Transparency as a Remedy of Agency Problems in Securitization? The Case of ECB's Loan-Level Reporting Initiative.*

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Abstract

The poor transparency of ABS exacerbated the latest subprime lending crisis. In response, the ECB introduced the ABS loan-level initiative, obliging originators to disclose quarterly loan-by-loan information. However, does this increase in transparency alleviate the agency problems inherent in securitization? We take advantage of the novel data set from the first securitization repository in Europe on 108 ABS that are backed by more than 2.8 million SME loans. Our results show that the increase in transparency indeed has valuable real effects for investors through inducing originators to improve portfolio performance and diversification in existing as well as newly issued ABS. Turning to the bank perspective, our findings also indicate that improving ABS pools comes at a cost, as the originators' non-performing loans (NPL) ratio significantly increases when affected by the new transparency regime for ABS, i.e. transparency of ABS pools induces originating banks to securitize their better performing loans on average. Taking into account a large set of control variables and several robustness tests, our results remain robust.

Keywords: Securitization, Agency Problems, Transparency, ECB, Portfolio Performance, Diversification
JEL Classification: E58, G21, G23, G28

1 Introduction

Changing views on securitization have accompanied the rise and fall of asset-backed securities (ABS)[1] markets in the past (International Monetary Fund, 2009). Before the outbreak of the latest subprime lending crisis, securitization markets exhibited large growth rates. The total outstanding securitization volume in Europe amounted to around USD 139 billion in 1999, and peaked in 2009 at USD 3.1 trillion (Securities Industry and Financial Markets Association, 2018). During this period, the valuable role played by securitization in diversifying bank credit risk and funding sources seemed to promise an optimal risk allocation in the credit market, as well as greater overall financial stability. The subsequent subprime lending crisis damaged this positive image of ABS, and revealed the agency conflicts between investors and originators in the context of securitization (Shin, 2009).

These agency conflicts were particularly severe, due to the general lack of transparency relating to the quality of the underlying assets and the composition of the ABS pools. Having no access to loan-level information to conduct their own risk assessments of securitization pools, investors relied heavily on rating agencies. However, it was as late as 2007 that Moody's finally requested loan-level data from issuers (Pagano and Volpin, 2012). Consequently, rating agencies deliberately neglected indicators that had considerable predictive power (Ashcraft et al., 2010). Additionally, they failed to regularly reestimate their models (Rajan et al., 2015). Both shortcomings led to rating agencies failing to downgrade ABS ratings until the second half of 2007 (International Monetary Fund, 2008). Against this background, opacity was regarded as a key driver of the latest subprime lending crisis, and of the ensuing decline of the securitization market (e.g., Financial Stability Forum, 2008; International Monetary Fund, 2008). In fact, the volume of outstanding securitizations in Europe almost halved in 2016, compared to 2009 (Securities Industry and Financial Markets Association, 2018).

[1] In the following, we use the term "ABS" in a broad sense comprising true-sale securitizations that are backed by different asset classes, such as micro, small, and medium-sized enterprise loans, residential and commercial mortgages, auto loans, leasing, and credit card contracts as well as consumer loans.

In order to restore overall trust in securitization markets after this severe decline, market participants called for greater transparency. In particular, a public consultation by the ECB on the provision of ABS loan-level information in 2009 revealed that such information "would provide a significant amount of very valuable data. Investors think it would unquestionably benefit all types of investors, as well as the general level of liquidity in the market" (European Central Bank, 2010b). Following this strong support, the ECB launched the ABS loan-level reporting initiative in 2009, which obliges originators to disclose quarterly loan-by-loan information on ABS in order for the latter to be accepted as collateral in Eurosystem credit operations.[2] The availability of loan-by-loan information enables investors themselves to regularly assess loan default risk and portfolio composition on a granular level. Furthermore, this data is subject to quality checks at the European DataWarehouse (ED), the repository of all loan-level information under the ECB's loan-level reporting initiative.

The novel database collected on behalf of the ECB is not only accessible to investors, but also to a broad range of other market participants, such as rating agencies, data vendors and analytic firms, investment and commercial banks, accounting firms, trustees and consultants (European DataWarehouse, 2016). As of June 2018, more than 200 institutional subscribers, including over 160 investors across Europe and the U.S., had access to ABS loan-level data (European DataWarehouse, 2018b). Furthermore, data access can be set up in the short term, and is free of charge for institutional investors.[3] Both the broad set of recipients and the simple data access motivate us to analyze whether the availability of loan-level information on ABS portfolios alleviates the agency problems inherent in securitization. Agency problems in securitization refer primarily to adverse selection and moral

[2] After the latest subprime lending crisis, the valuable role of ABS loan-level information was not only emphasized in Europe, but also in the U.S. For instance, the Dodd-Frank Act requires "issuers of asset-backed securities, at a minimum, to disclose asset-level or loan-level data, if such data are necessary for investors to independently perform due diligence" (Section 942 [b]).

[3] Laux (2012) emphasize that it is important to distinguish between disclosure and transparency, since the former refers only to providing information, while there is transparency when the information actually reaches market participants. However, due to the effective information provision of the ECB's loan-level reporting initiative, we do not need to differentiate between disclosure and transparency in the following analysis.

hazard arising from information asymmetries between banks, serving as originators, and investors.[4] In particular, banks decide on the extent of their screening and monitoring efforts at the loan-level as well as on the pool composition.

Investors in ABS, by the very nature of these securities, are not interested in single loans as such, but in the pools backing their investments. Therefore, changes in pool quality rather than in loan quality matter when assessing the impact of the loan-level reporting initiative. Pool quality itself depends on the quality of the loans included and the pool composition, notably its diversification. Observing that securitized loans originated after the quarter, in which a bank adopted the new reporting standards are of better quality than other loans securitized by the same bank (Ertan et al., 2017), is an important step, but only addresses one factor of pool quality. Apart from the neglect of diversification, a focus on the loan-level does not fully capture the dynamics of ABS pools. On the one hand, different from the U.S. originate-to-distribute model, in the European market many loans are securitized considerably after their origination, in our sample close to two years on average. On the other hand, many observed ABS pools are not static over time. This entails the introduction of new loans into, as well as the exclusion of loans from the already-securitized asset pool on a regular basis.[5] For instance, we observe around 10 % new loans in an ABS pool on average every reporting quarter in our sample. Accordingly, the selection process of loans to be securitized in an ABS pool is of greater relevance for ABS portfolio risk than the lending decisions for single loans. That is why we, to the best of our knowledge as the first do so, focus on the loan-level reporting initiative's impact on the pools of assets securitized.

4 There are also information asymmetries between the originator and other actors in the securitization process, such as rating agencies and trustees. As agency problems are most pronounced between originators and investors, our study focuses on this relationship.

5 Reasons for the exclusion of loans from already-securitized asset pools include redemption, prepayment, cancelation, repurchasement, default, and substitution (European Central Bank, 2018b).

In our analysis, we rely on data on 108 ABS backed by 2,844,122 SME loans,[6] reported from 2012 until 2017 to ED. We supplement this data by adding several bank characteristics from Fitch Connect. Using several fractional response regression models, we examine in detail five pool performance, as well as four concentration-risk measures. Our results can be summarized as follows. We find that pools affected by the new transparency regime perform better, i.e. on average, they exhibit lower loss and default rates, lower rates of delinquent amounts and of delinquent loans, as well as loans with fewer days in delinquency. This holds when controlling for loan, tranche, and pool characteristics, when including reporting quarter, country, and partially, ABS pool fixed effects (FE), as well as when utilizing clustered standard errors with respect to the ABS pool. In a similar setting, but controlling additionally for bank-specific variables, we find that transparency has an impact on concentration risk in ABS pools. Pools affected by the new transparency regime are more diversified with respect to single-name credit risk, business types, and industries. Turning to the originator behavior, our results also indicate that improving ABS pools comes at a cost, as the originating banks' ratio of non-performing loans (NPL) significantly increases when affected by the new transparency regime for ABS. i. e. transparency of ABS pools induces originating banks to securitize, on average their better performing loans. We conduct several robustness tests that confirm our findings.

Based on these findings, our main contribution is twofold. First, we extend the research on agency problems, and their mitigation, in securitization. Several studies provide evidence that banks lower screening and monitoring efforts when loans are securitized (e.g., Downing et al., 2009; Keys et al., 2010, 2012; Wang and Xia, 2014). We contribute to this literature strand by showing that transparency may be an effective way to limit bank scope for exploiting information asymmetries. The rationale for mitigating agency problems via transparency is straightforward. Generally, originators have low incentives to voluntarily increase transparency of ABS, as collecting and providing information is costly (Laux,

[6] The number of SME loans refers to the total number of unique loans in all ABS pools during the whole sample period.

2012). Being obliged to publicly disclose loan-level information, originators expect market participants, such as investors, to assess the disclosed data as well as to base their financial decisions on these assessments. If originators exploit information asymmetries, such financial decisions could range from demanding higher interest rates to not investing at all in certain ABS tranches, and possibly also to the loss of originator reputation beyond securitization transactions. Anticipating these disciplining actions by market participants, originators are incentivized to screen and monitor their borrowers thoroughly, even though they securitize their loans. For the same reason, ABS originators may adjust their policies on which loans to securitize, and reconsider how to combine them in pools.

In this way, secondly, we establish a connection between the literature on agency conflicts in securitization and the growing literature on the role of transparency in the banking industry (e.g., Jordan et al., 2000; Acharya and Ryan, 2016; Kleymenova, 2016; Goldstein and Yang, 2019). In particular, we add to two theoretical studies analyzing the role of transparency in securitization markets, both of which offer a rationale for transparency regulation (Pagano and Volpin, 2012; Chemla and Hennessy, 2014). We empirically supplement a direct link between transparency via ABS loan-level disclosures and the quality and diversification of banks' securitization pools. Following the mechanism described above, we expect the increase in transparency in securitization markets to limit originator exploitation of their informational advantages regarding borrower quality, and induce them to select better performing and more diversified loan pools for securitization.[7]

Beyond our contribution to these two pivotal literature strands, our study yields some practical implications. Specifically, the new European securitization framework, generally referred to as the 'Securitisation Regulation', has come into force on January 1, 2019 and applies to all European ABS. This regulation establishes criteria for simple, transparent and standardised (STS) securitizations, and prescribes disclosure requirements that are

[7] Beyond securitization markets, but in a similar vein, Pillar III of the Basel regulation aims at strengthening market discipline through more and stricter disclosure rules, allowing investors to assess bank activities based on sound and reliable information.

very similar to the ECB's loan-level initiative. Therefore, the real effects of the ECB's loan-level initiative can also provide guidance on the likely impact of the 'Securitisation Regulation'. In general, analyzing the effect of regulatory initiatives is of considerable relevance, as regulation is costly, and its existence needs to be justified comprehensively.

The remainder of this paper is organized as follows. Section 2 analyzes the status quo in securitization markets and reviews the literature. Section 3 introduces our data sources and sample-selection procedure. Section 4 presents our variables and summary statistics. In Section 5, we explain our empirical strategy and discuss our main empirical findings. In Section 6, we conduct several robustness tests. Section 7 concludes.

2 Status quo in securitization markets

2.1 Lack of transparency and agency conflicts in securitization

Below, we outline the status quo in securitization markets. In short, the latest subprime lending crisis revealed that securitization markets are mostly opaque, which exacerbates agency conflicts between originators and investors. Furthermore, due to the pooling and tranching of loan portfolios in securitization transactions, as well as the lack of available cost-efficient loan-level information, investors have little incentive to build up expensive expertise in portfolio risk analysis. This further aggravates information asymmetries and agency conflicts between originators and investors. Against this background, we consider whether transparency is an effective way to reduce agency problems in securitization markets by at least partly preventing originators from exploiting informational advantages with respect to loan default risk and portfolio diversification. Transparency not only affects originator behavior, but also contributes to decreasing information costs and raising incentives for investors to acquire expertise in portfolio risk analysis.

Opacity in securitization markets is attributable to both ABS issuers and rating agencies. Prior to the latest subprime lending crisis, investors relied heavily on the ABS prospectus and ratings in order to make investment decisions. However, the prospectus merely provided summary statistics about the typical loan in the underlying pool, but did not reveal granular loan-level characteristics (Pagano and Volpin, 2012). It was as late as 2007 that Moody's requested loan-level data from issuers (Pagano and Volpin, 2012). Similarly, ABS tranche ratings were based on a very limited number of loan-level variables, frequently neglecting indicators with considerable predictive power (Ashcraft et al., 2010). Furthermore, rating agencies failed to regularly reestimate their models to incorporate potential negative changes in the quality of the loan pool (Rajan et al., 2015). This shortcoming lead to precipitous ABS rating downgrades in the second half of 2007 (International Monetary Fund, 2008). Opacity finally resulted in investor mistrust and a sharply declining number of placed ABS issuances after the start of the latest subprime lending crisis (see Figure A.1).

[Figure A.1 about here.]

Following the outbreak of the subprime crisis, investor mistrust could predominantly be associated with agency conflicts in securitization, resulting particularly from asymmetric information between the informed bank that initially grants and securitizes loans, and investors that buy ABS tranches. For instance, according to the originate-to-distribute model, bank screening efforts decline with the intention to sell a loan via a securitization transaction (e.g., Keys et al., 2010; Purnanandam, 2011; Keys et al., 2012). After securitizing a loan, bank incentives to conscientiously monitor borrowers tend to decrease as well, as loan default risk is shifted to ABS investors (e.g., Gorton and Pennacchi, 1995; Parlour and Plantin, 2008; Wang and Xia, 2014; Kara et al., 2018). In addition to implications for screening and monitoring, asymmetric information also affects the loan-selection process in securitization transactions. Having private information, banks are able to choose the quality of loans being securitized or held on their balance sheet. Systematically securitizing poorer performing loans constitutes a "lemon problem" in the ABS market (e.g., Downing et al., 2009; An et al., 2011).

Prior to the latest subprime lending crisis, securitized mortgage loans were indeed of significantly lower quality than non-securitized mortgage loans (e.g., Krainer and Laderman, 2014; Elul, 2016). However, this finding differs from studies analyzing ABS backed by corporate loans, as securitized corporate loans tend to perform better than their non-securitized counterparts (e.g., Benmelech et al., 2012; Kara et al., 2018). According to Benmelech et al. (2012), these contradictory results can be attributed to two different circumstances. Firstly, in contrast to mortgage loans, large corporate loans tend to be syndicated, which entails a greater number of screening and monitoring originators. Secondly, large corporate loans are often securitized only partially. This increases originators' "skin the game". Nevertheless, for both mortgage and corporate loans, there is also some contrary evidence relating to loan quality in ABS transactions (e.g., Albertazzi et al., 2015; Bord and Santos, 2015).[8] While selling loans via securitization transactions tends to affect screening, monitoring, and loan selection, there is evidence that securitization activity does not lower bank lending standards. Accordingly, banks which are more active in issuing ABS do not price their loans more aggressively (Kara et al., 2016).

Further implications for banks and investors in securitization transactions arise from pooling and tranching loan portfolios, usually inducing AAA-rated senior tranches that are almost completely informationally insensitive (DeMarzo, 2005; Hanson and Sunderam, 2013). Information insensitivity arises from diversification effects allowing the originator to construct a low-risk senior tranche. From the perspective of social welfare, information insensitivity alleviates agency problems between originators and investors that result from asymmetric information, since the impact of banks' information advantages diminishes (e.g., DeMarzo and Duffie, 1999; DeMarzo, 2005). However, low credit risk of AAA-rated

[8] Some studies not only analyze the default risk of securitized loans, but also examine their prepayment risk. For instance, Agarwal et al. (2012) provide evidence that banks sell loans with higher prepayment risk via securitization transactions, and retain mortgage loans with lower prepayment risk on their balance sheet.

tranches also implies low incentives for investors to develop expensive expertise in portfolio risk analysis. As a result, investors rely heavily on the risk assessment of a few rating agencies (e.g., Hanson and Sunderam, 2013; Cerbioni et al., 2015). In this context, Hanson and Sunderam (2013) reveal that insufficiently informed investors may contribute to collapsing securitization markets in crisis periods, as they are unable to distinguish between high and low quality ABS. In this setting, comprehensive disclosure requirements may decrease information costs, and both enable and encourage investors to intensify their own risk assessment activities.

Expertise in portfolio risk analysis is crucial for understanding the quality of securitized loan pools and their related tranches. Credit portfolio risk estimation is widely discussed in the literature, and common in daily bank portfolio management practices, in order to quantify expected losses and tail risks (e.g., Dietsch and Petey, 2002; Gordy, 2003; Frye, 2008; Geidosch, 2014; Nakamura and Roszbach, 2018). At the loan-level, the drivers of borrower probability of default, or loss given default, arise to a large extent from idiosyncratic firm characteristics as well as from macroeconomic developments (e.g., Jimenez and Saurina, 2004; Carling et al., 2007; Bonfim, 2009). At the portfolio-level, there are two main dimensions affecting portfolio risk assessments and pricing. On the one hand, portfolio credit risk is driven mainly by the stand-alone risk of the underlying loans. On the other hand, the portfolio loss distribution and the resulting tail risk are driven by default correlation between the underlying assets determining diversification effects (e.g., Pesaran et al., 2005; An et al., 2011; Franke et al., 2012; Broer, 2018). Beyond the drivers of risk at loan- and portfolio-level, in the context of securitization, investors need to examine the transaction structure and payment terms in order to assess tranche credit risk. In particular, credit enhancements and risk retention influence tranche credit risk (e.g., Riddiough, 1997; Fender and Mitchell, 2009; Pagés, 2013; Malekan and Dionne, 2014). Guo and Wu (2014) reveal theoretically that information-disclosure requirements in securitization markets complement risk-retention regulation. According to their dynamic model with asymmetric information between an originating bank and a continuum of investors, both risk retention and information disclosure regulations are effective in reducing the informational deficit of investors.

So far, the role of transparency gained by disclosed information in securitization markets has only been addressed marginally in the literature. In accordance with our research topic, Ertan et al. (2017) examine the impact of the ECB's novel loan-level initiative. Focusing on the loan-level perspective, they show empirically that securitized loans originated after the bank adopted the novel ABS reporting requirements are of better quality. In addition, Pagano and Volpin (2012) propose a theoretical model dealing with the impact of transparency on securitization markets, and provide evidence that opacity impedes trading in the secondary market, due to adverse selection. Overall, their model offers support for the current regulatory efforts to increase regulatory disclosure standards in securitization markets. Similarly, Chemla and Hennessy (2014) argue that originators have low incentives to exert costly efforts to produce high quality ABS, if investors are unable to observe the true ABS quality. In their theoretical model, investors can receive informative signals under transparency, whereas such signaling is not possible under opacity.

Beyond the specific case of securitization markets, there are basically two competing conclusions on how transparency affects the banking industry as a whole. On the one hand, there is evidence that transparency has a positive impact on the banking sector. For example, enhanced voluntary disclosure by banks can improve the allocation of resources in the banking industry (Jordan et al., 2000). Moreover, regulatory requirements to increase bank-specific information disclosure promise a stabilizing effect during crises (Bouvard et al., 2015). Disclosure is also central to the efficacy of market discipline, as it may positively influence bank behavior. For instance, disclosure requirements limit bank increases of debt and risk overhangs in economically good times (Acharya and Ryan, 2016), and incentivize banks to ensure larger capital buffers (Nier and Baumann, 2006). On the other hand, public information disclosure may also lead to negative consequences, such as increasing the probability of bank failures or creating incentives for banks to avoid reporting requirements in the future by foregoing certain transactions (e.g., Cordella and Yeyati, 1998; Kleymenova, 2016; Goldstein and Yang, 2019). Even though Nier (2005) provides evidence that the benefits of transparency for bank stability outweigh its costs, the current discussions on whether enhanced transparency in securitization markets is beneficial overall, do not come to an unambiguous conclusion. We expect transparency to be beneficial and reduce agency problems between originators and investors in securitization markets, as the public consultation on loan-by-loan information requirements for ABS revealed strong support from a broad range of market participants (European Central Bank, 2018c). Loan-by-loan disclosure requirements for ABS are one of the recent developments in the European securitization market that we present below.

2.2 ECB's recent role in the European securitization market

Loan-level reporting requirements aim at restoring investor trust, as "during the subprime crisis, the lack of transparency regarding SIVs[9] compounded investor uncertainty and resulted in banks struggling to either roll over or refinance the maturing debt through new commercial paper issuance or asset sales" (International Monetary Fund, 2008). Therefore, increasing transparency is intended to revive the ABS market and its function as a provider of investor capital to the real economy. As Figure A.1 suggests, this function declined after the latest subprime lending crisis. Not being able to sell ABS via the securitization market and suffering major distortions in the collateral market for repurchasement agreements ('repo') (Gorton and Metrick, 2012), banks began to retain securitizations on their balance sheet, using them for 'repo' transactions with the ECB. Central banks started accepting securitizations as collateral for bank funding in early 2008, since mistrust between banks during the subprime lending crisis entirely terminated interbank lending (Association for Financial Markets in Europe, 2014). Retained securitizations quickly emerged to represent a large part of outstanding ABS issuances. For instance, in 2009 around 94 % and in

[9] Structured investment vehicles.

2017 still 53 % of all newly issued ABS in Europe were retained on bank balance sheets (Securities Industry and Financial Markets Association, 2018). Two further regulatory actions made securitizations a preferable source of liquidity for Eurozone banks. Firstly, the ECB reduced the rating threshold for accepting ABS as collateral in repo agreements from AAA in 2010 to A- in 2011 (European Central Bank, 2011a) and to BBB- in 2014 (European Central Bank, 2014). Secondly, the ECB lowered the ABS "haircut" in repo agreements from 16 % on an ABS rated between AAA- and A- in 2010 to 10 % in 2013 (European Central Bank, 2013).[10] In addition to accepting ABS as collateral for bank funding, the ECB started the asset-backed securities purchase programme (ABSPP) in November 2014. Within the ABSPP, the ECB purchases securitizations in the primary and secondary market in order to inject liquidity into the banking system, and stimulate the issuance of new securitizations. As of July 2018, the ECB's ABS holdings amounted to around EUR 27 billion (European Central Bank, 2018a). This represents around 1.8 % of total outstanding ABS in Europe (Securities Industry and Financial Markets Association, 2018).

Accepting securitizations as collateral in monetary policy operations, as well as purchasing securitizations as part of the ABSPP requires sound risk assessments of ABS by central banks. However, the ECB itself stated that "assessments of asset-backed securities have been hampered by the lack of standardized, timely and accurate information on single loan exposures" (European Central Bank, 2018c). In ABS prospectuses and investor reports, originators only provide summary statistics of the underlying loan portfolio at an aggregated level. As a result, the ECB launched a public consultation on loan-by-loan disclosure requirements for ABS being pledged as collateral in repo agreements, so as to be accessible to market participants on an ongoing basis. The public consultation from

[10] Van Bekkum et al. (2018) provide evidence that lower rating requirements for eligible RMBS in the ECB's collateral framework increase loan supply, and decrease loan interest rates. Moreover, loans that exhibit lower interest rates perform worse, and serve as collateral for newly issued RMBS with lower-rated tranches. Therefore, their results suggest that the loosening of collateral policy after 2010 is likely to incentivize banks to issue poorer performing ABS pools. This effect points in the opposite direction to our expected impact of transparency on pool performance, and strengthens our results.

December 2009 until February 2010 revealed strong support from a broad range of market participants. Following this strong support, the ECB announced the establishment of the ABS loan-level reporting initiative for residential mortgage-backed securities in December 2010, and for ABS backed by SME loans in April 2011 (European Central Bank, 2010a, 2011b). In July 2012, ED was established. ED collects all loan-level information on behalf of the ECB. This constitutes the first database for providing granular and standardized information on ABS, thus enabling extensive comparability across originators. Additionally, ED performs data-quality checks for the submitted data, such as examining significant deviations in key information compared to previous reports (Ertan et al., 2017). As of January 2013, originators pledging ABS backed by residential mortgages or SME loans as collateral for repo agreements with the ECB are obliged to report the required ABS information to ED (European Central Bank, 2018c). Thereafter, disclosure requirements for other ABS classes, such as commercial mortgage-backed securities and consumer ABS, followed gradually. The novel reporting requirements apply to existing as well as newly issued ABS. The exact timeline of the ECB's loan-level reporting initiative with respect to ABS backed by SME loans is illustrated in Figure A.2. As of October 2018, the ED collected loan-level information on around 1,200 ABS deals across Europe (European DataWarehouse, 2018a).

[Figure A.2 about here.]

2.3 Expected impact of transparency on European securitizations

Overall, we expect both objectives of the ECB's loan-level reporting initiative – the improvement of transparency in securitization markets as well as the facilitation of ABS risk assessment – to affect bank securitization behavior (European Central Bank, 2018c). First, greater transparency entails stronger market discipline, incentivizing banks to securitize better performing and more diversified ABS pools. By improving ABS pool performance and diversification, banks are able to conduct signaling (DeMarzo, 2005) and to gain reputation in the securitization market (Albertazzi et al., 2015). Second, the novel transparency regime constitutes an enhanced risk-assessment database, which implies a deeper understanding of ABS portfolio risk drivers, both for originators and investors. The associated increasing expertise of originators in structuring ABS portfolios, in turn, speaks in favor of enhanced pool performance and diversification. Moreover, more comprehensive knowledge of portfolio risk analysis strengthens investors' disciplining actions. The prediction that the introduction of more transparent disclosure standards in securitization markets leads to enhanced ABS pool performance and diversification constitutes the key hypothesis that we test empirically below.

3 Data sources and sample selection

This paper utilizes two different samples. Whereas the *Securitization sample* only comprises information on European ABS pools, the *Extended securitization sample* also includes originating bank characteristics. The data sources and sample selection procedures for both samples are explained below.

3.1 Securitization sample

Our main sample, the so-called *Securitization sample*, comprises granular information on European ABS pools. We obtain this data from ED, the first central repository for collecting, validating, and providing detailed and standardized information on securitization transactions in Europe. Following Ertan et al. (2017), we focus on ABS backed by SME loans, as SMEs are considered an important pillar of the EU economy.[11] Moreover, ABS

[11] According to the European Commission's definition, SMEs employ fewer than 250 persons and exhibit an annual turnover not exceeding EUR 50 million, or an annual balance sheet not exceeding EUR

backed by SME loans seem to be specifically affected by information asymmetries as they are usually not monitored by capital markets (Dietsch and Petey, 2002; Schertler et al., 2015; Albertazzi et al., 2017). Therefore, originating banks retain ABS backed by SME loans to a greater extent than other collateral categories. For instance, in 2013 around 86 % of newly issued European ABS backed by SME loans were retained, whereas for ABS backed by residential mortgages, this percentage amounted to only 66 % (Association for Financial Markets in Europe, 2014).

It should be noted that the data set obtained via ED can be selective in terms of bank liquidity needs. Pledging ABS as collateral for repurchasement agreements with the ECB entails the obligation to report the respective loan, tranche, and pool information to ED. Otherwise, reporting is on a voluntary basis. Drechsler et al. (2016) show that weakly capitalized banks borrowed more from the ECB and used riskier collateral than strongly capitalized banks. However, this potential limitation only marginally affects our study. Regarding the period from 2011 to 2017, the market coverage of newly issued ABS backed by SME loans that were reported to the ED amounted to more than 80 % on average (Securities Industry and Financial Markets Association, 2018).

The data obtained from the ED is clustered roughly into two relevant levels, the loan- and the tranche-level. To create a loan- as well as a tranche-level sample, we separately conduct our sample selection process on loan- and tranche-level. The SME loan-level reporting requirements include 48 mandatory and 65 optional variables grouped into six categories: identifiers, obligor information, loan characteristics, interest rate details, financials, and performance measures. In addition to loan-level information, the SME tranche-level reporting requirements comprise 15 mandatory and 11 optional variables, including information on credit enhancements, the payment structure, and performance measures. Originators are obliged to report these variables to ED at least on a quarterly

43 million (European Commission, 2003). SMEs represent more than 99 % of European companies, generating 57 cents of every euro value-added in the EU non-financial business sector, as well as employing about 67 % of the European workforce (Muller et al., 2017).

basis. In our analysis, we use information from both levels and focus mainly on mandatory variables because, on average, we observe that around 99 % of the mandatory and 21 % of the optional fields are reported in our sample.

Our sample covers the reporting period from 2012 until 2017. At the loan-level, we start from 32,026,829 observations. Firstly, we delete observations if variables that we employ in our analysis are missing or implausible. For instance, we exclude observations for which the days in arrears exceed the loan period, or where the loan origination date is after the loan maturity date. Moreover, we eliminate ambiguous bank names.[12] Ultimately, we drop all loan-level observations for which the corresponding tranche-level information is not available. In total, our loan sample includes 12,315,037 loan-quarter observations. At the tranche-level, we begin with 9,969 observations. In accordance with our loan-level procedure, we exclude observations if variables that we employ in our analysis are missing or implausible. For example, we delete observations for which the bond issue date is after the maturity date. We also exclude all tranche-level observations for which the corresponding loan-level information is not available. We finally retain 3,852 observations at the tranche-quarter level. In Tables A.1 and A.2 in the appendix, we summarize our sample loan- and tranche-level selection procedures in more detail.

Subsequent to our sample selection process, we arrive at loan- and tranche-level samples which are distinct from one another. Because we observe the corresponding ABS pool for every observation in our loan- and tranche-level sample, we aggregate loan- and tranche-quarter information and create a pool-level database that contains loan as well as tranche characteristics for every pool-quarter observation. We mainly aggregate loan- and tranche-level information by using weighted averages. Weighting is based primarily on the current loan or tranche balance to reflect the relative loan or tranche size in a portfolio[13] Our

[12] By excluding ambiguous bank names and only including banks in our sample that can be identified uniquely, we follow Ertan et al. (2017).

[13] In cases of loan default or delinquency, we observe that the originators in our sample reduce the current loan balance by the default or delinquent amount. In order to weight our observations accurately in

pool-level database initially contains 1,405 observations. One pool refers to one ABS transaction consisting of several tranches and numerous underlying loans.

As a final step, we adjust our pool-level sample. In cases of voluntary monthly reporting, we use the last observation in a quarter and ignore the previous observations in the same quarter, in order to ensure that securitization pools from monthly reporting originators are not overweighted in our analysis. Using the last observation is motivated by the fact that the majority of quarterly reporting banks reports shortly before the end of the respective quarter. Overall, our final *Securitization sample* comprises 1,072 pool-quarter observations, and includes 2,844,122 unique SME loans to 1,217,272 borrowers and securitized in 385 ABS tranches and 108 ABS pools by originators from Belgium, France, Germany, Italy, the Netherlands, Portugal, and Spain. These countries represent almost all Eurozone countries active in SME loan securitization (Association for Financial Markets in Europe, 2014). In Tables A.3 and A.4, we depict the final *Securitization sample*'s distribution by reporting year and country.

[Tables A.3 and A.4 about here.]

3.2 Extended securitization sample

After finalizing our *Securitization sample*, we extend this main sample by adding characteristics of the originating bank, by incorporating loan probabilities of default (PD), as well as by supplementing macroeconomic information. In the following analysis, we refer to this second sample as the *Extended securitization sample*.

To create the *Extended securitization sample*, we utilize our final *Securitization sample* as the starting point. Firstly, we complement the *Securitization sample* with yearly originating bank characteristics collected from Fitch Connect. Fitch Connect only provides

the aggregation process, we reverse this adjustment by adding the default or delinquent amount to the current loan balance.

information on banks of 62 ABS pools. As a result, we have to exclude 492 observations to construct our *Extended securitization sample*. Secondly, we estimate a PD for each individual loan, based on our loan-level database (see Section 3.1). As our PD estimation procedure mainly follows Ertan et al. (2017), we apply ABS pool FE.[14] Consequently, we do not obtain PDs for loans that are part of ABS pools exhibiting no defaults, as in this case, loan default is perfectly predictable. We drop pools without any estimated loan-level PDs from our *Extended securitization sample*. Thirdly, we add macroeconomic information from Eurostat. For each country in our sample, we collect data on the percentage change of gross domestic product (GDP) over the corresponding quarter one year earlier.

Overall, our *Extended securitization sample* comprises 580 pool-quarter observations, and includes 1,075,039 unique SME loans to 640,015 borrowers and securitized in 219 ABS tranches and 62 ABS pools.

4 Variable construction and summary statistics

4.1 General remarks

All variables used in the empirical analysis are described in the following section and summarized in Table A.5 in the appendix. Unless explicitly stated otherwise, we refer to our main *Securitization sample* when presenting summary statistics. These statistics are reported in Table A.6. Table A.7 in the appendix shows the variables' pairwise correlations.[15] Tables A.8 and A.9 present the same content, but refer to our *Extended securitization sample*.[16]

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14 For more details on the PD estimation procedure, refer to Section 4.4.

15 In our *Securitization sample*, we also test for multicollinearity, using variance inflation factors (VIF), and find that the mean VIF accounts for 1.53 and that all VIFs are smaller than 2.05, indicating that multicollinearity is not an issue in our empirical setting.

16 Multicollinearity is also not an issue in our empirical setting using the *Extended securitization sample*. The mean VIF amounts to 1.49, and all VIFs are smaller than 1.93.

[Table A.8 about here.]

4.2 Identification strategy for *Transparency pools*

Our main exogenous variable is *Transparency pool*. Given that the reporting requirements apply to existing as well as newly issued ABS, we are able to analyze major differences in securitization pools in the pre-transparency and transparency regime. For this purpose, we modify the definition for *Transparency loan* from Ertan et al. (2017)[17] by focusing on the pool perspective, and define *Transparency pool* using an indicator variable which reflects whether or not a pool is affected by the new transparency regime. We determine this indicator variable in two subsequent steps.

Firstly, we define pools under the transparency regime as those issued after the loan-level reporting requirements were announced for SME loan securitizations in April 2011 (see Figure A.2). At this point in time, banks were able to adjust their behavior for the first time, as the ECB published its decision to commence loan-level reporting for ABS backed by SME loans within the next 18 months (European Central Bank, 2011b). Secondly, we account for the fact that most of the ABS pools observed in our sample are not entirely static over time. As a result, pool composition changes regularly over time. This contradicts our first criterion that classifies a pool as either transparent or non-transparent over its entire reporting period, because its issue date is fixed. In order to adjust this initially static definition of *Transparency pool*, we allow pools to be classified as non-transparent for a maximum of two years after their first reporting quarter. We choose a two-year time period to incorporate the time lag that banks potentially need to adjust the pool composition of already-existing ABS pools. In Section 6, we address this assumption in our robustness checks. The mean value of *Transparency pool* is 0.75,

[17] Ertan et al. (2017) define *Transparency loan* as an indicator variable equal to one, if the loan was originated after the quarter in which the originating bank reported to ED for the first time, and zero otherwise.

indicating that 75 % of the sample observations are ABS pools under the transparency regime.

4.3 Pool performance measures

To examine the impact of transparency on securitization pool performance, we use five different performance measures as endogenous variables: *Loss rate* (1), *Default rate* (2), *Rate of delinquent amounts* (3), *Rate of delinquent loans* (4), and *Number of days in delinquency* (5).

The *Loss rate* refers to the weighted mean of each loan's loss rate, calculated as the ratio of the default amount to the current loan balance. The *Default rate* is computed as the weighted average default indicator at the loan-level. This default indicator equals one if the borrower defaulted on the loan, and zero otherwise. In our sample, the mean *Loss rate* accounts for 4 %, and the mean *Default rate* for 14 %. The *Rate of delinquent amounts* represents the weighted mean of each loan's delinquent amount, including principal and interest arrears, divided by the respective current loan balance. The *Rate of delinquent loans* refers to the weighted average delinquent indicator at the loan-level. This delinquent indicator equals one if the borrower is in arrears, either with respect to principal or interest payments, and zero otherwise. The *Number of days in delinquency* represents the weighted mean of the natural logarithm of the number of days for which the borrower delays principal or interest payments. In our sample, the *Rate of delinquent amounts* amounts to 2 % , and the *Rate of delinquent loans* to 16 % on average. The mean *Number of days in delinquency* is 0.6, which translates to around 2.6 days.

4.4 Pool diversification measures

Furthermore, we analyze the impact of transparency on securitization pool diversification. Following several European regulatory authorities (e.g., Deutsche Bundesbank, 2006; European Banking Authority, 2013), the Bulletin from the Irving Fisher Committee (IFC) on Central Bank Statistics by Àvila et al. (2013)[18] as well as several further studies (e.g., Acharya et al., 2006; An et al., 2011; Gordy and Lütkebohmert, 2013), we apply Herfindahl-Hirschman Indices (HHIs) as portfolio concentration-risk measures. The HHI of a portfolio i is the sum of the squared weights corresponding to a portfolio's exposure to different categories j and is formally defined as

$$HHI_i = \sum_{j=1}^{N} x_{i,j}^2, \tag{4.1}$$

where N refers to the total number of distinct categories, and $x_{i,j}$ relates to the exposure of category j relative to portfolio i's total volume. In order to facilitate the interpretation of our results, we calculate the inverse of the HHI, and scale it by the total number of distinct categories N (see 4.2). Therefore, by construction, the adjusted HHI[19] that we employ in our empirical analysis takes the value of zero when all loans belong to the same category and concentration risk is highest.

$$HHI_i^{Adjusted} = \frac{(1 - HHI_i)}{1 - \frac{1}{N}}. \tag{4.2}$$

Using the HHI, we measure pool diversification across business types, geographic locations, and industries. These categories are according to the Basel concentration risk regulation of pillar II (Bank for International Settlements, 2004). *Business type HHI* (2) refers to pool diversification with respect to five distinct obligor legal forms (public company, limited

[18] The Bulletins from the IFC on Central Bank Statistics contain the proceedings of meetings organized by the BCBS on topical statistical issues of interest to the international central banking community.

[19] In the following analysis, when we use the term "HHI", we mean the "adjusted HHI" according to Formula 4.2.

company, partnership, individual, and other). On average, *Business type HHI* accounts for 0.42. *Geographic HHI* (3) uses borrowers' one-digit postcodes to account for contagion effects due to local proximity. In total, our sample consists of seventy-four different one-digit postcodes, and the mean *Geographic HHI* amounts to 0.65. *Industry HHI* (4) is based on borrowers' two-digit NACE industry code, and proxies for industry diversification at the second highest possible level within a securitization pool. In our dataset, we observe eighty-eight distinct industries. On average, *Industry HHI* is 0.92.

In addition to the HHIs that mainly measure sectorial concentration in ABS pools, we calculate an index to incorporate single-name credit concentration risk. This measure was first proposed by Uberti and Figini (2010). One of its main advantages is that it takes loan risk, namely loan PD, into account, which reveals linkages between loan characteristics and risk. We estimate these required PDs based on our loan-level database (see Section 3.1). Our PD estimation procedure mainly follows Ertan et al. (2017). In particular, we apply a probit model and utilize a default indicator as endogenous variable. In this probit model, we control for several borrower and loan characteristics, and apply various FE. The results are reported in Table B.1 in the online appendix.

The normalized index $\bar{I}_i$ (1) for measuring single-name credit concentration risk in portfolio i according to Uberti and Figini (2010) is formally defined as

$$\bar{I}_i = \frac{\sum_{l=1}^{n} x_l^2 \sigma_{ll}}{max\{\sigma_{ll}\}}. \tag{4.3}$$

In this formula, n refers to the total number of loans in portfolio i, x_l is the portfolio share of loan l, and σ_{ll} relates to the PD for the lth statistical unit.

Analogous to the HHI, we facilitate the interpretation of our results by first multiplying the $\bar{I}_i$ index by 10, and subsequently calculating the inverse (see 4.4). Therefore, by construction, the adjusted $\bar{I}_i$ *index*[20] that we employ in our empirical analysis takes the value of zero when concentration risk is highest.

$$\bar{I}_i^{Adjusted} = 1 - (\bar{I}_i \cdot 10). \tag{4.4}$$

4.5 Further control variables referring to securitization

To account for observable differences among *Transparency pools* and other pools, we control for loan, tranche and pool characteristics. With respect to loan characteristics, we basically follow the variable definitions used by Ertan et al. (2017). In our analysis, we calculate these characteristics at the loan-level, winsorize the values of continuous variables 1 % and 99 %, and subsequently aggregate them at pool-level using weighted averages (see Section 3.1).

Interest rate serves as a proxy for loan riskiness and is calculated as the weighted average loan interest rate in the respective pool. The mean loan interest rate at pool-level is 2.62 %. We further control for loan riskiness using a weighted average collateral indicator variable (*Collateralization*). This indicator variable is equal to one if a loan is collateralized, and zero otherwise. In our sample, 85 % of the loans are collateralized. To account for borrowers' time-varying probability of default (Rodriguez, 1988; Kirschenmann and Norden, 2012), we control for the weighted average natural logarithm of the remaining loan years to maturity (*Loan years to maturity*).[21] The mean *Loan years to maturity* is 1.89, which reflects around seven years.

Securitized loan ratio represents the weighted average ratio of the loan balance outstanding at the time of securitization to the original loan amount, and serves as a proxy for the time to loan securitization. The outstanding loan balance usually decreases over time. As

[20] Below, when we use the term "$\bar{I}_i$ index", we mean the "adjusted $\bar{I}_i$ index" according to Formula 4.3.

[21] In robustness tests, we add the variable years since loan origination, but our findings do not change. These results are reported in Table B.2 in the online appendix.

a result, loans that are securitized directly at the time of origination exhibit a *Securitized loan ratio* of 100 %. This control variable is of particular relevance, as banks' screening incentives are assumed to be weaker for loans that are securitized directly at the time of origination (e.g., Keys et al., 2010; Purnanandam, 2011). The mean value of *Securitized loan ratio* accounts for 0.82, suggesting that the average loan in our sample was securitized 7.5 quarters after its origination.

We further use *Lending relationship* as an explanatory variable, although the empirical evidence on the effect of an existing relationship between borrower and lender on loan performance is ambiguous (e.g., Kysucky and Norden, 2016). *Lending relationship* is defined as a weighted average indicator variable, with the indicator variable at loan-level being equal to one if a borrower has borrowed at least once in the past from the same bank, and zero otherwise. About 35 % of borrowers in our sample have had prior lending relationships with their bank.

Regarding tranche characteristics, we define *Tranche years to maturity* as the weighted average of the natural logarithm of tranches' remaining years to maturity, to capture the effect that the tranche duration may be used by originators to signal particularly safe bonds (Helwege and Turner, 1999). In our sample, the mean *Tranche years to maturity* is 3.41, reflecting about thirty-six years to maturity. Furthermore, we control for the *Number of tranches* in a securitization pool, since tranching may attract investors, and higher investor attention justifies greater market discipline. Based on all pool-level observations in our sample, we observe 3.6 tranches on average.

At pool-level, we specify *Pool size* as the natural logarithm of the sum of loan current balances in an ABS portfolio. On average, the *Pool size* in our sample is EUR 1.51 billion. In addition, we proxy for the extent of bank information collection effort. Under the novel transparency regime, banks are supposed to specify why a variable is not reported, using one of six different categories.[22] We take advantage of these categories and calculate the corresponding percentage of variables reported to ED. Therefore, we compute the natural logarithm of the ratio of variables that neither belong in one of the above categories nor are completely missing, and the number of all variables (*Information collection*). Similar proxies have been used in prior studies (e.g., Lisowsky et al., 2017; Minnis and Sutherland, 2017). We show that on average, 76 % of the variables are reported.

Furthermore, we control for *Banking sector condition* by estimating the natural logarithm of the number of ABS pools that were issued in the same year and country. Observing a high number of comparable pools may indicate that the respective banking sector is subject to poor financial conditions, as banks that are less capitalized, profitable and liquid are more likely to issue ABS (Affinito and Tagliaferri, 2010). On average, 5.5 comparable ABS pools are reported in our sample. Lastly, we specify *Pool dynamics* as the share of new loans added to already-securitized asset pools compared to the previous reporting quarter. The introduction of new loans can, for example, be attributed to the replacement of matured or defaulted loans, in order to secure a stable ABS loan volume over time. On average, our sample shows 10 % *Pool dynamics*.

4.6 Characteristics of originators

In contrast to our *Securitization sample*, we observe both ABS and originating bank characteristics in our *Extended securitization sample*. Overall, the *Extended securitization sample* additionally comprises information on the originating bank's size, business model, capital structure, liquidity, profitability, and exposure to credit risk. The summary statistics presented below refer to our *Extended securitization sample*.

[22] The classifications are the following: data is not collected, as it is not required by the underwriting criteria (ND,1), data is collected at application, but not loaded in a separate system from the reporting one (ND,2), data is collected at application but loaded in a separate system from the reporting one (ND,3), data is collected but will only be available in the future (ND,4), data is not relevant (ND,5), or reporting requirement with respect to a certain data field is not applicable to the jurisdiction (ND,6).

To begin with, we proxy bank size and business model by using the natural logarithm of total assets (*Bank size*), as well as the sum of net loans divided by total assets (*Loan ratio*). *Bank size* accounts for around 11.3 on average, which translates into EUR 234 billion. The mean *Loan ratio* in our sample is 63 %. Turning to originating bank capital structure, we include the *Equity ratio* defined as the ratio of equity to total assets. On average, this ratio amounts to 8 %. Furthermore, we proxy a bank's liquidity position in relation to its funding needs by employing the ratio of liquid assets to deposits and short-term funding (*Liquidity*). We observe on average a ratio of 33 %. Regarding the originating bank profitability, we use the Cost-Income Ratio (*CIR*) as well as the Return on Equity (*RoE*). On average, the *CIR* accounts for 63 % and *RoE* for -1 %. Finally, we incorporate bank exposure to credit risk, and employ two further variables. In particular, the *NPL ratio* is computed by dividing the volume of non-performing loans by the volume of gross loans. In our sample, we observe a mean *NPL ratio* of 11 %. Moreover, we include *Loan growth* which amounts to 1 % on average.

5 Empirical strategy and results

5.1 Methods

In our empirical strategy, we take advantage of the fact that the ABS loan-level reporting requirements apply to existing as well as newly issued ABS. We distinguish between *Transparency pools* and other pools, using the indicator variable described in Section 4.2, and assess the impact of transparency on securitization pools by estimating two main regression models. Our third regression model analyzes the impact of transparency requirements for ABS on bank risk exposure.

In our first regression model, our endogenous variables are five different pool performance measures. We quantify pool performance by determining the *Loss rate*, *Default rate*, *Rate of delinquent amounts*, *Rate of delinquent loans*, as well as the *Number of days in delinquency*. The second regression model uses four concentration-risk measures, namely the $\bar{I}$ *index* of Uberti and Figini (2010) and various HHIs, as endogenous variables (see Section 4.4). In our third regression model, the endogenous variable represents bank-specific *NPL ratios* as a measure of bank credit risk exposure.

With the exception of *Number of days in delinquency*, all endogenous variables used in our regression models – both the performance and diversification measures, as well as the NPL ratio – are restricted to the interval between zero and one. Due to this bounded nature of variables, it is inappropriate to implement an ordinary least squares (OLS) regression model (Bastos, 2010). Therefore, we apply fractional response regression modeling, which is particularly suitable for modeling variables bounded to the interval [0, 1], thus ensuring that the predicted values lie within the unit interval (Papke and Wooldridge, 1996).[23] Fractional response regression modeling is applied in several studies (Ramalho and da Silva, 2009; Bastos, 2010; Bellotti and Crook, 2012; Li et al., 2018), and is based on a quasi-likelihood estimation. The corresponding log-likelihood function is of the following form (Papke and Wooldridge, 1996):

$$\ln L = \sum_{i=1}^{N} y_i \ln\{G(x_i'\beta)\} + (1 - y_i)\ln\{1 - G(x_i'\beta)\}, \tag{5.1}$$

where N is the sample size, y_i is the dependent variable, $x_i'\beta$ reflects the OLS regression model, and $G(.)$ satisfies $0 < G(w) < 1$ for all $w \in \mathbb{R}$. The last condition guarantees that

[23] In robustness tests, we also employ OLS models and gain the same results qualitatively as in our baseline regressions (see Tables B.3 and B.4 in the online appendix).

the estimated endogenous variables lie within the unit interval. As a functional form for $G(x_i'\beta)$, we apply the probit function:

$$G(x_i'\beta) = \phi\left(x_i'\beta\right), \tag{5.2}$$

where x_i are the covariates for portfolio i, and ϕ is the standard normal cumulative distribution function. Furthermore, we use robust standard errors that are clustered with respect to the ABS pool. Such clustering is especially important, as we observe the same ABS pool several times in our samples. Therefore, we need to control for correlations within one ABS pool over time.

5.2 Results for pool performance (First regression model)

Baseline regression:

Based on our *Securitization sample*, we analyze the impact of transparency on securitization pool performance, controlling for loan, tranche and pool-level information. In addition, we incorporate reporting quarter and country fixed effects in order to control for unobserved dynamics over time, as well as variations between securitization markets and economic conditions on the national level.[24] We estimate the following pooled fractional response regression model on quarterly data:

$$\begin{aligned} Pool\ performance_{ikt} = {} & \alpha + \beta_1 \cdot Transparency\ pool_{it} + \beta_2 \cdot Interest\ rate_{it} \\ & + \beta_3 \cdot Collateralization_{it} + \beta_4 \cdot Loan\ years\ to\ maturity_{it} \\ & + \beta_5 \cdot Securitized\ loan\ ratio_{it} + \beta_6 \cdot Lending\ relationship_{it} \\ & + \beta_7 \cdot Tranche\ years\ to\ maturity_{it} + \beta_8 \cdot Number\ of\ tranches_{it} \\ & + \beta_9 \cdot Pool\ size_{it} + \beta_{10} \cdot Information\ collection_{it} \\ & + \beta_{11} \cdot Banking\ sector\ condition_{it} + \beta_{12} \cdot Pool\ dynamics_{it} \\ & + Reporting\ quarter\ FE + Country\ FE + \epsilon_{it}, \end{aligned} \tag{5.3}$$

[24] In robustness tests, we replace reporting quarter FE and country FE by the interaction term between reporting quarter FE and country FE, to account in more detail for different developments over time in the observed countries. We obtain the same signs for our estimated coefficients of *Transparency pool* as in our baseline regressions. However, significance is slightly reduced, due to the numerous fixed effects applied.

where i indexes pools, k indexes one specific pool-performance measure, t indexes quarters, and ϵ_{it} refers to the error term. In line with our predictions, we expect the coefficient of *Transparency pool* (β_1) to be negative in our first regression model.

Table A.10 presents the results of our baseline regression model analyzing the impact of transparency on different pool performance measures, based on our *Securitization sample* (see Formula 5.3). Applying the pools' *Loss rate*, *Default rate*, and *Number of days in delinquency* as endogenous variables, we find a negative and significant coefficient of *Transparency pool* across all three specifications. To be more precise, specifications (1), (2) and (5) show that, on average, transparency pools experience about 2.3 percentage point (pp) lower loss rates, 5.5 pp lower default rates, and 24 % lower numbers of days in delinquency compared to other pools. This translates to around 55 % of the sample's mean *Loss rate*, 39 % of the sample's mean *Default rate*, and 1.2 as the absolute *Number of days in delinquency*. Additionally, *Transparency pool* also exhibits a negative, however not significant coefficient, when we apply the pools' *Rate of delinquent amounts* or *Rate of delinquent loans* as endogenous variables. Altogether, these findings indicate that pools issued under the transparency regime perform unambiguously better than other pools.

[Table A.10 about here.]

The control variables' coefficients are predominantly consistent with our expectations.[25] Pools with riskier loans, as measured by *Interest rate*, experience in specifications (4) and (5) a significantly lower *Rate of delinquent loans* and *Number of days in delinquency*. In specifications (1), (2), and (3), the coefficients of *Interest rate* are also negative, though not significant. At this point, the fact that we observe securitized loans seems to be pivotal. Most ABS pools in our sample are not entirely static, and banks may especially manage large risky loans in ABS portfolios, by trying to exclude these loans from the pool prior to

[25] Our exogenous variables – with the exception of *Transparency pool* – predominantly serve as control variables. When describing our results in the following, we do not claim causal effects.

the default event. This could explain why the coefficients of *Interest rate* in specifications (4) and (5) – in contrast to specifications (1), (2) and (3) – are significant.

The impact of *Collateralization* on the portfolios' performance measures is, in four out of five specifications, significantly positive. Accordingly, ABS pools with a higher proportion of collateralized loans show lower performance on average. This can be explained by the fact that banks mainly demand collateral from risky borrowers (Jimenez and Saurina, 2004). Furthermore, pools with longer remaining *Loan years to maturity* consistently show lower pool performance measures. This effect is significant in specification (3). The significantly positive coefficients of *Securitized loan ratio* in specifications (3), (4) and (5) suggest that pools with loans originated for immediate securitization exhibt more, higher and longer delinquencies on average. This finding is consistent with previous studies emphasizing decreasing bank screening incentives due to the shift of loan default risk to ABS investors (e.g., Keys et al., 2010; Purnanandam, 2011; Keys et al., 2012).

In addition, pools with a higher proportion of loans that experience prior *Lending relationships* with their banks show lower pool performance on average. However, in neither specification is this effect significant. In previous studies, the role of lending relationships is also ambiguous. For instance, on the one hand, Agarwal and Hauswald (2010) and Chang et al. (2014) provide evidence that relationship loans tend to perform better than non-relationship loans. On the other hand, relationship lending may lead to banks placing excessive trust in their borrowers. Accordingly, Boot (2000) argues that banks with close relationships to their borrowers may not deny further loan requests when borrowers are in danger of defaulting.

The impact of *Tranche years to maturity* is always negative, but mostly insignificant. Furthermore, pools with a higher *Number of tranches* and higher *Information collection* perform better on average. The significantly negative coefficient of *Information collection* in specification (3), indicating that pools with fewer missing reporting variables exhibit lower delinquencies, is consistent with the results at the loan-level from Ertan et al. (2017).

In all other specifications, the coefficients of *Information collection* are negative as well. *Pool size* tends to have a significant positive impact on pools' *Loss rate* and *Default rate*. In addition, pools that are issued under a poor *Banking sector condition* perform significantly worse in specifications (1), (2) and (5). The positive, but not significant coefficients in the remaining specifications are consistent with this finding. *Pool dynamics* has a significantly negative impact across all specifications. Therefore, our results indicate that the higher the ratio of new loans that are introduced into already-securitized asset pools, the better the pools tend to perform on average.

Overall, the results of our baseline regression model indicate that transparency has real effects on securitization pools. In particular, under the transparency regime, banks securitize better performing ABS pools in terms of *Loss rate*, *Default rate*, and *Number of days in delinquency*.

Subsample analysis:

One potential concern is that our results are driven by changes in bank securitization activities over time, which we do not control for sufficiently by using country and reporting quarter fixed effects. To address this concern, we limit our sample to pool observations from the third quarter of 2012 until the second quarter of 2013, as this period corresponds to the ECB's loan-level reporting initiative's starting period (see Figure A.2). This significant reduction in the sample period reduces our sample size by 956 observations, and limits the effects of other factors that could cause a shift in pool performance. As shown in Table A.11, *Transparency pool* significantly lowers the pool *Loss rate*, *Rate of delinquent loans*, and *Number of days in delinquency*. When limiting the sample to observations from the third quarter of 2012 until the second quarter of 2013, the economic significance relative to our baseline regressions even increases in these three specifications. Furthermore, the coefficients of *Transparency pool* when applying *Default rate* and *Rate of delinquent amounts* as endogenous variables are consistently negative, but lack significance. Summarizing the results of our subsample analysis, we can show that the impact of transparency on pool performance is not driven by changes in bank securitization activities over time, which we do not control for sufficiently in our baseline regressions.

[Table A.11 about here.]

Within ABS pool analysis:

Additionally, we address the potential concern that our results are driven by varying bank adaption periods to the new reporting requirements. As a consequence, we adjust our baseline regression model by focusing on ABS pools that change from being non-transparent to transparent during our sample period. For this purpose, we apply – in addition to our baseline regression model – ABS pool FE. This is especially useful as, with the help of these FE, we can examine whether originators changed their securitization behavior within one ABS pool due to the introduction of the new transparency regulation. This change in behavior can potentially affect pool performance, as most ABS pools observed in our sample are not completely static over time (see Section 1). Despite this, in accordance with the nature of securitization transactions, our control variables on loan-, tranche- and pool-level do not vary much over time. Consequently, it is more suitable to employ the interaction term between reporting quarter FE and country FE to control for variations over time as accurately as possible.[26] As reported in Table A.12, *Transparency pool* significantly lowers pools' *Loss rate*, *Default rate*, *Rate of delinquent amounts*, *Rate of delinquent loans*, and *Number of days in delinquency*. Compared to our baseline regression model and focussing on the originator behavior due to the elimination of inter-pool variation, our results become even stronger, as *Transparency pool* exhibits significantly negative coefficients across all five specifications. This indicates that originating banks changed their securitization behavior within one ABS pool, due to the introduction of the new transparency regulation.

[26] When we additionally employ some of the control variables mentioned in Section 4.5, we generally obtain the same results for *Transparency pool*.

[Table A.12 about here.]

Further transparency effect analysis:

Finally, we analyze whether the novel transparency regime induces disciplining effects for all pools reported to ED, independent of being classified as transparent or non-transparent. With the introduction of the ECB's loan-level reporting initiative, originators are able to observe ABS pools of many other originators on a very granular level. Monitoring these reports and assessing the quality of competing ABS pools, originating banks deepen their expertise in ABS risk assessment. Moreover, they may be incentivized to adjust their securitization behavior to ensure the competitiveness of their own ABS pools. A change in securitization behavior can also affect the pool performance of already-issued ABS pools, as many pools in our sample are not completely static over time. Against this background, we expect pool performance to rise with an increasing number of pools being reported to ED. In addition to our baseline regression model, we include the number of reported ABS pools to ED prior to the reporting quarter of the respective pool's reporting quarter (*Number of previous reportings*).

Based on this adjusted regression model reported in Table A.13, we obtain two valuable results. First, a higher *Number of previous reportings* induces significantly lower pool *Loss rates*, *Rates of delinquent amounts*, *Rates of delinquent loans*, and *Numbers of days in delinquency*. Originators seem to respond to the improving pool performance in the market and the decreasing costs of granular ABS risk assessment by increasing their own pool performance. This is valid for both *Transparency pools* as well as other pools. Second, using the *Number of previous reportings* as a control variable, the impact of *Transparency pool* on *Loss rate*, *Default rate*, and *Number of days in delinquency* is still consistent with our baseline regression model. *Rate of delinquent amounts* and *Rate of delinquent loans* display noticeably stronger significance. Although the *Number of previous reportings* increases over time, the initial impact of *Transparency pool* on pool performance even strengthens, as the coefficients become more significant across all five specifications.

Accordingly, the obligatory and regular ABS pool reports complement the still significant effect of *Transparency pool*. We can show that the transparency regime provides disciplinary effects for all pools, but these effects are even more pronounced for *Transparency pools*.

[Table A.13 about here.]

5.3 Results on pool diversification (Second regression model)

Baseline regression model:

The second regression model uses concentration-risk measures as endogenous variables. In order to proxy for diversification, we apply three different HHIs relating to borrower characteristics, namely business type, geographic location, and industry. Furthermore, we calculate the $\bar{I}$ index proposed by Uberti and Figini (2010). To the best of our knowledge, this is the first study that attempts to explain concentration risk in securitization portfolios.

To examine the impact of transparency on securitization pool diversification, we need to control for both securitization and originating bank characteristics. Incorporating originating bank information is especially relevant as bank business models vary widely in our *Extended securitization sample*. For instance, the standard deviation of *Bank size* accounts for EUR 287 billion. This corresponds to the size difference between a large international bank and a local bank operating mainly at a national level. Against this background, it is reasonable to assume that these differences in bank business models affect diversification in ABS pools.

Additionally, in our second regression model, we adjust our definition of *Transparency pool*. Even though the ABS pools observed in our sample are not completely static over time, it is difficult for banks to change the degree of diversification substantially within a short time period. Therefore, we ignore any maximum time period for ABS pools classified as non-transparent, and define *Transparency pools* solely as those issued chronologically after the announcement date of loan-level reporting requirements for SME loan securitizations in April 2011.[27]

In particular, we examine the impact of transparency on securitization pool diversification, based on the following pooled fractional response regression model on quarterly data using our *Extended securitization sample*:

$$\begin{aligned} Pool\ diversification_{ilt} = {} & \alpha + \beta_1 \cdot Transparency\ pool_{it} \\ & + \beta_2 \cdot Tranche\ years\ to\ maturity_{it} + \beta_3 \cdot Pool\ size_{it} \\ & + \beta_4 \cdot Information\ collection_{it} + \beta_5 \cdot Pool\ dynamics_{it} \\ & + \beta_6 \cdot Bank\ size_{it} + \beta_7 \cdot Loan\ ratio_{it} + \beta_8 \cdot NPL\ ratio_{it} \\ & + Reporting\ quarter\ FE + Country\ FE + \epsilon_{it}, \end{aligned} \tag{5.4}$$

where i indexes pools, l indexes one specific concentration-risk measure, t indexes quarters, and ϵ_{it} refers to the error term. In our second regression model and in line with our predictions, we expect the coefficient of *Transparency pool* (β_1) to be positive.[28]

In Table A.14, we present the results of our second regression model analyzing the impact of transparency on different concentration-risk measures (see Formula 5.4). Applying the $\bar{I}$ *index*, *Business type HHI* and *Industry HHI* as endogenous variables, we find positive and significant coefficients of *Transparency pool* across all specifications. In particular, with respect to specifications (1),(2) and (4), *Transparency pools* exhibit 0.0088 higher $\bar{I}$ *index*, 0.188 higher *Business type HHI*, and 0.024 higher *Industry HHI*. This converts to 22 % of the sample's variation between the tenth and the ninetieth percentile of the $\bar{I}$ *index*, 26 % of the mentioned sample's *Business type HHI* variation, and 30 % of the

[27] In a robustness check, we relax this modification. We find that with an increasing assumed maximum time period for ABS pools classified as non-transparent, our results strengthen. This speaks in favor of our assumption that originating banks are not able to adjust the degree of diversification in ABS pools in the short run.

[28] We do not expect negative coefficients because, for illustrative purposes, we calculated the inverse of the original diversification measures (see Section 4.4).

mentioned sample's *Industry HHI* variation. These results reveal that pools issued under the transparency regime are diversified to a greater extent with respect to loan credit risk, business types, and industries.

[Table A.14 about here.]

In specification (3) in Table A.14, we gain a significant negative coefficient of *Transparency pool* when applying *Geographic HHI* as endogenous variable. This finding somewhat contradicts our results in the other specifications. However, it should be noted that *Geographic HHI* is calculated from borrowers' one-digit postcodes. The size of areas with the same postcode may vary widely both across and within countries. This leads to a limited comparability of geographic diversification.

Turning to our exogenous variables, the significantly positive coefficients of *Pool size* in specifications (1) and (3) reveal that larger pools are on average more diversified than smaller pools. Furthermore, the variable *Pool dynamics* mainly shows a significantly positive coefficient. This indicates that pools with a higher ratio of new loans introduced into the already-securitized asset pool are more diversified on average. Finally, in two out of four specifications, we find that ABS pools, originated by banks exhibiting higher *NPL ratios*, are more diversified. This finding supports our approach to analyzing both pool performance and diversification.

Overall, the results of our second baseline regression model using the *Extended securitization sample* indicate that transparency also has real effects on securitization pools. In particular, under the transparency regime, banks securitize more diversified ABS pools in terms of $\bar{I}$ *index*, *Business type HHI*, and *Industry HHI*.

Subsample analysis:

One potential concern that we have already addressed in Section 5.2 with regard to our first regression model is that our results are driven by changes in bank securitization activities over time, which we do not control for sufficiently in our baseline regressions. To address this concern, we again limit our sample to pool observations from the third quarter of 2012 until the second quarter of 2013, as this period corresponds to the ECB's loan-level reporting initiative starting period (see Figure A.2). This significant reduction in the sample period reduces our sample size by 501 observations, and limits the effects of other factors that could cause a shift in pool diversification. As illustrated in Table A.15, *Transparency pool* still significantly increases pools' $\bar{I}$ *index* and *Industry HHI*. When limiting the sample to observations from the third quarter of 2012 until the second quarter of 2013, the economic significance relative to our primary regressions even increases in specifications (1) and (4). Even though the coefficients of *Transparency pool* in specifications (2) and (3) are the same as in our baseline regression model, they lack significance. Overall, with this subsample analysis, we can show that our results are not driven by changes in bank securitization activities over time, which we do not control for sufficiently in our baseline regressions.

[Table A.15 about here.]

Altogether, our results demonstrate that the novel transparency regime has real effects on both pool performance and diversification. Being aware of the fact that many market participants can observe loan performance in ABS pools, banks seem to adjust their securitization behavior, and issue better performing as well as more diversified ABS pools with respect to $\bar{I}$ *index*, *Business type HHI*, and *Industry HHI*. Below, we consider whether the issuance of better performing and more diversified ABS pools affect originating bank risk exposure.

5.4 Results for originating bank credit-risk exposure (Third regression model)

In our third regression model, we examine the impact of the novel transparency regime for ABS pools on originating bank risk exposure. We proxy for this exposure by using the *NPL ratio*. Because in Fitch Connect, bank-specific fundamental data are available only on a yearly basis, we convert our pool-quarter observations in our *Extended securitization sample* to pool-year observations by using averages. This adjusted *Extended securitization sample* comprises 194 pool-year observations.

To examine the impact of the novel transparency regime for ABS pools on originating bank risk exposure, we need to control for bank characteristics. In line with the study of Louzis et al. (2012), our exogenous variables depict originating bank size, business model, profitability, capital structure, liquidity, and profitability. Additionally, we apply the same *Transparency pool* definition as in our second regression model. In particular, we apply the following pooled fractional response regression model on yearly data using our adjusted *Extended securitization sample*:

$$\begin{aligned} NPL\ ratio_{it} = \alpha &+ \beta_1 \cdot Transparency\ pool_{it} + \beta_2 \cdot Loss\ rate_{it} + \beta_3 \cdot Pool\ dynamics_{it} \\ &+ \beta_4 \cdot Bank\ size_{it} + \beta_5 \cdot Loan\ ratio_{it} + \beta_6 \cdot Equity\ ratio_{it} \\ &+ \beta_7 \cdot Liquidity_{it} + \beta_8 \cdot CIR_{it} + \beta_9 \cdot RoE_{it} + \beta_{10} \cdot Loan\ growth_{it} \\ &+ \beta_{10} \cdot GDP_{it-1} + Reporting\ year\ x\ Country\ FE + \epsilon_{it}, \end{aligned} \tag{5.5}$$

where i indexes pools, t indexes years, and ϵ_{it} refers to the error term. In our third regression model, we expect the coefficient of *Transparency pool* (β_1) to be positive. This prediction can be explained by the fact that *Transparency pools* tend to increase pool performance. Therefore, assuming stable lending standards over time, the credit-risk exposure of originating banks with *Transparency pools* may increase.[29]

[29] When we control for lending standards, collected from the ECB's bank lending survey, at the time of loan origination in our third regression model, we find no indication that lending standards affect our results.

In Table A.16, we present the results of our third regression model analyzing the impact of transparency on originating bank risk exposure. Specification (1) refers to Formula 5.5, and reveals a positive coefficient of *Transparency pool*. This finding is consistent with our prediction, although, we do not observe any significance. In specification (2), we incorporate interaction effects between *Transparency pool* and *Loss rate*, as well as between *Loss rate* and *Pool dynamics*. Based on this specification, we gain three important results. Firstly, the coefficient of *Transparency pool* turns significantly positive. Secondly, the coefficient of the interaction effect *Transparency pool x Loss rate* is significantly negative. This indicates that banks which originate *Transparency pools*, aiming at lowering their ABS pool *Loss rate* show higher *NPL ratios* on average. Thirdly, the interaction effect *Loss rate x Pool dynamics* tends to significantly increase the banks' *NPL ratios*. This finding suggests that originating banks attempt to manage high *Loss rates* in ABS pools by retracting poorly performing loans from these pools and retaining them on their balance sheets, or by including loans that are performing well in these pools from their balance sheet. Consequently, the *NPL ratio* rises. This effect becomes even stronger applying, with respect to the small number of observations, an unreported triple interaction term *Transparency pool x Loss rate x Pool dynamics*.

[Table A.16 about here.]

Overall, the results of our third regression model demonstrate that the novel transparency regime for ABS pools has real effects on bank risk exposure. Banks seem to adjust their securitization behavior by issuing better performing as well as more diversified ABS pools. However, this comes at a cost, as bank credit-risk exposure increases.

6 Robustness checks

In order to reinforce our findings, we perform several robustness tests below. Firstly, we adjust our *Transparency pool* definition in our first regression model. In our baseline specification, *Transparency pools* refer to those issued chronologically after the announcement date of loan-level reporting requirements for SME loan securitizations in April 2011. Additionally, we classify pools as non-transparent for a maximum of eight quarters after their first reporting quarter. To relax this assumption, we adjust our applied time period and use six quarters as the maximum for ABS pools to be classified as non-transparent. We report our results in Table B.5 in the online appendix. According to Table B.5, *Transparency pool* still significantly lowers pool *Loss rates*, *Default rates*, and *Numbers of days in delinquency*. Moreover, the negative coefficients of *Transparency pool* when employing *Rate of delinquent amounts* or *Rate of delinquent loans* as the endogenous variable are consistent with our baseline regressions. Furthermore, if we assume maximum time periods for ABS pools to be classified as non-transparent that are greater than eight quarters, our results remain robust as well. When we ignore any maximum for ABS pools to be classified as non-transparent, and define *Transparency pools* solely as those issued chronologically after the announcement date of loan-level reporting requirements for SME loan securitizations in April 2011, we qualitatively obtain the same results as in our baseline regressions. *Transparency pools* exhibit lower *Loss rates*, *Default rates*, and *Number of days in delinquency* on average. This robustness check is reported in Table B.6 in the online appendix.

Secondly, another possible concern may be that our results are driven by the ECB's ABSPP (see Section 2.2).[30] Due to the regular ECB's ABS purchases, originators may be induced to change their securitization behavior. Therefore, we control for *ABSPP net purchases* in addition to applying reporting quarter FE in our first and second baseline regression.

[30] A potential impact by the ECB's ABSPP is plausible. For instance, Grosse-Rueschkamp et al. (2018) provide evidence that the announcement of central bank purchases reduces the bond yields of firms whose bonds are eligible for such purchases.

ABSPP net purchases refer to the ECB's net purchases during the quarter prior to the respective pools' issue quarter.[31] We summarize our findings in Tables B.7 and B.8 in the online appendix. As illustrated in Table B.7 in the online appendix, *Transparency pool* still significantly lowers pool *Loss rates*, *Default rates*, and *Numbers of days in delinquencies.* Moreover, in Table B.8 in the online appendix, the positive impact of *Transparency pool* on $\bar{I}$ *index*, *Business type HHI* and *Industry HHI*, as well as the negative impact on *Geographic HHI*, are consistent with our baseline regressions.

Thirdly, we conduct several minor robustness checks that we also report in the online appendix. For instance, we incorporate the fact that our *Securitization sample* is reduced by 6,477,261 observations at the loan-level and by 699 observations at the tranche-level, since we focus on quarterly observations, but some banks voluntarily report every month (see Tables A.1 and A.2 in the appendix). Therefore, we add another exogenous variable to our *Securitization sample*, and control for *Monthly reporting* in our first baseline regressions. This indicator variable equals one if the bank reports on a monthly basis, and zero otherwise. In accordance with our first baseline regression model, we observe significantly negative coefficients of *Transparency pool* in three specifications. This robustness check is reported in Table B.9 in the online appendix. Finally, as presented in Table B.10 in the online appendix, we still obtain the same findings for pool performance in our first baseline regressions, when controlling for GDP lagged by one quarter.

[31] For calculating this additional control variable, we use data from the European Central Bank (2018a). In a further robustness analysis based on the same data source, we control for the ECB's net purchases during the pools' respective reporting quarters, to control for the fact that many pools in our sample are not completely static over time. When adding this control variable to both our baseline regressions, we still obtain the same results.

7 Conclusion

One important consequence of the latest subprime lending crisis is that market participants called for greater transparency in securitization markets. Subsequently, the ECB launched the loan-level reporting initiative, obliging ABS originators to disclose quarterly loan-by-loan information to a broad range of market participants. Our study empirically explores whether these novel ABS reporting requirements have real effects on securitization pools. In particular, we consider whether originators improve ABS pool performance, and enhance ABS pool diversification. Building on these two analyses, we also examine the impact of the induced change in securitization behavior due to the novel transparency regime on originating bank risk exposure. To the best of our knowledge, this study is the first to analyze the impact of transparency on securitization from a pool-level perspective. Pool-level analysis is particularly relevant, as most of the observed ABS pools are not entirely static over time, which disentangles portfolio performance from long-term loan performance, and because diversification can in any event only be addressed at a pool-level.

We obtain data from ED, the central repository of all loan-level information under the ECB's loan-level reporting initiative, and use several fractional response regression models. Applying reporting quarter, country, and partially, ABS pool FE, as well as clustered standard errors with respect to the ABS pool, our results indicate that the novel transparency regime indeed has valuable real effects. In particular, pools affected by the novel transparency regime perform better, i.e. show significantly lower *Loss rates*, *Default rates*, *Rates of delinquent amounts*, and *Rates of delinquent loans*, as well as include loans with fewer *Numbers of days in delinquency*. Furthermore, transparency has an impact on concentration risk in ABS pools. Pools affected by the transparency regime seem to be more diversified than other pools with respect to single-name concentration, business types, and industries. In a further analysis, our results also indicate that these better performing and more diversified ABS pools come at a cost, as originators of *Transparency pools* exhibit significantly higher *NPL ratios*.

Altogether, we find ample evidence that transparency is an effective way to limit bank scope for exploiting information asymmetries. Transparency gained from loan-level reporting requirements reinforces bank incentives to increase portfolio performance and diversification in the ABS market. Restoring investor trust in ABS and reviving securitization markets in the future represent two major objectives of both regulators and policy makers. Smoothly functioning securitization markets help banks to diversify their loan portfolios and funding sources, which in turn enhances financial stability, as well as overall social welfare. Finally, our results can assist regulators in assessing the potential impact of loan-level reporting standards, which is also valuable concerning the forthcoming 'Securitisation Regulation'.

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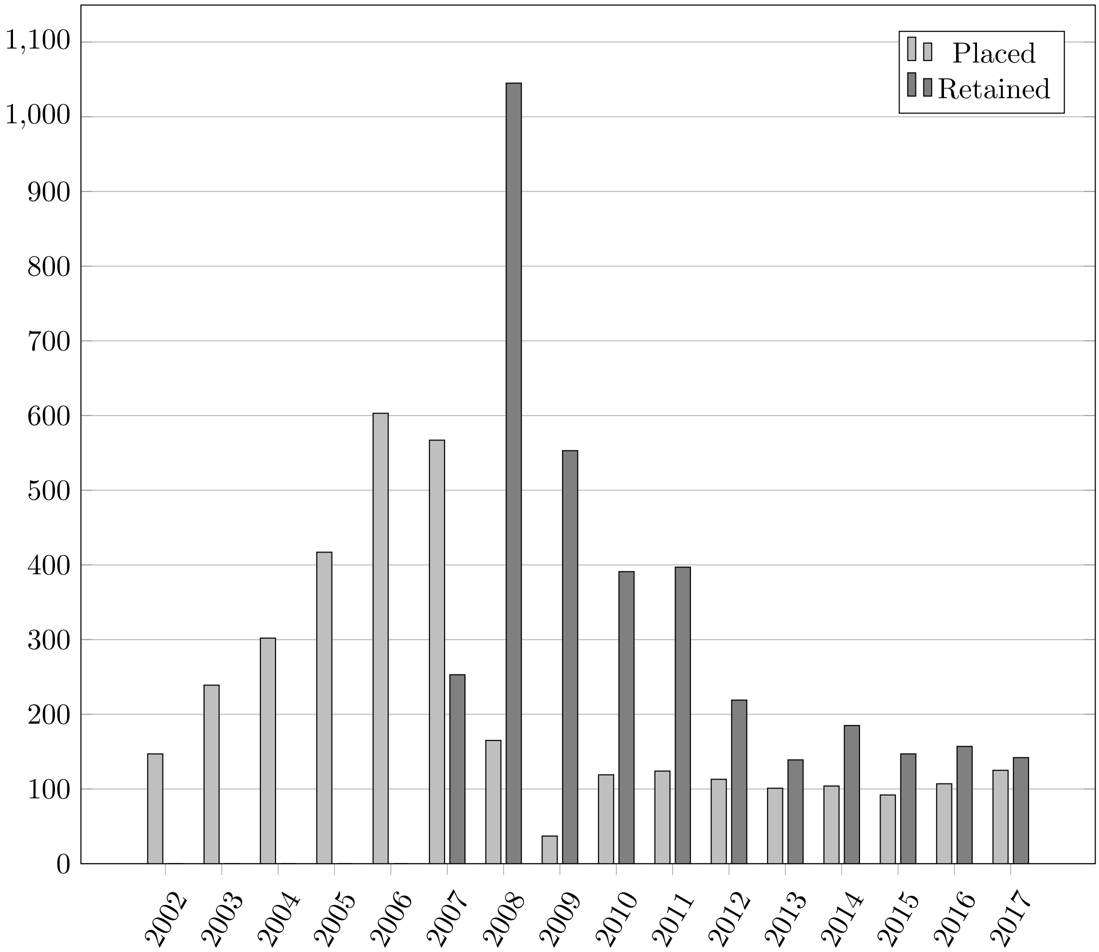
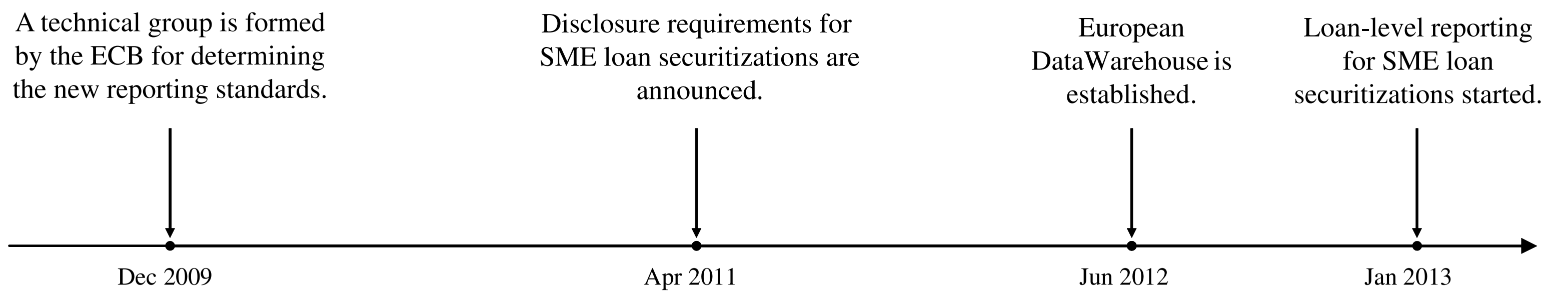
A Appendix

Figure A.1: ABS issuances in Europe (in billion USD)



Source: Securities Industry and Financial Markets Association (2018).

Figure A.2: Timeline of the ECB's loan-level reporting initiative



Source: Ertan et al. (2017).

Table A.1: Overview of the sample selection procedure on loan-level

	Loans	Borrowers	Pools	Observations at the loan-level
Data reported to ED from 2012-2017	**6,612,261**	**2,517,548**	**172**	**32,026,829**
Less				
Relevant variables are missing	924,736	599,684	9	5,712,605
Relevant variables are implausible (e.g., days in arrears exceed the loan period, reporting date is before the loan origination date)	1,556,658	99,368	3	3,608,981
Ambiguous bank names	532,042	478,246	52	3,625,027
Corresponding tranche-level data is not available	49,404	25,668	0	287,918
Voluntary monthly reporting	705,299	97,310	0	6,477,261
Securitization sample	**2,844,122**	**1,217,272**	**108**	**12,315,037**
Corresponding bank data are missing	1,763,081	573,739	40	4,786,260
Unenforceable PD estimation	6,002	3,518	6	16,833
Extended securitization sample	**1,075,039**	**640,015**	**62**	**7,511,944**

Table A.2: Overview of the sample selection procedure on tranche-level

	Tranches	Pools	Observations at the tranche-level
Data reported to ED from 2012-2017	**756**	**172**	**9,969**
Less			
Relevant variables are missing	1	0	4
Relevant variables are implausible (e.g., bond issue date is after the maturity date)	6	1	118
Corresponding loan-level data is not available	364	63	5,296
Voluntary monthly reporting	0	0	699
Securitization sample	**385**	**108**	**3,852**
Corresponding bank data are missing	151	40	1,878
Unenforceable PD estimation	15	6	61
Extended securitization sample	**219**	**62**	**1,913**

Table A.3: Number of loans and SMEs by country-reporting year in our *Securitization sample*

Country	2012		2013		2014		2015		2016		2017	
	Loans	SMEs	Loans	SMEs	Loans	SMEs	Loans	SMEs	Loans	SMEs	Loans	SMEs
BE	253,325	136,016	295,871	152,518	280,421	146,220	276,747	141,172	258,879	130,896	277,108	141,711
DE	0	0	15,131	8,991	11,883	7,769	32,060	23,677	29,800	21,242	125,254	113,579
ES	2,403	2,181	34,847	32,585	31,631	29,685	84,788	76,371	92,856	83,420	90,196	82,382
FR	0	0	161,160	70,332	322,516	50,053	333,674	62,317	371,432	79,867	393,541	97,869
IT	84,475	73,395	246,779	212,373	214,954	188,426	215,415	188,250	171,881	148,985	129,931	114,377
NL	24,948	18,594	22,831	17,074	11,666	6,683	9,842	5,726	7,942	4,718	5,964	3,605
PT	0	0	38,006	26,803	46,159	29,926	64,868	41,368	62,217	43,190	50,676	36,006
Total	365,151	230,186	814,625	520,676	919,230	458,762	1,017,394	538,881	995,007	512,318	1,072,670	589,529

This table reports the number of loan and borrower observations from 2012 until 2017 for every year and country. Our sample consists of seven different countries: Belgium (BE), Germany (DE), Spain (ES), France (FR), Italy (IT), the Netherlands (NL), and Portugal (PT).

Table A.4: Number of ABS pools and banks by country-reporting year in our *Securitization sample*

	2012		2013		2014		2015		2016		2017	
Country	Pools	Banks	Pools	Banks	Pools	Banks	Pools	Banks	Pools	Banks	Pools	Banks
BE	3	3	3	3	3	3	3	3	3	3	4	4
DE	0	0	1	1	2	2	4	4	2	2	4	4
ES	4	4	26	9	25	9	26	8	14	6	13	4
FR	0	0	5	5	4	4	8	8	8	8	8	8
IT	9	9	25	25	27	23	29	24	27	25	18	16
NL	1	1	1	1	1	1	1	1	1	1	1	1
PT	0	0	3	2	4	2	5	4	5	4	3	3
Total	17	17	64	46	66	44	76	52	60	49	51	40

This table reports the number of ABS pools and banks from 2012 until 2017 for every year and country. Our sample consists of seven different countries: Belgium (BE), Germany (DE), Spain (ES), France (FR), Italy (IT), the Netherlands (NL), and Portugal (PT).

Table A.5: Definitions of our variables

Variable	Description	Data source
Pool quality measures		
Loss rate	Weighted average of every loan's loss rate, calculated as default amount divided by the current loan balance.	ED, own calc.
Default rate	Weighted average default indicator variable (default indicator equals one if the borrower defaulted on the loan, and zero otherwise).	ED, own calc.
Rate of delinquent amounts	Weighted average of every loan's delinquent amount, including principal and interest arrears, divided by the respective current loan balance.	ED, own calc.
Rate of delinquent loans	Weighted average delinquent indicator variable (delinquent indicator equals one if the borrower is in arrears, either with respect to principal or interest payments, and zero otherwise).	ED, own calc.
Number of days in delinquency	Weighted average of the natural logarithm of every loan's days in delinquency.	ED, own calc.
Pool diversification measures		
Business Type HHI	Scaled inverse of the HHI relating to borrowers' legal form (e.g., public company, limited company, partnership, individual, other).	ED, own calc.
Industry HHI	Scaled inverse of the HHI relating to borrowers' two-digit NACE industry code.	ED, own calc.
Geographic HHI	Scaled inverse of the HHI relating to borrowers' one-digit postcode.	ED, own calc.
$\bar{I}$ index	Single-name credit concentration risk index proposed by Uberti and Figini (2010).	ED, own calc.
Transparency characteristic		
Transparency pool	An indicator variable equal to one if a pool's issue date is chronologically after the loan-level reporting requirements for SME loan securitizations were announced in April 2011, and zero otherwise. After a maximum period of two years subsequent to its first reporting quarter, every pool is classified as transparent.	ED, own calc.

All variables refer to the pool- or bank-level. The aggregation procedure at the pool-level is explained in more detail in Section 3.1. All weightings are based on the current loan or tranche balance.

Table A.5: Definitions of our variables (continued)

Variable	Description	Data source
Loan-level characteristics		
Interest rate	Weighted average loan interest rate (%).	ED, own calc.
Collateralization	Weighted average collateral indicator variable (collateral indicator equals one if the loan is collateralized, and zero otherwise).	ED, own calc.
Loan years to maturity	Weighted average of the natural logarithm of the remaining loan years to maturity.	ED, own calc.
Securitized loan ratio	Weighted average ratio of the loan balance outstanding at the time of securitization to the original loan amount.	ED, own calc.
Lending relationship	Weighted average lending relationship indicator variable (lending relationship indicator equals one if a borrower has borrowed at least once over the past from the same bank, and zero otherwise).	ED, own calc.
Tranche- and pool-level characteristics		
Tranche years to maturity	Weighted average of the natural logarithm of the remaining tranches' years to maturity.	ED, own calc.
Number of tranches	Total number of tranches in a securitization pool.	ED, own calc.
Pool size	Natural logarithm of the sum of loans' current balance in a securitization pool. The sum of loans' current balance is divided by millions for illustrative purposes.	ED, own calc.
Information collection	Natural logarithm of the ratio of non-missing variables reported to ED.	ED, own calc.
Banking sector condition	Natural logarithm of the number of ABS pools that were issued in the same year and country.	ED, own calc.
Pool dynamics	Share of new loans introduced into the already-securitized asset pool compared to the previous reporting quarter.	ED, own calc.
Originating bank characteristics		
Bank size	Natural logarithm of banks' total assets.	Fitch Connect
Loan ratio	Sum of net loans divided by banks' total assets.	Fitch Connect
Equity ratio	Ratio of equity to banks' total assets.	Fitch Connect
Liquidity	Ratio of liquid assets to deposits and short-term funding.	Fitch Connect
CIR	Cost-Income-Ratio.	Fitch Connect
RoE	Return on Equity.	Fitch Connect
NPL ratio	Ratio of non-performing loans volume to gross loans volume.	Fitch Connect
Loan growth	Loan growth compared to the previous year.	Fitch Connect

All variables refer to the pool- or bank-level. The aggregation procedure at the pool-level is explained in more detail in Section 3.1. All weightings are based on the current loan or tranche balance.

Table A.6: Summary statistics for our *Securitization sample*

Variable	N	Mean	SD	p10	p50	p90
Pool performance measures						
Loss rate	1,072	0.04	0.07	0.00	0.01	0.13
Default rate	1,072	0.14	0.21	0.00	0.07	0.36
Rate of delinquent amounts	1,072	0.02	0.03	0.00	0.01	0.06
Rate of delinquent loans	1,072	0.16	0.14	0.00	0.14	0.35
Number of days in delinquency	1,072	0.60	0.61	0.00	0.45	1.49
Transparency characteristic						
Transparency pool	1,072	0.75	0.43	0.00	1.00	1.00
Loan-level characteristics						
Interest rate (%)	1,072	2.62	0.90	1.52	2.55	3.91
Collateralization	1,072	0.85	0.22	0.54	0.95	1.00
Loan years to maturity	1,072	1.89	0.43	1.45	1.98	2.27
Securitized loan ratio	1,072	0.82	0.14	0.64	0.84	0.94
Lending relationship	1,072	0.35	0.27	0.08	0.26	0.78
Tranche- and pool-level characteristics						
Tranche years to maturity	1,072	3.41	0.58	2.53	3.57	3.88
Number of tranches	1,072	3.60	3.79	1.00	3.00	6.00
Pool size	1,072	19.96	1.44	18.11	19.94	21.88
Information collection	1,072	4.32	0.11	4.26	4.27	4.57
Banking sector condition	1,072	1.63	0.70	0.70	1.61	2.71
Pool dynamics	1,072	0.10	0.24	0.00	0.01	0.28

This table reports the descriptive statistics for the variables used in our analysis. Variables are described in the appendix in Table A.5. N refers to the number of observations. SD means standard deviation. p10, p50, and p90 represent the tenth, fiftieth, and the ninetieth percentile.

Table A.7: Correlations for our *Securitization sample*

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1)	Loss rate	1.00									
(2)	Default rate	0.44	1.00								
(3)	Rate of delinquent amounts	0.47	0.37	1.00							
(4)	Rate of delinquent loans	0.71	0.37	0.74	1.00						
(5)	Number of days in delinquency	0.80	0.44	0.80	0.92	1.00					
(6)	Transparency pool	-0.26	-0.20	-0.39	-0.26	-0.38	1.00				
(7)	Interest rate (%)	-0.21	-0.21	-0.26	-0.26	-0.29	0.24	1.00			
(8)	Collateralization	0.04	0.17	0.10	0.18	0.13	-0.07	-0.06	1.00		
(9)	Loan years to maturity	0.05	-0.01	-0.04	0.21	0.12	-0.02	-0.04	0.04	1.00	
(10)	Securitized loan ratio	0.13	-0.15	0.20	0.16	0.17	-0.05	0.08	0.01	-0.10	1.00
(11)	Lending relationship	-0.27	-0.09	-0.43	-0.43	-0.45	0.29	0.36	0.01	-0.26	-0.04
(12)	Tranche years to maturity	0.14	-0.27	0.14	0.35	0.25	0.04	0.11	-0.05	0.47	0.18
(13)	Number of tranches	-0.04	-0.06	0.03	0.07	0.07	-0.09	-0.08	0.05	0.21	0.05
(14)	Pool size	-0.24	-0.13	-0.47	-0.39	-0.44	0.42	0.34	-0.16	-0.05	-0.05
(15)	Information collection	-0.04	-0.05	-0.17	-0.04	-0.07	-0.02	-0.23	-0.12	0.30	-0.02
(16)	Banking sector condition	0.17	0.06	0.14	0.39	0.29	0.15	-0.21	0.16	0.43	0.05
(17)	Pool dynamics	-0.21	-0.07	-0.26	-0.32	-0.30	0.18	0.00	-0.06	-0.46	-0.03

This table reports the pairwise correlations of our variables used in the analysis. Variables are described in the appendix in Table A.5.

Table A.7: Correlations for our *Securitization sample* (continued)

		(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1)	Loss rate							
(2)	Default rate							
(3)	Rate of delinquent amounts							
(4)	Rate of delinquent loans							
(5)	Number of days in delinquency							
(6)	Transparency pool							
(7)	Interest rate (%)							
(8)	Collateralization							
(9)	Loan years to maturity							
(10)	Securitized loan ratio							
(11)	Lending relationship	1.00						
(12)	Tranche years to maturity	-0.34	1.00					
(13)	Number of tranches	-0.16	0.16	1.00				
(14)	Pool size	0.51	0.03	-0.05	1.00			
(15)	Information collection	-0.02	0.04	-0.03	-0.09	1.00		
(16)	Banking sector condition	-0.31	0.40	0.20	-0.22	0.08	1.00	
(17)	Pool dynamics	0.40	-0.37	-0.14	0.15	-0.03	-0.20	1.00

This table reports the pairwise correlations of our variables used in the analysis. Variables are described in the appendix in Table A.5.

Table A.8: Summary statistics for our *Extended securitization sample*

Variable	N	Mean	SD	p10	p50	p90
Pool performance measures						
$\bar{I}$	580	0.98	0.03	0.96	0.99	1.00
Business type HHI	580	0.42	0.26	0.01	0.46	0.74
Geographic HHI	580	0.65	0.23	0.26	0.72	0.87
Industry HHI	580	0.92	0.07	0.88	0.93	0.96
Transparency characteristic						
Transparency pool	580	0.66	0.47	0.00	1.00	1.00
Tranche- and pool-level characteristics						
Tranche years to maturity	580	3.55	0.43	3.22	3.64	3.87
Pool size	580	20.24	1.41	18.50	20.09	22.35
Information collection	580	4.27	0.09	4.25	4.27	4.45
Pool dynamics	580	0.05	0.16	0.00	0.00	0.12
Bank characteristics						
Bank size	580	11.32	1.64	9.15	11.02	13.44
Loan ratio	580	0.63	0.13	0.51	0.63	0.79
Equity ratio	580	0.08	0.02	0.05	0.08	0.10
Liquidity	580	0.33	0.15	0.19	0.31	0.47
CIR	580	0.63	0.24	0.51	0.57	0.76
RoE	580	-0.01	0.20	-0.20	0.06	0.10
Loan growth	580	0.01	0.11	-0.08	-0.01	0.09
NPL ratio	580	0.11	0.09	0.03	0.08	0.25
GDP	580	0.00	0.02	-0.03	0.01	0.03

This table reports the descriptive statistics for the variables used in our analysis. Variables are described in the appendix in Table A.5. N refers to the number of observations. SD means standard deviation. p10, p50, and p90 represent the tenth, fiftieth, and the ninetieth percentile.

Table A.9: Correlations for our *Extended securitization sample*

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1)	$\bar{I}$	1.00									
(2)	Business type HHI	0.32	1.00								
(3)	Geographic HHI	-0.10	-0.41	1.00							
(4)	Industry HHI	-0.02	-0.12	0.13	1.00						
(5)	Transparency pool	0.43	0.51	-0.26	-0.05	1.00					
(6)	Tranche years to maturity	0.28	0.32	-0.36	-0.11	0.14	1.00				
(7)	Pool size	0.57	0.01	0.24	-0.01	0.37	0.11	1.00			
(8)	Information collection	0.13	0.13	-0.15	-0.16	0.04	0.03	-0.01	1.00		
(9)	Pool dynamics	0.08	0.02	0.06	0.06	0.14	-0.23	0.13	-0.05	1.00	
(10)	Bank size	-0.24	-0.53	0.66	0.09	-0.34	-0.30	0.05	-0.11	-0.07	1.00
(11)	Loan ratio	0.22	0.21	-0.50	-0.06	0.08	0.39	-0.02	0.05	-0.09	-0.57
(12)	Equity ratio	-0.06	0.01	-0.42	-0.09	-0.03	0.16	-0.09	-0.34	-0.10	-0.31
(13)	Liquidity	-0.23	-0.17	0.32	0.01	-0.11	-0.37	-0.01	-0.01	0.13	0.44
(14)	CIR	0.08	0.12	0.10	0.00	0.17	0.08	0.14	0.00	0.07	-0.12
(15)	RoE	-0.10	-0.29	-0.05	0.02	-0.23	-0.23	-0.10	-0.02	-0.04	0.17
(16)	Loan growth	-0.05	0.00	-0.22	0.03	0.00	0.00	-0.12	0.15	-0.01	-0.15
(17)	GDP	-0.04	-0.08	0.24	0.17	-0.03	-0.18	-0.01	0.01	0.05	0.15

This table reports the pairwise correlations of our variables used in the analysis. Variables are described in the appendix in Table A.5.

Table A.9: Correlations for our *Extended securitization sample* (continued)

		(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1)	$\bar{I}$							
(2)	Business type HHI							
(3)	Geographic HHI							
(4)	Industry HHI							
(5)	Transparency pool							
(6)	Tranche years to maturity							
(7)	Pool size							
(8)	Information collection							
(9)	Pool dynamics							
(10)	Bank size							
(11)	Loan ratio	1.00						
(12)	Equity ratio	0.54	1.00					
(13)	Liquidity	-0.87	-0.51	1.00				
(14)	CIR	0.01	-0.11	-0.07	1.00			
(15)	RoE	-0.08	0.15	0.16	-0.69	1.00		
(16)	Loan growth	0.07	0.07	-0.01	-0.13	0.18	1.00	
(17)	GDP	-0.09	-0.08	0.02	0.08	0.07	0.18	1.00

This table reports the pairwise correlations of our variables used in the analysis. Variables are described in the appendix in Table A.5.

Table A.10: The impact of transparency on pool performance (Baseline regression)

	Loss rate	Default rate	Rate of del. amounts	Rate of del. loans	Number of days in del.
	(1)	(2)	(3)	(4)	(5)
Transparency pool	-0.0229**	-0.0546**	-0.00323	-0.0265	-0.238**
	(0.0095)	(0.0272)	(0.0037)	(0.0238)	(0.0961)
Interest rate	-0.00936	-0.00620	-0.00321	-0.0261*	-0.0955*
	(0.0070)	(0.0147)	(0.0023)	(0.0144)	(0.0509)
Collateralization	0.0527	0.232***	0.0255**	0.105*	0.276*
	(0.0356)	(0.0664)	(0.0099)	(0.0574)	(0.1554)
Loan years to maturity	-0.0291	-0.00162	-0.0195**	-0.00256	-0.128
	(0.0221)	(0.0490)	(0.0084)	(0.0481)	(0.0959)
Securitized loan ratio	0.0624	-0.0434	0.0357***	0.176***	0.487**
	(0.0429)	(0.0661)	(0.0136)	(0.0628)	(0.1954)
Lending relationship	0.0354	0.0742	0.00906	0.0572	0.142
	(0.0249)	(0.0747)	(0.0124)	(0.0616)	(0.1520)
Tranche years to maturity	-0.0334	-0.127**	-0.000482	0.0104	-0.0854
	(0.0259)	(0.0523)	(0.0081)	(0.0519)	(0.1429)
Number of tranches	-0.00729***	-0.00839***	-0.000579	-0.00192	-0.0142**
	(0.0025)	(0.0029)	(0.0008)	(0.0035)	(0.0055)
Pool size	0.0114**	0.0470***	-0.000645	-0.00812	0.00792
	(0.0048)	(0.0123)	(0.0021)	(0.0116)	(0.0379)
Information collection	-0.0322	-0.132	-0.0356*	-0.110	-0.692
	(0.0560)	(0.1221)	(0.0182)	(0.1403)	(0.4509)
Banking sector condition	0.0257***	0.0646***	0.00306	0.00146	0.216**
	(0.0080)	(0.0235)	(0.0031)	(0.0208)	(0.0912)
Pool dynamics	-0.0698***	-0.146*	-0.0206***	-0.103***	-0.270***
	(0.0205)	(0.0770)	(0.0070)	(0.0344)	(0.0868)
Reporting Quarter FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
N	1,072	1,072	1,072	1,072	1,072
Adj. R^2	0.1193	0.1443	0.0898	0.1088	0.4945

This table reports the analysis whether transparency affects ABS pools' performance. Variables are described in the appendix in Table A.5. Specifications (1) to (4) are estimated by a fractional response regression model. The fifth specification is estimated by an ordinary least squares regression model due to the missing upper limit of the endogenous variable *Number of days in delinquency*. Due to a variance matrix which is nonsymmetric or highly singular in case of *Rate of delinquent amounts* and *Rate of delinquent loans*, standard errors of these regression models are estimated by means of 500 times bootstrapping. Regressions (1) to (4) with ordinary least squares regression models yield smaller standard errors. Therefore, we report the conservative standard errors of the fractional response regression model. Marginal effects are reported and robust standard errors that are clustered with respect to the ABS pool are in parentheses. *, ** and *** denote significance at the 10%, 5%, and 1% levels.

Table A.11: The impact of transparency on pool performance (Subsample analysis)

	Loss rate	Default rate	Rate of del. amounts	Rate of del. loans	Number of days in del.
	(1)	(2)	(3)	(4)	(5)
Transparency pool	-0.0462**	-0.0523	-0.00837	-0.0977**	-0.478**
	(0.0214)	(0.0562)	(0.0055)	(0.0424)	(0.1798)
Interest rate	-0.0432***	-0.0824**	-0.0111***	-0.0822***	-0.352***
	(0.0162)	(0.0347)	(0.0038)	(0.0247)	(0.1113)
Collateralization	-0.0477	0.164	0.0198	-0.0320	-0.118
	(0.0503)	(0.1588)	(0.0129)	(0.0954)	(0.4871)
Loan years to maturity	-0.0164	-0.322**	-0.0395***	0.0663	0.0626
	(0.0318)	(0.1465)	(0.0095)	(0.0791)	(0.3969)
Securitized loan ratio	0.0688	-0.0429	0.0207**	0.0614	0.301
	(0.0532)	(0.0806)	(0.0096)	(0.0557)	(0.2695)
Lending relationship	0.0381	0.402**	0.0544***	0.146	0.300
	(0.0604)	(0.1583)	(0.0145)	(0.1003)	(0.3992)
Tranche years to maturity	-0.0866*	-0.101	0.0116	-0.0421	-0.136
	(0.0485)	(0.0731)	(0.0081)	(0.0614)	(0.2628)
Number of tranches	-0.00633	0.0275	0.00462***	-0.00458	-0.0444
	(0.0057)	(0.0182)	(0.0016)	(0.0101)	(0.0497)
Pool size	0.0203**	0.0942***	-0.000433	0.0134	0.120*
	(0.0081)	(0.0357)	(0.0021)	(0.0168)	(0.0705)
Information collection	-0.0311	0.00736	-0.00626	0.0935	0.368
	(0.0689)	(0.1825)	(0.0251)	(0.1900)	(0.6956)
Banking sector condition	0.0193	-0.0223	-0.00609	0.00685	0.199
	(0.0155)	(0.0397)	(0.0038)	(0.0345)	(0.1398)
Pool dynamics	-0.0702	-0.242**	-0.0177	-0.0140	-0.169
	(0.0901)	(0.1167)	(0.0110)	(0.0408)	(0.1446)
Reporting Quarter FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
N	116	116	116	116	116
Adj. R^2	0.1874	0.2098	0.0928	0.0858	0.5575

This table reports the analysis whether transparency affects pools' performance in the period from Q3/2012 to Q2/2013. Variables are described in the appendix in Table A.5. Specifications (1) to (4) are estimated by a fractional response regression model. The fifth specification is estimated by an ordinary least squares regression model due to the missing upper limit of the endogenous variable. Marginal effects are reported and robust standard errors that are clustered with respect to the ABS pool are in parentheses. *, ** and *** denote significance at the 10%, 5%, and 1% levels.

Table A.12: The impact of transparency on pool performance (Within ABS pool analysis)

	Loss rate	Default rate	Rate of del. amounts	Rate of del. loans	Number of days in del.
	(1)	(2)	(3)	(4)	(5)
Transparency pool	-0.0171**	-0.0479**	-0.0103***	-0.0581***	-0.162**
	(0.0084)	(0.0187)	(0.0031)	(0.0165)	(0.0660)
Reporting Quarter x Country FE	Yes	Yes	Yes	Yes	Yes
ABS Pool FE	Yes	Yes	Yes	Yes	Yes
N	1,072	1,072	1,072	1,072	1,072
Adj. R^2	0.2023	0.3302	0.1273	0.1622	0.8632

This table reports the analysis whether transparency affects pools' performance. Variables are described in the appendix in Table A.5. Specifications (1) to (4) are estimated by a fractional response regression model. The fifth specification is estimated by an ordinary least squares regression model due to the missing upper limit of the endogenous variable. Marginal effects are reported and robust standard errors that are clustered with respect to the ABS pool are in parentheses. *, ** and *** denote significance at the 10%, 5%, and 1% levels.

Table A.13: The impact of transparency on pool performance (Further transparency effects analysis)

	Loss rate	Default rate	Rate of del. amounts	Rate of del. loans	Number of days in del.
	(1)	(2)	(3)	(4)	(5)
Transparency pool	-0.0354***	-0.0661**	-0.00830**	-0.0587**	-0.295***
	(0.0095)	(0.0258)	(0.0039)	(0.0231)	(0.0973)
Number of previous reportings	-0.000105***	-0.000121	-0.0000370***	-0.000240***	-0.000585***
	(0.0000)	(0.0001)	(0.0000)	(0.0001)	(0.0002)
Interest rate	0.000350	-0.000382	-0.000476	-0.00736	-0.0738
	(0.0057)	(0.0154)	(0.0026)	(0.0145)	(0.0531)
Collateralization	0.0352	0.216***	0.0203**	0.0703	0.172
	(0.0353)	(0.0671)	(0.0100)	(0.0562)	(0.1603)
Loan years to maturity	-0.0178	0.0107	-0.0158*	0.0240	-0.0648
	(0.0214)	(0.0499)	(0.0092)	(0.0477)	(0.0977)
Securitized loan ratio	0.0348	-0.0800	0.0265**	0.103*	0.292
	(0.0413)	(0.0618)	(0.0113)	(0.0557)	(0.1856)
Lending relationship	0.0299	0.0471	0.00400	0.0179	0.0130
	(0.0233)	(0.0774)	(0.0124)	(0.0651)	(0.1663)
Tranche years to maturity	-0.0219	-0.133**	0.00304	0.0313	-0.0798
	(0.0256)	(0.0525)	(0.0084)	(0.0496)	(0.1413)
Number of tranches	-0.00532***	-0.00827***	-0.000461	-0.00169	-0.0149***
	(0.0020)	(0.0027)	(0.0009)	(0.0046)	(0.0055)
Pool size	0.0119***	0.0499***	-0.000487	-0.00610	0.0195
	(0.0045)	(0.0126)	(0.0023)	(0.0113)	(0.0400)
Information collection	0.00552	-0.0895	-0.0223	-0.0378	-0.503
	(0.0507)	(0.1236)	(0.0193)	(0.1304)	(0.4558)
Banking sector condition	0.0139*	0.0549**	-0.000307	-0.0236	0.156*
	(0.0072)	(0.0251)	(0.0029)	(0.0207)	(0.0936)
Pool dynamics	-0.0590***	-0.115	-0.0138**	-0.0630**	-0.137
	(0.0205)	(0.0737)	(0.0062)	(0.0276)	(0.0857)
Reporting Quarter FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
N	1,072	1,072	1,072	1,072	1,072
Adj. R^2	0.1303	0.1471	0.0905	0.1091	0.5140

This table reports the analysis whether transparency affects ABS pools' performance while additionally controlling for a dummy variables, which indicates whether the originator voluntarily reports in monthly intervals. Variables are described in the appendix in Table A.5. Specifications (1) to (4) are estimated by a fractional response regression model. The fifth specification is estimated by an ordinary least squares regression model due to the missing upper limit of the endogenous variable *Number of days in delinquency*. Due to a variance matrix which is nonsymmetric or highly singular in case of *Rate of delinquent amounts* and *Rate of delinquent loans*, standard errors of these regression models are estimated by means of 500 times bootstrapping. Regressions (1) to (4) with ordinary least squares regression models yield smaller standard errors. Therefore, we report the conservative standard errors of the fractional response regression model. Marginal effects are reported and robust standard errors that are clustered with respect to the ABS pool are in parentheses. *, ** and *** denote significance at the 10%, 5%, and 1% levels.

Table A.14: The impact of transparency on pool diversification (Baseline regression)

	$\bar{I}$	Business type HHI	Geographic HHI	Industry HHI
	(1)	(2)	(3)	(4)
Transparency pool	0.00884*	0.188*	-0.0450*	0.0241**
	(0.00518)	(0.107)	(0.0253)	(0.00983)
Tranche years to maturity	0.0119	0.148	-0.112	0.00678
	(0.0120)	(0.201)	(0.0896)	(0.0162)
Pool size	0.00806***	0.00789	0.0483**	-0.0106
	(0.00244)	(0.0522)	(0.0218)	(0.00702)
Information collection	0.0208	0.451*	-0.0648	-0.0768
	(0.0196)	(0.265)	(0.236)	(0.0536)
Pool dynamics	0.00859*	-0.0750	0.0308	0.0287**
	(0.00503)	(0.0688)	(0.0387)	(0.0137)
Bank size	-0.000609	-0.0406	0.0320**	-0.00397
	(0.00176)	(0.0347)	(0.0152)	(0.00310)
Loan ratio	0.0236*	-0.205	-0.196	0.0155
	(0.0127)	(0.223)	(0.179)	(0.0456)
NPL ratio	-0.00387	0.489	1.148***	0.298***
	(0.0232)	(0.345)	(0.303)	(0.0963)
Reporting Quarter FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
N	580	580	580	580
Adj. R^2	0.1600	0.1183	0.1260	0.0263

This table reports the analysis whether transparency affects pools' diversification. Variables are described in the appendix in Table A.5. All specifications are estimated by a fractional response regression model. Due to a variance matrix which is nonsymmetric or highly singular in case of *Business type HHI*, standard errors of this regression model are estimated by means of 500 times bootstrapping. Regressions with an ordinary least squares regression model yield smaller standard errors. Therefore, we report the conservative standard errors of the fractional response regression model. Marginal effects are reported and robust standard errors that are clustered with respect to the ABS pool are in parentheses. *, ** and *** denote significance at the 10%, 5%, and 1% levels.

Table A.15: The impact of transparency on pool diversification (Subsample analysis)

	$\bar{I}$	Business type HHI	Geographic HHI	Industry HHI
	(1)	(2)	(3)	(4)
Transparency pool	0.0172***	0.162	-0.0700	0.0709***
	(0.00578)	(0.164)	(0.0430)	(0.0190)
Tranche years to maturity	-0.00687	-0.0750	-0.0212	0.0376
	(0.00838)	(0.319)	(0.128)	(0.0422)
Pool size	0.00851***	0.0377	0.0326	-0.0509***
	(0.00226)	(0.129)	(0.0305)	(0.0166)
Information collection	-0.0204	0.167	-0.202	-0.0699
	(0.0132)	(0.453)	(0.319)	(0.0779)
Pool dynamics	0.00756*	-0.0921	0.227**	0.00923
	(0.00387)	(0.424)	(0.114)	(0.0320)
Bank size	0.0261**	-0.291	-0.272	0.505***
	(0.0106)	(0.426)	(0.312)	(0.135)
Loan ratio	0.00297***	-0.291	-0.272	0.505***
	(0.00114)	(0.437)	(0.312)	(0.135)
NPL ratio	-0.0243	1.044	-0.0273	1.500***
	(0.0279)	(1.148)	(0.808)	(0.374)
Reporting Quarter FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
N	79	79	79	79
Adj. R^2	0.2240	0.1734	0.1185	0.2240

This table reports the analysis whether transparency affects pools' diversification in the period from Q3/2012 to Q2/2013. Variables are described in the appendix in Table A.5. All specifications are estimated by a fractional response regression model. Due to a variance matrix which is non-symmetric or highly singular in case of *Business type HHI*, standard errors of this regression model are estimated by means of 500 times bootstrapping. Regressions with an ordinary least squares regression model yield smaller standard errors. Therefore, we report the conservative standard errors of the fractional response regression model. Marginal effects are reported and robust standard errors that are clustered with respect to the ABS pool are in parentheses. *, ** and *** denote significance at the 10%, 5%, and 1% levels.

Table A.16: The impact of ABS pool transparency on banks' risk exposure

	NPL ratio	NPL ratio
	(1)	(2)
Transparency pool	0.0113	0.0283**
	(0.00960)	(0.0138)
Loss rate	-0.119	0.115
	(0.102)	(0.114)
Pool dynamics	-0.00266	-0.0102
	(0.0121)	(0.0120)
Transparency pool x Loss rate		-0.410*
		(0.221)
Loss rate x Pool dynamics		2.263**
		(0.992)
Bank size	0.00614	0.00615
	(0.00459)	(0.00401)
Loan ratio	-0.0609	-0.0472
	(0.0717)	(0.0710)
Equity ratio	-0.239	-0.361
	(0.236)	(0.248)
Liquidity	-0.0690*	-0.0751*
	(0.0398)	(0.0404)
CIR	-0.0189	-0.0186
	(0.0142)	(0.0125)
RoE	-0.112***	-0.105***
	(0.0251)	(0.0207)
Loan growth	0.0269	0.0247
	(0.0198)	(0.0196)
GDP	1.534*	1.399*
	(0.868)	(0.763)
Reporting Year x Country FE	Yes	Yes
N	194	194
Adj. R^2	0.0877	0.0885

This table reports the analysis whether transparency affects banks' NPL ratio. Variables are described in the appendix in Table A.5. All specifications are estimated by a fractional response regression model. Marginal effects are reported and robust standard errors that are clustered with respect to the ABS pool are in parentheses. *, ** and *** denote significance at the 10%, 5%, and 1% levels.

B Online Appendix

Table B.1: Probit regression to estimate loan-level PDs

	Default
	(1)
Interest rate	0.00667***
	(0.00121)
Collateralization	0.00348
	(0.00591)
Loan years to maturity	0.0000604
	(0.000340)
Securitized loan ratio	-0.00253
	(0.00591)
Lending relationship	-0.00503
	(0.00310)
Reporting Quarter FE	Yes
Country FE	Yes
Business Type FE	Yes
Industry FE	Yes
ABS Pool FE	Yes
N	11,838,382
Adj. R^2	0.5930

This table reports the probit model to estimate a PD for every single loan in our loan-level database. *Default* relates to an indicator variable equal to one when the borrower defaulted on the loan, and zero otherwise. *Interest rate* refers to the current loan interest rate. *Collateralization* is an indicator variable equal to one if the loan is collateralized, and zero otherwise. *Loan years to maturity* specifies the remaining loan years to maturity. *Securitized loan ratio* is calculated as the ratio of the loan balance outstanding at the time of securitization to the original loan amount. *Lending relationship* refers to an indicator variable equal to one if a borrower has borrower at least once over the past from the same bank, and zero otherwise. Marginal effects are reported and robust standard errors that are clustered with respect to the ABS pool are in parentheses. *, ** and *** denote significance at the 10%, 5%, and 1% levels.

Table B.2: The impact of transparency on pool performance (Controlling for years since loan origination)

	Loss rate	Default rate	Rate of del. amounts	Rate of del. loans	Number of days in del.
	(1)	(2)	(3)	(4)	(5)
Transparency pool	-0.0177**	-0.0493*	-0.00204	-0.0130	-0.176*
	(0.0088)	(0.0283)	(0.0036)	(0.0230)	(0.0981)
Loanage	0.0163***	0.00951	0.00289*	0.0260***	0.0684**
	(0.0044)	(0.0095)	(0.0016)	(0.0093)	(0.0285)
Interest rate	0.00238	-0.00142	-0.000485	-0.00406	-0.0509
	(0.0090)	(0.0157)	(0.0029)	(0.0180)	(0.0585)
Collateralization	-0.0108	0.208***	0.0171*	0.0254	0.131
	(0.0335)	(0.0698)	(0.0095)	(0.0572)	(0.1545)
Loan years to maturity	-0.0235	-0.00670	-0.0198**	-0.00948	-0.191*
	(0.0199)	(0.0508)	(0.0081)	(0.0475)	(0.1058)
Securitized loan ratio	0.0674	-0.0585	0.0349***	0.167***	0.421**
	(0.0414)	(0.0641)	(0.0135)	(0.0630)	(0.2052)
Lending relationship	0.0268	0.0672	0.00775	0.0477	0.123
	(0.0288)	(0.0835)	(0.0119)	(0.0555)	(0.1806)
Tranche years to maturity	0.00310	-0.118**	0.00630	0.0611	-0.0437
	(0.0241)	(0.0522)	(0.0090)	(0.0494)	(0.1355)
Number of tranches	-0.00995***	-0.00946***	-0.000814	-0.00402	-0.0197***
	(0.0033)	(0.0033)	(0.0007)	(0.0035)	(0.0058)
Pool size	0.0221***	0.0557***	0.00162	0.00991	0.0692
	(0.0066)	(0.0162)	(0.0022)	(0.0157)	(0.0521)
Information collection	-0.0663	-0.153	-0.0403**	-0.155	-0.786*
	(0.0623)	(0.1216)	(0.0178)	(0.1241)	(0.4205)
Banking sector condition	0.0266***	0.0660***	0.00288	0.00362	0.222**
	(0.0076)	(0.0233)	(0.0029)	(0.0236)	(0.0849)
Pool dynamics	-0.0575***	-0.120*	-0.0179***	-0.0824***	-0.154*
	(0.0170)	(0.0666)	(0.0058)	(0.0221)	(0.0925)
Reporting Quarter FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
N	1,072	1,072	1,072	1,072	1,072
Adj. R^2	0.1373	0.1459	0.0918	0.1160	0.5144

This table reports the analysis whether transparency affects ABS pools' performance while additionally controlling for the years since loan origination. Variables are described in the appendix in Table A.5. Specifications (1) to (4) are estimated by a fractional response regression model. The fifth specification is estimated by an ordinary least squares regression model due to the missing upper limit of the endogenous variable *Number of days in delinquency*. Due to a variance matrix which is nonsymmetric or highly singular in case of *Rate of delinquent amounts* and *Rate of delinquent loans*, standard errors of these regression models are estimated by means of 500 times bootstrapping. Regressions (1) to (4) with ordinary least squares regression models yield smaller standard errors. Therefore, we report the conservative standard errors of the fractional response regression model. Marginal effects are reported and robust standard errors that are clustered with respect to the ABS pool are in parentheses. *, ** and *** denote significance at the 10%, 5%, and 1% levels.

Table B.3: The impact of transparency on pool performance (Baseline regression based on OLS)

	Loss rate	Default rate	Rate of del. amounts	Rate of del. loans	Number of days in del.
	(1)	(2)	(3)	(4)	(5)
Transparency pool	-0.0290**	-0.0711*	-0.00685	-0.0321	-0.238**
	(0.0129)	(0.0362)	(0.0050)	(0.0224)	(0.0961)
Interest rate	-0.00604	-0.00313	-0.00421**	-0.0318***	-0.0955*
	(0.0057)	(0.0147)	(0.0021)	(0.0113)	(0.0509)
Collateralization	0.0200	0.208***	0.00771	0.0737**	0.276*
	(0.0221)	(0.0657)	(0.0062)	(0.0350)	(0.1554)
Loan years to maturity	-0.0216*	0.00609	-0.0124**	0.0000915	-0.128
	(0.0122)	(0.0681)	(0.0058)	(0.0218)	(0.0959)
Securitized loan ratio	0.0477	-0.127	0.0263***	0.132***	0.487**
	(0.0318)	(0.0923)	(0.0095)	(0.0437)	(0.1954)
Lending relationship	0.0246	0.0870	0.00132	0.0401	0.142
	(0.0173)	(0.0924)	(0.0088)	(0.0316)	(0.1520)
Tranche years to maturity	-0.0212	-0.161***	-0.00710	-0.0113	-0.0854
	(0.0181)	(0.0606)	(0.0063)	(0.0327)	(0.1429)
Number of tranches	-0.00288***	-0.00583***	-0.000566**	-0.00283**	-0.0142**
	(0.0009)	(0.0016)	(0.0002)	(0.0012)	(0.0055)
Pool size	0.00871*	0.0519***	-0.00198	-0.00822	0.00792
	(0.0051)	(0.0135)	(0.0019)	(0.0102)	(0.0379)
Information collection	-0.0583	-0.155	-0.0484***	-0.0962	-0.692
	(0.0529)	(0.1331)	(0.0161)	(0.1129)	(0.4509)
Banking sector condition	0.0279***	0.0666**	0.00523	0.0139	0.216**
	(0.0091)	(0.0264)	(0.0037)	(0.0259)	(0.0912)
Pool dynamics	-0.0306***	-0.120**	-0.0122***	-0.0628***	-0.270***
	(0.0090)	(0.0476)	(0.0036)	(0.0183)	(0.0868)
Reporting Quarter FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
N	1,072	1,072	1,072	1,072	1,072
Adj. R^2	0.2549	0.3111	0.5012	0.4866	0.4945

This table reports the analysis whether transparency affects ABS pools' performance while substituting the fractional response regression model by an ordinary least squares regression model in all specifications. Variables are described in the appendix in Table A.5. Robust standard errors that are clustered with respect to the ABS pool are in parentheses. *, ** and *** denote significance at the 10%, 5%, and 1% levels.

Table B.4: The impact of transparency on pool diversification (Baseline regression based on OLS)

	$\bar{I}$	Business type HHI	Geographic HHI	Industry HHI
	(1)	(2)	(3)	(4)
Transparency pool	0.0132**	0.188**	-0.0397	0.0205*
	(0.00592)	(0.0783)	(0.0253)	(0.0108)
Tranche years to maturity	0.0400*	0.171	-0.131	0.0102
	(0.0209)	(0.158)	(0.0976)	(0.0197)
Pool size	0.0145**	0.00524	0.0524**	-0.0137
	(0.00700)	(0.0380)	(0.0248)	(0.0106)
Information collection	0.0373	0.451**	-0.0519	-0.0951
	(0.0243)	(0.211)	(0.255)	(0.0684)
Pool dynamics	-0.000796	-0.0842	0.0328	0.0316*
	(0.00522)	(0.0643)	(0.0433)	(0.0185)
Bank size	-0.00468	-0.0414	0.0374**	-0.00602
	(0.00521)	(0.0258)	(0.0180)	(0.00501)
Loan ratio	0.0149	-0.235	-0.208	0.0382
	(0.0183)	(0.142)	(0.205)	(0.0778)
NPL ratio	-0.0113	0.540*	1.289***	0.368**
	(0.0255)	(0.320)	(0.358)	(0.162)
Reporting Quarter FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
N	580	580	580	580
Adj. R^2	0.5403	0.5626	0.7085	0.2229

This table reports the analysis whether transparency affects pools' diversification while substituting the fractional response regression model by an ordinary least squares regression model in all specifications. Variables are described in the appendix in Table A.5. Robust standard errors that are clustered with respect to the ABS pool are in parentheses. *, ** and *** denote significance at the 10%, 5%, and 1% levels.

Table B.5: The impact of transparency on pool performance (Adjusted definition of Transparency pool)

	Loss rate	Default rate	Rate of del. amounts	Rate of del. loans	Number of days in del.
	(1)	(2)	(3)	(4)	(5)
Transparency pool	-0.0252***	-0.0524*	-0.00347	-0.0255	-0.213**
	(0.0084)	(0.0310)	(0.0026)	(0.0212)	(0.0882)
Interest rate	-0.00982	-0.00698	-0.00331	-0.0269*	-0.0998*
	(0.0071)	(0.0147)	(0.0024)	(0.0138)	(0.0513)
Collateralization	0.0539	0.235***	0.0256***	0.106*	0.290*
	(0.0353)	(0.0662)	(0.0099)	(0.0622)	(0.1542)
Loan years to maturity	-0.0303	-0.000770	-0.0196**	-0.00310	-0.122
	(0.0221)	(0.0494)	(0.0077)	(0.0518)	(0.0955)
Securitized loan ratio	0.0663	-0.0358	0.0363**	0.182***	0.523***
	(0.0424)	(0.0657)	(0.0145)	(0.0626)	(0.1958)
Lending relationship	0.0355	0.0779	0.00915	0.0587	0.155
	(0.0252)	(0.0755)	(0.0120)	(0.0588)	(0.1512)
Tranche years to maturity	-0.0331	-0.129**	-0.000505	0.00973	-0.0881
	(0.0261)	(0.0526)	(0.0086)	(0.0521)	(0.1449)
Number of tranches	-0.00719***	-0.00821***	-0.000572	-0.00186	-0.0136**
	(0.0025)	(0.0028)	(0.0007)	(0.0032)	(0.0057)
Pool size	0.0110**	0.0461***	-0.000700	-0.00859	0.00351
	(0.0048)	(0.0121)	(0.0021)	(0.0125)	(0.0376)
Information collection	-0.0312	-0.130	-0.0354*	-0.109	-0.685
	(0.0553)	(0.1213)	(0.0193)	(0.1418)	(0.4494)
Banking sector condition	0.0257***	0.0638***	0.00306	0.00105	0.211**
	(0.0080)	(0.0236)	(0.0031)	(0.0210)	(0.0911)
Pool dynamics	-0.0689***	-0.148*	-0.0206***	-0.104***	-0.278***
	(0.0205)	(0.0778)	(0.0063)	(0.0304)	(0.0864)
Reporting Quarter FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
N	1,072	1,072	1,072	1,072	1,072
Adj. R^2	0.1201	0.1441	0.0899	0.1088	0.4918

This table reports the analysis whether transparency affects ABS pools' performance while adjusting the maximum number of quarters in our *Transparency pool* definition from eight quarters to six quarters. Variables are described in the appendix in Table A.5. Specifications (1) to (4) are estimated by a fractional response regression model. The fifth specification is estimated by an ordinary least squares regression model due to the missing upper limit of the endogenous variable *Number of days in delinquency*. Due to a variance matrix which is nonsymmetric or highly singular in case of *Rate of delinquent amounts* and *Rate of delinquent loans*, standard errors of these regression models are estimated by means of 500 times bootstrapping. Regressions (1) to (4) with ordinary least squares regression models yield smaller standard errors. Therefore, we report the conservative standard errors of the fractional response regression model. Marginal effects are reported and robust standard errors that are clustered with respect to the ABS pool are in parentheses. *, ** and *** denote significance at the 10%, 5%, and 1% levels.

Table B.6: The impact of transparency on pool performance (Adjusted definition of Transparency pool)

	Loss rate	Default rate	Rate of del. amounts	Rate of del. loans	Number of days in del.
	(1)	(2)	(3)	(4)	(5)
Transparency pool	-0.0404***	-0.0665**	-0.00804	-0.0639	-0.289**
	(0.0148)	(0.0328)	(0.0075)	(0.0423)	(0.1124)
Interest rate	-0.00432	-0.00256	-0.00203	-0.0181	-0.0809
	(0.0060)	(0.0149)	(0.0031)	(0.0140)	(0.0512)
Collateralization	0.0375	0.214***	0.0228**	0.0869	0.217
	(0.0363)	(0.0643)	(0.0090)	(0.0597)	(0.1534)
Loan years to maturity	-0.0274	-0.00363	-0.0191**	-0.00240	-0.135
	(0.0218)	(0.0484)	(0.0089)	(0.0461)	(0.0973)
Securitized loan ratio	0.0403	-0.0675	0.0310***	0.144**	0.404**
	(0.0435)	(0.0657)	(0.0119)	(0.0595)	(0.1861)
Lending relationship	0.0336	0.0556	0.00773	0.0426	0.0703
	(0.0235)	(0.0749)	(0.0137)	(0.0593)	(0.1594)
Tranche years to maturity	-0.0318	-0.130**	0.000522	0.0148	-0.0969
	(0.0257)	(0.0523)	(0.0080)	(0.0451)	(0.1423)
Number of tranches	-0.00742***	-0.00867***	-0.000614	-0.00217	-0.0151***
	(0.0024)	(0.0032)	(0.0008)	(0.0035)	(0.0053)
Pool size	0.0115**	0.0480***	-0.000566	-0.00657	0.0126
	(0.0047)	(0.0130)	(0.0025)	(0.0137)	(0.0413)
Information collection	-0.0128	-0.0974	-0.0323*	-0.0845	-0.562
	(0.0520)	(0.1174)	(0.0197)	(0.1246)	(0.4432)
Banking sector condition	0.0251***	0.0632***	0.00311	0.00276	0.209**
	(0.0080)	(0.0231)	(0.0030)	(0.0230)	(0.0902)
Pool dynamics	-0.0731***	-0.129*	-0.0202***	-0.0965***	-0.234**
	(0.0225)	(0.0717)	(0.0073)	(0.0315)	(0.0897)
Reporting Quarter FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
N	1,072	1,072	1,072	1,072	1,072
Adj. R^2	0.1219	0.1447	0.0904	0.1104	0.4988

This table reports the analysis whether transparency affects ABS pools' performance while relaxing the maximum number of quarters in our *Transparency pool* definition. Variables are described in the appendix in Table A.5. Specifications (1) to (4) are estimated by a fractional response regression model. The fifth specification is estimated by an ordinary least squares regression model due to the missing upper limit of the endogenous variable *Number of days in delinquency.* Due to a variance matrix which is nonsymmetric or highly singular in case of *Rate of delinquent amounts* and *Rate of delinquent loans*, standard errors of these regression models are estimated by means of 500 times bootstrapping. Regressions (1) to (4) with ordinary least squares regression models yield smaller standard errors. Therefore, we report the conservative standard errors of the fractional response regression model. Marginal effects are reported and robust standard errors that are clustered with respect to the ABS pool are in parentheses. *, ** and *** denote significance at the 10%, 5%, and 1% levels.

Table B.7: The impact of transparency on pool performance (Controlling for ABSPP net purchases)

	Loss rate	Default rate	Rate of del. amounts	Rate of del. loans	Number of days in del.
	(1)	(2)	(3)	(4)	(5)
Transparency pool	-0.0229**	-0.0546**	-0.00323	-0.0265	-0.238**
	(0.0095)	(0.0272)	(0.0032)	(0.0238)	(0.0961)
ABSPP	0.0335*	0.0880	0.00220	-0.0471	0.0779
	(0.0196)	(0.0578)	(0.0081)	(0.0417)	(0.1493)
Interest rate	-0.00936	-0.00620	-0.00321	-0.0261*	-0.0955*
	(0.0070)	(0.0147)	(0.0023)	(0.0143)	(0.0509)
Collateralization	0.0527	0.232***	0.0255***	0.105*	0.276*
	(0.0356)	(0.0664)	(0.0099)	(0.0574)	(0.1554)
Loan years to maturity	-0.0291	-0.00162	-0.0195**	-0.00256	-0.128
	(0.0221)	(0.0490)	(0.0083)	(0.0481)	(0.0959)
Securitized loan ratio	0.0624	-0.0434	0.0357***	0.176***	0.487**
	(0.0429)	(0.0661)	(0.0135)	(0.0626)	(0.1954)
Lending relationship	0.0354	0.0742	0.00906	0.0572	0.142
	(0.0249)	(0.0747)	(0.0124)	(0.0612)	(0.1520)
Tranche years to maturity	-0.0334	-0.127**	-0.000482	0.0104	-0.0854
	(0.0259)	(0.0523)	(0.0081)	(0.0520)	(0.1429)
Number of tranches	-0.00729***	-0.00839***	-0.000579	-0.00192	-0.0142**
	(0.0025)	(0.0029)	(0.0008)	(0.0035)	(0.0055)
Pool size	0.0114**	0.0470***	-0.000645	-0.00812	0.00792
	(0.0048)	(0.0123)	(0.0021)	(0.0116)	(0.0379)
Information collection	-0.0322	-0.132	-0.0356*	-0.110	-0.692
	(0.0560)	(0.1221)	(0.0182)	(0.1401)	(0.4509)
Banking sector condition	0.0257***	0.0646***	0.00306	0.00146	0.216**
	(0.0080)	(0.0235)	(0.0031)	(0.0208)	(0.0912)
Pool dynamics	-0.0698***	-0.146*	-0.0206***	-0.103***	-0.270***
	(0.0205)	(0.0770)	(0.0070)	(0.0332)	(0.0868)
Reporting Quarter FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
N	1,072	1,072	1,072	1,072	1,072
Adj. R^2	0.1193	0.1443	0.0898	0.1088	0.4945

This table reports the analysis whether transparency affects ABS pools' performance while additionally controlling for *ABSPP*. Variables are described in the appendix in Table A.5. Specifications (1) to (4) are estimated by a fractional response regression model. The fifth specification is estimated by an ordinary least squares regression model due to the missing upper limit of the endogenous variable *Number of days in delinquency*. Due to a variance matrix which is nonsymmetric or highly singular in case of *Rate of delinquent amounts* and *Rate of delinquent loans*, standard errors of these regression models are estimated by means of 500 times bootstrapping. Regressions (1) to (4) with ordinary least squares regression models yield smaller standard errors. Therefore, we report the conservative standard errors of the fractional response regression model. Marginal effects are reported and robust standard errors that are clustered with respect to the ABS pool are in parentheses. *, ** and *** denote significance at the 10%, 5%, and 1% levels.

Table B.8: The impact of transparency on pool diversification (Controlling for ABSPP net purchases)

	$\bar{I}$	Business type HHI	Geographic HHI	Industry HHI
	(1)	(2)	(3)	(4)
Transparency pool	0.00945*	0.190*	-0.0461*	0.0230**
	(0.00519)	(0.108)	(0.0261)	(0.00965)
Tranche years to maturity	0.0117	0.149	-0.113	0.00605
	(0.0120)	(0.202)	(0.0895)	(0.0163)
Pool size	0.00811***	0.00873	0.0480**	-0.0110
	(0.00241)	(0.0543)	(0.0219)	(0.00721)
Information collection	0.0204	0.451*	-0.0648	-0.0766
	(0.0195)	(0.267)	(0.237)	(0.0531)
Pool dynamics	0.0106**	-0.0676	0.0277	0.0257*
	(0.00507)	(0.0700)	(0.0421)	(0.0135)
Bank size	-0.000514	-0.0401	0.0318**	-0.00404
	(0.00174)	(0.0352)	(0.0153)	(0.00313)
Loan ratio	0.0247**	-0.203	-0.196	0.0154
	(0.0124)	(0.223)	(0.179)	(0.0455)
NPL ratio	0.000636	0.517	1.137***	0.287***
	(0.0232)	(0.350)	(0.318)	(0.0973)
Reporting Quarter FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
N	580	580	580	580
Adj. R^2	0.1603	0.1184	0.1260	0.0263

This table reports the analysis whether transparency affects pools' diversification while additionally controlling for *ABSPP*. Variables are described in the appendix in Table A.5. All specifications are estimated by a fractional response regression model. Due to a variance matrix which is nonsymmetric or highly singular in case of *Business type HHI*, standard errors of this regression model are estimated by means of 500 times bootstrapping. Regressions with an ordinary least squares regression models yield smaller standard errors. Therefore, we report the conservative standard errors of the fractional response regression model. Marginal effects are reported and robust standard errors that are clustered with respect to the ABS pool are in parentheses. *, ** and *** denote significance at the 10%, 5%, and 1% levels.

Table B.9: The impact of transparency on pool performance (Controlling for monthly reporting)

	Loss rate	Default rate	Rate of del. amounts	Rate of del. loans	Number of days in del.
	(1)	(2)	(3)	(4)	(5)
Transparency pool	-0.0229**	-0.0558**	-0.00341	-0.0277	-0.260***
	(0.0095)	(0.0276)	(0.0036)	(0.0249)	(0.0942)
Monthly reporting	0.000534	0.0170	0.00853	0.0255	0.197*
	(0.0088)	(0.0278)	(0.0062)	(0.0472)	(0.1109)
Interest rate	-0.00937	-0.00515	-0.00326	-0.0258*	-0.0907*
	(0.0070)	(0.0143)	(0.0025)	(0.0148)	(0.0484)
Collateralization	0.0527	0.233***	0.0257**	0.104*	0.275*
	(0.0356)	(0.0666)	(0.0100)	(0.0580)	(0.1521)
Loan years to maturity	-0.0291	0.00000937	-0.0188**	0.000434	-0.104
	(0.0221)	(0.0498)	(0.0081)	(0.0482)	(0.0986)
Securitized loan ratio	0.0624	-0.0433	0.0359***	0.177***	0.481**
	(0.0429)	(0.0664)	(0.0105)	(0.0676)	(0.1916)
Lending relationship	0.0354	0.0782	0.00989	0.0617	0.189
	(0.0250)	(0.0764)	(0.0129)	(0.0569)	(0.1493)
Tranche years to maturity	-0.0334	-0.124**	-0.000679	0.0111	-0.0455
	(0.0259)	(0.0533)	(0.0086)	(0.0515)	(0.1459)
Number of tranches	-0.00729***	-0.00835***	-0.000593	-0.00194	-0.0140**
	(0.0025)	(0.0029)	(0.0009)	(0.0034)	(0.0055)
Pool size	0.0114**	0.0465***	-0.000605	-0.00848	0.00570
	(0.0048)	(0.0127)	(0.0020)	(0.0121)	(0.0363)
Information collection	-0.0323	-0.137	-0.0383**	-0.121	-0.795*
	(0.0561)	(0.1241)	(0.0159)	(0.1160)	(0.4130)
Banking sector condition	0.0257***	0.0642***	0.00303	0.00144	0.212**
	(0.0080)	(0.0234)	(0.0031)	(0.0228)	(0.0903)
Pool dynamics	-0.0699***	-0.152*	-0.0214***	-0.107***	-0.307***
	(0.0204)	(0.0779)	(0.0079)	(0.0291)	(0.0894)
Reporting Quarter FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
N	1,072	1,072	1,072	1,072	1,072
Adj. R^2	0.1193	0.1445	0.0905	0.1091	0.5000

This table reports the analysis whether transparency affects ABS pools' performance while additionally controlling for a dummy variables, which indicates whether the originator voluntarily reports in monthly intervals. Variables are described in the appendix in Table A.5. Specifications (1) to (4) are estimated by a fractional response regression model. The fifth specification is estimated by an ordinary least squares regression model due to the missing upper limit of the endogenous variable *Number of days in delinquency*. Due to a variance matrix which is nonsymmetric or highly singular in case of *Rate of delinquent amounts* and *Rate of delinquent loans*, standard errors of these regression models are estimated by means of 500 times bootstrapping. Regressions (1) to (4) with ordinary least squares regression models yield smaller standard errors. Therefore, we report the conservative standard errors of the fractional response regression model. Marginal effects are reported and robust standard errors that are clustered with respect to the ABS pool are in parentheses. *, ** and *** denote significance at the 10%, 5%, and 1% levels.

Table B.10: The impact of transparency on pool performance (Controlling for GDP)

	Loss rate	Default rate	Rate of del. amounts	Rate of del. loans	Number of days in del.
	(1)	(2)	(3)	(4)	(5)
Transparency pool	-0.0173*	-0.0566*	-0.00121	-0.0153	-0.213**
	(0.0098)	(0.0332)	(0.0035)	(0.0242)	(0.0939)
GDP	-0.00828	0.00391	-0.00292*	-0.0181*	-0.0593*
	(0.0052)	(0.0234)	(0.0018)	(0.0099)	(0.0307)
Interest rate	-0.00870	-0.00693	-0.00315	-0.0251*	-0.0825*
	(0.0068)	(0.0147)	(0.0024)	(0.0151)	(0.0496)
Collateralization	0.0595	0.230***	0.0270**	0.113**	0.303**
	(0.0366)	(0.0680)	(0.0110)	(0.0578)	(0.1525)
Loan years to maturity	-0.0264	-0.00174	-0.0189**	0.00193	-0.128
	(0.0212)	(0.0490)	(0.0083)	(0.0464)	(0.0944)
Securitized loan ratio	0.0679	-0.0455	0.0372***	0.188***	0.491**
	(0.0428)	(0.0670)	(0.0134)	(0.0571)	(0.1931)
Lending relationship	0.0343	0.0746	0.00938	0.0584	0.140
	(0.0245)	(0.0750)	(0.0151)	(0.0541)	(0.1485)
Tranche years to maturity	-0.0355	-0.130**	-0.00115	0.0111	-0.0440
	(0.0256)	(0.0536)	(0.0077)	(0.0463)	(0.1464)
Number of tranches	-0.00761***	-0.00842***	-0.000609	-0.00195	-0.0137**
	(0.0024)	(0.0029)	(0.0008)	(0.0037)	(0.0055)
Pool size	0.0120**	0.0472***	-0.000550	-0.00789	0.00582
	(0.0048)	(0.0126)	(0.0021)	(0.0118)	(0.0368)
Information collection	-0.0171	-0.141	-0.0302	-0.0795	-0.552
	(0.0598)	(0.1368)	(0.0199)	(0.1324)	(0.4753)
Banking sector condition	0.0251***	0.0649***	0.00288	0.000518	0.213**
	(0.0079)	(0.0238)	(0.0030)	(0.0218)	(0.0905)
Pool dynamics	-0.0677***	-0.144*	-0.0205***	-0.103***	-0.280***
	(0.0201)	(0.0763)	(0.0075)	(0.0275)	(0.0864)
Reporting Quarter FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
N	1,072	1,072	1,072	1,072	1,072
Adj. R^2	0.1207	0.1444	0.0904	0.1098	0.5000

This table reports the analysis whether transparency affects ABS pools' performance while controlling for the country-specific economic development. Variables are described in the appendix in Table A.5. Specifications (1) to (4) are estimated by a fractional response regression model. The fifth specification is estimated by an ordinary least squares regression model due to the missing upper limit of the endogenous variable *Number of days in delinquency*. Due to a variance matrix which is nonsymmetric or highly singular in case of *Rate of delinquent amounts* and *Rate of delinquent loans*, standard errors of these regression models are estimated by means of 500 times bootstrapping. Regressions (1) to (4) with ordinary least squares regression models yield smaller standard errors. Therefore, we report the conservative standard errors of the fractional response regression model. Marginal effects are reported and robust standard errors that are clustered with respect to the ABS pool are in parentheses. *, ** and *** denote significance at the 10%, 5%, and 1% levels.