securitisation has been very much subdued unlike it has been in the US. In order to re-establish securitisation markets and exploit its advantages while maintaining safer investment environment, European Commission issued draft on new securitisation regulation and changes on the capital requirements regulation. Both emanate from the securitisation framework introduced jointly by BCBS and IOSCO.

Under these new regulations the main focus is to create simple, transparent and standardised (STS) securitisations in the EU. Securitisations developed in accordance with the new criteria could be regarded as of high class as the underlying assets would be required to be as 'simple' as possible; information available to potential buyers be as much as 'transparent'; while in order to ensure the structures are comparable they are to be 'standardised' (Deloitte, 2018). 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, 2014a; 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.

One of the biggest challenges in securitisation market was the failure of CRAs risk assessments that led to the issuance of unfair and biased ratings. Conflict of interest between CRAs and issuer banks has led to ratings being inflated unreasonably (Bolton et al., 2012; Bar-Isaac and Shapiro, 2013; Efing and Hau, 2015). In order to restore market confidence and improve transparency, the EU has stepped up and took immediate 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 conflict of interest and improving methodologies used by CRAs. Further amendments were made in the next stage that was implemented in 2011 which also introduces new regulatory body ESMA to supervise CRAs. The last phase - CRA III – was implemented in mid-2013 and

involves additional set of measures on reducing transparency and rating over-reliance. Additionally, if issuers of structured finance instruments seek to obtain STS classification for their products then the new measures require those issuers to publish at least two ratings attained from independent CRAs[22]. Critics of CRA regulations claim the changes are not ambitious enough, particularly CRA III. They argue that increasing the minimum number of required ratings for STS classification to at least two may not help to solve the problems it is aiming to resolve (allenovery.com). In research study by Fabozzi and Vink (2015), however, the authors support the new EU rules and expect multiple ratings to provide markets with useful information about credit risks of a tranche.

3.2.4. Information Content of Yield Spreads

As discussed in the previous chapter, all available information is reflected on the market spread of the bonds. Hence any increased risk should be priced in by investors. In other words, information content of the initial market spreads[23] of ABS instruments can reveal market awareness of the possible risks applied by the opposite sides (Adelino, 2009; Faltin-Traeger et al., 2010). Components of initial market spread of securitised assets do not equally share the same importance. By far the biggest determinant of the launch spread of the securities is the rating provided by CRAs (Cuchra, 2005; Fabozzi and Vink, 2012b). Nonetheless, investors' consideration in setting the price for the structured issuances is not confined to CRA assessments alone.

One of the earliest works to observe the composition of initial spreads of ABS beyond ratings by Cuchra (2005) reveals market's reaction to the information regarding market placement as well as creditor's rights. According to Cuchra (2005), the fact that the former factor is excluded in CRA's risk assessment while the latter is partially examined demonstrates systematic differences on how investors and CRAs carried out risk evaluation. The author uses 5000

[22] Although 'at least two ratings' rule does not necessarily apply to all the issuers in the market, the benefits of obtaining STS classification means many would apply for such certification as such transactions could help attract investors.
[23] 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).

European structured finance bonds and finds investors had priced in factors such as market liquidity, legal environment (focusing on creditor protection regarding bankruptcy remoteness of the underlying assets) and the number of underwriters[24] engaged in a transaction. Adelino (2009) employs over 60,000 US mortgage-backed securities (MBS) issued between 2003 and 2007 to examine the information content of yield spread at issuance. He confirms that investors priced information in yield spread at launch above ratings. However the study identifies that investors, given the quality of the bonds they purchase, could differ in performing due diligence. In particular, investors of the highest rated (i.e. triple A) issuances were less informed buyers or simply did not carry out sufficient risk assessment. In contrast, investors of non-triple A tranches considered factors in addition to ratings as the initial spread of those bonds were identified to have predicted future performance.

According to Fabozzi and Vink (2012a), conditional on credit ratings, the price of ABS products at issuance reflects information regarding credit enhancement, seniority of tranches and the quality of collateral. Based on UK issued residential MBS transactions over 1996 and 2006, the authors highlight investors' overreliance on ratings. At the same time, they identify that buyers carry out due diligence on the factors already assessed by CRAs and price them in initial market spread. Fabozzi and Vink (2012b) investigate European issued ABS instruments over the same period. They obtain similar findings that CRA assessments are dominant element in ABS price-setting at issuance, yet not exclusive.

Moreover, initial spread of structured finance issues has also reflected the risks of possible conflict of interest between actors. Empirical work by He et al., (2012) shows a positive relation between the size of issuer and the spread. They used US MBS observations between 2000 and 2006 and postulate that investors might have suspected collusion between large issuers and CRAs especially right before the financial crisis. They observe differences in spreads of similar bonds issued by large and small issuers over the period of 2004–2006. The study explains the difference by investors' suspicion over CRAs

[24] Although the author finds the impact of the number of underwriters on the spread as being very low.

granting inflated ratings to 'big' issuers[25]. Therefore, investors demanded higher yields for the issuances of large investment banks in comparison to the issuers with smaller market share. He et al. (2016), utilising the same data, examine another form of moral hazard in the market, by investigating rating shopping and its possible reflection on the spread (He et al., 2016). They 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. They find that effects of rating shopping had been considered at least partially by investors of non-prime (i.e. non-triple A) bonds and had been priced in the spread at launch. Regarding prime bonds, the authors conclude spreads did not reflect shopping as investors of the highest quality bonds had been naïve to rely solely on the ratings.

The latest studies to investigate information content of initial spread of structured bonds underline the impact of reputation of the involved parties. Deku et al. (2021) observe European issued MBS transactions from 1999 to 2018. Their results indicate that investors attach value to reputable issuers as they have demanded lower spread for the bonds issued by them comparing to less reputable issuers. The market, according to the study, had suspected that pool of assets securitised by reputable issuers were of better quality especially over the boom period. Similarly, trustee reputation was perceived as a positive information by the market. Findings by Deku et al. (2019b) demonstrate that reputable trustees' engagement in securitisation program might have been deemed to help reduce information asymmetry. Investors of European MBS bonds had required lower spreads for such issuances at launch especially when it was hard to assess risk.

3.2.5. Hypothesis Development

2009 CRA Regulation and its amendments are designed to minimize conflict of interest between CRAs and issuer banks in securitisation. Given that rating is the dominant factor in determining the market value of securitised assets, tackling rating inflation would be vital in reducing information asymmetry.

[25] Issuers are classified as 'big' if they belong to the top 10% in terms of the market share allocation for a given year (He et al., 2012).

Rating inflation can be caused by rating shopping and rating catering (He et al., 2012; Griffin et al., 2013). Therefore, to investigate the effects of the changes we will examine rating shopping and ratings catering phenomena.

3.2.5.1. Rating Shopping

The number of ratings assigned to a tranche can help determine the existence of possible rating shopping (Benmelech and Dlugosz, 2010; Bongaerts et al., 2012). For instance, single rating should indicate that shopping exists for a relative securitisation transaction in comparison to a similar but double or triple rated transactions. The higher the difference in the number of ratings the greater should the risk of the shopping be. We suggest that new rule could be effective in restraining agents from engaging in moral hazard. However, we suppose that its impact should limited when it comes to reducing rating shopping. Because first of all, conflict of interest is not necessarily the sole cause for the occurrence of rating shopping. It can always be a natural consequence of the process of obtaining and reporting ratings. CRAs could be reporting unbiased ratings but it is at the discretion of issuer banks to make them public (Skreta and Veldkamp, 2009). Regulation changes can reduce conflict of interest, and also 'at least two ratings' rule can put issuers under pressure to disclose at least two ratings, but they can still censor out the third certification. Secondly, the effect of 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 and single rated tranches make up only a small proportion of the market[26]. Even if the implementation has been successful the rating inflation should disappear only between single and multiple rated deals. Meanwhile, tranches with dual ratings should still be liable for rating shopping in comparison to securities with triple CRA certifications.

We pre-suppose, therefore, that the effectiveness of the new rules when it comes to reducing rating shopping might be limited. In order to assess the

[26] 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.

possible effect of the new guidelines, we study the effects of shopping on the initial market spread of ABS. First, we examine single rated against multiple rated securities. If issuers' ability to shop for ratings had in fact been curbed, 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$_0$ *– new measures have no impact on rating shopping*

H1$_1$ *– new measures can impact on rating shopping*

Second, 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:

H2$_0$ *– new measures have no impact on rating shopping for multiple rated tranches*

H2$_1$ *– new measures can impact on rating shopping for multiple rated tranches*

We employ two variables to estimate the possible effects of rating shopping which are explained in detail in the data and methodology section.

3.2.5.2. Rating Disagreements

Issuers' incentive to shop for better ratings increases as the disagreement between CRAs evaluations widens. In addition to the fact that agencies use different methodologies to evaluate credit risk of securities the complexity of deals can mean CRAs might not reach the same ratings (Griffin et al., 2013). When ratings assigned for a given tranche differ it might signal potential risk. Because inconsistency in risk assessment between CRAs may concern investors (He et al., 2012). On the other hand, we posit that rating disagreements between CRAs could actually be a positive signal. Disagreement on the ratings assigned to a securitisation transaction could indicate the absence of conflict of interest. This is because, firstly it shows that issuers are not suppressing lower ratings but are reporting all, although

they disagree; and 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. We hypothesize that if investors saw rating disagreement as an indication to the absence of conflict of interest then the spread they demand for such transactions should be lower due to the reduced risk. Hence, we test the following hypothesis:

H3$_0$ *– initial market spread of ABS are not affected when the designated ratings are identical*

H3$_1$ *– initial market spread of ABS are affected when the designated ratings are identical*

On the other hand, for the period after the implementation of the new rule we anticipate rating catering to disappear, because rating catering is the direct result of conflict of interest. The new strict measures introduced under CRA guidelines aim to tackle conflict of interest and improve CRA methodologies. Thus, we expect investors to have confidence in CRAs over the new recovery period that they will adhere to their standards and issue unbiased ratings. We hypothesize:

H4$_0$ *– new measures have no impact on rating catering*

H4$_1$ *– new measures can impact on rating catering*

3.3. Data and Methodology

3.3.1. Data

The data is collected from Bloomberg, which provides all the main characteristics of securitisation transactions. The data attained comprises ABS tranches including MBS tranches issued in European countries over a two-decade period, between 1998 and 2018.

Our primary focus is the seven largest European countries who are major players in the market, accounting for over 80 per cent of total issuance between 1998 and 2018 (Bloomberg, 2018). These seven issuer nations include France, Germany, Italy, Ireland, Netherlands, Spain and the United

Kingdom. The main features of each transaction are value of a deal, collateral, type of a deal, asset origin, issuer identity, issuer nation, year of issue, pricing date. Also, we use key tranche level characteristics such as initial spread, credit ratings, tranche value and date of maturity.

One of the key variables is credit ratings attached to a tranche. In our final sample we include securities that had been assessed at least once by a rating agency. Original data we attained is 18,398 securitised bond tranches. However, we have eliminated tranches with no rating, as we are examining the effects of possible rating shopping on the pricing of structured bonds. In addition, some observations are dropped due to missing data on initial market spread of ABS tranches. This leaves a final sample of 12,469 observations.

3.3.2. Empirical model

To test our hypotheses, we refer to pricing models employed by the structured finance literature. The models address tranche specific and deal level characteristics in addition to controlling for economic conditions as well as factors than can impact the price of securitised assets (Cuchra, 2005; He et al., 2012; Fabozzi and Vink, 2012b; Deku et al., 2019b). Initial market spread of securitised bond i issued as part of deal d at time t is expressed by the following model:

$$\begin{aligned} LogSpread_{d,i,t} = {} & \beta_0 + \beta_1 L_i + \beta_2 Size_i + \beta_3 Weighted\ Average\ Life_i + \beta_4 Issue\ Type_{d,i} \\ & + \beta_5 Tranche\ Credit\ Rating_{d,i} + \beta_6 Issuer_d + \beta_7 Issuer\ Nation_{d,i} \\ & + Collateral\ Nations, Guarantor, Private\ Placement, \\ & Market\ area\ ,\ Time\ controls_{d,i,t} + e_{d,i,t} \end{aligned} \quad (1)$$

LogSpread defines the natural logarithm of launch yield spread of a tranche. For floating rate securities, initial spread is set on issuance date and measured in bps as fixed premium over relevant benchmark (Cuchra, 2005). Yield spread at issuance is considered to be more reflective of market demands on risk premiums than secondary spread. We restrict our sample to tranches with floating coupon rates only. Because floating rate securities

reflect liquidity, optionality and credit risks and are compensated above the reference benchmark (Fabozi and Vink, 2015).

L is a set of three variables (*Multiple ratings, CRA reported* and *Rating agreement*) that we will use interchangeably to study the impact of rating related factors on ABS initial spread. *Multiple ratings* is a binary variable and it demonstrates the number of independent CRA involved in assessing credit risks of securitised issues. The variable equals 1 if at least two of the obtained certifications are published by issuer banks, and it gets the value of 0 if a tranche has obtained a single rating. We exclude tranches thar are not rated by at least one rating agency. Similar to the work by He et al. (2012), we use this variable to test for the possible existence of rating shopping. We expect rating shopping to exist, although to a lesser extent, even after the introduction of the new regulations for two reasons. Firstly, the impact of 'at least two ratings' rule on reducing conflict of interest is minimal because, as stated earlier, majority of securitised bonds are rated at least twice. In our dataset over 80% of all securities have at least dual ratings (Table 3.2). Second, rating shopping phenomenon is not solely driven by conflict of interest. Therefore, eliminating conflict of interest cannot guarantee the disappearance of rating shopping.

CRA reported is the number of ratings assigned for a given security. We use this variable to test our second hypothesis in analysing the existence of rating shopping. In comparison to the previous variable, this will help us to better see the possible effects of changes. We rely on 2 *CRA reported* and 3 *CRA reported* where the former indicates that a tranche has two ratings, and the latter shows only triple rated tranches. The variable helps to compare the dual against triple rated tranches. We anticipate rating shopping to exist between multiple rated tranches (Skreta and Veldkamp, 2009). Each additional rating is informative and should reduce information asymmetry. However, if additional CRA certification is lower than issuers' expected grade then it can be suppressed. Therefore, in comparison to triple rated tranches, securities with two ratings could still be treated under rating shopping hypothesis.

Rating agreement is a binary variable and equals 1 if at least two of the total issued CRA certifications are identical, otherwise 0. We limit our sample to securities rated by at least two independent CRAs. Unlike He et al. (2012) findings, we believe rating agreements should signal rating catering. A study on CDOs market by Griffin et al. (2013) finds that dual rated CDOs issued during boom of 2006-2007, when ratings agreed, underperformed similar but single rated tranches. Similarly, we use this dummy variable to investigate rating catering. We anticipate rating catering to disappear after the implementation of the new regulation by the EU. Because rating catering is direct consequence of conflict of interest and therefore the introduction of strict measures should be effective in tackling rating inflation. *Number of ratings* is controlled for to capture possible risks that might arise due to rating shopping (He et al., 2012; 2016). This variable is similar to *CRA reported*. However, the main difference is that CRA reported only reports 2 *CRA reported* (dual) and 3 *CRA reported* (triple) rated tranches, while *Number of ratings* variable indicates the number of *all* ratings attained for a tranche. Also, we use this variable *only* when we study the effects of *Rating agreement* on initial spread to control for rating shopping. That is, we do not include it in the regression specifications where we study the impact of *Multiple ratings* and *CRA reported*.

Tranche credit rating is used to control for the credit quality of structured finance issues. All the tranches in our dataset are rated by the Big Three rating agencies: S&P, Moody's and Fitch. We convert tranche rating grades into numeric scale with 1 indicating AAA (the highest grade) and 21 replacing C (the lowest grade) then calculate the arithmetic mean of all the ratings issued for a tranche. Rating captures asset and structural risks of securitised assets (Fabozzi and Vink, 2012a) and it is the biggest determinant factor in explaining the initial spread (Cuchra 2005; Adelino, 2009; Deku et al., 2019b). We categorize securities with AAA grades as Prime and all the other ratings outside AAA as non-Prime securities.

Additionally, we have taken into account other key characteristics as well. In order to control for liquidity, we use natural log of tranche value denoted as

Size (Efing and Hau, 2015; Deku et al., 2019b). *Weighted Average Life (WAL)* is the natural logarithm of structured bond maturity and it used over nominal maturity because it addresses prepayment rates (Cuchra, 2005; Mahlmann, 2012). Our model also includes *Issuer* and *Issuer country* fixed effects. We aim to capture possible issuer-relevant attributes as well as economic conditions (Fabozzi and Vink, 2012b; Deku et al., 2019b). *Issue Type* is used to control for possible risks that can arise due to varying assets underlying securitised bonds (Cuchra, 2005; Deku and Kara, 2017). Other characteristics such as *Collateral nation* and *Market area* have also been addressed by the model. Unlike *Issuer country*, which is where securitisation deals are structured, *Collateral nation* is the country where the underlying assets originate from. Whereas *Market area* is the target market for the securitised bonds to be traded at. Variable *Guarantor* is a binary variable and indicates if external credit enhancement applies for securitised bonds. *Private placement* is also a binary variable and defines whether sales of securities are carried through private or public offering.

The sample size of pooled cross-sectional data can be enhanced and this in turn could result in accurate estimators given that the relationships in estimation are stable over time. In order allow temporal variation we rely on time dummy and the introduction of year dummy variables is important, as the effect of various economic factors across time can be captured (Wooldridge, 2013; Peterson, 2009). Rating agencies utilise various methods and yardsticks in evaluating the ABS securities. While the risk assessment can be carried out at a deal and/or a tranche level, any deal specific assessment revisions can result in deal-wide rating changes. Therefore, it is possible that tranches of a given deal are not independent from each other (Deku et al., 2019b). According to Adelino (2009), ratings revisions on multiple tranches are performed around same time. Hence, for the purposes of mitigating correlation of errors standard errors are clustered at deal level (Deku et al., 2019b; Cuchra, 2005). Moreover, in our estimations we have included *Issuer Nation* to control for specific issuer nation attributes in the models. However, there is a possibility that not all nation-specific

characteristics could be captured, and therefore to evaluate the robustness of the outcomes we employ a uniform sample using ABS tranches issued only in the UK.

3.3.3. Descriptive Statistics

Our final sample of 12,469 tranches are issued across seven EU nations between 1998 to 2018. Table 3.1 presents the summary statistics for selected variables included in our dataset. Yield spread at issuance, on average, is 128.72 bps for the whole sample. Whereas, spread demanded for least risky (AAA rated) securities are more than three times lower than for non-prime tranches. Average value of a bond across the whole sample is approximately €300m which is about half of that of prime bond value. Meanwhile each deal approximates at €1.6bn suggesting roughly 5 tranches per deal. All securities are assigned at least single rating and the average for the entire sample lies between AA- and A+; for tranches outside AAA the average reported rating grade is A-.

Table 3.1 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	1017.32
	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	1981.66	849.6	3558.65
	Non-Prime	7,663	1392.33	629.48	2417.84
	Total	12,469	1619.36	688.21	2924.73

Table 3.2 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%		

Table 3.2 contains summary of tranche rating distribution. In comparison to bonds rated by multiple CRAs, single rated tranches make up little less than one-fifth of the entire sample. Over 80 per cent of the observations obtained certification from at least two independent rating agencies. Observations for *Rating agreement* variable has been reduced to 10,016 tranches, as we had to exclude single rated tranches. For about 16% of the sample, multiple ratings obtained by a security are different (i.e. rating agencies do not agree). For non-prime issuances, the proportion increases to almost 26%.

In Table 3.3, the distribution of tranche credit ratings by grades are presented. Prime quality issues account for almost 40% of the entire sample and the frequency of securities with AAA rating grades are the highest in the data. 4,806 ABS securities have been issued with the highest level of rating. Next most reported ratings are A, AA and BBB each approximating around 1,500, respectively. Total number of non-prime securitised bonds equals 7,663.

Table 3.3 Tranche rating distribution by grades

Credit ratings grades	**Freq.**	**Credit ratings grades**	**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

3.4. Regression Results

The estimations of the regression models are rolled out progressively. We commence with baseline regression for the aggregate data. This allows us to see the effects of the main variables 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. First period studies the pre-GFC phase of the securitisation market which had experienced immense expansion (or what we will call the boom period). Subsequently, we investigate post implementation period of the new CRA III rule (or the recovery period) which is between mid-2013 and mid-2018[27].

The spread investors demand for structured finance transactions is based on potential risks of those instruments. They attempt to assess all the available information and risk factors and price them in the spread of the securities. As information asymmetry increases, market participants might become more cautious and more attentive to various information available and try to take into account all available information (Adelino, 2009). Therefore, we will split the sample into two sets with different risk levels. By doing so, we aim to find whether the effects of the selected variables change under different informational settings. Firstly, we compare Prime (i.e. triple A) rated tranches against Non-Prime rated tranches over the boom period between 1998 and 2007. Then, we will perform the same comparisons over the recovery period of 2013 and 2018.

3.4.1. Aggregate Sample Over 20-Year Period

Table 3.4 displays the results of the regressions for the entire sample. The first variable of our interest is *Multiple ratings,* and it is presented against single rated securitisation issues in the first Column. The coefficient of the variable is close to negative 14% and statistically significant at 1% level. Negative sign indicates that, on average, having at least two ratings should

[27] We will exclude 2008-2009 as crisis period. And we will exclude 2010-2013 as well, because these years become irrelevant to our research motivation. Because the final changes were put into action starting from mid-2013. Moreover, the sharp decline in ABS issuance that began after 2008 continued till 2013 before it started to rise again (EUDatawarehouse, 2018).

reduce the initial spread for a security. If a tranche has been rated at least by two independent CRAs and those ratings has been reported then the spread of that security should be 14% lower than a single rated tranche. Such difference in the spread is explained by rating shopping phenomenon (Skreta and Veldkamp, 2009; Benmelech and Dlugosz, 2010). Investors demand higher spread for single rated tranches in comparison to double or triple, because they suspect that issuers shop for ratings and unfavourable ratings are suppressed by issuers (He et al., 2012).

The above results are supported further by our next variable which is the number of *CRA reported* that is under Column 2. The coefficients for double-rated (2) and triple-rated (3) tranches are negative 9 and 37 per cents respectively and both are statistically significant at 1% level. Negative sign indicates that the higher the number of ratings assigned to a security the lower the spread demanded by investors. If a tranche has been assessed by three rating agencies and all the ratings are reported then the spread of such security should be 37% lower than a tranche that has single rating. Whereas the difference between dual and single ratings are reflected as 9% lower spread. The results should indicate that each added certification from independent CRAs is informative and reduces information gap.

The final Column 3 shows the coefficient of the *Rating agreement* variable. The number of observations has been reduced to 10,016 tranches, because we had to exclude securities that had been rated by only one agency. The dummy variable explains whether harmony in ratings allocated to deals lead to change in the initial spread. A significant 15 percentage points at 1% level indicate that investors deemed securities that have at least two identical rating notches to be of more risk in comparison to ABS bonds with varied ratings. On average investors demanded 15% more spread for securitised bonds that have at least two ratings that agree. The result supports our hypothesis $H3_1$ and the increase in the initial yield spread that investors demand can be explained by rating catering. Rating catering occurs when

Table 3.4 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)	
Multiple ratings	-0.1379***	(0.0331)				
2 CRA reported			-0.0899***	(0.0329)		
3 CRA reported			-0.3725***	(0.0418)		
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)
Weighted Average Life	0.0004	(0.0004)	0.0003	(0.0004)	0.0009**	(0.0004)
Issue Type						
MBS	-0.2813***	(0.0231)	-0.2178***	(0.0223)	-0.1988***	(0.0245)
Issuer Nation						
France	-0.2480**	(0.1040)	-0.3560***	(0.1055)	-0.3978***	(0.1204)
Germany	-0.1398*	(0.0714)	-0.1605**	(0.0694)	-0.1099	(0.0674)
Italy	0.0040	(0.0955)	-0.0703	(0.0904)	0.0189	(0.1086)
Netherlands	0.0551	(0.0519)	0.0125	(0.0523)	0.0739	(0.0505)
Republic of Ireland	0.0890	(0.0613)	0.0361	(0.0616)	0.0356	(0.0605)
Spain	-0.4568***	(0.1175)	-0.5329***	(0.1144)	-0.4118***	(0.1358)
Guarantor	-0.3822***	(0.0917)	-0.3866***	(0.0915)	-0.4033***	(0.1077)
Private Placement	-0.0006	(0.0272)	-0.0176	(0.0263)	-0.0217	(0.0280)
Tranche credit rating						
AA+	0.3156***	(0.0894)	0.3069***	(0.0908)	0.4713***	(0.1002)
AA	0.5684***	(0.0213)	0.5574***	(0.0207)	0.5887***	(0.0215)
AA-	0.5708***	(0.0505)	0.5421***	(0.0509)	0.6558***	(0.0547)
A+	0.5746***	(0.0607)	0.5760***	(0.0623)	0.8576***	(0.0388)
A	0.9582***	(0.0203)	0.9341***	(0.0200)	0.9981***	(0.0210)
A-	1.1031***	(0.0549)	1.0742***	(0.0543)	1.2933***	(0.0569)
BBB+	1.4988***	(0.0468)	1.4873***	(0.0479)	1.6525***	(0.0485)
BBB	1.5052***	(0.0226)	1.4911***	(0.0221)	1.5586***	(0.0232)
BBB-	1.6489***	(0.0348)	1.6014***	(0.0343)	1.8081***	(0.0357)
BB+	2.2790***	(0.0726)	2.2730***	(0.0731)	2.4716***	(0.0821)
BB	2.3014***	(0.0356)	2.2676***	(0.0349)	2.3783***	(0.0388)
BB-	2.3646***	(0.0660)	2.3125***	(0.0652)	2.5398***	(0.0723)
B+	1.9754***	(0.1504)	1.9602***	(0.1563)	1.9385***	(0.2365)
B	2.5332***	(0.0906)	2.5069***	(0.0900)	2.8365***	(0.1121)
B-	2.1575***	(0.0324)	2.1413***	(0.0316)	2.3089***	(0.0384)
CCC+	1.2921***	(0.2315)	1.2726***	(0.2130)	2.0302***	(0.0609)

CCC	1.8431***	(0.4478)	1.8842***	(0.4729)	2.9313***	(0.0786)
CCC-	2.3005***	(0.2190)	2.2664***	(0.2138)	2.6798***	(0.3318)
CC	3.5538***	(0.0587)	3.7372***	(0.0615)	3.8178***	(0.0626)
C	3.6011***	(0.0610)	3.4950***	(0.0578)	3.5516***	(0.0614)
Controlled for						
Issuer	Yes		Yes		Yes	
Collateral Nation	Yes		Yes		Yes	
Market Area	Yes		Yes		Yes	
Year	Yes		Yes		Yes	
Obs.	12,469		12,469		10,016	
Adjusted R^2	0.711		0.718		0.766	

issuers, instead of supressing unfavourable ratings, collaborate with CRAs to obtain tailored ratings so that certifications are higher and identical (Griffin et al., 2013). The number of ratings assigned for a tranche is important in reducing information asymmetry. However, from an issuer viewpoint each additional rating should add value to bonds and reduce yield spread investors demand for them. Therefore, issuers are incentivised to report the highest possible rating and ensure each additional rating match the desired level. When investors are aware of CRAs failure of adhering to their benchmark, they might suspect issuance of rating favours.

As we are examining the effect of rating catering as a separate phenomenon, we control for rating shopping using the *Number of ratings* variable. The coefficient for the variable is statistically significant at 1% level as shown in Column 3. Negative 28% indicates that investors find additional CRA certification as informative and thus demand reduced spread for such issues at launch. It also confirms above results that markets might have been aware of possible rating shopping.

Tranche credit rating is significant across all specifications. Tranche credit ratings are the primary determinant of security prices (Cuchra, 2005; Adelino, 2009; Fabozzi and Vink, 2012; Deku 2019b). Each rating grade is significant while coefficient values are upward and negatively related to grading rates. *Issue type* variable addresses the difference in underlying assets of the bonds. MBS tranches across all specifications yield negative and significant

coefficients in comparison to ABS securities. It supports securitisation literature that investors deem the former as less risky asset than the more complex latter type (For instance, Deku and Kara, 2017). *Issuer, Issuer nation* and *Time* controls have also captured issuer specific as well as macroeconomic and geographic attributes.

3.4.2. Estimations at Two Different Periods

The first period is pre-crisis period based on a decade long sample covering 1998 and 2007. The second is five-year period between mid-2013 and mid-2018 which is after the new CRAIII rule's introduction. Table 3.5 presents the results for the boom and recovery periods for the securitisation market in Europe. On the first two columns it is evident that over the boom period conflict of interest between parties was at its peak. The coefficients of the same variables are considerably higher (in absolute value) than that of the baseline models. Negative 21% in Column 1, and 15% and 40% in Column 2 show how much investors valued the number of ratings attached to a tranche as vital risk mitigating factor. Variable *Rating agreement*, after controlling for credit rating and *Number of ratings*, has yielded about 17% coefficient at 1% level. It supports our first outcome for the baseline model. Further, it also shows that over the boom period the market participants were aware of increased conflict of interest in securitisation and thus demanded higher spread for the instruments that had unvaried ratings. It suggests that in these cases, certification obtained from additional CRA was not informative about tranche credit risk.

On the other hand, the second half of the table (Columns 4 to 6) shows the results for the recovery period models. *Multiple ratings* in Column 4 is close to zero and is not statistically significant. It can suggest that the new rule might have been effective in tackling potential collusion between issuers and CRAs. Investors seem to have ignored the differences in the number of ratings obtained by deals. This outcome supports $H1_1$ that shopping does not seem to matter when it comes to single rated securities in comparison to multiple rated ones. We can look at the disappearance of rating shopping closer by

Table 3.5 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						**After 2013**					
	(1)		(2)		(3)		(4)		(5)		(6)	
Multiple ratings	-0.2064***	(0.0409)					-0.0329	(0.0410)				
2 CRA reported			-0.1525***	(0.0409)					-0.0167	(0.0422)		
3 CRA reported			-0.3981***	(0.0474)					-0.2951***	(0.0835)		
Rating agreement					0.1722***	(0.0283)					-0.0109	(0.0314)
Number of ratings					-0.2741***	(0.0263)					-0.2976***	(0.0769)
Size	-0.0003***	(0.0000)	-0.0003***	(0.0000)	-0.0002***	(0.0000)	-0.0002**	(0.0001)	-0.0001*	(0.0001)	-0.0000	(0.0000)
Weighted Average Life	0.0003	(0.0005)	0.0003	(0.0005)	0.0010**	(0.0005)	0.0003	(0.0006)	0.0003	(0.0006)	0.0000	(0.0007)
Issue Type												
MBS	-0.3322***	(0.0267)	-0.2678***	(0.0256)	-0.2391***	(0.0263)	0.0398	(0.0408)	0.0644	(0.0401)	-0.0092	(0.0564)
Issuer Nation												
France	-0.1786	(0.1167)	-0.3046**	(0.1208)	-0.3666***	(0.1330)	-0.5088***	(0.1447)	-0.5305***	(0.1415)	-0.7623***	(0.1782)
Germany	-0.1038	(0.0792)	-0.1361*	(0.0767)	-0.0846	(0.0743)	-0.0249	(0.2239)	-0.0436	(0.2298)	-0.7819***	(0.0808)
Italy	0.0918	(0.1225)	0.0088	(0.1160)	0.0920	(0.1238)	-0.3883***	(0.0924)	-0.4134***	(0.0914)	-0.2368	(0.1547)
Netherlands	0.0346	(0.0594)	-0.0046	(0.0595)	0.0787	(0.0566)	-0.0474	(0.0706)	-0.0595	(0.0684)	-0.0772	(0.0774)
Republic of Ireland	0.0977	(0.0695)	0.0436	(0.0711)	0.0300	(0.0695)	-0.0417	(0.0716)	-0.0613	(0.0700)	0.0029	(0.0772)
Spain	-0.4260***	(0.1345)	-0.4916***	(0.1303)	-0.3756**	(0.1468)	-0.1404	(0.2108)	-0.2011	(0.2091)	-0.6163***	(0.2273)
Guarantor	-0.6887***	(0.1176)	-0.6858***	(0.1143)	-0.6198***	(0.1186)	0.0245	(0.0544)	0.0266	(0.0600)	0.0276	(0.0497)
Private Placement	0.0198	(0.0321)	-0.0027	(0.0312)	-0.0021	(0.0308)	0.1078***	(0.0414)	0.1049**	(0.0411)	0.0811	(0.0529)
Tranche credit rating												
AA+	0.4119***	(0.0600)	0.4084***	(0.0590)	0.6254***	(0.0517)	0.5126***	(0.0884)	0.5214***	(0.0913)	0.7741***	(0.1280)

AA	0.5067***	(0.0255)	0.5073***	(0.0249)	0.5393***	(0.0242)	0.6011***	(0.0423)	0.5852***	(0.0410)	0.6130***	(0.0381)
AA-	0.5306***	(0.0538)	0.5144***	(0.0548)	0.6610***	(0.0552)	0.6163***	(0.1153)	0.6046***	(0.1102)	0.6440***	(0.1579)
A+	0.5821***	(0.0896)	0.6072***	(0.0927)	0.9418***	(0.0426)	0.5775***	(0.0814)	0.5596***	(0.0805)	0.6612***	(0.0759)
A	0.9307***	(0.0231)	0.9153***	(0.0227)	0.9797***	(0.0226)	0.9492***	(0.0444)	0.9349***	(0.0430)	0.9636***	(0.0395)
A-	1.1283***	(0.0670)	1.1098***	(0.0665)	1.3059***	(0.0621)	1.0875***	(0.0751)	1.0659***	(0.0739)	1.0405***	(0.0801)
BBB+	1.5944***	(0.0497)	1.6103***	(0.0510)	1.7472***	(0.0527)	1.2085***	(0.0760)	1.1740***	(0.0740)	1.2275***	(0.0767)
BBB	1.5364***	(0.0270)	1.5333***	(0.0263)	1.5990***	(0.0251)	1.3005***	(0.0464)	1.2859***	(0.0450)	1.3199***	(0.0426)
BBB-	1.7575***	(0.0394)	1.7150***	(0.0392)	1.8785***	(0.0358)	1.3844***	(0.0559)	1.3658***	(0.0538)	1.3178***	(0.0619)
BB+	2.4780***	(0.0798)	2.4917***	(0.0805)	2.6369***	(0.0867)	1.4445***	(0.0911)	1.4233***	(0.0912)	1.3717***	(0.0913)
BB	2.6295***	(0.0340)	2.5972***	(0.0333)	2.7076***	(0.0335)	1.7391***	(0.0463)	1.7249***	(0.0449)	1.7689***	(0.0430)
BB-	2.6130***	(0.0926)	2.5675***	(0.0918)	2.6746***	(0.0870)	1.6685***	(0.0682)	1.6491***	(0.0664)	1.6979***	(0.0779)
B+	3.2013***	(0.2082)	3.2529***	(0.2257)	3.7667***	(0.0829)	1.4977***	(0.1018)	1.4677***	(0.1024)	1.5103***	(0.1079)
B	3.2199***	(0.0710)	3.1881***	(0.0711)	3.3245***	(0.0694)	1.8234***	(0.0751)	1.8065***	(0.0745)	1.8456***	(0.0722)
B-	3.0005***	(0.1363)	2.9853***	(0.1327)	3.3411***	(0.0615)	2.0397***	(0.0463)	2.0258***	(0.0449)	2.0316***	(0.0542)
CCC+							1.6265***	(0.0617)	1.5857***	(0.0583)	1.6705***	(0.0587)
CCC	2.5085***	(0.1045)	2.6363***	(0.1683)	2.9170***	(0.0799)	1.6708***	(0.0740)	1.6504***	(0.0715)		
CCC-	2.9849***	(0.3220)	2.9505***	(0.3009)	3.3481***	(0.1803)	1.6236***	(0.0641)	1.5858***	(0.0617)	1.6566***	(0.0575)
CC	3.4697***	(0.0616)	3.6470***	(0.0650)	3.8457***	(0.0628)						
C	3.5221***	(0.0646)	3.4516***	(0.0622)	3.5690***	(0.0640)						
Controlled for												
Issuer	Yes		Yes		Yes		Yes		Yes		Yes	
Collateral Nation	Yes		Yes		Yes		Yes		Yes		Yes	
Market Area	Yes		Yes		Yes		Yes		Yes		Yes	
Year	Yes		Yes		Yes		Yes		Yes		Yes	
Obs.	8,502		8,502		7,368		2,184		2,184		1,746	
Adjusted R^2	0.709		0.717		0.752		0.806		0.809		0.836	

Table 3.6 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 (Tr.cred.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**						**Non-Prime**					
	(1)		(2)		(3)		(4)		(5)		(6)	
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)		
Rating agreement											0.1697***	(0.0293)
Number of ratings					-0.2496***	(0.0382)					-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)
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)
MBS	-0.3020***	(0.0346)	-0.2245***	(0.0349)	-0.2102***	(0.0362)	-0.3409***	(0.0286)	-0.2895***	(0.0276)	-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)	-0.2292*	(0.1186)
Private Placement	0.0232	(0.0392)	0.0037	(0.0380)	0.0136	(0.0387)	0.0205	(0.0362)	-0.0027	(0.0356)	-0.0107	(0.0340)
Controlled for												
Issuer/Year	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	
Market Area/ Tr.cred.rating	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Obs.	3,194		3,194		2,801		5,308		5,308		4,567	
Adjusted R^2	0.388		0.402		0.373		0.672		0.680		0.732	

Panel B: After 2013	**Prime**						**Non-Prime**					
	(1)		(2)		(3)		(4)		(5)		(6)	
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)		
Rating agreement											0.0075	(0.0320)
Number of ratings					-0.2915***	(0.0854)					-0.2442	(0.2370)
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)
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)
MBS	-0.0803	(0.0787)	-0.0171	(0.0793)	-0.0902	(0.0948)	0.0894**	(0.0353)	0.0916***	(0.0352)	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)	0.0251	(0.0435)
Private Placement	0.0396	(0.0817)	0.0345	(0.0809)	0.0205	(0.0965)	0.1196***	(0.0338)	0.1176***	(0.0339)	0.1107***	(0.0392)
Controlled for												
Issuer/Year	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	
Market Area/ Tr.cred.rating	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Obs.	638		638		551		1,546		1,546		1,195	
Adjusted R^2	0.294		0.315		0.296		0.803		0.803		0.843	

observing the next variable. First coefficient in Column 5 confirms the previous result as it is also close to 0 and not statistically significant. However, the initial spread for triple rated tranches is significant and negative 30%. It is in line with $H2_0$ that the new rule might have been effective between single vs double rated tranches however triple rated tranches are still deemed to be much less risky by investors than the other two. It highlights that investors still view the possibility of rating shopping to exist[28].

Variable *Rating agreement* over the recovery period did not yield any significant results. The last column demonstrates that markets for structured finance assets have not considered unanimity of ratings to be an important factor in determining the initial spread of the securities. This result is in line with our last hypothesis $H4_1$, and we can explain this change as the consequence of the new guidelines in reducing conflict of interest in EU securitisation market. Rating catering is the direct consequence of collusion between CRAs and issuer banks, as the two could agree on inflating and harmonizing the ratings obtained by different CRAs. The coefficients suggest the new strict measures that have taken place have been effective in tackling conflict of interest and reducing rating inflation caused by rating catering.

3.4.3. Prime vs Non-Prime Securities

We have grouped our sample into Prime and Non-prime securities as the information contained in Prime tranches differ in comparison to lower rated securities (Adelino, 2009). The results, presented in Table 3.6, is similar to the previous Tables. *Multiple ratings* is negative and significant over the boom period for both group of securitised bonds. Yield spread demanded for multiple rated prime tranches is 37% lower than tranches rated with single AAA grade. Outside AAA, although the coefficient is smaller (in absolute value), investors still perceived multiple ratings to be more informative and its impact on the initial spread was minus 13%. The difference between the two coefficients shows that investors of triple-A assets appreciated the number of ratings more than investors of riskier securities. The former group might have

[28] We have also examined triple rated issues against double rated ones excluding single rated transactions. The result was similar at negative 30 percentage points.

been more reliant on ratings and less informed about the quality of the assets than the latter (Adelino, 2009).

Over the recovery period, in Panel B of the Table 3.6, the coefficient for non-prime sample is close to zero and is insignificant suggesting the effectiveness of the regulation for non-AAA tranches. As in hypothesis $H1_1$, rating shopping is not suspected by investors of non-prime securities and therefore not reflected in the initial spread. Investors of riskier assets, who are more informed, might have had confidence in the EU regulatory changes implemented to tackle conflict of interest and regulate CRAs. On the other hand, the coefficient for *Multiple ratings* is negative and significant for Prime tranches. This is again might be explained by Adelino's (2009) findings that investors of prime tranches are still more reliant on ratings and higher insensitivity of AAA securities to various information.

Similar results are displayed in Columns 2 and 4 of Panel A. In the pre-GFC period, each additional AAA grade reported to highest quality securities lowers the spread demanded by the market significantly 31% and 57% respectively. Yield spread for sub-prime tranches also reduces for each addition but to a lesser extent of 8% and 30%. This supports the literature that rating shopping existed and investors were aware of it (He et al., 2012; Deku et al., 2019b). Over the recovery period, initial yield spread demanded by the market for non-prime riskier securities was not particularly affected by the number of *CRA reported*. Insignificant results for dual and triple rated bonds indicates that investors did not consider rating shopping to be a risk factor. However, with high quality bonds rating shopping had a significant impact on the spread. For each additional *CRAs reported* the spread reduces, 15% and 45% respectively. These results further highlight that investors of high-quality bonds are still reliant on ratings and the new rules might not have been effective in reducing rating over-reliance particularly investors of high-quality assets.

Column 6 of Panel A and B contains the coefficients for the *Rating agreement* variable for non-prime structured assets. After taking into account the *Number of ratings*, ratings that agree was seen to be an indication of risk

before the GFC. In line with $H3_1$, on average investors demanded 17% higher spread for securitisation transactions where they suspected rating catering. In contrast, over the recovery period as shown in Panel B, rating harmony was not a significant factor considered by investors. The coefficient for *Rating agreement* is almost zero. This result once more supports $H4_1$ that CRA Regulation has been effective in tackling conflict of interest or at least it has restored investor confidence that ratings reported are not unreasonably inflated.

3.4.4. Robustness Check with a Uniform Sample

To evaluate the robustness of the outcomes we employ a more uniform sample, i.e. securities issued only in the UK. We have controlled for the specific *Issuer Nation* attributes in our models, however, there is a possibility that not all country-specific characteristics might be captured in our estimations. The UK is the largest issuer nation for the structured bonds in Europe and it accounts for a little more than half of the entire sample used in our study. All the tables of the regression outputs for the UK tranches are in the Appendix section.

The outcome for the baseline model for the entire period is presented in Table 3.7 (in Appendix). The coefficient for the *Multiple ratings* is negative and significant at 1% level in Column 1. It indicates that initial yield spread for securities with multiple ratings are about 19% lower than single rated tranches. When we look at the difference within multiple ratings in Column 2, the numbers are negative 13% and 42% for dual and triple ratings, respectively, in comparison to single ratings. It shows that investors for the UK ABS products might have considered rating shopping and thus perceived bonds with triple ratings to be the least risky. The coefficient for *Rating agreement* in Column 3, on the other hand, is positive 18% at 1% significance level. This is after taking into account the possible rating shopping (proxied by *Number of ratings*). It supports $H3_1$ that investors might have deemed identical ratings to be the result of conflict of interest and hence required higher spread for such tranches. Overall, Table 3.7 yields similar results to that of Table 3.4 which shows the baseline model for the entire sample.

Table 3.8 contains results for the two periods for the UK issued structured bonds. For the boom period we obtain similar results as in the baseline model that issuers' shopping for ratings might have been considered by investors. *Multiple ratings* is significant and equals minus 21% while coefficients for dual and triple ratings are minus 15% and 43% respectively. As for *Rating agreement*, in Column 3, 22% positive and significant coefficient shows that rating shopping might have caused the demand for higher yields. Over the recovery period, after the implementation of three-phased CRA regulation, rating shopping seems to have disappeared between single and *Multiple ratings* as the coefficient is almost zero and not significant. Also, double rated tranches against single ratings yielded almost zero insignificant coefficient as shown in Column 5. This supports our hypothesis $H1_1$ that rating shopping is not reflected in the initial spread of securitised bonds. However, the spread demanded for tranches with three CRA certifications are 32% lower. In line with $H2_0$, it indicates shopping might still exist between triple vs other ratings and thus. $H4_1$ is supported by our proxy variable for rating catering – *Rating agreement*. After controlling for number of ratings, the coefficient in Column 6 is not significant and equals almost zero. The outcome of the regressions presented in Table 3.8 reiterates the results in Table 3.5 and the overall effectiveness of the changes in tackling conflict of interest and rating inflation.

Finally, Table 3.9 shows the results for Prime and Non-prime tranches over the boom (Panel A) and recovery (Panel B) periods. The results in Panel A shows that investors did consider rating shopping and rating catering to be risk factors and demanded higher spread for relevant tranches. It is interesting to see that coefficients are stronger for AAA-rated securities in comparison to securities of lower classes. It might be due to rating over dependence as previously stated. Investors of highest-class bonds are thought to have higher reliance and are less informed than investors of lower rated bonds. For the post-GFC period as shown in Panel B, regulatory changes did have an impact on investors' perception on CRAs and their possible involvement in conflict of interest. However, as in Panel B of Table 3.6, for Prime tranches rating shopping does not seem to have disappeared.

The coefficients for *Multiple ratings* and the number of *CRAs reported* are all negative and significant in Columns 1,2 and 3. It can also be explained by rating over-reliance of investors of high-class structured bonds. Outside AAA, the effectiveness of regulatory changes can be noticed. Insignificant coefficients for the proxy variables for rating shopping and rating catering supports our hypothesis $H1_1$ and $H4_1$ that investors of UK issued ABS securities do not seem to price the two phenomena in the yield spread of securities at issuance. Overall, the results for the UK sample reiterated the results for the overall European observations that EU initiatives helped improve investor confidence in CRA certifications and reducing conflict of interest. However, rating over-reliance still seems to be an issue especially for investors of the highest quality tranches.

3.5. Conclusion

EU has implemented several guidelines following the GFC aimed at tackling conflict of interest in the ABS market. In this empirical chapter, we review the overall conditions in the EU securitisation market before and after the GFC focusing on rating inflation. Specifically, we have examined whether the changes have had any impact on rating shopping and rating inflation phenomena. We base our investigation on European ABS sample of 12,469 issued between 1998-2018.

Our results suggest that changes have been effective in tackling conflict of interest in structured finance market. Rating catering, which is the direct consequence of issuer and CRA collusion, seems to have disappeared over the recovery period. Investors who demanded higher spread for a multiple rated tranche with identical ratings, did not consider the effect of rating harmony in the post-GFC period. Regarding rating shopping, we find that the effectiveness of the changes has been minimal. We argue that is the case for two reasons. First, rating shopping could be driven by conflict of interest. However, it is also innate cause of rating processing and issuing procedure, as it is at issuer bank's discretion to report or suppress additional ratings. Secondly, at least two rating rule - one of the regulations that could impact

the rating shopping – is not enough to reduce shopping. Because most of the ABS bonds are already rated by at least two CRAs. Additionally, we also find that rating over-reliance might still be an issue especially for investors of high-quality bonds. Even after the implementation of the changes, investors of triple-A ABS securities are still seemed to be heavily reliant on the ratings.

Overall, our findings suggest that investors do not seem to think that there is conflict of interest between CRAs and ABS issuers in the post-GFC period. Also, we find that EU initiatives have been effective in reducing rating inflation as rating catering is not reflected in the prices of the structured finance issuances over the recovery period. As for rating shopping and rating over-reliance, we think further set of measures might be needed to be implemented. Because our results suggest that the two issues might still be present to a certain degree.

CHAPTER IV: The Pricing of Issuer Service in Securitisation

4.1. Introduction

Financial intermediaries have a significant role in capital markets in linking borrower firms and investors. Theories on financial intermediation indicate that services provided by financial firms are valuable. For instance, one crucial feature of intermediation is lower transactional costs (Benston and Smith, 1976). Another key function of financial firms involves reduced informational gap as demonstrated in a theoretical model by Leland and Pyle (1977). And most importantly, in addition to other services the theory of financial intermediation is explained by the production of information (Campbell and Kracaw, 1980). The valuation of services provided by intermediaries have been widely studied for debt and equities markets. These studies, mainly focus on the US capital markets, examine the pricing of services (Chen and Ritter, 2000; Hansen, 2001; Yeoman, 2001; Roten and Mullineaux, 2002; Butler, 2008), the value of reputation in ensuring the quality of services (Chemmanur and Fulghieri, 1994; Puri, 1999; Livingston and Miller, 2000; Fang, 2005; Golubov et al., 2012) benefits of previous partnership and loyalty between client firms and intermediaries (James, 1992; Yasuda, 2005; Burch et al., 2005; Wang and Whyte, 2010). And according to Lee et al. (1996), the commission received by investment bankers for their service averages between 7% and 0.5% depending on the type and the quality of equity and debt issues.

When it comes to pricing of intermediary services, there is a gap in the literature regarding markets for mortgage and asset backed securities. Moreover, aforementioned literature and others concentrate on the US capital markets whereas the studies on European markets are scarce. In order to fill in this gap we will study the pricing of intermediary services for the global securitisation market, and we will also examine the US and European markets in this chapter.

The United States and the EU are by far the dominant in securitisation markets in terms of global annual issuance (about 95% until recently)[29] and the global securitisation outstanding (almost 98%) accounting for almost the total global issuances in securitisation (SIFMA[30], 2020; S&PGlobal, 2020). Although less comparing to its peak periods, global structured finance issuances over the past years have been equivalent to around $1 trillion annually (S&PGlobal, 2019).

Financial firms (such as banks) or non-financial firms who own the underlying assets often require the service of investment banks as intermediaries to arrange the complex securitisation programs on behalf of them. With specialised expertise and better marketing techniques, investment banks can help bridge the information gap between investors and originators as issuers of structured finance products. For the services they offer, they receive compensation fee as a percentage of the issuance, which might also reflect other factors. For instance, the pricing of intermediary service is found to be influenced by certain issue characteristics such as the size of issue (Altinkilic and Hansen, 2000; Butler, 2008), credit ratings and maturity of issue (Hansen and Torregrosa, 1992; Gande et al., 1999 Fang, 2005). One of the determinants of service fee that divides the literature into two is the factor of reputation. One side argues that reputable banks charge lower fees comparing to less prestigious counterparts as they can take advantage of economies of scale (James, 1992; Livingston and Miller, 2000; Iannotta and Navone, 2008). However, there is another group (Puri 1999; Fang, 2005; Kollo and Sharpe, 2006; Esho et al., 2006; Golubov et al., 2012) who refuses the idea of 'reputation discount' and argues for the idea of 'premium fee - superior quality' which is in line with the equilibrium modelled by Klein & Leffler (1981) and for banking services industry by Chemmanur and Fulghieri (1994).

There are several studies that examine the determinants of the pricing of intermediary service (in advising, arranging and/or underwriting financial services and instruments and promoting them to investors). For instance,

[29] In China since 2014 securitisation market has been expanding strikingly in terms of annual issuance, accounting for around 30% of annual total issuance globally (S&PGlobal, 2020).
[30] Securities Industry and Financial Markets Association in the United States

Livingston and Miller (2000) examine the impact of bank reputation on fees received by banks for their service in underwriting nonconvertible debts. They find inverse relation between reputation and investment banker fee. Financial advisors with large market share are found to demand higher compensation for their service in mergers and acquisitions (Golubov et al., 2012). Yasuda (2005) studies corporate bonds and finds previous cooperation between client firms and commercial banks leads to discount on fees charged by banks.

In the context of securitisation, however, there is no academic research which looks into the factors that can influence the issuer service fee. To the best of our knowledge, we are the first ones to study the pricing of issuer service in global securitisation markets. In addition to studying the possible determinants, we also examine whether issuer bank reputation has any value in structured finance. We examine the global ABS issuances including MBS (mortgage backed securities) in the US and Europe. Given that most studies in pricing of service fees are focused on the US financial markets, our study can also contribute to the literature by studying the European securitisation market separately in addition to the US market. Moreover, as securitised bonds are different than conventional bonds our study is unique in a way that we also analyse additional factors that might have potential impact on service fee particularly, initial market spread and other additional issue specific characteristics (such as originator type, type of issue, issue nation and number of credit ratings in addition to the credit ratings attained for structured bonds and other control variables). Furthermore, we also examine the subsamples of ABS and MBS bonds separately as the underlying assets and the related risks of the two are different. Our analyses also include investigating pre and post GFC periods for structured bonds issued over more than 20 years.

This empirical study contributes to the existing securitisation and financial intermediation literature in numerous ways. Firstly, to our knowledge, this is the first study to examine the determinants of issuer service charge in global securitisation market. Secondly, our findings on the impact of intermediary reputation on fees can be a useful addition to the ambiguous literature on the

topic. Although the theoretical literature is unanimous, empirical studies show mixed results on the relation between fee and reputation. Further, our results suggest top issuers are paid premium prices for their services. This can incentivise issuers to try to provide high quality services to ensure their reputation is maintained in the securitisation market.

The remainder of this chapter is organised as follows. The following section reviews the literature on the role of intermediary banks in structured finance; and it highlights the determinants in the pricing of issuer bank service and develops our hypotheses. In section 4.3 we outline the details on the sample data, summary statistics and estimation methods we employ. The analysis of the regression outcomes and their interpretation are reported in Section 4.4. The final section contains the concluding remarks.

4.2. Literature Review

4.2.1. Securitisation and the Role of Intermediary Banks

Securitisation allows illiquid assets or pool of assets to be turned into tradable financial products. It also offers originators to free up their capital and raise new funding. In order to initiate the securitisation process an originator (or sponsor), usually a financial institution or a company of different sizes, transfers its assets (receivables) to and independent SPV (Special Purpose Vehicle) which is established for the sole purpose of isolating the assets from the originator. SPV does not have employee and can be established by the sponsor or the arranger intermediary bank (the issuer)[31]. Originator appoints issuer (can be known as arranger, underwriter or manager), usually an investment bank, to help carry out the structuring of the assets and finding investors that are interested in investing in such bonds. In structured finance, intermediaries play an important role in structuring the securitised bonds. Originators are dependent on intermediary banks for several reasons. Firstly, in comparison to originators investment banks are more specialised in

[31] In securitisation the term 'issuer' can also be used to refer to SPV. However, given that SPVs are just conduits created for the sole purpose of asset isolation and that they could be established by intermediary banks we use the term solely to define intermediaries.

securitisation programs so they are equipped with enough expertise to securitise, to deal with the sale and promotion of the issues. Hence hiring intermediaries helps originator to reduce transaction costs[32] related to undertaking securitisation program. Secondly, information asymmetry is very high in structured finance than in corporate bonds market (Coval et al., 2009a; Ashcraft and Schuermann, 2009). Therefore, the borrowers are in need of intermediary banks if they are to bridge the information gap[33] between them and the lenders. The need for reducing the 'lemons problem'[34] in securitisation markets is important as the structured bonds are very complex financial products for many investors to fully comprehend (Deku and Kara, 2017).

Issuer banks' main tasks involve arranging the securitisation program by creating ABS securities and the sale and marketing of the securities. To improve the credit rating that could be obtained for the issues issuers also perform range of credit enhancement methods (Fabozzi and Vink, 2012b). For instance, tranching technique is often applied in which using the same pool of receivables tranches of different risk levels are securitised. Senior tranches are then credit enhanced by subordinated ones as the latter would be the first in absorbing any losses while the former offers its potential buyers a priority in payments. Tranching also helps to satisfy the different needs of various investors. Other credit enhancement methods can involve the retention of extra income by SPVs, or it is also possible to obtain external enhancement from insurers to cover payments in case SPV fails to do so (Fabozzi and Vink, 2012b). In addition, issuers' service also includes obtaining credit ratings for the ABS issues from credit rating agencies. Depending on the risk levels each tranche is rated separately and is assigned rating grades accordingly.

4.2.2. Intermediary Bank Service Fee and Its Determinants

In exchange for their service issuers receive compensation as a percentage of the size of an issue. Investment banks deduct the fee from the gross proceeds

[32] Benston and Smith (1976).
[33] Leland and Pyle (1977), Campbell and Kracaw (1980).
[34] Akerlof (1970).

of the sale. This fee also referred to as the spread[35] (for instance Livingston and Miller, 2000; Esho et al., 2006). According to Chen and Ritter (2000) the fees investment bankers received on IPOs in the US concentrated around 7% of the issue amount. Whereas, in bonds market they can be below one percent (Lee et al., 1996; Fang, 2005). In recent years, the fees intermediary banks received for underwriting corporate bonds in the United States averaged around 0.7% for investment-grade issues while for high-yielding issues or 'junk' bonds the average was at 1.2% (Dalal, 2018). According to Financial Times (December 29, 2020), in 2020 $124.5 -bn in fees were generated by investment banks around the globe of which $42.9bn accounts for debt underwriting. Thanks to bond purchasing programs introduced by major Central banks during the Covid-19 crisis, companies have quickly turned towards bond markets to raise funds.

The compensation intermediaries are paid for bridging the gap between the borrowers and the lenders can depend on several factors. There are some academic studies that examine the possible determinants of service fees charged by investment banks for their role as intermediaries in bonds (Rogowski and Sorensen, 1985; Hansen and Torregrosa, 1992; Livingston and Miller, 2000; Butler, 2008), IPOs (James, 1992; Chemmanur and Fulghieri, 1994; Chen and Ritter, 2000; Hansen, 2001; Koda and Yamada, 2018) and mergers and acquisitions (Rau, 2000; Golubov et al., 2012)

Widely used proxies often considered by the literature include some issue characteristics that can influence service fee. For instance, the size of an issue is examined by Altinkilic and Hansen, (2000). The main purpose of their research is reconciling what they call 'popular wisdom' and theories that are in contradiction on the relation between underwriting spread (compensation) and the size of issues. Examining over 1,000 SEOs (seasoned equity offer) during 1990-97, they conclude there is a U-shaped relation. Initially, when the issue size increases the underwriter compensation might seem to be reducing, but as the proceeds grow beyond certain amount the cost of placement will go up and the 'diseconomies of scale in the supply of services'

[35] Not to be confused with yield spread of issues.

will kick in (Altinkilic and Hansen, 2000, p.213). However, Lee et al. (1996) report the presence of economies of scale for all classes of US debts and equities. Investigating the costs of raising capital including the compensation paid to financial intermediaries over 1990-94, they find economies of scale is significant in IPOs and SEOs while less so for straight bonds. Chen and Ritter (2000) study the level commission paid to investment bankers who underwrite IPOs in the US. They find that moderate sized IPOs does not exhibit economies of scale as the average payment received by banks clusters around 7%. Therefore, issue size is often applied as a proxy for economies of scale in the literature (Esho et al., 2006; Butler, 2008; Iannotta and Navone, 2008). Other characteristics include maturity of issues and credit ratings obtained as proxies for intermediaries' monitoring, marketing and certification functions that can influence the price paid for the intermediaries' services (Rogowski and Sorensen, 1985; Hansen and Torregrosa, 1992; Gande et al., 1999; Jewell and Livingston, 1998; Roten and Mullineaux, 2002). Issue maturity could have an impact on the intermediary fee as the longer maturities are associated with higher likelihood of default risks (Flannery, 1986).

4.2.3. Intermediary Reputation

In addition to the size and the quality of the issuance, the reputation of investment banks acting as intermediaries can have impact on the fees they receive (Chemmanur and Fulghieri, 1994; Puri, 1999). Because reputable banks with high market presence should be able to offer high quality service and therefore charge higher prices (Golubov, 2012). There are academic studies on the impact of reputation which support this notion (Fang, 2005; Kollo and Sharpe, 2006; Esho et al., 2006; Golubov, 2012) however, not all have yielded similar results (James, 1992; Livingston and Miller, 2000; Iannotta and Navone, 2008).

On the one hand there are studies that find investment banks with large market presence charge higher prices for the services they provide. A study by Fang (2005) for instance, finds that top-tier investment banks receive premium fees for their service in underwriting bonds in comparison to lower-tier banks. It suggests that prestigious banks obtain higher prices for the

bonds they sell and therefore lower yield spreads for their issuers. The reduction in the yield, according to the author, outweighs the premium price paid to the banks. Their study is based on 3,000 corporate non-convertible bonds that involved 51 different investment banks over 1991 to 2000. Esho et al. (2006) study the determinants of underwriter spread for Eurobonds issued between 1990 to 1998 by US firms. The authors observe that in addition to other factors, the compensation received by firms were influenced by the reputation of the entities. Reputable underwriters were paid higher prices for their service. In the extended version of the study which included firms from different nations and employed larger sample similar results were obtained regarding reputation as an influential factor in determining fees (Kollo and Sharpe, 2006). Golubov et al. (2012) report similar outcome studying the effects of reputation and the fees charged by the banks involved in mergers and acquisitions. The sample they use include acquisitions announced in the US between 1996 and 2009. In both studies the superior price charged by reputable banks is explained by the superior quality of the service they provide supporting the type of 'premium fee - superior quality' equilibrium modelled by Klein & Leffler (1981). Although the model was developed for the product markets, the applicability of the relationship for the services in banking industry was presented by Chemmanur and Fulghieri (1994). They argue that in equilibrium, reputation delivers higher compensation to investment banks as they underwrite less risky issues and therefore obtain better prices for borrowers. Investment banks try to protect their reputation by maintaining high quality service and forgoing short-term profits. Puri (1999), also supports the view that in comparison to less prestigious banks the ones with better reputation charge higher price as they incur greater costs in providing superior service.

On the other hand, earlier literature on investment banker prestige finds inverse correlation between reputation and service charge. Livingston and Miller (2000) examine around 2,500 nonconvertible debt issues and find prestigious banks have certification value which are appreciated by investors. Nonetheless, unlike previous studies, compensation received by top-tier

intermediaries are actually lower than less reputable arranger banks. The authors justify this by economies of scale, arguing that the top managers offer low service fees in order to increase their market share. Negative relation between prestige and the price of banking service is also supported by James (1992) whose analysis is based on IPOs. The study particularly finds that underwriter banks have economies of scale for frequent customers. Firms that continued with the same investment bank in making subsequent issues paid lower compensation than the ones who did not. In a later study Iannotta and Navone (2008) investigate the determinants of bank service fee using a sample of 2,202 bonds issued between 1993 and 2003 by European firms. The study concludes that reputable banks charge lower fees as they attempt to increase their market presence.

4.2.4. Hypotheses Development

Clearly, academic studies seem to suggest that the reputation of intermediary banks signals the quality of the issues they sell to investors. Whether it influences the fee they receive positively or negatively, hirers and the consumers of their services seem to appreciate the quality of what they have to offer. In relation to securitisation, one of the gaps in the literature is that the relationship between reputation and its price has not been studied in the global structured finance markets. To the best of our knowledge, issuer reputation and its effect on the payment they receive for their service in issuing and selling ABS (including MBS bonds) is yet to be studied.

Fees received by financial intermediaries are the commissions charged as a percentage of issue proceeds. The fee is found to be positively affected by the reputation of intermediary banks (Puri, 1999). Reputable banks are likely to be paid higher compensation than less prestigious counterparts who are involved in bonds (Fang, 2005; Esho et al., 2006) and M&As (Golubov et al., 2012). Similarly, we attempt to apply the predictions of the theory modelled by Chemmanur and Fulghieri (1994) in the context of securitisation. We expect positive relation between fees and the reputation of ABS issuers. We can assume that if originators of structured bonds hire reputable investment banks as their issuers (or arrangers), the issuers are likely to provide better

service hence charge premium fees. Moreover, prestigious issuers in securitisation are able to obtain higher prices for the bonds they sell and thus lower yields[36] to the SPVs that own the bonds[37]. Therefore, we can hypothesise that:

$H1_0$ *– the reputation of issuers has no influence on the compensation they receive*

$H1_1$ *– the reputation of issuers has positive influence on the compensation they receive*

Another factor that can have an impact on the fee is the initial yield spread obtained for securitised bonds. Yield spread is often studied in securitisation literature (Cuchra, 2005; Fabozzi and Vink, 2012a; He et al, 2012; Deku et al, 2019) but mainly from investors' perspective. Because, given that initial yield spread is the interest investors demand for investing in securitised bonds, the spread of such bonds reflect all the possible risks investors may perceive beyond credit ratings (Adelino, 2009; Deku et al, 2021).

In examining the determinants of intermediary service fees, we were not able to find a literature that factored in the yield spread not just in securitisation but also in bonds or related literature. Yield spread of ABS issues and the quality of such instruments are negatively related. Investors demand higher yield spread for buying lower quality (riskier) bonds. Meanwhile, an improvement in the quality of ABS issues can lead to lower yield spreads being paid to investors. As a result, originators and/or the SPVs who own the underlying assets (receivables) can retain higher proportion of the income. Having said that, issuers are the key parties in enhancing the quality of securitised bonds. One of the ways issuers can help this is by performing credit enhancement methods (Fabozzi and Vink, 2012a; b) as discussed earlier. Performing such techniques demands more effort as well as costs from issuers. Therefore, we assume that the level of compensation issuers charge

[36] The price of ABS and its initial yield spread is negatively related. As the price of a bond is how much the bond is sold for, while yield spread is the interest that investors demand for buying such bonds.
[37] For instance, Deku et al. (2021) find that MBS issuers with large market presence obtain lower yields for the bonds they sell as investors appreciate certification offered by reputable issuers.

for the services they provide in structuring and selling the bonds can be influenced by the level of yield spread that can be obtained for such bonds. In other words, we can hypothesise that:

H2₀ *– the initial spread of a securitised bond has no influence on the issuer service charge*

H2₁ *– the initial spread of a securitised bond has negative influence on the issuer service charge*

4.3. Data and Methodology

4.3.1. Data

The data sample we employ in our analysis are obtained from Bloomberg. We include securitised bonds issued between 1997 and 2018 in the two biggest securitisation markets of the world, namely the US and Europe. Until recently the shares of the two markets in terms of the global annual issuance (around 95%) and the global securitisation outstanding (around 98%) almost accounted for the total global structured issuances[38] (SIFMA[39], 2020; S&PGlobal, 2020).

The US sample extends from September 1997 till November 2017, and it consists of asset and mortgage-backed securities issued both by government and non-government agencies. The European data covers the period over January 1998 and June 2018 and consists of seven major issuer nations that accounts for over 80% of the total issuance in the region over the same period (Bloomberg, 2018). Those countries are the UK, France, Germany, Italy, Ireland, Netherlands and Spain. Each observation in the sample reports the main features of a given structured issues including single tranche characteristics such as credit ratings, tranche size, initial yield spread, service fee, maturity etc. Also deal level characteristics as deal size, issuer, issuer nation, collateral type, issuer year maturity and others.

[38] In China since 2014 securitisation market has been expanding strikingly in terms of annual issuance, accounting for around 30% of annual total issuance globally (S&PGlobal, 2020).
[39] Securities Industry and Financial Markets Association in the United States.

The original global sample we collected totalled to 44,219. However, we had to keep only those observations that reported the service fee per tranche. Also, any observation with missing values for crucial tranche characteristics such as initial spread, credit rating, size and issuer identity had all been excluded. As a result, the total final sample is 34,499 securitised bonds. Out of these 21,680 are issued in the US market and 13,319 bonds are issued across the seven European countries.

4.3.2. Descriptive Statistics

In Table 4.1 summary statistics of selected variables for two different regions and for the whole sample are reported. The average fee for the whole sample is 0.57% in relation to issue proceeds (i.e., 0.57% x Issue size). Our main variable service fee is slightly different in the US than it is in Europe. In the US the average is at 0.51% and given that the average US tranche size is $160 mn, the average fee paid to issuers equals to around $800,000. While the mean of our sample for the European bankers averages around 0.67% of issue size or about €1.5 mn compensation pay. (The difference might be explained by the fact that issuers of most EU securitised bonds are American firms and hence demand higher charges than in the US due to increased costs. (For instance, Kollo (2005) finds that service charges are lower for local banks underwriting Eurobonds than others). Also, it could be explained by the fact that securitisation existed in the US for longer period than in the EU so there is bigger competition for banks in the US and there is also a more established market. Whereas the placement of such bonds could be costly in the EU and therefore there is an upward pressure on issuer compensation in Europe. However, one should be careful with the interpretation as the US sample in our dataset is about twice as big as the European sample.

Table 4.1 Summary statistics of selected variables

Variable	Origin	Freq.	Mean	Median	Std. Dev
Service fee (%)	US	21,680	0.51	0.22	0.85
	EU	13,319	0.67	0.24	1.46
	Global	34,999	0.57	0.23	1.12
Price - Spread (basis points)	US	21,506	134.70	90	167.24
	EU	11,257	128.12	65	166.69
	Global	32,763	132.44	80.00	167.08
Weighted Average Life (Years)	US	21,680	19.27	15.23	12.42
	EU	13,319	30.62	25.36	26.27
	Global	34,999	23.59	17.36	19.71
Credit Rating	US	21,680	4	2	3.72
	EU	13,319	4.74	3	4.02
	Global	34,999	4.29	3	3.85
Tranche value (million USD & EUR)	US	21,680	156.91	56.57	253.97
	EU	13,319	223.72	48.36	438.43
Deal Value (million USD & EUR)	US	21,680	699.55	537.43	601.71
	EU	13,319	1,304.38	627.49	2,097.98

When it comes to credit ratings obtained per tranche American bonds have received better ratings. They average at AA- while the ratings attained for the ones issued in the EU approximates to A+[40]. The difference in the size of the issues is noticeable in terms of both tranche and deal values. Average tranche value is close to $160 mn in the US and roughly €225 mn in Europe. Deal sizes are $700 mn and €1.3 bn, respectively. This also suggests that in the US each deal consists of around 4 tranches while the European deals offer 6 tranches on average.

Table 4.2 reports the summary statistics of the top 20 global investment firms out of 126 involved in our study sample. Nine top-tier banks are ordered according to the number of issues they have advised. The tables for the US

[40] Each tranche is rated by at least one of the Big Three credit rating agencies: S&P, Moddy's and Fitch.

(Table 4.3) and the European (Table 4.4) markets are ordered according to the volume of the issues over the total period. Although the orders are slightly different in each table the list of the nine prestigious banks are unchanged. It is clear from all the three tables that reputable issuers have been involved with majority of the global ABS bonds. In the US the numbers are above 80% while in Europe top issuers account for little less than 70% of the market volume. Whereas the top five investment banks only are responsible for roughly 60% of the total global issues. This indicates that there is high concentration in bond securitisation markets as in other debt underwriting markets (Fang, 2005). The main differences between the US and the European issues are that in the EU securitisation markets service fees and the average ratings obtained for the bonds are slightly higher than in the US, similar to Table 4.1. Also, understandably the top issuers have smaller issue volumes in Europe given the size of the European ABS market.

4.3.3. Measuring Issuer Reputation

Table 4.2 contains the summary statistics for the top 20 global issuers based on the market volume for the US (in Table 4.3) and EU (in Table 4.4) samples over the period of 1997 and 2018. We have classified the first nine intermediaries as the top-tier issuers in terms of the total issue values, and the rest as non-top-tier. In total there are 126 issuers are involved. In measuring reputation, we have followed similar methods used in the literature (Livingston & Miller, 2000; Fang, 2005; Golubov et al., 2012). First, we have used the total market share issued by intermediaries over the whole sample period. Secondly, we have used Bloomberg's annual global[41] investment banks league tables for the study period and chose those banks with the most frequent appearances in the tables. Our top investment banks are almost the same as those in Livingston & Miller (2000), Fang (2005) and Golubov et al., (2012) apart from the inclusion of Deutsche Bank. As stated in Golubov et al., (2012) these similarities could indicate the stability of reputational attributes across services offered by investment banks.

[41] Also, US and EU league tables.

Table 4.2 Summary statistics of Top-tier banks

Rank	Issuer Entities	Number of Issues	Market Share By Number of Issues (%)	Number of Deals	Average Fee (%)	Average Spread (bps)	Average Rating
	Top-Tier Issuers						
1	Merrill Lynch / Bank of America	4,755	14.70	1,255	0.55	127.40	4.06
2	Chase / JP Morgan	3,593	11.11	1,064	0.66	117.26	3.71
3	Salomon Bros. / City	3,493	10.80	938	0.61	133.90	4.20
4	Lehman Bros. / Barclays	3,453	10.68	857	0.59	118.86	4.33
5	DLJ / Credit Suisse	2,843	8.79	724	0.48	152.25	4.64
6	Morgan Stanley	2,603	8.05	619	0.53	152.92	4.71
7	Deutsche Bank	1,790	5.54	490	0.55	153.20	4.82
8	Goldman Sachs	1,649	4.96	370	0.59	164.07	4.80
9	Bear Stearns	1,052	3.25	265	0.45	117.71	3.65
			77.88				
	Non-Top-Tier Issuers						
10	Wells Fargo	752	2.33	158	0.48	236.86	4.50
11	RBS	646	2.01	159	0.39	131.97	4.63
12	BNP Paribas	566	1.75	148	0.51	128.34	4.37
13	ABN-Amro	367	1.13	124	1.07	75.24	4.23
14	Prudential Financial	340	1.05	68	0.22	108.31	3.14
15	Wachovia Bank	271	0.84	88	0.43	103.73	4.76
16	Credit Agricole	249	0.77	91	0.57	79.86	3.95
17	UBS	233	0.72	66	0.49	126.23	4.19
18	Cantor Fitzgerald	173	0.53	24	0.35	161.66	2.94
19	HSBC	150	0.46	46	0.76	88.68	4.19
20	Commerzbank AG	122	0.38	32	0.40	142.98	5.16

Table 4.3 Summary statistics of Top-tier banks for the US subsample

Rank	Issuer banks	Total Issue Size (USD mln)	Market Share by Issue Size (%)	Average Fee (%)	Average Spread (bps)	Average Rating	Number of Issues	Number of Deals
1	Merrill Lynch / Bank of America	603,245	18.18	0.52	123.44	3.70	3,453	971
2	Chase / JP Morgan	543,752	16.39	0.56	120.36	3.55	2,508	788
3	Salomon Bros. / City	481,428	14.51	0.61	131.48	3.84	2,436	731
4	Lehman Bros. / Barclays	324,442	9.78	0.55	118.58	3.91	2,018	546
5	DLJ / Credit Suisse	305,149	9.20	0.45	150.40	4.45	2,246	595
6	Morgan Stanley	280,784	8.46	0.53	160.40	4.65	1,706	428
7	Goldman Sachs	199,040	6.00	0.52	155.35	4.57	1,308	302
8	Deutsche Bank	126,383	3.81	0.55	152.57	4.35	955	292
9	Bear Stearns	62,813	1.89	0.31	116.75	3.26	807	219
			88.22					

Table 4.4 Summary statistics of Top-tier banks for the EU subsample

Rank	Issuer banks	Total Issue Size (EUR mln)	Market Share by Issue Size (%)	Average Fee (%)	Average Spread (bps)	Average Rating	Number of Issues	Number of Deals
1	Chase / JP Morgan	324,309	12.60	0.87	110.09	4.09	1,085	276
2	Lehman Bros. / Barclays	319,345	12.41	0.65	119.24	4.92	1,435	311
3	Merrill Lynch / Bank of America	299,152	11.62	0.63	137.89	5.02	1,302	284
4	Salomon Bros. / City	282,999	11.00	0.63	139.48	5.03	1,057	207
5	Morgan Stanley	205,333	7.98	0.52	138.69	4.83	897	191
6	Deutsche Bank	118,144	4.59	0.56	153.92	5.36	835	198
7	DLJ / Credit Suisse	88,248	3.43	0.54	159.20	5.36	597	129
8	Goldman Sachs	83,174	3.23	0.84	197.51	5.70	341	68
9	Bear Stearns	43,474	1.69	0.92	120.86	4.94	245	46
			68.55					

It also indicates the stability of their reputation over time as some of our top banks appear in the rankings of Rau (2000) who examined the period between 1980 and 1994. Our top-nine issuers are Merrill Lynch/Bank of America), Chase/JP Morgan, Salomon Brothers/Citi, Lehman Brothers/Barclays, DLJ/Credit Suisse, Morgan Stanley, Deutsche Bank, Goldman Sachs, Bear Stearns. There are two bank names for each of the top five issuers as those had either been acquired or merged with one another. However, any transaction made by a bank prior to its M&A is classified under that bank's individual reputation. For instance, Chase had been acquired by JP Morgan in 2000 and all of the deals performed by Chase till that period have been classified as issues of a non-prestigious bank. Moreover, if an ABS deal involves more than one investment bank and at least one of them belongs to the top-nine then we give the full credit for that issue to the prestigious bank (Rau, 2000; Golubov et al., 2012).

4.3.4. Empirical Model

We refer to the literature on the factors considered to impact on the pricing of financial services and model issuer fee as a linear function of those factors (Livingston & Miller, 2000; Fang, 2005; Esho et al., 2006; Iannotta and Navone, 2008). Given the difference between securitised bonds and other conventional bonds we also include additional variables to address potential related risks. Issuer service fee received for ABS tranche i which is issued within deal d and at period t is defined in below model:

$$\begin{aligned} Fee_{d,i,t} = \beta_0 &+ \beta_1 IssuerReputation_i + \beta_2 TrancheCreditRating_i + \beta_3 Size_i \\ &+ \beta_4 WeightedAverageLife_i + \beta_5 IssueType_{i,d} + \beta_6 CRAReported \\ &+ OriginatorTypeMarketArea\ Issuer\ and, Time\ controls_{d,i,t} + \mu_{d,i,t} \end{aligned} \quad (1)$$

Fee is the compensation paid to an investment bank for its service as an issuer to the originator of securitisation program. The service fee is measured as a percentage of the size of an ABS tranche. Intermediary banks deduct the fee from the gross proceeds of the sale. Research that examines the

determinants of service charge in bonds market finds that issue attributes that carry potential risks are reflected on the fees as they have impact on banks' intermediary functions and, therefore, the costs (Livingston & Miller, 2000; Fang, 2005; Esho et al., 2006; Iannotta and Navone, 2008). In our sample, the average service fee charged by banks is 0.51% in the US securitisation market. Whereas, it is relatively higher in the EU 0.67%, and 0.56% for the total global sample. Meanwhile, average issue size is around $157 mln and €230 mln in the US and EU respectively.

Issuer Reputation is our one of key variables of interest. We have measured reputation following the previous literature on investment bank reputation and its effect on the price bankers charge for their service (Livingston & Miller, 2000; Fang, 2005; Golubov et al., 2012). *Issuer Reputation* is a binary variable, and in comparison to continuous measure, applying binary classification is preferred. As justified by Fang (2005), it yields better inference on the qualitative differences between reputable and non-reputable banks. Reputable banks are the top nine investment banks out of 126 issuers involved in securitisation in our total dataset for the whole period. The sample represent majority of the ABS instruments in the global securitisation market.

Tranche credit rating is the credit rating assigned to a single tranche (ABS bond) within a deal. All the observations in the sample are assessed by at least one of the Big Three[42] rating agencies. We use rating as one of the proxies for risks related to the underlying assets and the structure of the issues (Fabozzi and Vink, 2012a; Deku et al., 2019b). Literature also shows that ratings have impact on service fees (Livingston and Miller, 2000; Kollo and Sharpe, 2006). The variable we have employed is the arithmetic mean of the ratings obtained for each bond after converting rating grades of AAA to C into numeric scale of 1 to 21. We expect the fee and the rating to have negative relation as the riskiness of a bond increases the costs related to certification, marketing and the distribution increases.

[42] S&P, Moddy's and Fitch.

Size is one of the issue specific characteristics, which is the natural logarithm of bond/tranche issue size. In the spirit of Altinkilic and Hansen (2000), we use it to control for the effects of scales of economies on the fees charged by banks. We anticipate the relationship between the size of a tranche and the service charge to be negative.

Weighted Average Life (WAL) is proxy for the possible impact that higher risks related to ABS with longer maturity can have on the fee. Bonds with longer term maturity have higher default risk (Flannery, 1986) and can carry higher cash flow risks and placing such bonds can be costly leading to higher prices charged by intermediaries (Esho et al., 2006; Iannotta and Navone, 2008). The variable is the natural logarithm of the years to maturity, and we expect it to be positively related with the dependent variable.

Although the securitisation market can be likened to bonds market, ABS bonds possess distinct features and thus carry distinct risks. Any additional risk should pose extra costs and require expertise from intermediaries dealing with such financial instruments. Therefore, unlike previous studies that focus on debt and equity markets we have introduced other additional variables that can affect the issuers' fee in securitisation issuance.

CRA Reported is the total number of ratings attained from rating agencies for an ABS tranche. The higher the number of ratings assigned the lower the risks related to a bond (Skreta and Veldkamp, 2009; Deku et al., 2019b). Therefore, we assume a positive relation to exist between the number of ratings and issuer fee.

Issue Type is a proxy we use for different level of risks related to the differences in the underlying assets of securitised bonds (Cuchra, 2005; Deku and Kara, 2017). We particularly control for the possible difference between ABS and MBS tranches.

Originator Type is a binary variable that takes the value of 1 if the originator of the underlying assets are one of the two government agencies[43], and equals

[43] Freddie Mac and Fannie Mae are the two government agencies that have been actively involved in the US securitisation.

0 otherwise. We have employed three different variables to address the geographic differences. One is an issuer specific characteristic, the *Issuer Nation* which is the country where the issuer is located. Variable *Market Area* defines the country where the issued bonds are traded. We have also included variable *Year* to capture possible impact of economic conditions that might have on the dependent variable (Fabozzi and Vink, 2012a).

Regarding our second hypothesis in measuring the effect of initial spread on the fee we might have to address the simultaneity issue. The initial market spread of ABS bonds are found to reflect issue related characteristics which are considered by ABS investors (Cuchra, 2005; He et al., 2012; Deku et al., 2021). Therefore, information available on the issue and issuer attributes which can influence the issuer service fee can simultaneously determine the initial spread of ABS bonds. To take into account the simultaneity effects we use two-stage least squares model in estimating the effects of spread on the service fee. The first stage involves measuring initial spread of ABS tranches using control variables:

$$LogSpread_{d,i,t} = \beta_0 + \beta_1 TrancheCreditRating_i + \beta_2 Size_i + \beta_3 WeightedAverageLife_i + \beta_4 IssueType_{i,d} + \beta_5 CRAReported + OriginatorType, MarketArea, + Issuer\ and, Time\ controls_{d,i,t} + \mu_{d,i,t} \quad (2)$$

LogSpread is one of the main variables of interest and is measured as the natural logarithm of yield spread of an ABS tranche at issue. Initial yield spread is defined over relevant benchmark as fixed premium in basis points and is set at launch date (Cuchra, 2005). Whereas in the second stage, predicted value of *LogSpread* derived from (2) is used to estimate the main model:

$$Fee_{d,i,t} = \beta_0 + \beta_1 IssuerReputation_i + \beta_2 LogSpreadPredicted_i + \beta_3 TrancheCreditRating_i + \beta_4 Size_i + \beta_5 WeightedAverageLife_i + \beta_6 IssueType_{i,d} + \beta_7 CRAReported + OriginatorType, MarketArea, + Issuer\ and, Time\ controls_{d,i,t} + \mu_{d,i,t} \quad (3)$$

Initial yield spread of ABS tranche is deemed to better reflect the investor demand on risk premiums than the spread in the secondary market (Deku et al., 2021). In relation to the service fee issuers receive, we believe yield spread should be one of its determinants. As issuers' ability to obtain higher/lower spread for a bond is appreciated by originators of the assets accordingly. We anticipate service fee and initial spread to be inversely related as obtaining better spread requires issuers to undertake additional functions such as improving credit enhancement.

4.3.5. An Alternative Methodology: Heckman Selection Model

There is a possibility that our model could suffer from endogeneity issues. The matching between ABS originators and investment banks might be endogenous. The reason why an originator firm chooses reputed or less known issuers might be explained by unobserved private information. Similarly, self-selection bias could be present in the choices that an issuer bank makes. For instance, top-tier banks might incline more towards securitising less risky and better-quality issues because they are mindful of their reputation. This potential issue could render OLS estimators unreliable (Heckman, 1979). Therefore, it is important that we address this concern in our estimation. Heckman (1979) offers corrections for this bias and proposes a two-step procedure. The first stage involves estimating the selection equation by probit model[44]:

$$IssuerReputation_i = \gamma Z_i + \varepsilon_i \tag{4}$$

where Z_i denotes all the available information (variables) that has impact on the choice between prestigious and less reputable investment banks, and ε_i is the error term. Considering that our variable *IssuerReputation* is binary,

$$IssuerReputaion_i \begin{cases} 1, \ iff \ \ \gamma Z_i + \varepsilon_i > 0 \\ 0, \ iff \ \gamma Z_i + \varepsilon_i \leq 0 \end{cases} \tag{5}$$

[44] Li and Prabhala (2007), Wooldridge (2010) - for more on selection model and its properties.

The second stage corrects the selection problem and involves estimating the linear regression (1) given that we incorporate (4) and its properties (5) and a variable λ (inverse Mills ratio):

$$Fee_i = \delta Variables_i + \pi\lambda(\gamma Z_i) \quad (6)$$

λ is the variable for unobserved private information that effects the choice, and its coefficient π can help determine the potential issue of selection bias in the model (Li and Prabhala, 2007).

4.4. Regression Results

The estimation and the analysis of regression models with various specifications are performed progressively. We commence our analysis by reporting the estimates for OLS regression for the entire dataset. The data covers more than two-decade period and is made up of structured bonds issued in the two largest securitisation markets. Next, we split our global sample into the US and European issues and discuss our findings for the two different markets. Also, in estimating the effects of yield spread on the fee we include results for the two-stage least squares models for the full sample. Using the same method, we compare ABS and MBS subsamples to examine if the possible relationship between dependent and independent variables changes when the risk levels of securitised bonds change. Further, our analyses include before and after GFC (Global Financial Crisis) periods for the two markets. Finally, as part of our robustness check we have employed Heckman's selection model. This will allow us to compare the results obtained from OLS to the Heckman's correction method which helps to address the potential endogeneity issue within our model.

4.4.1. Full Sample

The results for the baseline model for the global sample are presented in Table 4.5. The first column in the table depicts the coefficients for the variables used to determine issuer service fee. One of the key variables that we are interested in is *Issuer Reputation* which is positive and significant at 1% significance level. The coefficient indicates that in global structured finance markets top-

tier issuers receive higher compensation for their service in comparison to less prestigious issuers. On average, our results suggest, the service fee charged by large ABS issuers is 6% higher than issuers with smaller market presence. This finding is in line with the literature that supports the existence of positive relation between reputation and fee (Fang, 2006; Esho et al., 2006; Golubov et al., 2012). Such positive relation between the two can be explained by the quality of services offered by the top tier banks. Reputable issuers can offer high quality ABS issues to investors as they have longer and stronger market presence with better expertise. Also, they have better and wider channels to reach investors, which most importantly allow them to obtain better (more profitable) deals for the originators. As a result, for their service top tier intermediary firms can be compensated better and higher than their less prestigious competitors. This result supports our first hypothesis $H1_1$ that intermediary's reputation does have positive impact on the price they demand for their involvement in securitisation transactions.

The variable *Issue Type* has negative coefficient of 33% which is statistically significant at 1% level. The inverse relation between *Issue Type* and issuer service fee could be explained by the fact that in comparison to ABS bonds securitising MBS and promoting such bonds to investors might incur less costs to issuers. Generally, MBS bonds are considered to be less risky financial instruments than ABS bonds (Deku and Kara, 2017), and therefore obtaining better prices for such instruments in structured finance markets might not require the same costs/expertise as it does for riskier instruments. In other words, in order to increase the attractiveness of riskier ABS issues to investors more time, costs and expertise might be needed form intermediary banks. Because, it can involve utilising various methods such as credit enhancement (internal and/or external). This in turn can lead to higher compensation being demanded by the intermediaries for the services they offer to originators.

Table 4.5 OLS regression analysis of ABS issuer fees on issuer reputation, size and other deal and tranche specific characteristics for the aggregate sample

This table presents OLS regressions analysis of ABS issuer fees issued globally, issued between September 1997 and June 2018, on issuer reputation, issue type, size, weighted average life and other deal and tranche level characteristics. Issuer Reputation is a binary variable and it is equal to 1 if an issuer bank belongs to one of the nine top-tier banks, otherwise 0. Issue Type is the classification method used to account for the type of underlying assets of a given tranche. Weighted Average Life is the natural logarithm of the total maturity of a bond and used as a proxy for potential cash flow risk. Size is the face value of a securitised bond and it is in the logarithmic form. We have included Size as a proxy for economies of scale. Originator Type classifies the type of originator of underlying assets which can be a government agency or private firm. Tranche credit rating is the rating assigned for a securitised issue at launch by one of the three big rating agencies. CRA Reported is the number of ratings obtained for a given structured bond at launch. Market Area is the country where the securitised bonds are sold for/at. Nation is the country where the securitisation program takes place. Finally, factor variable Year is the year when structed finance products are issued. Significance levels of 1%, 5% and 10% are replaced by the indicators ***, ** and * respectively.

	Global		**US**		**EU**	
Issuer Reputation	0.0560***	(0.0184)	0.0989***	(0.0160)	0.0242	(0.0350)
Issue Type						
MBS	-0.3312***	(0.0194)	-0.2848***	(0.0178)	-0.3857***	(0.0435)
Weighted Average Life	-0.0014	(0.0094)	-0.0338***	(0.0105)	0.0195	(0.0197)
Size	0.2554***	(0.0155)	0.1688***	(0.0124)	0.4091***	(0.0364)
Originator Type						
Government Agency	0.5612***	(0.0969)	0.5421***	(0.0924)		
Tranche credit rating						
AA+	-0.4730***	(0.0410)	-0.3945***	(0.0393)	-0.5594***	(0.0828)
AA	-0.6568***	(0.0196)	-0.5098***	(0.0163)	-0.9022***	(0.0431)
AA-	-0.6186***	(0.0273)	-0.5014***	(0.0212)	-0.8258***	(0.0731)
A+	-0.5714***	(0.0363)	-0.4817***	(0.0379)	-0.8324***	(0.0694)
A	-0.6748***	(0.0177)	-0.5498***	(0.0148)	-0.9211***	(0.0411)
A-	-0.5489***	(0.0229)	-0.4468***	(0.0247)	-0.7612***	(0.0515)
BBB+	-0.5723***	(0.0289)	-0.4600***	(0.0364)	-0.9126***	(0.0483)
BBB	-0.6513***	(0.0219)	-0.4838***	(0.0274)	-0.9641***	(0.0447)
BBB-	-0.6296***	(0.0179)	-0.4701***	(0.0174)	-1.0085***	(0.0444)
BB+	-0.5685***	(0.0375)	-0.3661***	(0.0461)	-0.8671***	(0.0607)
BB	-0.5156***	(0.0224)	-0.3312***	(0.0274)	-0.7973***	(0.0417)
BB-	-0.4527***	(0.0254)	-0.3341***	(0.0267)	-0.6342***	(0.0520)
B+	-0.3858***	(0.0698)	-0.2916***	(0.0728)	-0.7742***	(0.1520)
B	-0.3048***	(0.0546)	-0.2034***	(0.0453)	-0.6765***	(0.1217)
B-	-0.5498***	(0.0282)	-0.3375***	(0.0456)	-0.8591***	(0.0426)
CCC+	0.2279	(0.9961)	-0.7168***	(0.0618)	0.7275	(1.3541)
CCC	-0.5460***	(0.1641)	-0.2867***	(0.0311)	-1.1302***	(0.1437)
CCC-	-0.8529***	(0.1437)			-1.0841***	(0.1512)
CC	0.4783	(0.5899)			0.3680	(0.5252)
C	-1.0502***	(0.0991)			-1.1717***	(0.0984)
Controlled for						
CRA Reported	Yes		Yes		Yes	
Market Area	Yes		Yes		Yes	
Nation	Yes		-		Yes	
Year	Yes		Yes		Yes	
Obs.	34,999		21,680		13,319	
Adjusted R^2	0.1518		0.1742		0.1640	

The coefficient of *Weighted Average Life* is not significant and is close to zero. We have expected the variable to have positive impact on issuer service fee as longer maturity bonds can be costly to underwrite and thus lead to higher fees (Esho et al., 2006; Iannotta and Navone, 2008). However, our findings show that in global securitisation markets *Weighted Average Life* or the maturity of ABS products has no significant impact on service fee received by financial intermediaries. Similar to the first variable, the coefficients for *Size* and *Originator Type* are both positive and statistically significant (at 1% levels). However, the coefficients are much higher than *Issuer Reputation* almost 26% and 56% respectively. The compensation is higher for issuing ABS when government agencies are the originators in those transactions. *Originator Type* indicates whether an originator of underlying securitised assets are government agencies or not. Positive coefficient suggests that issuer service fees obtained for dealing with ABS assets originated by government agencies are much higher. We have used the variable *Size* as a proxy for liquidity. Positive coefficient for *Size* indicates that intermediary banks receive higher compensation for arranging large sized ABS transactions. This might be due to increased marginal costs related to such deals. However, the variable is not significant in previous studies (Livingston and Miller, 2000; Esho et al., 2006).

Tranche credit rating is reported against the base prime (AAA-rated) tranches. The coefficients show that in comparison to prime bonds the fee has negative relation with the ratings. Meanwhile, arranging high quality bonds have positive influence on the fees charged by intermediary banks. Ratings attained for a tranche can greatly help in reducing information asymmetry between borrowers and lenders (Adelino, 2009; He et al., 2012). Obtaining better rating grades for structured bonds could demand extra costs as it can involve improving the quality of issues using various methods such as performing internal and external credit enhancements. Therefore, the effect of top graded tranches might have positive effect on the service fee. The other variables controlled for in the model include *CRA Reported*, *Market Area*, *Issuer Nation* and *Year*. *CRA Reported* is the number of ratings assigned per tranche and

we rely on this variable to address the possible issue of rating shopping[45] (Skreta and Veldkamp, 2009; He et al., 2012). We have used *Market Area*, *Issuer Nation* and *Year* controls to capture potential macroeconomic and geographic characteristics (Deku et al., 2019; 2021).

4.4.2. The US and European Sample

The results of the regressions for the US and EU are presented in Table 4.5, columns 2 and 3 respectively. In column 2 the coefficient for *Issuer Reputation* is 10% and is significant at 1% level. This suggests that in US securitisation market reputable banks charge higher service fee than lower tiered banks. And further supports our first hypothesis that reputation influences the fee positively. As explained earlier, the positive relation might be due to the fact that reputable issuers are expected to offer high quality service for investors and originators, and hence compensated higher than less prestigious firms. The effects of *Issue Type* and *Originator Type* on the dependant variable is very much similar to the previous table with 1% significance level. The *Issue Type* has a coefficient of -28% whereas *Originator Type* is 54%. Negative *Issue Type* coefficient means the service fee is usually lower for less risky ABS bonds than it is for higher risk ones. the Variable *Size* is statistically significant at 1 % level and its coefficient is equal to almost 17%. The only noticeable difference is *Weighted Average Life* which is negative and significant with the coefficient of 3%.

On the other hand, the last column of the table shows the estimations for the European markets. By analysing securitised bonds issued in Europe we have obtained different outcomes in comparison to the US. In column 3 *Issuer Reputation* has positive yet non-significant coefficient. It indicates that issuer fee does not reflect issuer's market presence in EU bonds. This is inconsistent with our previous results and our first hypothesis. However, other variables in the regression have yielded similar results to the ones obtained in previous tables. *Issue Type* is statistically significant at 1% level and the coefficient is equal to almost -39%. Given MBS bonds in comparison to other types of ABS

[45] Rating shopping is explained in more detail in the previous chapter.

is less complex (Deku and Kara, 2017), the relation between the former and issuer fee is negative in comparison to the latter. The coefficient for *Size* is 41% and is significant while for *Weighted Average Life* is about 2% and not significant.

4.4.3. Two-stage Least Squares Estimates

Table 4.6 reports the results for the two-stage regression analyses. Column 1 is the specification for the global sample and the coefficient for the variable *Issuer Reputation* is statistically significant (at 1%) with 6%. It is similar to the results obtained in Table 4.5 and it supports our first hypothesis $H1_1$. That is, top tier intermediary firms are, on average, receive higher service fee. Our second key variable *LogSpread Predicted* is negative at 2% but it is not significant. This suggests that obtaining lower initial yields for ABS bonds does not have impact on the fee issuers charge. In other words, the price obtained for ABS transactions has no effect of the issuer fee. Therefore, we cannot accept our second hypothesis $H2_1$. Issuers dealing with ABS bonds seem to receive higher compensation in comparison to MBS bonds as *IssueType* is negative 38% and significant at 1% level. *Size* and *Originator Type* are both positive and significant with 22% and 42% coefficients, respectively. The rest of the variables have yielded similar results to the previous ones.

Estimates for the US sample is presented in Column 2 and it seems to suggest that top tier issuers are likely to receive better pay than less prestigious issuers. The coefficient for *Issuer Reputation* is not different than in Table 4.5, significant (1%) with 10%. *LogSpread Predicted* has yielded negative 4% coefficient and it is significant at 1% level. It indicates that in the US securitisation market, all else equal, issuers who can obtain better deals (lower initial yield spread) for securitised bonds are likely to receive higher fee. It also shows, that regardless of the reputation of issuers, obtaining better price for ABS bonds can lead to higher service fee. This supports our second hypothesis $H2_1$ that issuer fee has an influence on the fee issuers receive. Other variables such as *Issue Type* and *Size* are not much different than previous results -32% and 14% (both significant at 1% level), respectively.

Table 4.6 Two-stage Least Squares regression analysis of ABS issuer fees on issuer reputation, initial yield spread and other deal and tranche specific characteristics for the aggregate sample

This table presents two-stage Least Squares model analysis of ABS issuer fees issued globally, issued between September 1997 and June 2018, on issuer reputation, yield spread, size, weighted average life and other deal and tranche level characteristics. Issuer Reputation is a binary variable, and it is equal to 1 if an issuer bank belongs to one of the nine top-tier banks, otherwise 0. LogSpread Predicted is the predicted value of LogSpread and is obtained in the first stage of the estimation (LogSpread is the natural logarithm of the yield spread of a securitised bond at issuance). Issue Type is the classification method used to account for the type of underlying assets of a given tranche. Weighted Average Life is the natural logarithm of the total maturity of a bond and used as a proxy for potential cash flow risk. Size is the face value of a securitised bond and it is in the logarithmic form. We have included Size as a proxy for economies of scale. Originator Type classifies the type of originator of underlying assets which can be a government agency or private firm. Tranche credit rating is the rating assigned for a securitised issue at launch by one of the three big rating agencies. CRA Reported is the number of ratings obtained for a given structured bond at launch. Market Area is the country where the securitised bonds are sold for/at. Nation is the country where the securitisation program takes place. Finally, factor variable Year is the year when structed finance products are issued. Significance levels of 1%, 5% and 10% are replaced by the indicators ***, ** and * respectively.

	Global		**US**		**EU**	
Issuer Reputation	0.0561***	(0.0184)	0.1002***	(0.0159)	0.0265	(0.0345)
LogSpread Predicted	-0.2254	(0.1384)	-0.3831***	(0.1377)	0.8282	(0.5537)
Issue Type						
MBS	-0.3798***	(0.0294)	-0.3174***	(0.0222)	-0.2393**	(0.1063)
Weighted Average Life	0.0521*	(0.0301)	0.0848*	(0.0449)	-0.0124	(0.0277)
Size	0.2169***	(0.0270)	0.1351***	(0.0164)	0.5892***	(0.1286)
Originator Type						
Government Agency	0.4181***	(0.0953)	0.4613***	(0.0970)		
Tranche credit rating						
AA+	-0.3852***	(0.0696)	-0.2386***	(0.0693)	-0.8235***	(0.1996)
AA	-0.5162***	(0.0906)	-0.2554***	(0.0934)	-1.4072***	(0.3468)
AA-	-0.4615***	(0.0992)	-0.2247**	(0.1027)	-1.3278***	(0.3336)
A+	-0.4467***	(0.0881)	-0.2868***	(0.0838)	-1.3874***	(0.3854)
A	-0.4644***	(0.1321)	-0.1893	(0.1313)	-1.7381***	(0.5524)
A-	-0.2847*	(0.1639)	-0.0052	(0.1617)	-1.6866***	(0.6193)
BBB+	-0.2297	(0.2127)	0.1289	(0.2167)	-2.1776**	(0.8466)
BBB	-0.3140	(0.2110)	0.0966	(0.2168)	-2.2536***	(0.8645)
BBB-	-0.2641	(0.2258)	0.1421	(0.2229)	-2.3824***	(0.9203)
BB+	-0.1318	(0.2704)	0.2111	(0.2154)	-2.7815**	(1.2825)
BB	-0.0393	(0.2929)	0.4137	(0.2709)	-2.7014**	(1.2737)
BB-	-0.0034	(0.2793)	0.3452	(0.2476)	-2.5354**	(1.2745)
B+	-0.0328	(0.2294)	0.2389	(0.2074)	-2.3733**	(1.0808)
B	0.1198	(0.2655)	0.3907*	(0.2219)	-2.7781**	(1.4070)
B-	-0.0977	(0.2799)	0.2792	(0.2294)	-2.6702**	(1.2136)
CCC+	0.5023	(1.0191)	-0.3979***	(0.1362)	-0.3522	(1.5838)
CCC	-0.3275	(0.2163)	-0.5387***	(0.0939)	-2.7991**	(1.1324)
CCC-	-0.3453	(0.3488)			-3.0920**	(1.3624)
CC	1.0878	(0.6964)			-2.0409	(1.6912)
C	-0.3766	(0.4274)			-3.7282**	(1.7156)
Controlled for						
CRA Reported	Yes		Yes		Yes	
Market Area	Yes		Yes		Yes	
Nation	Yes		-		Yes	
Year	Yes		Yes		Yes	
Obs.	34,999		21,680		13,319	
Adjusted R^2	0.1510		0.1738		0.1649	

The final column in Table 4.6 shows the results for the EU specification. Again, the coefficients obtained are not much different than the ones reported in Table 4.5. *Issuer Reputation* is positive 3% however its effect on the dependent variable is not significant. Similarly, the next variable *LogSpread Predicted* is 8% but not statistically significant. The two confirms that we cannot reject $H1_0$ and $H2_0$ hypotheses. The first indicates that in EU securitisation, the factor of reputation does not have significant impact on the service intermediaries receive. While the latter suggests that yield spread and the issuer fee have no statistically significant relation. The coefficient for *Issue Type* is negative 24% (at 5%) and the *Size* is 59% (at 1%).

4.4.4. ABS and MBS Specifications

Underlying assets of more complex ABS bonds are considered to carry more risks comparing to MBS bonds (Deku and Kara, 2017). Therefore, we have split the data into ABS and MBS subsamples to examine whether the relation between issuer fee and dependent variables change when the risks of securitised bonds change. Panel A in Table 4.7 (in Appendix) contains the results for ABS tranches. In the first column the coefficient for *Issuer Reputation* for global sample is 6% and significant at 5% level. The coefficient is even higher for the US 10% and statistically significant at 1% level. The two supports our first hypothesis that issuers with higher reputation receive higher compensation for their service. However, for the EU structured market the value of reputation is not significantly reflected in the service fee (5% and not significant).

LogSpread Predicted is negative and significant across all three specifications. Significant -51% and -35% (both at 5% level) for global and the US samples respectively, and -38% (at 10% level) for the EU tranches. These support $H2_1$ that obtaining better yield spreads are associated with better service fees. *Weighted Average Life* is positive and significant in the first two columns. It might indicate that placing longer term tranches can be costly as they carry higher cash flow risks (Esho et al., 2006; Iannotta and Navone, 2008). But for the EU ABS tranches the coefficient for the variable is close to 0 and is not

significant. *Size* have yielded positive and significant coefficients across all the three columns in the table.

Panel B of Table 4.7 (in Appendix) reports the outcomes of the MBS tranches. Very similar to previous results global and the US specifications have positive and significant coefficients for *Issuer Reputation* 9% and 7% respectively. While the EU tranches do not support $H1_1$ as the coefficient is positive but insignificant. Regrading *LogSpread Predicted* we have obtained insignificant results in all the three columns. In comparison to MBS, the results seem to indicate that for more complex and riskier ABS tranches issuers' ability of obtaining better deals for structured products are compensated better. *Weighted Average Life* is insignificant for all the MBS tranche samples and their value is close to 0. Variables *Size* and *Originator Type* have yielded similar coefficient values to the ones reported in previous tables.

4.4.5. Before and After GFC Periods

Table 4.8 (in Appendix) presents the regression outcome for before and after GFC periods. Panel A contains the before period and *Issuer Reputation* is very similar to previous results. Global and the US samples have positive and significant coefficients while the value for the EU specification is insignificant. *LogSpread Predicted* is significant -32% (at 1% level) for the US while the other two have insignificant coefficients. Similarly, the remaining variables seem to have yielded very much similar outcomes as reported before. Unlike Panel A, the estimation coefficients obtained for key variables for post GFC period in Panel B are not significant in all specifications. *Issuer Reputation* and *LogSpread Predicted* have both insignificant values. The only significant value reported is *LogSpread Predicted* for the US tranches. The results in this table seem to suggest that issuer reputation was especially appreciated over the pre-GFC period but in the post GFC the relation between fee and reputation seem to have vanished.

4.4.6. Heckman's Selection Model

As mentioned previously our model might suffer from an endogeneity issue. Therefore, as a robustness check we have employed Heckman's correction

model to correct for potential selection bias in our model. Table 4.9 reveals the estimates for the Heckman's model with first column reporting results for the entire sample. The US and the EU specifications are presented in the following columns respectively. There is an additional variable that can be noticed in the table. *Inverse Mills Ratio* (*IMR*) λ is potential unobserved private information that might explain the choice, while its coefficient is vital in determining the existence of the issue of selection bias (Heckman, 1979; Li and Prabhala, 2007).

The first column shows *Issuer Reputation* is positive and significant (at 1% level). It should be noted that the coefficient is much larger (18%) than the one reported in Table 4.5. This means the effect of bank reputation on bank fee is stronger and it supports the hypothesis $H1_1$. Regarding *LogSpread* we have obtained -8% coefficient with 1% significance level. This outcome support $H2_1$ and is in line with the US and Global specifications described in previous tables. Variables *Issue Type* and *Size* are similar to results in Table 4.5 and they are significant with negative and positive signs respectively. The key coefficient in this regression is the coefficient for *IMR* which is positive and statistically significant at 1% level. Positive relation indicates that originators choose top-tier issuers because of unobserved private information they possess and therefore are also ready to pay higher fees. Significant self-selection term also indicates that the model did indeed have selection bias and it has been corrected. This result is in consistence with the literature who argue that there could be an issue of endogeneity in matching between borrowers and intermediaries (Fang, 2005; Golubov et al., 2012).

The second column reports the results for the US sample and the results replicate the ones presented in Table 4.6. *Issuer Reputation* is significant and its coefficient is 8%. Variable *LogSpread* is significant as well, and it is negative 10% with significance of 1%. Both coefficients are the same as in Table 4.6 and they both support our two hypotheses $H1_1$ and $H2_1$.

Table 4.9 Heckman' selection model regression analysis of ABS issuer fees on issuer reputation, yield spread and other deal and tranche specific characteristics for the aggregate, US and EU samples

This table presents Heckman's two-step model analysis of ABS issuer fees issued globally, issued between September 1997 and June 2018, on issuer reputation, yield spread, size, weighted average life and other deal and tranche level characteristics. Issuer Reputation is a binary variable and it is equal to 1 if an issuer bank belongs to one of the nine top-tier banks, otherwise 0. LogSpread is the natural logarithm of the yield spread of a securitised bond at issuance. Issue Type is the classification method used to account for the type of underlying assets of a given tranche. Weighted Average Life is the natural logarithm of the total maturity of a bond and used as a proxy for potential cash flow risk. Size is the face value of a securitised bond and it is in the logarithmic form. We have included Size as a proxy for economies of scale. Originator Type classifies the type of originator of underlying assets which can be a government agency or private firm. Inverse Mills ratio is the unobserved private information that can help understand the choice of matching between originator and issuer. Tranche credit rating is the rating assigned for a securitised issue at launch by one of the three big rating agencies. CRA Reported is the number of ratings obtained for a given structured bond at launch. Market Area is the country where the securitised bonds are sold for/at. Nation is the country where the securitisation program takes place. Finally, factor variable Year is the year when structed finance products are issued. Significance levels of 1%, 5% and 10% are replaced by the indicators ***, ** and * respectively.

	Global		**US**		**EU**	
Issuer Reputation	0.1766***	(0.0409)	0.0750***	(0.0152)	0.1779**	(0.0779)
Log Spread	-0.0804***	(0.0096)	-0.0990***	(0.0108)	0.0087	(0.0212)
Issue Type						
MBS	-0.3419***	(0.0226)	-0.2831***	(0.0195)	-0.3673***	(0.0302)
Weighted Average Life	0.0118	(0.0116)	-0.0189**	(0.0090)	0.0136	(0.0166)
Size	0.2256***	(0.0163)	0.1720***	(0.0191)	0.3930***	(0.0241)
Originator Type						
Government Agency	0.2790***	(0.0748)	0.6179***	(0.1505)		
Inverse Mills ratio (λ)	0.9512***	(0.3407)	-0.6336	(0.7398)	0.5330**	(0.2668)
Tranche credit rating						
AA+	-0.4740***	(0.0324)	-0.3550***	(0.0404)	-0.7110***	(0.0965)
AA	-0.6057***	(0.0189)	-0.4420***	(0.0169)	-0.9643***	(0.0429)
AA-	-0.5863***	(0.0249)	-0.4395***	(0.0165)	-0.9500***	(0.0891)
A+	-0.6334***	(0.0416)	-0.4836***	(0.0502)	-1.0190***	(0.0768)
A	-0.6233***	(0.0191)	-0.4689***	(0.0183)	-1.0083***	(0.0455)
A-	-0.5143***	(0.0260)	-0.3681***	(0.0279)	-0.9671***	(0.1014)
BBB+	-0.5217***	(0.0460)	-0.3709***	(0.0305)	-1.0296***	(0.1178)
BBB	-0.5514***	(0.0257)	-0.3373***	(0.0322)	-1.0683***	(0.0540)
BBB-	-0.5210***	(0.0176)	-0.3265***	(0.0287)	-1.1041***	(0.0794)
BB+	-0.4316***	(0.0398)	-0.2358***	(0.0473)	-0.9477***	(0.1435)
BB	-0.3311***	(0.0238)	-0.1344***	(0.0403)	-0.8543***	(0.0803)
BB-	-0.2975***	(0.0324)	-0.1610***	(0.0385)	-0.7167***	(0.1119)
B+	-0.2876***	(0.0859)	-0.1561**	(0.0743)	-0.9681***	(0.3317)
B	-0.1903***	(0.0508)	-0.0375	(0.0510)	-0.8673***	(0.1742)
B-	-0.3952***	(0.0298)	-0.1788***	(0.0443)	-0.9698***	(0.1239)
CCC+	0.3160	(1.5413)	-0.7172***	(0.0672)	0.6647	(0.7717)
CCC	-0.4857**	(0.1994)	-0.3103***	(0.0769)	-1.1900	(0.7644)
CCC-	-0.6310***	(0.0836)			-1.0952*	(0.6002)
CC	-0.7890***	(0.0844)			-1.2345	(1.3228)
C	-0.7587***	(0.0978)			-1.1811	(1.3052)
Controlled for						
CRA Reported	Yes		Yes		Yes	
Market Area	Yes		Yes		Yes	
Nation	Yes		-		Yes	
Year	Yes		Yes		Yes	
Obs.	35,251		21,608		13,643	

Other variables are also not so different from the previous outcomes in Table 4.6. The effects of *Issue Type* and *Size* on the dependant variable are confirmed with significant -28% and 17% respectively. However, we should be careful with these results as the term λ did not yield significant coefficient.

Insignificant coefficient of *IMR* term suggests that this model does not have self-selection issue and therefore the OLS estimators can be considered to better reflect the effects of known variables on the issuer service fee (Heckman, 1979; Li and Prabhala, 2007).

The last column in Table 4.9 contains the estimates of Heckman's model for the European sample. Unlike OLS estimates, the coefficient for *Issuer Reputation* is significant (at 5% level) and it is 18%. The positive outcome indicates that top-tier investment banks involved in issuing European structured bonds receive higher compensation relative to less reputed banks. Similar to the US sample, the European data also support the $H1_1$ and in line with the literature that studies reputation effect on fees in Eurobonds (Esho et al., 2006; Kollo and Sharpe, 2006). The impact of *LogSpread* on the fee however is not significant. The coefficient for the *LogSpread* is positive but equals almost zero. Therefore, we cannot accept $H2_1$ and can conclude that there is no relation between yield spread of a bond and banker fee for the European sample. Other explanatory variables are similar to the ones obtained in Table 4.6. The effect of the type of issue advised by issuer banks on the service fee is confirmed by significant *Issue Type* coefficient (-37%). *Weighted Average Life*, on the other hand is shown to be ineffective with insignificant 1% coefficient. λ of the model is positive and significant and hence suggests that the EU sample might have suffered from endogeneity and the problem has been addressed. Further, it shows originator's choice of top-tier issuer can be explained by unobserved information and that prestigious bankers are compensated better than less prestigious ones.

4.5. Conclusion

We have reviewed the pricing of issuer services for the US and European securitisation markets. There are some academic studies on the determinants of financial services offered by intermediary banks for various financial markets. However, for the global ABS and MBS markets we are the first ones to examine the factors that can influence the banker fees. Also, we have examined the US and EU markets separately as the two are not identical. Moreover, we have examined the effect of factors such as bank reputation and initial yield spread in addition to the more conventional factors usually considered by the literature.

Using ABS (including MBS) bonds issued between 1997 and 2018 in the US and Europe and estimation techniques to correct for potential simultaneity and self-selection biases we have obtained several findings. Firstly, we found that reputation of issuer banks is influential in determining the compensation they receive for the services they provide. Services provided by top-tier investment banks seem to be appreciated by originators and hence the compensation received by top investment banks are higher than less prestigious banks. The finding is in line with similar studies carried for non-convertible bonds (Fang, 2005) and in M&As (Golubov et al., 2012). In comparison to the US data, we found that our European sample suffered from endogeneity issue and following the correction we have obtained similar results in terms of issuer reputation. Similarly, Heckman's correction was applied on the aggregate dataset, and our global specification confirmed the positive relation between issuer reputation and service fee.

Obtaining better initial yield spread for ABS tranches seems to have negative impact on the fee for the US market. It indicates that issuers are paid higher fees if they are able to obtain better prices for securitised bonds. However, for the EU sample the effect of the yield spread was not significant on the service fee. The remaining variables that are included in our study such as the type of issue, size, ratings and others were almost similar across all specifications

suggesting that those more conventional proxies are well reflected in the pricing of issuer services in securitisation.

CHAPTER V: Conclusion

The world's first mortgage-backed securities were issued in the US around half a century ago. Since then, the level of sophistication in securitisation markets grew steadily as it began covering other types of assets. Later, the gradual increase was followed by a rapid expansion starting from the mid-1990s. By this time, a new market for securitised debt instruments was emerging in Europe. The two markets witness rapid and unsustainable growth as well as the boom period for securitisation up until the onset of the GFC of 2007-2009. Following the crisis, various set of measures have been implemented at government and international levels. Such measures mainly concentrate at improving transparency and stricter supervision over CRAs in the aim of restoring investor confidence. The US securitisation market have bounced back to its pre-crisis levels since then as government backed agencies had a crucial part in the early stages of the recovery. On the contrary, European securitisation market have since struggled to reach its pre-crisis peak. In this thesis we have explored both markets yet giving more emphasis on the European securitisation.

Securitisation has benefited the modern financial system in a number of ways. First, it offers a new way of raising funds for asset holders in the market. It allows the transformation of assets such as loans and receivables which are normally non-tradeable into tradeable financial products. This conversion process requires the pooling of the underlying collateral which then will be repackaged into various classes of securities that can meet the needs of different investors. Similarly, the securitisation process enables risk redistribution as originators can transfer their risk exposure into the market. Capital relief can be another motivation for undertaking securitisation program because originators can offload certain assets from their balance sheet. Moreover, well-functioning ABS markets can make important contributions to the stability of the financial system as well as central banking in supporting the transmission of their policies.

Structured finance products are complex financial instruments with high information asymmetries between originators and end-buyers. Therefore, it can be very challenging for investors to evaluate the risks associated with them and the true value of such products. The yield spread investors demand at ABS origination can contain various information. The literature reveals that certain parties engaged in securitisation can send informative signals to investors in relation to potential risks[46]. Information attained by investors can be used to bridge informational gap and add value to ABS issues or might lead to greater gap and impact the initial spread accordingly. On that account, the motivation for this thesis mainly arises from the strand of literature that explore the pricing of ABS bonds.

5.1. Summary of Results

This thesis examines the role and importance of three crucial parties engaged in securitisation. First, we investigate the value of legal advisors in reducing information asymmetry in ABS structuring in Europe. We study the importance and value of legal advisors to potential investors. Specifically, we examined the impact of legal advisor reputation, past partnership between legal and issuing entities, and the number of legal advisors involved in a deal on the initial spread of structured bond tranches. Second, we reviewed the effectiveness of CRA Regulation implemented in Europe. The new measures intend to better regulate CRAs, reduce incentive issues and hence restore investor confidence in the European ABS market. Our study focused on three key issues: rating shopping, rating catering and excessive investor reliance on ratings. Finally, the role of financial intermediaries in ABS structuring and the pricing of their service is explored in the final empirical chapter. This chapter particularly focuses on the determinants of service fee received by issuer banks in securitisation. The key factors we analyse are issuer reputation and ABS initial yield spread in addition to other issue characteristics.

[46] Cuchra (2005), Faltin-Traeger et al.(2010), Fabozzi and Vink (2012a; b), He et al. (2012; 2016) and Deku et al. (2019; 2021).

The first empirical study (Chapter II) concentrates on European securitisation market. Our estimations are based on 6,624 ABS tranches issued in Europe over 20-year period. This chapter contributes to the literature on securitisation by providing the first empirical evidence on the value of legal advisors to investors in securitisation transactions. Our study reveals that investors attach value to past cooperation between legal advisors and ABS issuers. This might be explained by increased complexity in securitisation markets. The level of initial yield spread demanded for such transactions are significantly lower. It indicates that previous working relationship sends a positive signal about the structure, and familiarity between agents produce less risky securities. Possible explanations for positive impact on pricing might be due to soft information accumulated as well as experience, comfort and trust that have been built through past partnerships. We also find that the magnitude of past cooperation is perceived to be important. When we compare prime (AAA rated) and non-prime (non-AAA rated) tranches, we find that the past collaboration becomes even more valuable. This indicates when there is an increased risk, investors are likely to rely more on the available information. When we compare before and after GFC periods, we observe that partnership experience is more appreciated over the post crisis period. The second key question we have addressed in this study is to evaluate the value of reputation of legal advisors in ABS. The reputation of legal advisors is measured by their market presence in securitisation. We obtained some evidence in relation to ABS spread at launch. ABS tranches are perceived to be less risky if reputable legal advisors are involved in the structuring. Specifically, the value of reputation is reflected only when there is increased risk in the market, i.e. when it becomes difficult for investors to assess risk. Finally, the study investigated whether the number of legal advisors in securitisation can have an impact on initial spread. Our findings suggest that there is no added value from an additional number of legal advisors in securitisation.

In Chapter III (the second empirical study) we review the overall conditions in European securitisation market before and after the GFC focusing on rating

inflation. We examine whether the changes have had any impact on rating shopping and rating catering phenomena. Our estimations are based on European ABS sample of 12,469 issued between 1998 and 2018. The results indicate that CRA Regulation has been effective in tackling conflict of interest between rating agents and their clients. First, rating catering which is the direct consequence of issuer and CRA collusion, seems to have disappeared over the recovery period. Rating catering occurs when issuers, instead of supressing unfavourable ratings, collaborate with CRAs to obtain tailored ratings so that certifications are higher and identical. The number of ratings assigned for a tranche is important in reducing information asymmetry. However, from an issuer viewpoint each additional rating should add value to bonds and reduce the level of spread demanded by investors. Therefore, issuers are incentivised to report the highest possible rating and ensure each additional rating match the desired level. When investors are aware of CRAs failure of adhering to their benchmark, they might suspect issuance of rating favours. By examining the boom and recovery periods of European ABS market, we find that investors who demanded higher spread for a multiple rated tranche with identical ratings did not consider the effect of rating harmony over the post-GFC period. Second, in terms of reducing rating shopping, the effectiveness of the new measures has been minimal. We suggest two possible explanations for the limited impact of the regulation. One reason is that although rating shopping could be driven by incentive issues, ultimately it is ABS issuers who chose to either publish or supress preliminary ratings reported by CRAs. Therefore, even if CRAs are fully adherent to their standards issuers can still shop for better ratings. Another reason is that 'at least two ratings' requirement as part of the new changes is not necessarily enough to reduce rating shopping. Because majority of ABS tranches already report two CRAs ratings. Moreover, in this study we also examine investor rating reliance. We find that the issue of excessive rating reliance by investors could still be present to some extent. The yield spread of prime class tranches indicate that investors of high-quality bonds are still heavily dependent on ratings.

Our analysis of issuer significance in global securitisation markets is presented in the final empirical chapter. For this study we employ 34,499 global ABS tranches issued between 1997 and 2018. This chapter extends our study into the pricing of services provided by financial intermediaries in securitisation. Reputation of issuers and ABS yield spread, in addition to other variables, are the two main factors we are particularly interested in identifying the determinants of service fee. In measuring the reputation of issuer banks, we rely on widely accepted method of using market share as well as global annual investment bank league tables. We have identified nine investment banks out of 126 ABS issuers as top-tier banks over the study period. Our estimations have yielded few important outcomes. First, we find that reputation is an influential factor in determining how much issuers receive. Top-tier banks appear to have received higher payments than less reputable banks over the study period. Positive relationship between reputation and service fee can be explained by the quality of services offered by top tier banks, and therefore allowing them to obtain better deals for the originators and, thus, better compensation. The results were similar for global sample, the US and the European sample. This outcome can incentivise issuers to try to provide high quality services, ensuring their reputation is maintained in the securitisation market. Second, obtaining better initial yield spread for ABS tranches seems to have a negative impact on the fee for the US market. It indicates that issuers are paid higher fees if they are able to obtain better prices for securitised bonds. For the EU sample, however, the effect of the yield spread was not significant on the service fee. Other additional factors such as originator and issue types were also significant highlighting their importance in the evaluations of service payment. We observe that the effects of all the remaining variables are almost similar across all specifications suggesting that those more conventional proxies are well reflected in the pricing of issuer services in securitisation.

5.2. Policy Implications

Alongside its benefits various types of risks can arise from securitisation transactions. Due to its complexity, risks posed by securitisation process can be related to legal and operational aspects of transactions, it can include liquidity and counterparty risks, or risks arising from agency issues and many others. This is one of the main reasons why investors of complex structured finance products can be very sensitive to any information. Moreover, our results show that when there is an increased risk and it is difficult to assess risk, investors become more vulnerable to available information. To protect investors against these various risks and to revive better-functioning securitisation market, the EU has drafted its STS Framework in 2014. Under this Framework the main focus is to create safer and high-quality securitisation transactions in Europe that are based on *simple* underlying assets, with highly *transparent* information available to buyers, and *standardised* ABS structures. The implementation of such measures can help reduce various risks posed against investors and regain investor confidence in the ABS markets in Europe.

The EU CRA Regulation was introduced in 2009 and implemented in three phases over the following three years aims to better regulate and supervise rating agencies and reduce incentive issues. We have identified that in tackling incentive issues these rules seem to have been effective. At least, in relation to the issue of rating catering our findings indicate that initial yield spread does not contain such information. Having said that, in addressing the issues of rating shopping and investor over-reliance on ratings the effectiveness of new measures was limited. We argue that in tackling rating shopping 'at least two rating' rule is not enough, and we propose that issuers' ability to supress preliminary ratings could be reviewed. Reducing investor over-dependence on ratings can be partly achieved by STS Framework as it can help investors to carry out due diligence on their own due to simple, transparent and standardised nature of new securitisation transaction. However, the issue cannot be eliminated as CRAs ratings are the benchmark in assessing credit risk and performing independent due diligence can be

costly, or time consuming, and, therefore, some investors might still prefer outsourcing their risk assessment tasks to CRAs.

In Chapter IV we observed that reputable investment banks charge higher service fee as they offer high quality service. We propose creating an annual league table for ABS issuers[47] so that based on the ranking in the table issuers service fee is determined. This will incentivise issuers to try to provide high quality services and, therefore, ensure their reputation is maintained in the securitisation market. Such table can also be used by investors in evaluating the risks related to a particular ABS transaction and be useful in reducing asymmetric information.

5.3. Limitations

One of the limitations of our study is that our analysis is based on ABS and MBS tranches. The implications of our study might not be necessarily applicable to other types of structured debt instruments such as CLOs or CDO squared. Another limitation is that original European sample we had was more than 18,000 tranches. However, due to missing information on legal entities we had to exclude more than half of the original dataset and that left us with over 6,600 ABS tranches.

Moreover, in the first empirical chapter, one of the key variables we have used is the reputation of legal advisors. In measuring reputation, we have used annual market volume of ABS transactions undertaken by legal advisors. Legal advisor is reputable for the current year if its market share accounts for at least 5% of total ABS issuance in previous year. Our measure could have been improved by using annual league table for legal advisors engaged in ABS issuance. However, we were not able to find such benchmark for our study period.

[47] Similar to the one proposed by Golubov et al. (2012) for M&A market.

5.4. Suggestions for Future Research

Each of the three empirical studies has highlighted the role and importance of key parties in securitisation. Agents within securitisation chain can be important in reducing information asymmetry between originators and investors. In this regard, we have studied the significance of legal advisors, rating agencies and issuers. Similarly, further investigations can be carried out on other key participants such as servicers and their importance in securitisation.

EU policymakers have introduced a number of regulatory changes in order to address the flaws within securitisation. CRA Regulation is one of them and was introduced to improve investor confidence in the ABS market. In this thesis we have covered the effects of CRA Regulation in addressing incentive problems in European securitisation. Further research works can be done on the effectiveness of other measures implemented under the STS Framework. Such measures include, for instance, risk retention requirement, or the requirement that ABS originator, issuer and SPV to be EU based entity. The Framework is intended to create safe and better-quality ABS transactions that need to be assessed by *simple*, *transparent* and *standardised* ABS criteria.

There are many academic works on US securitisation market and a growing number of new studies on Europe. However, other parts of the world lack academic attention. Asian ABS markets, for instance, Chinese securitisation in particular can be an interesting addition to the literature. Given that China has recently overtaken Europe in terms of annual ABS issuance to become the world's second biggest issuer. The country's ABS market has its distinct features and it differs considerably from western structured finance in terms of SPV forms, market structure, regulatory rules, due diligence requirements and others. Moreover, its ABS market is still largely dominated by domestic investors. Research studies on Chinese structured finance might help foreign investors to better understand the market and identify potential opportunities as well as challenges.

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Appendix

Table 2.11 The effect of legal advisors on initial market spread of ABS tranches issued in UK

This table demonstrates OLS regressions of initial market spread of UK issued ABS tranches on legal advisor, deal and tranche-level as well as collateral characteristics. The sample consists of tranches issued from 1998 to July 2018. Same Advisor is a dummy variable that takes the value of 1 if manager and issuer legal advisors are the same legal advisors, otherwise 0. Past Collaboration is a dummy variable that takes the value of 1 if both legal advisors and issuer have all cooperated in the past, otherwise 0. Collaboration Magnitude1 is the number of previous cooperation between issuer legal advisor and the issuer. Collaboration Magnitude2 is the number of past cooperation between both legal advisors and issuer. Market Share is a dummy variable that takes the value of 1 for a given year if the legal advisor accounts for at least 5% of the market share for previous year, otherwise 0. Number of ratings assigned for a given tranche is used to control for possible rating shopping. Size of each tranche (in $ millions) is employed to control for liquidity. Weighted Average Life is tranche's maturity conditional upon the prepayment expectations. Issue Type classifies the type of issuance i.e. the underlying assets for a tranche within a deal. Market Area where tranches of a deal is targeted for. Issuer Nation is the country where a tranche is issued. Guarantor indicates whether external credit enhancement applies for a given ABS deal. Tranche Credit Rating is the initial rating assigned for a tranche. Issuer Reputation is a dummy that takes the value of 1 is the issuer accounts for at least 5% of the market for previous year. Issuer of each deal has been controlled for. Collateral nation is where the collateral originates. Time is factor variable indicates issuing period quarterly. ***, ** and * indicate significance levels at 1%, 5% and 10%respectively.

	(1)		(2)		(3)		(4)		(5)	
Same Advisor	17.9850*	(10.2056)								
Past Collaboration			-11.2246***	(4.0447)						
Collaboration Magnitude1					-8.6796***	(2.1489)				
Collaboration Magnitude2							-8.3516***	(2.4613)		
Market Share									-15.5372*	(8.5899)
Number of Ratings	-12.3129***	(3.7122)	-11.3527***	(3.8977)	-10.9192***	(3.9395)	-11.5779***	(3.8884)	-12.1770***	(3.8106)
Size	-0.0016	(0.0022)	-0.0014	(0.0022)	-0.0018	(0.0023)	-0.0014	(0.0023)	-0.0016	(0.0022)
Weighted Average Life	0.0306	(0.0741)	0.0434	(0.0773)	0.0310	(0.0762)	0.0302	(0.0766)	0.0178	(0.0730)
Issue Type										
Mortgage-backed	-37.3743***	(5.1467)	-36.0962***	(5.2277)	-36.6098***	(5.3380)	-36.8968***	(5.3434)	-36.6922***	(5.0154)
Market Area										
Domestic	-58.9542*	(33.8334)	-64.8331*	(33.7202)	-67.4208*	(36.2076)	-70.8955**	(34.1050)	-67.8273*	(38.9976)
Global	-28.2654***	(6.8019)	-27.3904***	(8.4199)	-21.6477**	(9.2648)	-22.3634***	(8.0601)	-28.2763***	(6.8556)
International	14.5729*	(7.7707)	19.4775**	(8.2101)	25.9999***	(8.9444)	22.1351**	(9.2781)	16.2794**	(7.4788)
Guarantor	-57.4560	(39.1461)	-52.8572	(38.0579)	-52.8878	(39.2054)	-49.2084	(38.3062)	-52.9946	(39.5576)
Private Placement	-4.0098	(4.9019)	-4.2659	(5.1186)	-5.2408	(5.0692)	-4.3075	(5.0758)	-3.5159	(4.7677)
Tranche Credit Rating										
AA+	14.7750***	(5.3901)	13.4515**	(5.5998)	13.0985**	(5.3113)	13.2761**	(5.5280)	12.2088**	(5.2733)
AA	27.1674***	(2.8623)	27.2407***	(2.9684)	26.5088***	(2.9144)	27.3187***	(2.9261)	26.4310***	(2.8393)

AA-	24.6507***	(7.1407)	22.7187***	(7.4357)	21.1279***	(7.5802)	21.0900***	(7.5543)	23.3100***	(7.2229)
A+	64.9365***	(10.2704)	67.6984***	(10.1648)	67.6210***	(9.9634)	66.4547***	(10.1590)	63.2809***	(9.9132)
A	62.4679***	(3.5775)	63.1401***	(3.7387)	62.5637***	(3.7064)	63.0883***	(3.7086)	61.7590***	(3.5896)
A-	86.9238***	(10.2598)	87.1575***	(10.2800)	85.7067***	(10.2821)	87.1946***	(10.3407)	86.1016***	(9.7638)
BBB+	159.4730***	(19.5573)	157.7427***	(19.5850)	156.2848***	(19.5943)	157.4473***	(19.6814)	157.6525***	(19.0391)
BBB	123.9744***	(5.8527)	125.8106***	(6.1558)	124.7253***	(6.1694)	125.9211***	(6.1257)	123.3480***	(5.8329)
BBB-	163.9621***	(10.6062)	165.7585***	(10.7149)	165.4084***	(10.7169)	165.4878***	(10.6985)	163.5017***	(10.4897)
BB+	382.8881***	(56.5228)	380.4674***	(58.6580)	378.8659***	(58.9284)	380.5068***	(58.8914)	379.9626***	(55.5890)
BB	337.4088***	(8.6300)	338.9016***	(8.7261)	337.2882***	(8.7447)	338.2093***	(8.7262)	337.5506***	(8.6823)
BB-	340.6703***	(19.9264)	338.8543***	(19.8915)	338.6831***	(20.1733)	339.1514***	(19.9148)	339.7992***	(19.8354)
B+	327.7174***	(45.6831)	328.7518***	(45.7809)	323.5030***	(45.8883)	327.1172***	(45.7151)	327.6282***	(46.0651)
B	498.4044***	(49.8741)	500.0242***	(50.3959)	500.1154***	(50.6057)	500.4681***	(50.3640)	498.4316***	(50.6826)
B-	514.9229***	(11.8474)	517.1653***	(11.9915)	515.7424***	(11.9956)	516.9311***	(11.9840)	515.3111***	(11.8705)
CCC+	375.2735***	(20.4011)	375.4128***	(17.0987)	372.9177***	(18.5360)	375.3585***	(18.6078)	369.6154***	(15.5301)
CCC	325.7152***	(14.8042)	316.2102***	(14.7455)	314.3146***	(14.0254)	319.5442***	(14.2493)	323.3697***	(14.7719)
CCC-	292.5656***	(7.8739)	286.9670***	(8.1696)	285.3227***	(8.1068)	288.1282***	(7.7595)	292.0267***	(7.8717)
Controlled for										
Issuer Reputation	Yes		Yes		Yes		Yes		Yes	
Issuer	Yes		Yes		Yes		Yes		Yes	
Collateral Nation	Yes		Yes		Yes		Yes		Yes	
Time (in Quarters)	Yes		Yes		Yes		Yes		Yes	
Obs.	3,791		3,585		3,585		3,585		3,791	
R^2	0.806		0.805		0.805		0.805		0.806	

Table 2.12 The effect of legal advisors on initial market spread of UK prime and non-prime ABS tranches

This table demonstrates OLS regressions of initial market spread of UK issued prime and non-prime ABS tranches on legal advisor, deal and tranche-level as well as collateral characteristics. The sample consists of tranches issued from 1998 to July 2018. Same Advisor is a dummy variable that takes the value of 1 if manager and issuer legal advisors are the same legal advisors, otherwise 0. Past Collaboration is a dummy variable that takes the value of 1 if both legal advisors and issuer have all cooperated in the past, otherwise 0. Collaboration Magnitude1 is the number of previous cooperation between issuer legal advisor and the issuer. Collaboration Magnitude2 is the number of past cooperation between both legal advisors and issuer. Market Share is a dummy variable that takes the value of 1 for a given year if the legal advisor accounts for at least 5% of the market share for previous year, otherwise 0. Number of ratings assigned for a given tranche is used to control for possible rating shopping. Size of each tranche (in $ millions) is employed to control for liquidity. Weighted Average Life is tranche's maturity conditional upon the prepayment expectations. Issue Type classifies the type of issuance i.e. the underlying assets for a tranche within a deal. Market Area where tranches of a deal is targeted for. Issuer Nation is the country where a tranche is issued. Guarantor indicates whether external credit enhancement applies for a given ABS deal. Tranche Credit Rating is the initial rating assigned for a tranche. Issuer Reputation is a dummy that takes the value of 1 is the issuer accounts for at least 5% of the market for previous year. Issuer of each deal has been controlled for. Collateral nation is where the collateral originates. Time is factor variable indicates issuing period quarterly. ***, ** and * indicate significance levels at 1%, 5% and 10%respectively.

Panel A: Prime (AAA) – Least Risky

	(1)		(2)		(3)		(4)		(5)	
Same Advisor	0.4194	(4.4059)								
Past Collaboration			-7.7985**	(3.4378)						
Collaboration Magnitude1					-9.7119***	(1.9246)				
Collaboration Magnitude2							-6.0689***	(2.3212)		
Market Share									-6.4528	(4.1129)
Number of Ratings	-10.3730***	(3.0686)	-8.4003***	(3.2432)	-7.0962**	(3.2310)	-8.6293***	(3.2353)	-10.0746***	(3.1199)
Size	-0.0052***	(0.0018)	-0.0047***	(0.0017)	-0.0048***	(0.0018)	-0.0047***	(0.0018)	-0.0052***	(0.0017)
Weighted Average Life	0.1160	(0.0738)	0.1118	(0.0766)	0.0884	(0.0737)	0.1008	(0.0748)	0.1130	(0.0742)
Issue Type										
Mortgage-backed	-0.1730	(4.2466)	1.0834	(4.5391)	0.7230	(4.2496)	0.3547	(4.3320)	0.1369	(4.2210)
Guarantor	-39.5338	(26.8814)	-43.7940*	(26.2873)	-46.4868*	(26.5140)	-41.3855	(26.0182)	-41.0869	(26.5030)
Private Placement	-3.6243	(3.7187)	-3.9569	(3.7806)	-5.4469	(3.9092)	-4.0896	(3.8548)	-3.7310	(3.7104)
Controlled for										
Tr. Credit Rating/Time	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Issuer/Issuer Reputation	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Market area/Collateral nation	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Obs.	1,437		1,360		1,360		1,360		1,437	
R^2	0.656		0.658		0.669		0.659		0.656	

Panel B: Non-Prime (Non-AAA) – More Risk

	(1)		(2)		(3)		(4)		(5)	
Same Advisor	19.7018	(14.1537)								
Past Collaboration			-15.4820***	(5.3051)						
Collaboration Magnitude1					-5.2462*	(2.7819)				
Collaboration Magnitude2							-9.2724***	(3.3115)		
Market Share									-23.5773**	(11.3000)
Number of Ratings	-18.9552***	(4.4973)	-16.2189***	(4.9694)	-17.4835***	(5.1605)	-16.9477***	(5.1517)	-18.2286***	(4.6727)
Size	-0.0225***	(0.0069)	-0.0250***	(0.0083)	-0.0262***	(0.0082)	-0.0245***	(0.0085)	-0.0215***	(0.0067)
Weighted Average Life	-0.0131	(0.0896)	0.0099	(0.0923)	0.0030	(0.0931)	-0.0039	(0.0928)	-0.0331	(0.0895)
Issue Type										
Mortgage-backed	-53.9206***	(6.9449)	-52.5287***	(7.0727)	-53.9417***	(7.3668)	-53.7145***	(7.3314)	-52.2577***	(6.6750)
Guarantor	-81.3527	(83.5096)	-75.0233	(78.2315)	-69.8005	(82.4873)	-69.0964	(80.5135)	-81.2418	(82.3669)
Private Placement	-6.3616	(6.4054)	-7.1473	(6.7511)	-7.4977	(6.7055)	-7.1537	(6.7613)	-6.2281	(6.3725)
Controlled for										
Tr. Credit Rating/Time	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Issuer/Issuer Reputation	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Market area/Collateral nation	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Obs.	2,354		2,225		2,225		2,225		2,354	
R^2	0.824		0.822		0.821		0.822		0.824	

Table 2.13 The effect of legal advisors on initial market spread of UK issued ABS and MBS tranches

This table demonstrates OLS regressions of initial market spread of UK issued ABS and MBS tranches on legal advisor, deal and tranche-level as well as collateral characteristics. The sample consists of tranches issued from 1998 to July 2018. Same Advisor is a dummy variable that takes the value of 1 if manager and issuer legal advisors are the same legal advisors, otherwise 0. Past Collaboration is a dummy variable that takes the value of 1 if both legal advisors and issuer have all cooperated in the past, otherwise 0. Collaboration Magnitude1 is the number of previous cooperation between issuer legal advisor and the issuer. Collaboration Magnitude2 is the number of past cooperation between both legal advisors and issuer. Market Share is a dummy variable that takes the value of 1 for a given year if the legal advisor accounts for at least 5% of the market share for previous year, otherwise 0. Number of ratings assigned for a given tranche is used to control for possible rating shopping. Weighted Average Life is tranche's maturity conditional upon the prepayment expectations. Issue Type classifies the type of issuance i.e. the underlying assets for a tranche within a deal. Market Area where tranches of a deal is targeted for. Issuer Nation is the country where a tranche is issued. Guarantor indicates whether external credit enhancement applies for a given ABS deal. Tranche Credit Rating is the initial rating assigned for a tranche. Issuer Reputation is a dummy that takes the value of 1 is the issuer accounts for at least 5% of the market for previous year. Issuer of each deal has been controlled for. Collateral nation is where the collateral originates. Time is factor variable indicates issuing period quarterly. ***, ** and * indicate significance levels at 1%, 5% and 10%respectively.

Panel A: ABS (More Risk)

	(1)		(2)		(3)		(4)		(5)	
Same Advisor	0.8892	(11.5998)								
Past Collaboration			-1.0208	(6.2836)						
Collaboration Magnitude1					-9.3312***	(3.2057)				
Collaboration Magnitude2							-5.1037	(3.9459)		
Market Share									-30.5902***	(10.8274)
Number of Ratings	-29.7950***	(6.0788)	-28.9872***	(7.1786)	-28.9297***	(7.1095)	-29.0912***	(7.1894)	-31.3608***	(6.1505)
Size	-0.0026	(0.0064)	-0.0027	(0.0066)	-0.0013	(0.0064)	-0.0024	(0.0065)	-0.0038	(0.0061)
Weighted Average Life	0.2169*	(0.1117)	0.2279*	(0.1190)	0.2155*	(0.1113)	0.2178*	(0.1143)	0.1741	(0.1092)
Guarantor	-40.6695	(34.1917)	-41.0501	(32.6044)	-52.8288	(32.7607)	-42.4716	(32.4607)	-50.4406	(32.4316)
Private Placement	-6.2542	(6.3761)	-6.4925	(6.3227)	-6.7202	(6.3250)	-6.1497	(6.3374)	-6.7192	(6.0413)
Controlled for										
Tr. Credit Rating/Time	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Issuer/Issuer Reputation	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Market area/Collateral nation	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Obs.	1,556		1,487		1,487		1,487		1,556	
R^2	0.867		0.867		0.868		0.867		0.869	

Panel B: MBS (Less Risk)

	(1)		(2)		(3)		(4)		(5)	
Same Advisor	10.3324*	(6.2562)								
Past Collaboration			-5.7827*	(3.3699)						
Collaboration Magnitude1					-5.4681***	(1.8709)				
Collaboration Magnitude2							-5.3583**	(2.1655)		
Market Share									5.3750	(7.1471)
Residential dummy	-1.8597	(3.1952)	-1.3667	(3.2252)	0.1643	(3.2212)	-1.2066	(3.1852)	-1.8714	(3.2079)
Number of Ratings	-8.9796**	(4.0864)	-9.6637***	(3.7310)	-9.2022**	(3.7484)	-9.3028**	(3.7199)	-9.8130**	(3.9254)
Size	-0.0007	(0.0015)	-0.0004	(0.0015)	-0.0006	(0.0015)	-0.0003	(0.0015)	-0.0008	(0.0014)
Weighted Average Life	0.0557	(0.0805)	0.0818	(0.0821)	0.0556	(0.0812)	0.0605	(0.0819)	0.0550	(0.0814)
Guarantor	-4.1265	(10.7931)	-2.3289	(12.7583)	-3.0228	(11.9699)	-0.9858	(12.2010)	-0.1470	(12.4666)
Private Placement	5.8903	(3.7824)	6.0233	(3.8287)	5.2657	(3.7498)	5.9017	(3.7687)	7.0678*	(3.7674)
Controlled for										
Tr. Credit Rating/Time	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Issuer/Issuer Reputation	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Market area/Collateral nation	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Obs.	2,235		2,098		2,098		2,098		2,235	
R^2	0.784		0.785		0.786		0.785		0.784	

Table 2.14 The effect of legal advisors on initial market spread of UK issued tranches before and after the crisis

This table demonstrates OLS regressions of initial market spread of UK issued ABS tranches before and after the crisis on legal advisor, deal and tranche-level as well as collateral characteristics. The sample consists of tranches issued from 1998 to 2008 (before crisis) and from 2009 to July 2018 (after crisis). Same Advisor is a dummy variable that takes the value of 1 if manager and issuer legal advisors are the same legal advisors, otherwise 0. Past Collaboration is a dummy variable that takes the value of 1 if both legal advisors and issuer have all cooperated in the past, otherwise 0. Collaboration Magnitude1 is the number of previous cooperation between issuer legal advisor and the issuer. Collaboration Magnitude2 is the number of past cooperation between both legal advisors and issuer. Legal Advisor Size is a dummy variable that takes the value of 1 for a given year if the legal advisor accounts for at least 5% of the market share for previous year, otherwise 0. Number of ratings assigned for a given tranche is used to control for possible rating shopping. Size of each tranche (in $ millions) is employed to control for liquidity. Weighted Average Life is tranche's maturity conditional upon the prepayment expectations. Issue Type classifies the type of issuance i.e. the underlying assets for a tranche within a deal. Market Area where tranches of a deal is targeted for. Issuer Nation is the country where a tranche is issued. Guarantor indicates whether external credit enhancement applies for a given ABS deal. Tranche Credit Rating is the initial rating assigned for a tranche. Issuer Reputation is a dummy that takes the value of 1 is the issuer accounts for at least 5% of the market for previous year. Issuer of each deal has been controlled for. Collateral nation is where the collateral originates. Time is factor variable indicates issuing period quarterly. ***, ** and * indicate significance levels at 1%, 5% and 10%respectively.

Panel A: Before Crisis

	(1)		(2)		(3)		(4)		(5)	
Same Advisor	9.7803	(10.8605)								
Past Collaboration			-4.1719	(3.3147)						
Collaboration Magnitude1					-3.2722*	(1.7010)				
Collaboration Magnitude2							-3.4604	(2.3755)		
Market Share									-24.7435***	(7.9287)
Number of Ratings	-20.7014***	(3.3559)	-20.3588***	(3.4928)	-20.1961***	(3.5132)	-20.2765***	(3.5270)	-20.0643***	(3.2726)
Size	-4.7904***	(1.1744)	-4.7101***	(1.2925)	-4.6900***	(1.2621)	-4.6090***	(1.2914)	-4.8852***	(1.1736)
Weighted Average Life	0.1224*	(0.0718)	0.1403*	(0.0775)	0.1382*	(0.0776)	0.1335*	(0.0775)	0.1073	(0.0718)
Issue Type										
Mortgage-backed	-19.3886***	(4.5767)	-17.7672***	(4.6542)	-17.6332***	(4.6424)	-17.9198***	(4.7243)	-16.9240***	(4.1395)
Guarantor	9.3958	(9.4659)	14.0814*	(7.5415)	13.7881*	(7.3219)	15.1738**	(7.3346)	21.0230***	(7.1646)
Private Placement	2.8251	(4.4660)	3.3091	(4.3221)	2.8528	(4.3991)	3.3485	(4.3260)	2.9195	(3.8698)
Controlled for										
Tr. Credit Rating/Time	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Issuer/Issuer Reputation	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Market area/Collateral nation	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Obs.	2,484		2,305		2,305		2,305		2,474	
R^2	0.770		0.769		0.770		0.770		0.773	

Panel B: After Crisis

	(1)		(2)		(3)		(4)		(5)	
Same Advisor	6.3401	(14.3610)								
Past Collaboration			-14.1294*	(7.3237)						
Collaboration Magnitude1					-21.8586***	(4.6062)				
Collaboration Magnitude2							-17.8042***	(5.8528)		
Market Share									18.7354	(15.3883)
Number of Ratings	17.6704	(11.5779)	17.7128*	(10.5237)	21.9223**	(10.0305)	18.0704*	(10.2457)	14.7421	(10.7185)
Size	-0.0063	(0.0072)	-0.0049	(0.0076)	-0.0075	(0.0068)	-0.0057	(0.0075)	-0.0065	(0.0071)
Weighted Average Life	0.1147	(0.1480)	0.1435	(0.1543)	0.1246	(0.1494)	0.1416	(0.1511)	0.1269	(0.1490)
Issue Type										
Mortgage-backed	-22.7900**	(9.4470)	-23.5105**	(9.4847)	-26.6336***	(9.3174)	-26.0753***	(9.3920)	-23.0355**	(9.3697)
Guarantor	-45.3821	(56.4218)	-52.8498	(57.1634)	-58.4085	(62.6404)	-48.8649	(55.9248)	-48.5606	(55.2904)
Private Placement	-5.9334	(9.2743)	-7.6947	(9.4411)	-7.8017	(9.0737)	-7.9992	(9.1450)	-5.9463	(9.1029)
Controlled for										
Tr. Credit Rating/Time	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Issuer/Issuer Reputation	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Market area/Collateral nation	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Obs.	1,134		1,107		1,107		1,107		1,134	
R^2	0.825		0.826		0.832		0.828		0.825	

Table 3.7 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.

	(1)		(2)		(3)	
Multiple ratings	-0.1925***	(0.0456)				
2 CRA reported			-0.1304***	(0.0453)		
3 CRA reported			-0.4170***	(0.0574)		
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)
Weighted Average Life	0.0009*	(0.0005)	0.0011**	(0.0005)	0.0018***	(0.0005)
Issue Type						
MBS	-0.4255***	(0.0347)	-0.3300***	(0.0331)	-0.2289***	(0.0361)
Guarantor	-0.2153	(0.2749)	-0.1247	(0.3135)	-0.1946	(0.3740)
Private Placement	-0.0053	(0.0386)	-0.0244	(0.0367)	-0.0509	(0.0388)
Tranche credit rating						
AA+	0.5192***	(0.0514)	0.5031***	(0.0525)	0.6614***	(0.0580)
AA	0.5579***	(0.0280)	0.5394***	(0.0278)	0.5611***	(0.0286)
AA-	0.6223***	(0.0632)	0.5490***	(0.0639)	0.6555***	(0.0683)
A+	0.2771**	(0.1411)	0.2434*	(0.1448)	0.9662***	(0.0660)
A	0.9778***	(0.0268)	0.9450***	(0.0269)	0.9970***	(0.0273)
A-	1.2744***	(0.0739)	1.2079***	(0.0718)	1.4009***	(0.0824)
BBB+	1.5863***	(0.0766)	1.5289***	(0.0811)	1.6357***	(0.0861)
BBB	1.5199***	(0.0311)	1.4962***	(0.0306)	1.5462***	(0.0313)
BBB-	1.7600***	(0.0413)	1.6851***	(0.0397)	1.8353***	(0.0443)
BB+	2.2940***	(0.1315)	2.2651***	(0.1309)	2.4715***	(0.1406)
BB	2.2869***	(0.0457)	2.2444***	(0.0448)	2.3302***	(0.0471)
BB-	2.4100***	(0.0636)	2.3375***	(0.0614)	2.5395***	(0.0637)
B+	2.1621***	(0.2649)	2.1218***	(0.2857)	2.1749***	(0.3000)
B	2.5090***	(0.1240)	2.4562***	(0.1181)	2.7230***	(0.1494)
B-	2.1080***	(0.0370)	2.0921***	(0.0363)	2.2878***	(0.0508)
CCC+	1.9085***	(0.0843)	1.8169***	(0.0795)	1.9400***	(0.0768)
CCC	1.7765***	(0.0905)	1.7328***	(0.0857)		
CCC-	1.9989***	(0.0548)	1.9122***	(0.0639)	1.9965***	(0.0725)
Controlled for						
Issuer	Yes		Yes		Yes	
Collateral Nation	Yes		Yes		Yes	
Market Area	Yes		Yes		Yes	
Year	Yes		Yes		Yes	
Obs.	6,318		6,318		5,486	
Adjusted R^2	0.767		0.774		0.811	

Table 3.8 The effect of multiple ratings on initial market spread of UK ABS tranches before 2008 and after 2013

This table presents OLS regressions output for the logarithm of initial market spread of ABS tranches issued in UK, 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. 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						**After 2013**					
	(1)		(2)		(3)		(4)		(5)		(6)	
Multiple ratings	-0.2116***	(0.0613)					-0.0263	(0.0514)				
2 CRA reported			-0.1474**	(0.0609)					-0.0091	(0.0527)		
3 CRA reported			-0.4265***	(0.0735)					-0.3174***	(0.0937)		
Rating agreement					0.2212***	(0.0457)					-0.0286	(0.0352)
Number of ratings					-0.3493***	(0.0373)					-0.3267***	(0.0895)
Size	-0.0004***	(0.0000)	-0.0004***	(0.0000)	-0.0003***	(0.0000)	-0.0001	(0.0001)	-0.0001	(0.0001)	-0.0000	(0.0001)
Weighted Average Life	0.0003	(0.0007)	0.0006	(0.0007)	0.0018***	(0.0006)	0.0008	(0.0007)	0.0008	(0.0007)	0.0005	(0.0008)
Issue Type												
MBS	-0.4864***	(0.0420)	-0.3761***	(0.0411)	-0.2938***	(0.0413)	-0.0679	(0.0533)	-0.0343	(0.0531)	0.0055	(0.0619)
Guarantor	-0.5112*	(0.2862)	-0.4787*	(0.2571)	-0.5516	(0.4023)	-0.0109	(0.1186)	-0.0724	(0.1140)		
Private Placement	0.0189	(0.0436)	-0.0116	(0.0416)	-0.0309	(0.0419)	0.0158	(0.0577)	0.0259	(0.0569)	0.0556	(0.0631)
Tranche credit rating												
AA+	0.4949***	(0.0542)	0.4881***	(0.0558)	0.6528***	(0.0588)	0.4530***	(0.0947)	0.4621***	(0.1035)	0.4472***	(0.1281)
AA	0.4766***	(0.0335)	0.4657***	(0.0325)	0.4760***	(0.0321)	0.5874***	(0.0458)	0.5707***	(0.0450)	0.5841***	(0.0471)
AA-	0.5982***	(0.0655)	0.5275***	(0.0675)	0.6610***	(0.0716)	0.3711*	(0.1943)	0.3692**	(0.1691)	0.3845*	(0.2050)
A+	0.2876	(0.2219)	0.2788	(0.2303)	1.0519***	(0.0722)	0.4918***	(0.1105)	0.4713***	(0.1107)	0.5882***	(0.0871)
A	0.9474***	(0.0321)	0.9163***	(0.0315)	0.9616***	(0.0315)	0.9227***	(0.0464)	0.9095***	(0.0460)	0.9373***	(0.0483)
A-	1.3004***	(0.0826)	1.2336***	(0.0802)	1.3948***	(0.0899)	0.9624***	(0.0978)	0.9349***	(0.0971)	0.8846***	(0.1032)
BBB+	1.6921***	(0.1013)	1.6727***	(0.1063)	1.8101***	(0.1082)	1.1401***	(0.0722)	1.1036***	(0.0714)	1.0932***	(0.0799)
BBB	1.5625***	(0.0364)	1.5415***	(0.0349)	1.5732***	(0.0351)	1.2630***	(0.0501)	1.2501***	(0.0497)	1.2945***	(0.0514)

BBB-	1.8164***	(0.0440)	1.7406***	(0.0420)	1.8644***	(0.0461)	1.2403***	(0.0587)	1.2168***	(0.0575)	1.2121***	(0.0751)
BB+	2.5423***	(0.1470)	2.5365***	(0.1472)	2.6656***	(0.1542)	1.3702***	(0.0976)	1.3376***	(0.0984)	1.2520***	(0.1211)
BB	2.6466***	(0.0471)	2.5851***	(0.0462)	2.6932***	(0.0450)	1.6967***	(0.0490)	1.6838***	(0.0486)	1.7477***	(0.0491)
BB-	2.6343***	(0.0523)	2.5619***	(0.0498)	2.6718***	(0.0572)	1.6132***	(0.0680)	1.5887***	(0.0676)	1.5763***	(0.0928)
B+	3.2959***	(0.2985)	3.3569***	(0.3111)	3.7960***	(0.0871)	1.4041***	(0.1152)	1.3770***	(0.1188)	1.3699***	(0.1315)
B	3.1526***	(0.1077)	3.0743***	(0.0971)	3.2581***	(0.0846)	1.7073***	(0.0807)	1.6899***	(0.0810)	1.7707***	(0.0970)
B-	2.9721***	(0.0732)	2.9380***	(0.0543)	3.1798***	(0.0869)	1.9939***	(0.0511)	1.9804***	(0.0508)	1.9846***	(0.0634)
CCC+							1.6161***	(0.0616)	1.5772***	(0.0585)	1.5731***	(0.0623)
CCC							1.6162***	(0.0780)	1.6039***	(0.0766)		
CCC-	1.9937***	(0.1100)	1.9868***	(0.1073)			1.6268***	(0.0557)	1.5876***	(0.0569)	1.5861***	(0.0625)
Controlled for												
Issuer	Yes		Yes		Yes		Yes		Yes		Yes	
Collateral Nation	Yes		Yes		Yes		Yes		Yes		Yes	
Market Area	Yes		Yes		Yes		Yes		Yes		Yes	
Year	Yes		Yes		Yes		Yes		Yes		Yes	
Obs.	4,280		4,280		3,810		1,451		1,451		1,245	
Adjusted R^2	0.749		0.758		0.789		0.812		0.817		0.833	

Table 3.9 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 UK, 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. Guarantor is a dummy variable that is equal to 1 if there is external credit enhancement for tranches, otherwise 0. Tranche Credit Rating (Tr.cred.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**						**Non-Prime**					
	(1)		(2)		(3)		(4)		(5)		(6)	
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)		
Rating agreement											0.2362***	(0.0475)
Number of ratings					-0.2816***	(0.0570)					-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)
Weighted Average Life	0.0021**	(0.0008)	0.0020**	(0.0008)	0.0030***	(0.0009)	-0.0006	(0.0008)	-0.0001	(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)	-0.2938***	(0.0417)
Guarantor	0.1909	(0.2080)	0.1310	(0.1597)	0.0260	(0.1238)	-1.0367***	(0.3539)	-0.9365**	(0.3793)	-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)	-0.0201	(0.0452)
Controlled for												
Issuer/Year	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Market Area/ Tr.cred.rating	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Collateral Nation	Yes		Yes		Yes		Yes		Yes		Yes	
Obs.	1,565		1,565		1,431		2,715		2,715		2,379	
Adjusted R^2	0.414		0.430		0.396		0.719		0.730		0.785	

Panel B: After 2013	**Prime**						**Non-Prime**					
	(1)		(2)		(3)		(4)		(5)		(6)	
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)		
Rating agreement											-0.0600	(0.0375)
Number of ratings					-0.3279***	(0.1064)					-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)
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)
MBS	-0.1137	(0.0968)	-0.0351	(0.1022)	-0.0209	(0.1140)	-0.0197	(0.0413)	-0.0157	(0.0417)	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)	0.0946**	(0.0415)
Controlled for												
Issuer/Year	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Market Area/ Tr.cred.rating	Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Collateral Nation	Yes		Yes		Yes		Yes		Yes		Yes	
Obs.	410		410		369		1,041		1,041		876	
Adjusted R^2	0.165		0.198		0.174		0.804		0.805		0.838	

Table 4.7 Two-stage Least Squares regression analysis of ABS and MBS subsamples

This table presents two-stage Least Squares model analysis of ABS (Panel A) and MBS (Panel B) issuer fees issued globally, issued between September 1997 and June 2018, on issuer reputation, yield spread, size, weighted average life and other deal and tranche level characteristics. Issuer Reputation is a binary variable and it is equal to 1 if an issuer bank belongs to one of the nine top-tier banks, otherwise 0. LogSpread Predicted is the predicted value of LogSpread and is obtained in the first stage of the estimation (LogSpread is the natural logarithm of the yield spread of a securitised bond at issuance). Issue Type is the classification method used to account for the type of underlying assets of a given tranche. Weighted Average Life is the natural logarithm of the total maturity of a bond and used as a proxy for potential cash flow risk. Size is the face value of a securitised bond and it is in the logarithmic form. We have included Size as a proxy for economies of scale. Originator Type classifies the type of originator of underlying assets which can be a government agency or private firm. Tranche credit rating is the rating assigned for a securitised issue at launch by one of the three big rating agencies. CRA Reported is the number of ratings obtained for a given structured bond at launch. Market Area is the country where the securitised bonds are sold for/at. Nation is the country where the securitisation program takes place. Finally, factor variable Year is the year when structed finance products are issued. Significance levels of 1%, 5% and 10% are replaced by the indicators ***, ** and * respectively.

Panel A: ABS Tranches	**Global**		**US**		**EU**	
Issuer Reputation	0.0574**	(0.0232)	0.0965***	(0.0202)	0.0552	(0.0460)
LogSpread Predicted	-0.5107**	(0.2092)	-0.3459**	(0.1551)	-0.3831*	(0.2320)
Weighted Average Life	0.1282**	(0.0552)	0.0975*	(0.0577)	0.0031	(0.0262)
Size	0.1846***	(0.0379)	0.1307***	(0.0248)	0.4140***	(0.0623)
Originator Type						
Government Agency	0.1163	(0.2644)	0.0414	(0.2979)		
Controlled for						
Tranche credit rating	Yes		Yes		Yes	
CRA Reported/Issuer Nation	Yes/Yes		Yes/-		Yes/Yes	
Market Area/ Year	Yes/Yes		Yes/Yes		Yes/Yes	
Obs.	23,856		16,729		7,127	
Panel B: MBS Tranches	**Global**		**US**		**EU**	
Issuer Reputation	0.0902***	(0.0262)	0.0728***	(0.0184)	0.0434	(0.0394)
LogSpread Predicted	-0.0499	(0.2273)	-0.1902	(0.2341)	0.7238	(0.6503)
Weighted Average Life	0.0232	(0.0191)	-0.0189	(0.0189)	0.0188	(0.0397)
Size	0.2311***	(0.0318)	0.1281***	(0.0212)	0.5252***	(0.1318)
Originator Type						
Government Agency	0.4295***	(0.1349)	0.5486***	(0.1135)		
Controlled for						
Tranche credit rating	Yes		Yes		Yes	
CRA Reported/Issuer Nation	Yes/Yes		Yes/-		Yes/Yes	
Market Area/ Year	Yes/Yes		Yes/Yes		Yes/Yes	
Obs.	11,143		4,951		6,192	

Table 4.8 Two-stage Least Squares regression analysis of pre and post GFC periods

This table presents two-stage Least Squares model analysis of ABS issuer fees issued globally, issued over the pre (Panel A) and post GFC periods (Panel B), on issuer reputation, yield spread, size, weighted average life and other deal and tranche level characteristics. Issuer Reputation is a binary variable and it is equal to 1 if an issuer bank belongs to one of the nine top-tier banks, otherwise 0. LogSpread Predicted is the predicted value of LogSpread and is obtained in the first stage of the estimation (LogSpread is the natural logarithm of the yield spread of a securitised bond at issuance). Issue Type is the classification method used to account for the type of underlying assets of a given tranche. Weighted Average Life is the natural logarithm of the total maturity of a bond and used as a proxy for potential cash flow risk. Size is the face value of a securitised bond and it is in the logarithmic form. We have included Size as a proxy for economies of scale. Originator Type classifies the type of originator of underlying assets which can be a government agency or private firm. Tranche credit rating is the rating assigned for a securitised issue at launch by one of the three big rating agencies. CRA Reported is the number of ratings obtained for a given structured bond at launch. Market Area is the country where the securitised bonds are sold for/at. Nation is the country where the securitisation program takes place. Finally, factor variable Year is the year when structed finance products are issued. Significance levels of 1%, 5% and 10% are replaced by the indicators ***, ** and * respectively.

Panel A: Before GFC	**Global**		**US**		**EU**	
Issuer Reputation	0.0497**	(0.0214)	0.1329***	(0.0177)	-0.0277	(0.0372)
LogSpread Predicted	0.0154	(0.1610)	-0.3159***	(0.1199)	-2.5689	(2.9226)
Issue Type						
MBS	-0.2987***	(0.0447)	-0.2929***	(0.0301)	-1.0356	(0.6838)
Weighted Average Life	-0.0517	(0.0352)	0.0041	(0.0402)	0.0831	(0.1019)
Size	0.2262***	(0.0262)	0.1199***	(0.0153)	-0.1628	(0.6160)
Originator Type						
Government Agency	-0.4520***	(0.1174)	-0.2740***	(0.1047)		
Controlled for						
Tranche credit rating	Yes		Yes		Yes	
CRA Reported/Issuer Nation	Yes/Yes		Yes/-		Yes/Yes	
Market Area/ Year	Yes/Yes		Yes/Yes		Yes/Yes	
Obs.	23,854		13,802		10,052	
Panel B: After GFC	**Global**		**US**		**EU**	
Issuer Reputation	0.0259	(0.0323)	0.0017	(0.0341)	0.0443	(0.0677)
LogSpread Predicted	0.3992	(0.3770)	0.7341***	(0.2845)	-0.0528	(0.3886)
Issue Type						
MBS	-0.3964***	(0.0415)	-0.5119***	(0.0374)	-0.1070	(0.0733)
Weighted Average Life	-0.0136	(0.0875)	-0.0949	(0.0854)	-0.0051	(0.0379)
Size	0.4239***	(0.0633)	0.3937***	(0.0700)	0.5883***	(0.0940)
Originator Type						
Government Agency	0.7112***	(0.1528)	0.9961***	(0.1092)		
Controlled for						
Tranche credit rating	Yes		Yes		Yes	
CRA Reported/Issuer Nation	Yes/Yes		Yes/-		Yes/Yes	
Market Area/ Year	Yes/Yes		Yes/Yes		Yes/Yes	
Obs.	10,250		7,234		3,016	