Financing the Green Transition: A Case for Synthetic Capital Relief Trades*

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Bank financing to close the green finance gap depends on the availability of sufficient capital. Synthetic capital relief trades (SCRTs) are securitizations designed to release capital and reduce capital requirements. Bank capital ratios are unrelated to SCRTs ex ante and unaffected by SCRTs ex post, suggesting that banks use SCRTs to maintain target capital ratios. SCRTs are not associated with more lending, but with more *green* lending, which significantly reinforces the implementation of self-commitments. Two years after SCRTs, non-performing loan ratios are higher, not because of SCRTs as such, but because of the higher risk of green lending.

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1 Introduction

The worldwide implementation of sustainability goals, like the UN Agenda 2030 comprising 17 so-called Sustainable Development Goals (United Nations, 2015), requires exceptional investments. For example, governments need to finance networks to distribute green energy from producers to consumers, firms the transition to greener products and processes, and consumers heating, insulation, and electric cars. Globally, all of these investments amount to 9.2 trillion USD per year, corresponding to 7.5% of the global gross domestic product (McKinsey & Company, 2022).

We attach the attribute "green" to lending contracts, i.e., bonds as well as bank loans, if the borrower uses the funds exclusively for environmental projects (use-of-proceeds principle). The literature on *green bonds* is quite extensive (e.g., Zerbib, 2019; Tang and Zhang, 2020; Flammer, 2021; Baker et al., 2022b). By contrast, contributions on *green loans* are still rather scarce (recent contribution by, e.g., Kim et al., 2023).

Bank lending requires liquidity and capital. We focus on the role of capital, yet we provide a broader view in our literature review. Regulatory capital requirements can be reduced by using derivatives and guarantees. Shaped as securitization, this is referred to as synthetic securitization (European Parliament and the Council, 2017, Art. 2). If such transactions are aimed at releasing capital they are called synthetic capital relief trades (SCRTs) and were viewed as hazardous at the height of the Global Financial Crisis 2007-2009 (GFC). However, it will turn out that SCRTs help banks to expand their green lending even if these loans come along with more risk and higher capital requirements.

At first glance, one might expect more securitization activities when capital ratios are smaller, and larger capital ratios after SCRTs. But this perspective would be too simplistic, ignoring the existence of target capital ratios (e.g., Francis and Osborne, 2012). Target ratios imply that capital ratios relative to the target matter, not the level of capital ratios as such. Consequently, we should not expect the use of an SCRT to be associated with an ex ante unadjusted total capital ratio. In our post-GFC analysis we actually find no

significant relation between ex ante capital ratios and securitization activities. Moreover, ex post capital ratios are unaffected by securitization.

For banks starting from their target ratio, a reduction in capital requirements through SCRTs implies a ratio above the target, and presumably they will engage in activities that use the margin to increase profits, e.g., by expanding the total loan volume or adjusting the loan portfolio towards riskier loans requiring more capital. Since SCRTs do not provide additional liquidity, in contrast to outright sales, the first alternative requires some liquidity ex ante.

To find out whether SCRTs can facilitate the funding of the green transition, it seems reasonable to link SCRT activities to subsequent loan issuance by banks. The number and volume of loans are unaffected. But, turning to green loans, the picture is markedly different. The number as well as the volume of green loans is larger for banks with SCRTs. Combined, this means that green loans have replaced non-green loans. As non-performing loans (NPL) over total loans, the NPL ratio, is larger two years after SCRT activities, this may look like another adverse effect of securitization on bank stability. But upon closer inspection, it turns out that, in our sample, more risky green loans are the driver, not securitization as such.

Essentially, this is how SCRTs can help finance the green transition, in particular if presently green loans should be riskier on average and therefore require more capital. When regrouping the loan portfolio towards green loans, additional capital required could be freed via SCRTs. Similarly, if a bank with capital at its target level wants to increase its volume of green loans, adjusting the additional capital requirements through SCRTs is again an appropriate strategy. Indeed, banks that intend to support the transition as measured by their Science Based Targets Initiative (SBTi) participation, provide three to five times more green loans if they make use of SCRTs than the other participants.

This paper sheds light on one of the few academically unexplored important financial markets, the European market of SCRTs, using a novel commercial data set hardly used

in scientific work so far. For our analysis, we employ a panel consisting of 225 European banks from 23 countries between 2012 and 2021, i.e., after adjustments in response to the GFC. We provide insights into how SCRTs, the decried product that has recently come into the spotlight again, is a meaningful instrument for addressing one of the major challenges today, the financing of the green transition by banks.

With our analysis, we contribute to at least three strands of the literature. First, we are among the first to academically investigate the role of securitization in financing the green transition, an idea of high political relevance. Second, we add to the scarce literature on green loans by analyzing the determinants for banks as lenders to engage in these credits as a sustainable form of lending. Third, we add to the literature on determinants and implications of securitization transactions, where we put a particular focus on the time after the GFC and on synthetic transactions.

Our findings are important for policymakers and society as a whole, as they indicate that banks restructure their loan portfolios by switching to green loans with the help of SCRTs. The reason banks are interested in increasing their green loans may be related to social pressure, but this question is beyond our scope. In a nutshell, formerly suspicious (at least as viewed by some) SCRTs could become an important instrument for financing the implementation of sustainability goals.

2 Literature and Hypotheses

Banks' loans are typically financed through deposits. However, banks' traditional practice of transforming savings into loans will presumably not provide sufficient financial resources to support the green transition extensively (e.g., Lagarde, 2023). By securitization in the form of true sale transactions, banks can transfer the ownership and economic interest of receivables, thereby generating liquidity. This has been a major motive for such transactions (e.g., Bannier and Hänsel, 2008; Affinito and Tagliaferri, 2010; Cardone-Riportella et al., 2010; Loutskina, 2011) and is especially prevalent for banks with liquidity constraints or more difficult capital market access (Almazan et al., 2015). In accordance with

theoretical arguments, securitization has increasingly come into the political spotlight in order to strengthen the financial markets and to support banks in financing the green transition (e.g., European Central Bank Governing Council, 2024; Noyer et al., 2024).

In light of liquidity provision for banks by depositors, through true sales, and by central banks, our analysis focuses on banks' capital requirements. Information asymmetry suggests that loans are not marketable (Diamond, 1984). Still, securitizations have been established over time, although the originating bank obtains detailed information on the loans and the borrowers in the screening process as well as in the lifetime of the loans when monitoring the borrowers, which is usually not available to investors or the public. This is known to have amplified the GFC of 2007-2009 or enabled it in the first place (e.g., Berndt and Gupta, 2009; Keys et al., 2010; Purnanandam, 2011; Arentsen et al., 2014). Certain transactions led to capital savings that were not matched by corresponding reductions in actual economic risk, providing the opportunity for regulatory arbitrage (e.g., Calomiris and Mason, 2004; Ambrose et al., 2005; Acharya et al., 2013). As a consequence, there has been a tremendous skepticism towards securitization in Europe since the GFC.

In the aftermath of the GFC, two central institutional changes have fundamentally affected the (European) securitization market. First, considerable tightening of the regulatory framework aimed to eliminate negative externalities emitted by securitization (e.g., 111th US Congress, 2010; European Parliament and the Council, 2017).[1] Second, the European Central Bank (ECB) started an extensive liquidity provision in 2011, which included making asset-backed securities (ABS) eligible as collateral in repurchase agreements (repos) and allowing them to be bought as part of the ABS Purchase Programme (ABSPP) (European Central Bank, 2015). Both developments worked to segment the European securitization market into two categories of transactions, namely liquidity-generating transactions and Capital Relief Trades (CRTs). Moreover, the changes limit today's significance of formerly highly relevant pre-GFC analyses.

[1] Practitioners typically concede that arbitrage opportunities exist no more, with some claims that the regulatory requirements are now even excessive (Structured Credit Investor (SCI), 2018).

Before turning to the main analysis, we briefly look into the reasons for the use of SCRTs to facilitate additional lending or risk-taking. This may provide evidence which banks would benefit the most from a decrease in capital requirements. As our focus is the role of (green) lending, we will not investigate all potential drivers of securitization.[2] Instead, we stress the role of NPL because SCRTs, and also true sales, of course, are designed to reduce capital requirements in a first step by eliminating credit risks from banks' (loan) portfolios (e.g., Affinito and Tagliaferri, 2010; Loutskina, 2011). As we have already noted in Section 1, reducing capital requirements is not the ultimate goal when SCRTs are performed. In this way, securitization potentially provides an important contribution to bank funding and credit risk diversification, as well as to enhanced bank lending and optimal risk allocation in the economy in the second step (e.g., Pennacchi, 1988; Altunbas et al., 2009; Loutskina, 2011).

Banks with higher NPL ratios arguably have a stronger incentive for securitization. However, due to the information asymmetries, investors may be reluctant to buy credit risks from banks with higher NPL ratios. Before the GFC, some analyses find that higher default risk of a bank's loan portfolio is a significant driver of securitization activities; others do not observe this or even note a positive reputation effect when securitizing high-quality portfolios (e.g., Ambrose et al., 2005; Bannier and Hänsel, 2008; Affinito and Tagliaferri, 2010; Cardone-Riportella et al., 2010; Farruggio and Uhde, 2015). Eventually, it is an empirical question, possibly without an answer that is valid always and everywhere, whether banks' incentives or investors' skepticism prevails. In line with participants in the European securitization markets, we state Hypothesis 1 for ex ante NPL as follows:

H1: Ex ante, banks are more extensively involved in SCRTs if they have lower NPL ratios.

We are turning now to the situation ex post, i.e., a year or two after a securitization. If banks want to keep their target capital ratios, the capital leeway is to be used for

[2] The studies mentioned in the following, with no particular emphasis on synthetic transactions, tend to identify, though not uniformly, little equity, size, better access to capital markets, and the ambition to improve performance as (other) potential determinants of securitization.

risk-taking. In the case of synthetic transactions, no liquidity is generated, and therefore additional loans require some idle liquidity ex ante or through additional activities. Without available liquidity, the loan portfolio could be partially adjusted towards more risky loans with higher expected, ideally risk-adjusted returns. Earlier literature indeed has pointed out that a reduction in risks, and sometimes in capital requirements, is just the first step. It was accompanied by taking new risks when reinvesting the liquidity obtained (e.g., true sale) or using the leeway created in derivatives transactions (e.g., SCRTs). Some banks even ended up with more risk than before (e.g., Franke and Krahnen, 2007; Haensel and Krahnen, 2007; Uhde and Michalak, 2010; Casu et al., 2011; Michalak and Uhde, 2012; González et al., 2016; Bakoush et al., 2018).

According to the presumed aim of SCRTs and based on these findings in the literature, we formulate Hypothesis 2 for ex post NPL as follows:

H2: Ex post, banks that are more extensively involved in SCRTs have higher NPL ratios.

Lastly, we focus on banks' business activities, especially on the loan supply, banks' central role in the overall economy. For the US market and traditional true-sales, securitizations can enable banks to provide more loan financing for individuals and corporations, which is offered at better conditions, i.e., lower interest rates (e.g., Carbo-Valverde et al., 2015; Kaya and Masetti, 2019). This positive effect of securitization on the loan supply arises in the US through the liquidity effect of converting typically illiquid loans into liquid assets (e.g., Loutskina and Strahan, 2009; Loutskina, 2011). However, the importance of liquidity generation differs greatly between the years before the GFC and the time of massive liquidity-increasing central bank interventions after the GFC. Thus, the studies above predominantly provide evidence on banks' loan supply as a consequence of securitization for the framework before the GFC. Moreover, none of them, nor any other we know of, has examined the impact of SCRTs on banks' loan supply in the economy.

Banks can expand the volume or the riskiness of their lending using the capital relief achieved via SCRTs. They play an increasingly important role in the current debate about a more climate-friendly economy as financiers of the transition. This is especially the case in light of credit constraints that firms face on their path towards higher sustainability (e.g., De Haas et al., 2024; Kaldorf and Shi, 2024). One particular way in which banks could contribute to a sustainable economy is by granting green loans. Green loans, which have become popular over the last years, are credits that finance specific environmentally friendly projects with a use-of-proceeds principle (Kim et al., 2023). In contrast to their capital market counterpart, green bonds, literature on green loans is scarce (Gilchrist et al., 2021). Most of the few existing contributions focus on the loan level and/or the borrowers of green loans (e.g., Li et al., 2018; Dursun-de Neef et al., 2023; Kim et al., 2023) but less on the lenders (e.g., Connolly and Echeverry, 2024).

Some studies investigate environmental aspects in the credit business of banks. Kacperczyk and Peydró (2024) find that banks committing to reducing carbon emissions provide relatively more (less) loan volume to their existing corporate borrowers with low (high) emissions.[3] Houston and Shan (2022) show that banks tend to give credit to companies with environmental, social, and governance (ESG) ratings similar to their own. Anginer et al. (2024) show empirically that banks charge, on average, higher interest rates and require stricter covenants and higher collateral from corporate borrowers that have previously been involved in adverse climate-related events as reported in the news. Firms with better environmental performance are generally found to have lower credit risk compared to firms with worse environmental performance (e.g., Barth et al., 2022; Höck et al., 2020; Sautner et al., 2025). However, Höck et al. (2020) find that this relation holds only for companies with high credit worthiness. Furthermore, empirical results by Beyene et al. (2024) suggest that fossil fuel firms substitute bond financing with bank loans because banks, compared to bond markets, price less the risk of stranded assets.

[3] The prevailing view in the literature is that for corporations in general, committing to environmental goals can indeed lead to improvements in environmental firm outcomes (e.g., Ioannou et al., 2016; Dahlmann et al., 2019; Freiberg et al., 2021). One form of such commitment is joining the Science Based Targets Initiative (SBTi, see Section 6.3) which is also used in the study by Kacperczyk and Peydró (2024).

Other studies analyze the outcomes of green lending for borrowers and lenders. Zhou et al. (2022) investigate green lending by Chinese banks. They find that a higher share of green credit in the overall credit portfolio is related to lower credit risk for large, state-controlled banks, but they find a positive relation for smaller city and regional banks. Green financing, especially green bonds, are found to lead issuing companies to subsequently improve their environmental ratings and reduce their emissions (Flammer, 2021). Houston and Shan (2022) show empirically that firms particularly improve their ESG performance when they lend from banks with relatively better ESG performances and that companies might be affected by disturbances in their lending relations if they continue with unwanted ESG practices. Kacperczyk and Peydró (2024) find that as a consequence of less credit being allocated to firms with high carbon emissions, these companies do not improve their environmental performance afterwards but instead seemingly engage in greenwashing.

Interrelating the results of banks' expandable loan supply as a consequence of securitizations and the recent rise of green lending activities, we formulate Hypothesis 3 on banks' usage of capital relief in their loan supply:

H3: Ex post, banks that are more extensively involved in SCRTs originate

a) a larger number and total volume of loans.

b) a larger number and volume of green loans.

3 Data

Our data is mainly retrieved from three sources. The first source is Fitch Connect. In our analysis, we focus on European banks because here, the role of banks in providing financing to the economy is particularly important. Thus, we access a list of European banks with individual total average assets per bank over USD 50 billion as of December 31, 2021. For the banks on the list, we download from Fitch Connect annual balance sheet data, income statement items, and regulatory figures from 2012 to 2021. Accounting measures that are not expressed in USD are converted with each year-end's exchange rate.

Central to our analysis are the total capital ratio (TCR) and the non-performing loans to total loans (NPLL). Relevant controls for our regressions on the bank level are the ratio of deposits to total assets (DTA), the ratio of liquid assets to total assets (LATA), the logarithm of total assets (LN_TA), the ratio of gross loans to total assets (LTA), the ratio of non-interest operating income to total assets (NII), and the return on equity (ROE). As an alternative to NPLL, we use the ratio of loan loss provisions to total loans (LLPL) for further insights. For precise definitions of the variables, please refer to Table A1 in the Appendix.

Some of the entities included in the Fitch Connect list are erroneously declared as commercial or investment banks even though they do not operate as banks. Examples are central banks, stock exchanges, or associations of banks. These entities are eliminated from the list. Additionally, all banks from Russia and Turkey are eliminated because their economies and banking systems differ largely from all other countries in Europe in various structural and regulatory aspects and could bias the results. A list of the names of all banks included in the final sample is provided in Table A2, and a list of the number of banks per country is given in Table A3, which can both be found in the Appendix. An overview of the numeric variables indicates that some infrequent and extreme outliers (e.g., TCR values much higher than 100 % which are, thus, not within an expected value range) might distort regression results. Therefore, the variables from Fitch Connect used as explanatory variables in the following analyses are consistently winsorized for each variable to the top and bottom 1 %.

The second data set, provided by Structured Credit Investor (SCI), comprises tranche-level information on CRTs since 2005.[4] It contains information on approximately 400 CRTs conducted by around 100 originating banks, including information on whether a trade is a synthetic or a true sale transaction. We extract from the SCI data set the number of SCRT transactions conducted by each bank in a given year (SCRT_COUNT) and the natural log-

[4] The classification of a certain transaction as a CRT is not fully transparent to researchers. However, as SCI sells access to this data, it should be in its commercial interest to supply a correct and unbiased classification, and we have not come across any peculiar classification.

arithm of the total SCRT deal volume for each bank-year combination (LN_SCRT_VOL).[5] LN_SCRT_VOL is winsorized to the top and bottom 1 %. To determine whether a bank has ever made an SCRT before the respective observation year, we use the dummy variable SCRT_PRE and the SCRT_PRE_STBi dummy for restricting this definition to the years before bank's STBi ratification. In our data set, 5 % of the bank-year observations reveal that a certain bank has conducted at least one SCRT in a given year (6 % in the case of the broader definition of CRT transactions).

The third data set stems from LSEG (formerly Refinitiv) LoanConnector Dealscan. It provides detailed information on the terms and conditions of syndicated corporate loan transactions worldwide. From this data set, we extract four variables for our analysis: the annual number of all corporate loan transactions a respective bank issued or where it participated in the underwriting group (LOAN_COUNT) and the natural logarithm of the corresponding annual credit volume (LN_LOAN_VOL). Besides that, we analogously extract the annual number (GREEN_LOAN_COUNT) and natural logarithm of the annual volume (LN_GREEN_LOAN_VOL) of corporate loans that are labeled as "green loans" within the Dealscan data set for each bank. LN_LOAN_VOL and LN_GREEN_LOAN_VOL are winsorized to the top and bottom 1 %.

The data used in our analysis is additionally augmented by macro variables, such as country-level data on the annual growth rate of the harmonized consumer price index (CPI) and the annual growth rate of the real gross domestic product (GDP), accessed via EUROSTAT and by data on banks' participation in the STBi from Kacperczyk and Peydró (2024).

To combine the information from the Fitch Connect and SCI data sets, they are matched based on bank names. For each of the banks included in the SCI data set, the Fitch ID

[5] We deliberately only include *synthetic* CRTs in our main analyses in order to use a clearly defined and homogeneous instrument. However, we analogously extract a count (CRT_COUNT) and a logarithmized volume (LN_CRT_VOL) variable for all deal types, i.e., synthetic, true sale, and unknown deal type CRTs, for robustness checks. The results are provided collectively in Tables A14 to A20 in the Appendix and remain qualitatively unchanged compared to the results of the main analyses with consistently similar economic and statistical magnitudes.

is retrieved by manually searching for the bank name in the Fitch Connect database. Here, we correct missing matches that exist, e.g., due to slightly different spellings as well as in rare cases of name changes, mergers, and acquisitions. The data are deliberately not consolidated on the group level, because in principle every subsidiary has to fulfill regulatory requirements, for instance, concerning minimum capital, on an individual basis (European Parliament and the Council, 2013, Art. 6) and, thus, motivations for and consequences of securitization transactions also have to be analyzed on the bank level.[6] The variables from Dealscan are matched to the data set by bank names similar to, e.g., Chava and Roberts (2008) and Schwert (2018). The macro variables are finally matched according to the country of the banks' respective headquarters.

In total, we obtain a panel data set containing accounting, regulatory, macro, loan origination, and securitization information for 225 banks from 23 countries between 2012 and 2021 on an annual basis, with up to 2,250 bank-year observations for each variable. Table 1 provides summary statistics for the data set.

The mean value of the variable SCRT_COUNT can be interpreted such that on average, per bank-year observation, 0.08 SCRT deals are conducted. Banks already have issued an SCRT in the past appear in about 7 % of the observations, increasing to 10 % if their first SCRT transaction has to be before the STBi ratification (this variable can only be calculated for those banks that are part of the STBi at the end of our observation period). The average total capital ratio is roughly 21 % and the mean of NPLL is around 4.5 %. The remaining values of DTA, LATA, LN_TA, LTA, NII, ROE, CPI, GDP, and LLPL are within expected and plausible ranges. In the sample, a bank has, on average, provided firms with credit in 40 syndicated transactions per year, as reflected by the mean of LOAN_COUNT. Interestingly, for more than 50 % of the bank-year observations, no syndicated corporate credit (as reported by Dealscan) has been issued. The mean of LOAN_COUNT is substantially higher than for green loans (GREEN_LOAN_COUNT),

[6] So-called waivers, where, e.g., capital requirements have to be fulfilled only on a group level, are in principle possible under very strict conditions (European Parliament and the Council, 2013, Art. 7 - 10). However, because of these strict requirements, waivers are a rare exception in practice.

Table 1: Summary statistics

	N	Mean	SD	5 %	50 %	95 %
Synthetic securitization variables						
SCRT_COUNT	2,250	0.08	0.46	0.00	0.00	0.00
LN_SCRT_VOL	2,236	0.24	1.12	0.00	0.00	0.00
SCRT_PRE	2,250	0.07	0.25	0.00	0.00	1.00
SCRT_PRE_STBi	390	0.10	0.30	0.00	0.00	1.00
Bank-level determinants						
TCR	1,788	20.69	11.29	12.10	18.40	35.00
NPLL	1,790	4.51	6.78	0.10	2.51	14.96
Bank-level controls						
DTA	2,054	57.21	24.41	5.13	62.32	89.36
LATA	2,094	22.95	17.64	2.32	18.68	62.11
LN_TA	2,108	11.86	1.21	10.46	11.60	14.10
LTA	2,076	55.31	23.48	8.90	59.59	89.25
NII	2,099	0.84	0.96	-0.05	0.67	2.34
ROE	2,074	6.30	9.48	-6.88	6.73	19.65
LLPL	1,873	2.51	3.56	0.06	1.39	8.50
Macro controls						
CPI	2,180	1.17	1.08	-0.55	1.10	3.00
GDP	2,180	1.31	3.20	-3.90	1.60	5.65
Overall loan origination variables						
LOAN_COUNT	2,250	40.09	123.59	0.00	0.00	249.00
LN_LOAN_VOL	1,952	2.37	3.26	0.00	0.00	8.86
Green loan origination variables						
GREEN_LOAN_COUNT	2,250	0.46	2.61	0.00	0.00	2.00
LN_GREEN_LOAN_VOL	2,128	0.22	1.00	0.00	0.00	0.00
Bank STBi self-commitment variable						
STBi	2,250	0.09	0.28	0.00	0.00	1.00

Note: This table reports the number of observations (N), the arithmetic mean (Mean), the standard deviation (SD) and the 5 %, 50 % and 95 % percentiles for the relevant variables of the data set. LN_SCRT_VOL, LN_CRT_VOL, TCR, NPLL, DTA, LATA, LN_TA, LTA, NII, ROE, LLPL, LN_LOAN_VOL, and LN_GREEN_LOAN_VOL are winsorized to the top and bottom 1 %.

where roughly 0.5 transactions per bank-year are originated. Around 9 % of the bank-year observations relate to banks that had joined the STBi at this point in time with the earliest self-commitments in 2015.

4 Methodology

The models we employ in our analyses can be broadly divided into two major categories, the first capturing the ex ante determinants of banks' SCRT activity and the second

investigating the ex post consequences of it. First, to analyze the ex ante determinants, an OLS regression model is set up with a dependent variable SCRT_VAR referring to either SCRT_COUNT or LN_SCRT_VOL, depending on the model specification. This results in Equation 1:

$$\begin{aligned} \text{SCRT_VAR}_{\text{i,t}} = \alpha + \sum_{\text{j=1}}^{\text{m}} \beta_{\text{j}} \cdot \text{Determinant}_{\text{i,j,t-1}} \\ + \sum_{\text{k=1}}^{\text{n}} \gamma_{\text{k}} \cdot \text{Control}_{\text{i,k,t-1}} + \zeta_{\text{i}} + \zeta_{\text{t}} + \epsilon_{\text{i,t}} \end{aligned} \tag{1}$$

In our ex ante analyses, we are particularly interested in the variables TCR and NPLL as potential determinants of SCRTs. Determinant is therefore a placeholder variable for TCR and NPLL, respectively. We add, as bank control variables, how strongly a bank's refinancing depends on deposits (DTA), bank size (LN_TA), the relative importance of the credit business for a bank's business model (LTA), available liquidity (LATA), the bank's reliance on non-interest income (NII), and profitability (ROE), and we use CPI and GDP as macro control variables. i is the bank index, j is the determinants' index, k is the controls' index, and t is the time index. To account for the time needed to prepare an SCRT and to partly counter potential endogeneity issues, all explanatory variables are lagged by one year. α is a constant, ζ_{i} and ζ_{t} are the bank-fixed and time-fixed effects, respectively, and ϵ is the error term. By using bank-fixed effects, we control for unobserved bank-specific drivers of SCRT activity that are not already modeled as variables. Here, for example, one might think of the general tendency to issue ABS or conduct SCRTs. The pairwise correlations between the explanatory variables are generally moderate (see Table A4 in the Appendix). Only the absolute pairwise correlation between LTA and LATA is comparably high, but it is still low enough to assume that multicollinearity is likely not a concerning problem in the model.[7]

[7] This is also strongly supported by calculations of the variance inflation factors (VIFs) for our models. None of the VIFs is larger than 3.5 and the mean VIFs are consistently below the value of two.

Second, to investigate the ex post consequences, i.e., how capital adequacy and risk measures as well as loan origination are affected by the SCRT activity of a bank τ years earlier, we employ Equation 2:

$$\text{Measure}_{\text{i,t}} = \alpha + \beta \cdot \text{SCRT_VAR}_{\text{i,t-}\tau} + \sum_{\text{k=1}}^{\text{n}} \gamma_{\text{k}} \cdot \text{Control}_{\text{k,i,t-1}} + \zeta_{\text{i}} + \zeta_{\text{t}} + \epsilon_{\text{i,t}} \qquad (2)$$

In this OLS regression, the generic dependent variable Measure is replaced by the relative changes (in percentage points) of different bank capitalization and risk-related variables, namely ΔTCR, ΔNPLL, ΔLATA, and ΔLTA, or by variables measuring a bank's loan origination, namely LOAN_COUNT, GREEN_LOAN_COUNT, LN_LOAN_VOL or LN_GREEN_LOAN_VOL. As the explanatory variable of main interest capturing banks' SCRT activities, SCRT_VAR, we use one of the variables SCRT_COUNT, LN_SCRT_VOL, SCRT_PRE, and SCRT_PRE_STBi) in the ex post analyses. In our final analysis on the role of SCRTs in the implementation of banks' explicit commitment to sustainability, we also include the variable STBi. As in Equation 1, we control for relevant bank and macro variables as well as bank-fixed and time-fixed effects. The notation is otherwise equivalent to Equation 1.

5 Results on Bank Capital and Risk

In the first part of this section, we present the determinants of issuing SCRTs on the bank-level. In the second part, we provide evidence on the impact of SCRT activity on banks' capital and risk figures.

5.1 Ex ante Determinants on the Bank-Level

First, we investigate the ex ante determinants of banks' SCRT activity. Table 2 provides the regression results of Equation 1 in different specifications with respect to dependent variables, determinants, and fixed effects. In this analysis, SCRT_COUNT (columns (1)-(3)) and LN_SCRT_VOL ((4)-(6)) are used as the dependent variables. The potential determinants of main interest are the banks' capitalization expressed by TCR and the

riskiness of their loan portfolios NPLL. The results show that TCR is insignificantly related to banks' SCRT activity in all models. Thus, capitalization is not a determinant of the number of SCRTs or of the volume of the SCRT deals conducted. This finding is counterintuitive with respect to the primary target of SCRTs and suggests that SCRTs are presumably not intended as a remedy for weakly capitalized banks (in contrast to, e.g., Affinito and Tagliaferri (2010)).

Table 2: Ex ante analysis - SCRT determinants

Dep. var.	SCRT_COUNT			LN_SCRT_VOL		
	(1)	(2)	(3)	(4)	(5)	(6)
TCR_{t-1}	-0.001		-0.002	-0.002		-0.003
	(-0.82)		(-1.31)	(-0.67)		(-0.80)
$NPLL_{t-1}$		-0.011**	-0.012**		-0.029*	-0.031*
		(-2.23)	(-2.27)		(-1.94)	(-1.92)
DTA_{t-1}	0.003	0.002	0.002	0.006	0.003	0.004
	(1.63)	(0.94)	(1.08)	(1.56)	(0.72)	(0.83))
$LATA_{t-1}$	-0.004*	-0.004	-0.004	-0.011	-0.009	-0.011
	(-1.67)	(-1.59)	(-1.63)	(-1.59)	(-1.40)	(-1.47)
LN_TA_{t-1}	-0.008	0.001	0.009	-0.050	-0.029	-0.001
	(-0.16)	(0.02)	(0.16)	(-0.44)	(-0.24)	(-0.01)
LTA_{t-1}	-0.005**	-0.005**	-0.004*	-0.011*	-0.010	-0.009
	(-2.03)	(-2.08)	(-1.75)	(-1.85)	(-1.60)	(-1.37)
NII_{t-1}	-0.044	-0.052	-0.059	-0.071	-0.097	-0.102
	(-1.16)	(-1.29)	(-1.27)	(-0.71)	(-0.87)	(-0.80)
ROE_{t-1}	0.001	-0.001	-0.000	-0.002	-0.004	-0.004
	(0.40)	(-0.50)	(-0.25)	(-0.34)	(-0.84)	(-0.75)
CPI_{t-1}	0.010	0.010	0.011	-0.006	-0.004	-0.005
	(0.50)	(0.53)	(0.56)	(-0.10)	(-0.06)	(-0.09)
GDP_{t-1}	-0.002	0.001	0.000	0.017	0.022	0.023
	(-0.23)	(0.08)	(0.07)	(0.63)	(0.84)	(0.81)
R^2	0.529	0.521	0.531	0.556	0.553	0.557
No. of Obs.	1,543	1,528	1,393	1,531	1,516	1,381
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table reports the coefficients and t-statistics in parentheses of the OLS regression models with the SCRT count (SCRT_COUNT) or the logarithmized SCRT volume (LN_SCRT_VOL) as the dependent variable and the independent variables listed. Standard errors used are clustered by bank. ***, **, and * denote significance levels of 1, 5, and 10 %, respectively.

NPLL is negatively and significantly related to SCRT in all relevant models ((2)-(3), (5)-(6)), at a minimum of a 10 % significance level. This means that the lower the quality of loan portfolios, expressed by higher NPL ratios, the lower banks' engagement in SCRTs,

which is in contrast with, e.g., Bannier and Hänsel (2008) and Affinito and Tagliaferri (2010). Increasing NPLL by one standard deviation (6.78, see Table 1) means a reduction in the number of SCRT deals by 0.08 in model (3), which is about 16 % of the sample mean. This leads to H1 being accepted. To strengthen this result, we re-estimate columns (3) and (6) of Table 2 and replace NPLL with LLPL. The results can be found in Table A5 in the Appendix and they are qualitatively unchanged. Additionally, replacing bank-fixed effects with country-fixed effects results in bank size and profitability becoming significant, but leaves basically everything else unaffected (see Table A6 in the Appendix). One potential explanation for these results might be that, compared to the time prior to the GFC, now there are substantially more extensive and stricter regulations on ABS transactions in place (e.g., with respect to risk retention European Parliament and the Council, 2017, Art. 6). In that sense, our result might also be interpreted such that these attempts to reduce negative externalities are indeed effective, which supports findings by, e.g., Klein et al. (2021) and Billio et al. (2023, 2024) based on traditional true-sale securitizations. Another reason might be that the sale of the credit default risk of the loans that are already exposed to delayed payments but not yet in arrears can lead to the realization of impairments and actual losses that are not yet required to be reported in the P&L statement.[8] In this case, the issue of SCRTs burdens the current balance sheet and at the same time makes the sale of the risk more expensive, which in turn reduces the incentive for the bank to issue SCRTs.

5.2 Ex post Implications on Bank Capital and Risk

Second, we present the findings from the models investigating the ex post consequences of banks' SCRT activity on capital adequacy and loan portfolio risk (Equation 2). The results are depicted in Table 3 where ΔTCR and ΔNPLL are used as the dependent variables. Both are hereby related to SCRT_COUNT ((1)-(2), (5)-(6)) or LN_SCRT_VOL ((3)-(4), (7)-(8)). The explanatory variable capturing banks' SCRT activity is lagged by one period in model specifications (1), (3), (5), and (7) and by two periods in the columns

[8] Even in case of an extensive write off of possible or actual losses in the banks' balance sheets, an investor will most likely demand an additional risk premium for overshooting losses, the associated uncertainty, and the inherent information disadvantage.

with even numbers, respectively. The control variables are again lagged by one period. None of the coefficients capturing the ex post relation between SCRT activity and ΔTCR is significant. Thus, we find no evidence that SCRTs would increase banks' regulatory capital ratios. Instead, combined with the lack of ex ante effects, these results indicate that banks might maintain their target capital ratio, but use SCRTs as an instrument of capital management to support their lending business activities, as we show in the following.

For ΔNPLL as the dependent variable, we find positive and significant coefficients in the two models where the variables measuring SCRT activity by banks are lagged by two years ((6) and (8)). In all models where SCRT variables are lagged by one period, the relation between ΔNPLL and SCRT_COUNT or LN_SCRT_VOL is also positive, but insignificant. The coefficients are furthermore larger analyzing the two-year lag than in models with the one-year lag of our SCRT activity measures, respectively. Thus, having issued an additional SCRT two years ago increases ΔNPLL by 21.5 % (column (6)). It is particularly conspicuous that SCRT activity seems to be related to subsequent changes in NPL ratios after two years, but not after one year. This could be driven by the fact that banks engage in new and riskier credit contracts some time after SCRTs are conducted but the actual impairments or defaults on loans are not immediately noticeable.

To test the assumption of defaults' time lag and to provide further robustness for SCRTs' consequences for the riskiness of banks' loans portfolios, we re-estimate columns (5)-(8) of Table 3 and replace ΔNPLL by the changes in loan loss provisions (ΔLLPL). The results can be found in Table A7 in the Appendix. In three out of four model specifications, the relation between SCRT activity and ΔLLPL is positive and significant, supporting our findings described above. Importantly, ΔLLPL is economically and statistically more significantly impacted by the SCRT activity one year earlier than two years. Banks estimate the riskiness of their newly originated loans at origination and are obliged, both for regulatory and accounting purposes, to accrue loan loss provisions for the loan risk upfront.

Table 3: Ex post analysis - Impact on TCR and NPLL

Dep. var.	ΔTCR				ΔNPLL			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$SCRT_COUNT_{t-1}$	0.082				0.132			
	(0.95)				(1.32)			
$SCRT_COUNT_{t-2}$		-0.089				0.215*		
		(-0.72)				(1.75)		
$LN_SCRT_VOL_{t-1}$			0.002				0.096	
			(0.03)				(1.37)	
$LN_SCRT_VOL_{t-2}$				0.053				0.132**
				(0.89)				(2.24)
TCR_{t-1}					0.003	0.002	0.002	0.002
					(0.30)	(0.20)	(0.25)	(0.23)
$NPLL_{t-1}$	-0.015	-0.000	-0.018	0.004				
	(-0.52)	(-0.01)	(-0.59)	(0.14)				
DTA_{t-1}	-0.035	-0.026	-0.036	-0.027	-0.057***	-0.058***	-0.058***	-0.060***
	(-1.50)	(-1.32)	(-1.51)	(-1.38)	(-3.82)	(-3.49)	(-3.80)	(-3.52)
$LATA_{t-1}$	0.027	0.026	0.026	0.028	-0.003	0.000	-0.001	0.002
	(1.09)	(1.20)	(1.05)	(1.25)	(-0.21)	(0.02)	(-0.11)	(0.12)
LN_TA_{t-1}	0.319	0.201	0.280	0.220	-0.083	-0.070	-0.058	-0.068
	(0.66)	(0.39)	(0.58)	(0.42)	(-0.19)	(-0.15)	(-0.13)	(-0.14)
LTA_{t-1}	-0.007	-0.007	-0.007	-0.006	0.100***	0.109***	0.101***	0.109***
	(-0.39)	(-0.37)	(-0.42)	(-0.32)	(4.38)	(3.71)	(4.41)	(3.73)
NII_{t-1}	-0.080	-0.301	-0.044	-0.349	-1.414**	-1.675**	-1.460**	-1.697**
	(-0.20)	(-0.88)	(-0.11)	(-1.01)	(-2.47)	(-2.46)	(-2.54)	(-2.49)
ROE_{t-1}	-0.029**	-0.038**	-0.030**	-0.037**	0.011	0.006	0.011	0.007
	(-2.16)	(-2.44)	(-2.22)	(-2.40)	(0.65)	(0.24)	(0.66)	(0.27)
CPI_{t-1}	-0.413	-0.207	-0.409	-0.209	0.203	0.095	0.205	0.097
	(-1.32)	(-1.11)	(-1.31)	(-1.11)	(1.60)	(0.54)	(1.60)	(0.54)
GDP_{t-1}	0.057	0.090*	0.059	0.090	-0.101**	-0.065	-0.099**	-0.064
	(1.28)	(1.65)	(1.32)	(1.64)	(-2.06)	(-1.38)	(-2.00)	(-1.34)
R^2	0.084	0.139	0.083	0.139	0.206	0.210	0.208	0.211
No. of Obs.	1,376	1,238	1,366	1,228	1,372	1,234	1,362	1,224
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table reports the coefficients and t-statistics in parentheses of the OLS regression models with the change in percentage points of the total capital ratio (ΔTCR) or the change in percentage points of the ratio of non-performing loans to total loans (ΔNPLL) as the dependent variable and the independent variables listed. Standard errors used are clustered by bank. ***, **, and * denote significance levels of 1, 5, and 10 %, respectively.

Therefore, this result provides a consistent picture of our analysis above where the ΔNPLL are realized later. Additionally, the relation of SCRTs, ΔNPLL, and the banks' new loan origination is analyzed in more detail in Section 6. In every case, H2 can be accepted, because we find evidence supporting a risk-enhancing effect of SCRTs.

In summary, the results of our ex post analysis suggest that originating SCRTs does not significantly alter bank capitalization, which is counterintuitive with respect to the seeming target of these transactions, but further points to the managerial decision of keeping target capital ratios rather than increasing TCR. In contrast, we find that the loan portfolio risk measured by both, the NPL ratio as well as loan loss provisions, increases subsequent to SCRT activity. As an SCRT does not mechanically increase the banks' NPL ratios, but the banks' reaction to the arising leeway in the capital ratio can do, we analyze the consequences of banks' SCRT activities on the loan portfolio in the following.

6 Results on Loan Origination and Transition Finance

After having analyzed the results of Equation 2 using bank capital and loan portfolio risk positions (ΔTCR and ΔNPLL) as dependent variables, we next examine the consequences of SCRT activity on banks' business activities, i.e., possible changes in the loan origination policy, the resulting loan portfolio composition, and banks' financing of the (green) transition.

6.1 Implications of SCRTs on Loan Origination

Building on the results that SCRT activity does not increase banks' capital ratios, but leads to higher NPL ratios, we first analyze the consequences for banks' loan portfolios in more detail. Thus, we investigate the relation between SCRT activity and banks' overall corporate loan origination in the syndicated loan market and re-estimate Equation 2 using LOAN_COUNT and LN_LOAN_VOL as dependent variables. In line with Table 3, the SCRT-related explanatory variables are lagged by one ((1) and (3)) or two ((2) and (4)) years. The results are depicted in columns (1)-(4) of Table 4. None of the coefficients are statistically significant, and the signs of the coefficients are not even consistently positive.

Table 4: Ex post analysis - Impact on loan issuance

Dep. var.	LOAN_COUNT		LN_LOAN_VOL		GREEN_LOAN_COUNT		LN_GREEN_LOAN_VOL	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$SCRT_COUNT_{t-1}$	0.175				1.048*			
	(0.03)				(1.83)			
$SCRT_COUNT_{t-2}$		-3.254				1.215**		
		(-0.59)				(2.36)		
$LN_SCRT_VOL_{t-1}$			0.008				0.198***	
			(0.28)				(2.64)	
$LN_SCRT_VOL_{t-2}$				0.011				0.220***
				(0.44)				(3.05)
TCR_{t-1}	-0.054	-0.021	-0.005	-0.007	0.002	0.007	-0.004	-0.002
	(-0.33)	(-0.11)	(-0.86)	(-1.00)	(0.16)	(0.53)	(-0.60)	(-0.37)
$NPLL_{t-1}$	-0.608*	-0.611	-0.018	-0.019	-0.017	-0.018	-0.031**	-0.034**
	(-1.85)	(-1.54)	(-1.33)	(-1.45)	(-0.67)	(-0.67)	(-2.45)	(-2.24)
DTA_{t-1}	-0.006	-0.159	-0.002	-0.006	0.017	0.016	0.004	-0.002
	(-0.04)	(-0.77)	(-0.22)	(-0.82)	(1.23)	(0.97)	(0.47)	(-0.22)
$LATA_{t-1}$	-0.163	-0.164	0.011	0.012	-0.006	-0.007	0.008	0.010
	(-0.54)	(-0.49)	(1.32)	(1.41)	(-0.33)	(-0.35)	(1.12)	(1.38)
LN_TA_{t-1}	4.082	3.172	0.226	0.283	-0.603	-0.646	-0.365	-0.332
	(0.40)	(0.28)	(0.73)	(1.01)	(-1.53)	(-1.47)	(-1.19)	(-1.08)
LTA_{t-1}	-0.547**	-0.579**	0.003	0.005	0.015	0.020	0.003	0.002
	(-2.03)	(-2.03)	(0.30)	(0.45)	(0.83)	(1.14)	(0.26)	(0.24)
NII_{t-1}	-4.573	-5.350	-0.045	-0.092	0.274	0.064	0.060	0.021
	(-0.91)	(-0.88)	(-0.28)	(-0.65)	(0.75)	(0.17)	(0.35)	(0.12)
ROE_{t-1}	0.113	0.116	0.002	0.001	0.001	0.008	0.001	0.003
	(1.00)	(0.87)	(0.34)	(0.18)	(0.20)	(0.83)	(0.25)	(0.54)
CPI_{t-1}	0.443	2.441	0.056	0.072	0.059	0.210*	-0.056	-0.038
	(0.30)	(1.43)	(1.28)	(1.14)	(0.77)	(1.68)	(-1.59)	(-0.77)
GDP_{t-1}	1.259**	1.227**	0.015	0.018	-0.099**	-0.102**	-0.011	-0.012
	(2.11)	(2.02)	(0.92)	(1.11)	(-2.32)	(-2.43)	(-0.83)	(-0.96)
R^2	0.950	0.953	0.935	0.941	0.467	0.516	0.525	0.577
No. of Obs.	1,393	1,255	1,202	1,076	1,393	1,255	1,275	1,136
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table reports the coefficients and t-statistics in parentheses of the OLS regression models with the loan count (LOAN_COUNT), the logarithmized loan volume (LN_LOAN_VOL), the green loan count (GREEN_LOAN_COUNT), or the logarithmized green loan volume (LN_GREEN_LOAN_VOL) as the dependent variable and the independent variables listed. Standard errors used are clustered by bank. ***, **, and * denote significance levels of 1, 5, and 10 %, respectively.

This means that higher SCRT activity is not related to higher overall corporate loan origination, and we reject H3a.

Similarly, we relate SCRT activity to ΔLATA and ΔLTA. The results can be found in Tables A8 and A9 in the Appendix. The results show that SCRT activity is not found to significantly drive the loan to asset ratio as well as the banks' liquidity positions in any of the model specifications, consistent with the finding on the total loan volume above. Consequently, the question remains of how banks use the released capital and what the drivers of the increased NPL ratios are.

In the next step, we again re-estimate Equation 2 and replace LOAN_COUNT by GREEN_LOAN_COUNT and LN_LOAN_VOL by LN_GREEN_LOAN_VOL in order to evaluate how banks' SCRT activity is associated with their loan origination and portfolio composition in the green loan segment. The results are shown in columns (5) to (8) of Table 4. All coefficients capturing the relation between SCRT activity and banks' green loan issuance are positive and significant. This means that higher SCRT activity is related to higher subsequent green corporate lending by the securitizing bank, and thus, H3b is accepted. In economic terms, the effect is more pronounced for SCRT activity two years earlier. On average, one SCRT deal is approximately related to the issuance of one additional green corporate loan, which is twice the sample mean.

In order to examine in more detail the relationship between SCRT activity and green loan issuance, we additionally estimate the effects of an SCRT introduction by banks on green loan issuance in a Difference-in-Difference (DiD) setting with a matched sample as proposed by Callaway and Sant'Anna (2021).[9] We exploit the situation in which banks firstly introduce SCRTs as instrument during the sampling period. These banks serve as the treatment group. Banks that never use SCRTs serve as the control group. We do not consider banks for the treatment group if they use SCRTs once and not again thereafter because these banks can hardly be considered as having SCRTs as a permanent instrument

[9] This analysis also strengthens our results with regard to possible issues on, first, reverse causality, i.e., that SCRTs might be a consequence of green loans or, second, that the positive correlation of SCRT activity and green loan issuances could result from parallel time trends.

in their portfolio. Of note, introducing SCRTs is not a perfectly exogenous shock, and thus, interpreting results in a strictly causal way is not possible.

First, treated banks are matched to comparable control banks by matching the propensity scores with a nearest-neighbor estimation based on our determinants and control variables in Equation 1.[10] Second, we perform the DiD analysis. We are interested in the effects of introducing SCRTs on GREEN_LOAN_COUNT as the outcome variable. We choose the count instead of the green loan volume as the data coverage is slightly better than for LN_GREEN_LOAN_VOL. Econometrically, this can be captured by the average treatment effect on the treated (ATT). As SCRTs are newly introduced at different times, depending on the bank, there is a staggered treatment adaption. In line with the critique by Baker et al. (2022a), ATTs are computed in the way proposed by Callaway and Sant'Anna (2021).[11] We separately calculate the ATTs for the 1st, 2nd, 3rd, and 4th year after the introduction of SCRTs by the bank.

The results are displayed in Table 5. All ATTs are positive. Their economic magnitude is strongly increasing over time and, on average, of similar size as in the regression models (5) and (6) in Table 4. Thus, a positive and statistically as well as economically significant effect of introducing SCRTs on the issuance of green loans is detected after a relatively short implementation time, which additionally strongly increases over the years after the bank's first SCRT issuance. Overall, this again supports hypothesis H3b. However, it is still unexplored, whether the increased origination of green loans causes the higher loan

[10] For propensity score matching, a logistic regression model is estimated. Here, the probability of receiving the treatment is regressed on the control variables. We ensure that the nearest neighbor controls are assigned from the same year as the treated bank starts the treatment. This procedure better accounts for time trends in the outcome variable. We allow banks from the group of potential controls to serve as matches multiple times. This ensures the best possible comparability. Nevertheless, none of the potential control banks are matched to treatment banks more often than twice. The propensity score matching succeeds in creating a more homogeneous sample. This can be seen by a substantially reduced absolute difference between the mean propensity scores of the treated and control banks in the matched vs. the original sample (see Table A10 in the Appendix).

[11] Under staggered treatment adaption, this state-of-the-art estimation technique, unlike computing ATTs in fixed effects regression models, provides unbiased estimates of ATTs. This is achieved by accounting for differences in the treatment timing specifically and robustly (Callaway and Sant'Anna, 2021; Baker et al., 2022a).

portfolio risk and is therefore the reason for the rising NPL ratios and the constant capital ratios despite banks' SCRT transactions.

Table 5: Ex post analysis - SCRT usage as treatment

	Outcome variable: GREEN_LOAN_COUNT			
Years since introduction	1	2	3	4
ATT	0.778	0.886*	1.665**	2.562**
No. of Banks	32	32	32	32

Note: This table reports the results of the staggered DiD analysis using the balanced sample matched via propensity scores. Method: Callaway and Sant'Anna (2021). Computation of group-time average treatment effects: Doubly robust. Control group: Never treated. Standard errors used for significance calculation are clustered by entity. ***, **, and * denote significance levels of 1, 5, and 10 %, respectively.

6.2 Implications of Green Loan Issuance on Loan Portfolio Risk

Consequently, we now investigate whether the positive relation between SCRT activity and subsequent change in NPL ratios (Table 3) might be driven by the revealed increase in corporate green loan issuance. To do so, we relate ΔNPLL to the green loan issuance one year earlier and the SCRT activity two years earlier. The estimated regression models are extensions of the models (6) and (8) in Table 3. The results can be found in Table 6. In both regressions, the coefficients on green loan issuance are positive and significant on a 5 % and 1 % significance level, respectively. Economically, one additional green loan is on average related to a higher ΔNPLL by 0.06 percentage points in model (1). However, the coefficients relating SCRT activity to ΔNPLL are both insignificant and the economic magnitudes are now lower compared to the corresponding coefficients in Table 3. These results show that the increase in NPL ratios is not directly driven by banks' use of SCRTs, but by bank management's decision on how to use the capital released by these transactions, namely by expanding the issuance of green syndicated loans. Again, we check the robustness of our finding by replacing ΔNPLL with ΔLLPL and the results remain qualitatively unchanged (Table A11 in the Appendix).

One might be surprised as to why green loans are related to more risk in the credit portfolio. The prevailing view in the existing literature is that borrowers' higher ESG performance is related to lower credit risk on the firm-level (see Section 2). However, these findings do not

necessarily contrast with ours. If banks grant green loans, they can still face a higher risk in the credit portfolio if they grant these loans to firms with generally higher credit risk, e.g., new borrowers. Other reasons could also be that green loans fund specific projects that are riskier or that the borrowers are project corporations with limited liability. In fact, we frequently find the borrowers of green corporate loans in our data to be project corporations.

6.3 SCRTs and the Implementation of Banks' Self-Commitments

For the implementation of the transition towards a more sustainable economy, huge amounts of funding, in Europe, especially bank funding, are necessary. Thus, banks' responses to the challenge of sustainability and their potential adjustments of business models are of utmost importance for the success of the transformation. For this purpose, a group of major companies, including banks, have voluntarily and explicitly decided to participate in the SBTi (for the characteristics of the SBTi and its role in the banking industry, see Kacperczyk and Peydró (2024) and Bolton and Kacperczyk (2025)). Participation requires an unambiguous statement of the bank, committing the bank itself to, e.g., the path of the Paris Agreement's greenhouse gas emission limit. Using the banks' staggered commitment as provided by Kacperczyk and Peydró (2024), we are able to identify the banks aiming at supporting the green transition with their business activities. However, the question remains as to whether these banks actually provide more credit to sustainable firms and projects.

To evaluate this question, we re-estimate the regression model shown in columns (5)-(6) of Table 4 with three adjustments.[12] First, we integrate STBi and its interactions to capture the periods after banks' commitments. Second, we include banks' previous experience with SCRTs, by using SCRT_PRE and SCRT_PRE_STBi as our independent variables of main interest. Third, we restrict our sample for a range of analyses to those banks that participate in the STBi within our observation period. The results are presented in

[12] We re-estimate the regression models of this section again, using LN_GREEN_LOAN_VOL instead of GREEN_LOAN_COUNT as dependent variable. The results are presented in Table A12 in the Appendix and remain qualitatively unchanged.

Table 6: Ex post analysis - Impact on NPLL - Securitization vs. green loan issuance

Dep. var.	ΔNPLL	
	(1)	(2)
$SCRT_COUNT_{t-2}$	0.152	
	(1.18)	
$LN_SCRT_VOL_{t-2}$		0.117
		(1.32)
$GREEN_LOAN_COUNT_{t-1}$	0.055**	
	(1.99)	
$LN_GREEN_LOAN_VOL_{t-1}$		0.261***
		(3.81)
TCR_{t-1}	0.002	0.001
	(0.15)	(0.08)
DTA_{t-1}	-0.060***	-0.070***
	(-3.54)	(-3.70)
$LATA_{t-1}$	0.000	-0.002
	(0.01)	(-0.12)
LN_TA_{t-1}	-0.051	0.222
	(-0.11)	(0.40)
LTA_{t-1}	0.107***	0.110***
	(3.70)	(3.68)
NII_{t-1}	-1.671**	-1.677**
	(-2.47)	(-2.43)
ROE_{t-1}	0.006	0.007
	(0.24)	(0.24)
CPI_{t-1}	0.094	0.080
	(0.53)	(0.43)
GDP_{t-1}	-0.058	-0.054
	(-1.21)	(-1.12)
R^2	0.213	0.229
No. of Obs.	1,234	1,137
Bank FE	Yes	Yes
Time FE	Yes	Yes

Note: This table reports the coefficients and t-statistics in parentheses of the OLS regression models with the change in percentage points of the ratio of non-performing loans to total loans (ΔNPLL) as the dependent variable and the independent variables listed in an extended setting. Standard errors used are clustered by bank. ***, **, and * denote significance levels of 1, 5, and 10 %, respectively.

Table 7. Model (1) shows that banks originate more green loans after joining the STBi compared to all bank-year observations. In contrast, the coefficient of STBi in column (2), only assessing those banks that ever join the initiative, is neither positive nor significant. As there is no regulatory or legal requirement to participate in the initiative, although there may be social or political pressure to do so, the participating banks are expected

to have the intention to support the green transition, and thus, to intensify green loan issuance. Bringing this together, we find that the committed banks provide indeed more loans to green projects after joining the initiative compared to banks that never join, but they are not able to expand their lending for those purposes after their commitment compared to the periods before the commitment.

However, when additionally integrating the bank's previous SCRT activity (SCRT_PRE) and its interaction with STBi in columns (3)-(4), we show that the banks that committed themselves to the STBi and actively use SCRTs increase their green lending economically and statistically significantly, while STBi participation alone does not provide a significant positive impact on GREEN_LOAN_COUNT. The result that the banks' SBTi participations lead to more sustainable syndicated loan portfolios is in line with the findings of Kacperczyk and Peydró (2024) as their results show that banks participation leads to a lower carbon footprint in the syndicated loan portfolio. Our results further expand their findings by providing SCRTs as a tool for banks that want to adapt their lending strategy by expanding green lending as an alternative or complement to reducing brown lending and increasing loan rates for brown firms.

Finally, we include the interaction term of STBi and SCRT_PRE_STBi in our regression model to analyze whether banks with SCRT activity before their STBi participation exhibit higher green loan issuances thereafter. In unreported analyses, we find that banks' activity in the SCRT-market before their commitment is an important determinant of their later SCRT activity, which is, as shown above, an important driver of the GREEN_LOAN_COUNT. As the data set does not allow us to use the triple-interaction term of STBi, SCRT_PRE, and SCRT_PRE_STBi due to collinearity, we demonstrate that this mechanism can also be shown in a direct relation between SCRT_PRE_STBi and the green loan supply in the regression model.

Analyzing all observations of those banks that are involved in the STBi at the end of our observation period in column (5), banks with an SCRT activity before the commitment issue approximately 10 green loans per year more after the commitment than those banks

Table 7: SCRTs as instrument for self-commitment implementation

Dep. var.	GREEN_LOAN_COUNT				
	(1)	(2)	(3)	(4)	(5)
STBi	2.054**	-1.216	0.337	-2.713*	-2.988*
	(2.00)	(-0.99)	(0.83)	(-1.78)	(-1.90)
SCRT_PRE			1.166	-4.364	
			(1.02)	(-1.45)	
STBi × SCRT_PRE			7.246**	10.678***	
			(2.12)	(5.75)	
STBi × SCRT_PRE_STBi					9.942***
					(3.27)
TCR_{t-1}	0.012	0.057*	0.002	0.015	0.026
	(0.70)	(1.87)	(0.17)	(0.70)	(1.25)
$NPLL_{t-1}$	-0.028	-0.044	-0.025	-0.131	-0.166
	(-1.14)	(-0.11)	(-1.08)	(-0.32)	(-0.43)
DTA_{t-1}	0.014	0.054	0.014	0.042	0.097
	(1.01)	(0.58)	(1.01)	(0.65)	(1.17)
$LATA_{t-1}$	-0.006	-0.240	-0.005	-0.187	-0.227
	(-0.35)	(-1.18)	(-0.28)	(-1.13)	(-1.16)
LN_TA_{t-1}	-0.863*	-6.432**	-0.445	-4.961**	-4.537*
	(-1.87)	(-2.20)	(-1.03)	(-2.41)	(-1.89)
LTA_{t-1}	0.008	0.122	0.021	0.210	0.124
	(0.44)	(0.72)	(1.25)	(1.58)	(0.94)
NII_{t-1}	0.098	-2.185	0.111	-3.333	-3.011
	(0.25)	(-0.70)	(0.30)	(-1.01)	(-0.93)
ROE_{t-1}	0.001	0.080	0.003	0.101	0.103
	(0.17)	(0.78)	(0.42)	(1.23)	(1.21)
CPI_{t-1}	0.047	-0.065	0.082	0.131	-0.043
	(0.66)	(-0.12)	(1.05)	(0.23)	(-0.08)
GDP_{t-1}	-0.092**	-0.457	-0.071*	-0.302	-0.249
	(-2.39)	(-1.65)	(-1.92)	(-1.11)	(-1.19)
R^2	0.465	0.525	0.531	0.598	0.584
No. of Obs.	1,393	247	1,393	247	247
Bank FE	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes

Note: This table reports the coefficients and t-statistics in parentheses of the OLS regression models with the SCRT count (SCRT_COUNT) or the logarithmized SCRT volume (LN_SCRT_VOL) as the dependent variable and the independent variables listed. Standard errors used are clustered by bank. ***, **, and * denote significance levels of 1, 5, and 10 %, respectively.

without previous SCRT issuances. This result is also confirmed when further restricting our dataset in unreported analyses and assessing the impact of SCRT_PRE_STBi only for the observations after the banks' respective adoptions as the coefficient remains very similar. Consequently, not just released capital but also a higher likelihood of issuing new

SCRTs due to experience and expertise in the SCRT market and the issuance process enable banks to implement an expansion of their green loan portfolio.

Again, we strengthen our results using the DiD approach proposed by Callaway and Sant'Anna (2021). Following the same estimation concept as in Section 6.1, we use the dummy variable STBi as treatment in Panel A and its interaction with SCRT_PRE as treatment in Panel B (according to column (3) of Table 7).[13] The results presented in Table 8 further support that banks under the STBi increase their green lending in the syndicated loan market, but only with a marginal economic and statistical significance, especially in the first years after STBi implementation (Panel A). In contrast, the banks already using SCRTs or starting to use them while implementing the STBi, demonstrate a multiple times greater and statistically highly significant increase in green syndicated loan provision, starting from the beginning of the treatment.

Table 8: Ex post analysis - Commitment as treatment

Panel A: Commitment only

	Outcome variable: GREEN_LOAN_COUNT			
Years since introduction	1	2	3	4
ATT	0.091	0.321	0.741	1.535*
No. of Banks	58	58	58	58

Panel B: Commitment interacted with SCRT usage

	Outcome variable: GREEN_LOAN_COUNT			
Years since introduction	1	2	3	4
ATT	4.350*	4.200*	4.496**	5.575***
No. of Banks	20	20	20	20

Note: This table reports the results of the staggered DiD analysis using the balanced sample matched via propensity scores. Method: Callaway and Sant'Anna (2021). Computation of group-time average treatment effects: Doubly robust. Control group: Never treated. Standard errors used for significance calculation are clustered by entity. ***, **, and * denote significance levels of 1, 5, and 10 %, respectively.

We visualize the DiD estimation results in Figure 1. As the first banks sign the letter in order to participate in the STBi in 2015, we observe the first difference between the treated and control banks in their green loan lending in 2016. After the second phase of STBi-

[13] Again, propensity score matching substantially reduces the absolute differences between the mean propensity scores of the treated and control banks (see Table A13 in the Appendix).

implementations in 2017/18, there are substantial differences between these two groups afterwards. In the left panel, in which the treated banks were only selected on the basis of STBi (Panel A of Table 8), the treated banks issue approximately 5 green loans per year and therefore around twice as many as the control group. In contrast, if the treatment is defined by the interaction of STBi and previous bank's SCRT activity, the treated banks issue more than 15 new green syndicated loans per year, which is more than three times as many as the respective control group. Therefore, the economic consequences of SCRTs for the green credit supply to corporations and thereby for financing the green transition become particularly evident.

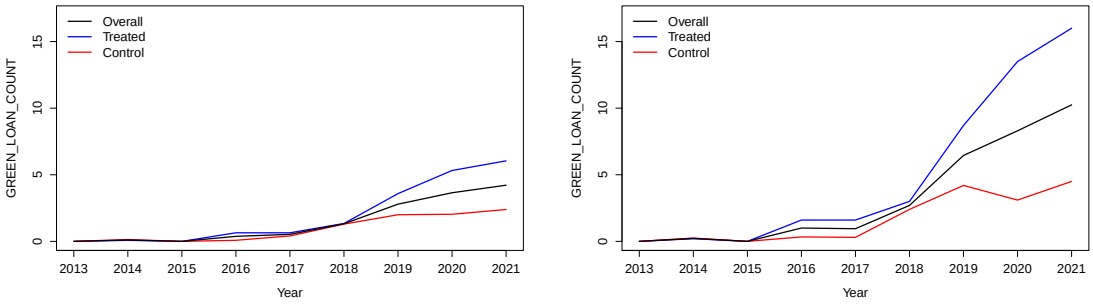


Figure 1: Annual means of GREEN_LOAN_COUNT
Note: The figure shows the development of the annual means of GREEN_LOAN_COUNT in our matched DiD sample, split by treatment group. In the left graph, all banks that participate in the STBi are treated. In the right graph, only those banks that both participate in the STBi and issued an SCRT up to the respective year are treated. ALT TEXT: Charts visualizing the banks' issuances of green syndicated loans by their STBi participation and previous SCRT issuances, indicating that banks' SCRT acitivity strengthens the sustainability initiative implementation.

7 Conclusion

The accomplishment of global climate-related goals hinges on a number of factors, including sustainable real investments of firms and individuals. Bank loans are often needed to finance these outlays. This requires sufficiently capitalized and liquid banks. For some time now, securitization has been an important instrument for transforming otherwise illiquid loans into liquid securities and for allocating risks. Banks can use securitization as a tool to adjust their risk exposure, to receive liquidity, or to manage their regulatory capital ratios (e.g., Affinito and Tagliaferri, 2010; Loutskina, 2011). Either way, securitization widens banks' scope for further lending and, thereby, has the potential to contribute to the transformation to a greener, sustainable economy.

However, in the run-up to the global financial crisis (GFC), securitization was discredited due to abuse of the instrument. Information asymmetries were exploited and incentives were misaligned, leading to a breakdown of the respective markets. In the aftermath of the crisis and despite regulatory improvements closing former loopholes, at least in Europe, securitization markets have still not recovered as desired, given their commercial relevance. Thus, securitization is only rarely considered as a potential remedy to overcome the green finance gap, even though more and more of such political ambitions have developed in recent years (e.g., Lindner and Le Maire, 2023; European Central Bank Governing Council, 2024; Noyer et al., 2024).

Our empirical study focuses on securitization transactions that have been underresearched from an academic perspective. We employ a novel data set on synthetic capital relief trades (SCRTs) aimed at releasing capital. Ex ante, we relate banks' use of SCRTs as issuers to their capitalization and loan portfolio risk. One would expect that banks with a lower total capital ratio should be more likely to conduct SCRTs. However, this simplistic management perspective ignores the existence of target capital ratios (e.g., Francis and Osborne, 2012). Target ratios imply that capital ratios relative to the target matter, not the level of capital ratios as such. Consequently, we find no significant relation between banks' capitalization and SCRT activity. It also seems plausible, looking at literature on securitization prior to the GFC, that banks with higher NPL ratios will use SCRTs more intensively to reduce their credit risk. But the opposite seems to be true. The NPL ratio ex ante is negatively and significantly related to SCRT activity.

Ex post, we analyze the consequences of issuing banks' SCRT activities on various risk-related variables and their lending. We find that SCRT activity does not change the liquid assets to total assets, loans to total assets, and total capital ratios; this last observation supports our view that SCRT origination is seemingly not used for a pure boost of capital ratios but rather to maintain target leverage ratios. However, NPL ratios are ex post positively related to banks' previous SCRT activity, especially two years after the transactions. These results suggest that banks use SCRTs not to increase their lending

but to shift toward riskier loans, because such behavior would simultaneously explain the findings on all four of the previously mentioned variables. Next, we conduct a deeper analysis. We find in an OLS and a DiD setting that after performing SCRTs, banks seem to particularly increase the issuance of *green* corporate loans, but not overall corporate loans. Moreover, we provide evidence that this issuance of green loans explains the relation between SCRT activity and increasing NPL ratios two years after SCRT origination. Finally, we show that banks after their self-commitment to the sustainability-orientated Science Based Targets Initiative provide three to five times more green loans if they issue SCRTs than without this capital relief.

We contribute to at least three streams of the literature. We are among the first to provide insights into the role of securitization in financing the green transition. Further, we provide important results on banks' determinants driving their engagement in green loans as lenders. Lastly, we add to the literature on determinants and implications of securitization transactions, especially concerning the time after the GFC and SCRTs as an instrument.

From a political perspective, our findings are overall good news. SCRTs are a way to sell credit-related bank risks to the capital market, and, thereby, they can help finance environmentally friendly firm projects and, thus, partly alleviate the green finance gap. However, regulators should keep an eye on the increased risks of banks' loan portfolios as a potential consequence.

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Appendix

Financing the Green Transition: A Case for Synthetic Capital Relief Trades

Table A1: Variable description

Variable	Description	Unit
Synthetic securitization variables		
SCRT_COUNT	Number of *synthetic* CRT deals the respective bank conducted as originator in the respective year.	units
LN_SCRT_VOL	(Natural) logarithm of the total *synthetic* CRT deal volume the respective bank conducted as originator in the respective year.	ln(mio. USD)
SCRT_PRE	Dummy variable, which is equal to one if the respective bank has issued an SCRT prior to the respective observation year.	0/1
SCRT_PRE_STBi	Dummy variable, which is equal to one if the respective bank has issued an SCRT prior to the bank's first year of STBi participation.	0/1
Overall securitization variables		
CRT_COUNT	Number of CRT deals the respective bank conducted as originator in the respective year.	units
LN_CRT_VOL	(Natural) logarithm of the total CRT deal volume the respective bank conducted as originator in the respective year.	ln(mio. USD)
Bank-level determinants		
TCR	Total capital ratio calculated as the sum of Tier 1 and Tier 2 capital divided by total risk weighted assets.	%
NPLL	Non-performing loans divided by total loans.	%
Bank-level controls		
DTA	Total deposits divided by total assets.	%
LATA	Liquid assets divided by total assets.	%
LN_TA	(Natural) logarithm of total assets.	ln(mio. USD)
LTA	Total gross loans divided by total assets.	%
NII	Total non-interest operating income divided by total assets.	%
ROE	Return on equity, i.e., net income divided by average common equity.	%
LLPL	Loan loss provisions divided by total loans.	%

Macro controls		
CPI	Annual growth rate of the harmonized consumer price index in the country of a bank's headquarters.	%
GDP	Annual growth rate of real gross domestic product in the country of a bank's headquarters.	%
Overall loan origination variables		
LOAN_COUNT	Number of overall syndicated loans where the respective bank has participated in the underwriting group in the respective year.	units
LN_LOAN_VOL	(Natural) logarithm of the total contributed credit volume of the respective bank in the underwriting groups of overall syndicated loans where it has participated in the respective year.	ln(mio. USD)
Green loan origination variables		
GREEN_LOAN_COUNT	Number of green syndicated loans where the respective bank has participated in the underwriting group in the respective year.	units
LN_GREEN_LOAN_COUNT	(Natural) logarithm of the total contributed credit volume of the respective bank in the underwriting groups of green syndicated loans where it has participated in the respective year.	ln(mio. USD)
Bank STBi self-commitment variable		
STBi	Dummy variable, which is equal to one if the respective bank has participated in the STBi in the respective year.	0/1

Note: This table reports the names, descriptions and units of the variables used in the sample.

Table A2: List of banks in the sample

No.	Bank
1	Aareal Bank AG
2	ABANCA Corporacion Bancaria, S.A.
3	ABH Financial Limited
4	ABN AMRO Bank N.V.
5	Accord Mortgages Limited
6	AIB Group Public Limited Company
7	Allied Irish Banks, plc
8	Alpha Bank S.A.
9	Alpha Services and Holdings S.A.
10	Argenta Bank- en Verzekeringsgroep NV
11	Argenta Spaarbank N.V.
12	Banca Mediolanum S.p.A.
13	Banca Monte dei Paschi di Siena S.p.A.
14	Banca Nazionale del Lavoro S.P.A.
15	Banca Popolare di Sondrio - Societa per Azioni
16	Banco Bilbao Vizcaya Argentaria, S.A.
17	Banco BPM S.p.A.
18	Banco Comercial Portugues, S.A.
19	Banco de Sabadell, S.A.
20	Banco Santander Totta S.A.
21	Banco Santander, S.A.
22	BancoPosta RFC
23	Bank Julius Baer & Co. AG
24	Bank of Ireland
25	Bank of Ireland Group plc
26	Bank of Scotland Plc
27	Bankia S.A.
28	Bankinter, S.A.
29	Banque Cantonale Vaudoise
30	Banque et Caisse d'Epargne de l'Etat
31	Banque Federative du Credit Mutuel S.A.
32	Barclays Bank Ireland Plc
33	Barclays Bank plc
34	Barclays Bank UK PLC
35	Barclays plc
36	Basler Kantonalbank
37	Bausparkasse Schwaebisch Hall AG
38	BAWAG Group AG
39	BAWAG P.S.K.
40	Bayerische Landesbank

41 Belfius Bank SA/NV
42 Berliner Sparkasse
43 BFA, Tenedora de Acciones, S.A.U.
44 BGL BNP Paribas
45 BNG Bank N.V.
46 BNP Paribas Fortis SA/NV
47 BNP Paribas Personal Finance
48 BNP Paribas S.A.
49 BNP Paribas Securities Services
50 BPCE S.A.
51 BPER Banca S.p.A.
52 Bpifrance
53 BRED Banque Populaire
54 CA Consumer Finance
55 Caceis Bank
56 CACEIS SA
57 Caisse d'Epargne et de Prevoyance de Rhone Alpes
58 Caisse d'Epargne et de Prevoyance Ile-de-France
59 Caisse Federale de Credit Mutuel
60 Caisse Francaise de Financement Local
61 Caisse Regionale de Credit Agricole Mutuel de Paris et d'Ile de France
62 Caixa Geral de Depositos, S.A.
63 CaixaBank, S.A.
64 Ceska Sporitelna, a.s.
65 Ceskoslovenska Obchodni Banka a.s. (CSOB)
66 Citibank Holdings Ireland Limited
67 Citigroup Global Markets Europe AG
68 Clydesdale Bank PLC
69 Commerzbank AG
70 Compagnie de Financement Foncier
71 Cooperatieve Rabobank U.A.
72 Coventry Building Society
73 Credit Agricole
74 Credit Agricole Corporate and Investment Bank
75 Credit Agricole Italia S.p.A.
76 Credit Agricole S.A.
77 Credit du Nord S.A.
78 Credit Foncier de France S.A.
79 Credit Industriel et Commercial
80 Credit Mutuel
81 Credit Mutuel Alliance Federale
82 Credit Mutuel Arkea
83 Credit Suisse (Schweiz) AG

84 Credit Suisse AG
85 Credit Suisse Group AG
86 Credit Suisse International
87 Credito Emiliano Holding SpA
88 Credito Emiliano S.p.A.
89 Danske Bank A/S
90 de Volksbank N.V.
91 DekaBank Deutsche Girozentrale
92 Deutsche Apotheker- und Aerztebank eG
93 Deutsche Bank AG
94 Deutsche Kreditbank AG
95 Deutsche Pfandbriefbank AG
96 Dexia Credit Local S.A.
97 Dexia S.A.
98 DNB ASA
99 DNB Bank ASA
100 DZ BANK AG Deutsche Zentral-Genossenschaftsbank
101 DZ HYP AG
102 Erste Group Bank AG
103 Erwerbsgesellschaft der S-Finanzgruppe mbH & Co KG
104 Eurobank Ergasias Services and Holdings S.A.
105 Eurobank S.A.
106 Fideuram - Intesa Sanpaolo Private Banking
107 FMS Wertmanagement AoeR
108 Groupe BPCE
109 Hamburger Sparkasse AG (Haspa)
110 HASPA Finanzholding
111 HBOS plc
112 HSBC Bank plc
113 HSBC Continental Europe S.A.
114 HSBC Holdings plc
115 HSBC UK Bank plc
116 Ibercaja Banco, S.A.
117 Iccrea Banca S.P.A.
118 ING Bank N.V.
119 ING Belgium NV/SA
120 ING Groep N.V.
121 ING Holding Deutschland GmbH
122 ING-DiBa AG
123 Intesa Sanpaolo S.p.A.
124 Investec Group
125 J.P. Morgan Capital Holdings Limited
126 J.P. Morgan SE

127 Julius Baer Group Ltd
128 Jyske Bank A/S
129 KBC Bank NV
130 KBC Group NV
131 KfW
132 Komercni Banka, a.s.
133 Kommunalbanken AS
134 Kutxabank, S.A.
135 La Banque Postale S.A.
136 Landesbank Baden-Wuerttemberg
137 Landesbank Hessen-Thueringen Girozentrale
138 Landeskreditbank Baden-Wuerttemberg - Foerderbank
139 Landwirtschaftliche Rentenbank
140 Le Credit Lyonnais
141 LGT Group Foundation
142 Liberbank S.A.
143 Lloyds Bank Corporate Markets plc
144 Lloyds Bank plc
145 Lloyds Banking Group plc
146 Luzerner Kantonalbank AG
147 Lyonnaise de Banque
148 Mediobanca - Banca di Credito Finanziario SPA
149 Migrosbank AG
150 Muenchener Hypothekenbank eG
151 Municipality Finance PLC
152 National Bank of Greece S.A.
153 National Westminster Bank Plc
154 Nationwide Building Society
155 Natixis S.A.
156 NatWest Group plc
157 NatWest Markets Plc
158 Nederlandse Waterschapsbank N.V.
159 Nomura International plc
160 Norddeutsche Landesbank Girozentrale
161 Nordea Bank Abp
162 Nordea Hypotek AB (publ)
163 Nordea Kredit Realkreditaktieselskab
164 Novo Banco, S.A.
165 NRW.BANK
166 Nykredit A/S
167 Nykredit Realkredit A/S
168 OP Corporate Bank Plc
169 OP Financial Group

170 OTP Bank Plc.
171 Pfandbriefbank schweizerischer Hypothekarinstitute
172 Pfandbriefzentrale der schweizerischen Kantonalbanken AG
173 Pictet Group
174 Piraeus Bank S.A.
175 Piraeus Financial Holdings S.A.
176 Postfinance AG
177 Powszechna Kasa Oszczednosci Bank Polski S.A.
178 PPF Group N.V.
179 Raiffeisen Bank International AG
180 Raiffeisen Group
181 Raiffeisen Schweiz Genossenschaft
182 Raiffeisenlandesbank Oberoesterreich Aktiengesellschaft
183 RBC Europe Limited
184 RCI Banque S.A.
185 Realkredit Danmark A/S
186 Royal Bank of Scotland International (Holdings) Ltd.
187 Royal Bank of Scotland International Limited
188 Santander Bank Polska S.A.
189 Santander Consumer Bank AG
190 Santander Consumer Finance, S.A.
191 Santander Totta, SGPS, S.A.
192 Santander UK Group Holdings plc
193 Santander UK plc
194 SBAB Bank AB (publ)
195 Skandinaviska Enskilda Banken AB (publ)
196 Societe Generale International Limited
197 Societe Generale S.A.
198 Stadshypotek AB (publ)
199 Standard Chartered Bank
200 Standard Chartered PLC
201 State Street Bank International GmbH
202 State Street Europe Holdings Germany S.a.r.l. & Co. KG
203 Storebrand Group
204 Svenska Handelsbanken AB
205 Swedbank AB
206 Swedbank Mortgage AB
207 Swiss Post Ltd
208 The Mortgage Works (UK) plc
209 The Royal Bank of Scotland Public Limited Company
210 Totalkredit A/S
211 TSB Bank plc
212 TSB Banking Group PLC

213	UBS AG
214	UBS Europe SE
215	UBS Group AG
216	UBS Switzerland AG
217	Unicaja Banco, S.A.
218	UniCredit Bank AG
219	UniCredit Bank Austria AG
220	UniCredit S.p.A.
221	Unione di Banche Italiane S.p.A.
222	Volkswagen Bank GmbH
223	Volkswagen Leasing GmbH
224	Yorkshire Building Society
225	Zuercher Kantonalbank

Note: This table reports all banks in the sample in alphabetical order.

Table A3: Number of banks in the sample per country

Country	Number of banks in the sample
GERMANY	35
FRANCE	34
UNITED KINGDOM	33
SWITZERLAND	20
ITALY	16
SPAIN	13
NETHERLANDS	8
BELGIUM	8
DENMARK	7
GREECE	7
SWEDEN	7
AUSTRIA	6
IRELAND	6
PORTUGAL	5
NORWAY	4
FINLAND	4
CZECH REPUBLIC	3
JERSEY	2
POLAND	2
LUXEMBOURG	2
HUNGARY	1
CYPRUS	1
LIECHTENSTEIN	1

Note: This table reports the number of banks in the sample by country.

Table A4: Correlation matrix of key variables

	TCR	NPLL	DTA	LATA	LN_TA	LTA	NII	ROE	CPI	GDP
TCR	1.000									
NPLL	-0.231	1.000								
DTA	-0.193	0.152	1.000							
LATA	0.028	-0.251	-0.191	1.000						
LN_TA	-0.035	-0.071	-0.300	0.232	1.000					
LTA	0.055	0.175	0.243	-0.781	-0.328	1.000				
NII	-0.213	0.041	0.241	0.228	-0.101	-0.332	1.000			
ROE	0.130	-0.329	0.049	0.023	-0.103	0.030	0.227	1.000		
CPI	0.045	-0.168	-0.052	0.018	0.104	-0.033	-0.099	0.054	1.000	
GDP	0.071	-0.091	0.032	0.055	-0.042	-0.000	-0.011	0.137	0.188	1.000

Note: This table reports the pairwise Pearson correlation coefficients of the sample variables listed.

Table A5: Ex ante analysis - Robustness - LLPL

Dep. var.	SCRT_COUNT		LN_SCRT_VOL	
	(1)	(2)	(3)	(4)
TCR_{t-1}	-0.002	-0.000	-0.003	0.001
	(-1.23)	(-0.21)	(-0.75)	(0.19)
$LLPL_{t-1}$	-0.021**	-0.021**	-0.057*	-0.048*
	(-2.05)	(-2.05)	(-1.90)	(-1.89)
DTA_{t-1}	0.002	-0.001	0.005	-0.002
	(1.24)	(-0.93)	(0.99)	(-0.62)
$LATA_{t-1}$	-0.004*	-0.001	-0.011	-0.001
	(-1.72)	(-0.38)	(-1.57)	(-0.17)
LN_TA_{t-1}	0.008	0.158***	-0.006	0.422***
	(0.14)	(3.51)	(-0.05)	(3.91)
LTA_{t-1}	-0.005*	-0.000	-0.010	0.002
	(-1.86)	(-0.06)	(-1.50)	(0.38)
NII_{t-1}	-0.052	0.039	-0.085	0.101
	(-1.16)	(1.43)	(-0.70)	(1.28)
ROE_{t-1}	-0.001	-0.005**	-0.006	-0.014**
	(-0.52)	(-2.13)	(-0.93)	(-2.16)
CPI_{t-1}	0.012	0.001	-0.003	-0.035
	(0.58)	(0.06)	(-0.04)	(-0.53)
GDP_{t-1}	0.000	-0.001	0.022	0.019
	(0.00)	(-0.14)	(0.76)	(0.67)
R^2	0.531	0.129	0.558	0.143
No. of Obs.	1,440	1,446	1,428	1,433
Bank FE	Yes	No	Yes	No
Country FE	No	Yes	No	Yes
Time FE	Yes	Yes	Yes	Yes

Note: This table reports the coefficients and t-statistics in parentheses of the OLS regression models with the SCRT count (SCRT_COUNT) or the logarithmized SCRT volume (LN_SCRT_VOL) as the dependent variable and the independent variables listed. Standard errors used are clustered by bank. ***, **, and * denote significance levels of 1, 5, and 10 %, respectively.

Table A6: Ex ante analysis - SCRT determinants using Country FEs

Dep. var.	SCRT_COUNT	LN_SCRT_VOL
	(1)	(2)
TCR_{t-1}	-0.000	0.001
	(-0.28)	(0.14)
$NPLL_{t-1}$	-0.012**	-0.027**
	(-2.22)	(-2.08)
DTA_{t-1}	-0.001	-0.002
	(-0.92)	(-0.63)
$LATA_{t-1}$	-0.001	-0.001
	(-0.39)	(-0.18)
LN_TA_{t-1}	0.161***	0.429***
	(3.53)	(3.92)
LTA_{t-1}	-0.000	0.002
	(-0.08)	(0.36)
NII_{t-1}	0.038	0.099
	(1.52)	(1.33)
ROE_{t-1}	-0.004**	-0.013**
	(-2.16)	(-2.21)
CPI_{t-1}	0.001	-0.038
	(0.04)	(-0.56)
GDP_{t-1}	-0.000	0.021
	(-0.01)	(0.76)
R^2	0.131	0.144
No. of Obs.	1,399	1,386
Country FE	Yes	Yes
Time FE	Yes	Yes

Note: This table reports the coefficients and t-statistics in parentheses of the OLS regression models with the SCRT count (SCRT_COUNT) or the logarithmized SCRT volume (LN_SCRT_VOL) as the dependent variable and the independent variables listed. Standard errors used are clustered by bank. ***, **, and * denote significance levels of 1, 5, and 10 %, respectively.

Table A7: Ex post analysis - Robustness - Impact on LLPL

Dep. var.	ΔLLPL			
	(1)	(2)	(3)	(4)
$SCRT_COUNT_{t-1}$	0.111**			
	(2.35)			
$SCRT_COUNT_{t-2}$		0.080		
		(1.22)		
$LN_SCRT_VOL_{t-1}$			0.073***	
			(2.67)	
$LN_SCRT_VOL_{t-2}$				0.066*
				(1.83)
TCR_{t-1}	0.001	0.002	0.001	0.002
	(0.34)	(0.45)	(0.28)	(0.47)
DTA_{t-1}	-0.028***	-0.028***	-0.028***	-0.029***
	(-3.52)	(-3.14)	(-3.53)	(-3.19)
$LATA_{t-1}$	0.007	0.006	0.007	0.007
	(1.18)	(0.81)	(1.35)	(0.95)
LN_TA_{t-1}	-0.050	-0.137	-0.035	-0.134
	(-0.21)	(-0.50)	(-0.15)	(-0.49)
LTA_{t-1}	0.047***	0.049***	0.048***	0.050***
	(4.42)	(3.57)	(4.48)	(3.61)
NII_{t-1}	-0.759**	-0.895**	-0.783***	-0.903**
	(-2.57)	(-2.56)	(-2.64)	(-2.58)
ROE_{t-1}	0.015*	0.013	0.015*	0.014
	(1.88)	(1.12)	(1.88)	(1.13)
CPI_{t-1}	0.089	0.036	0.089	0.039
	(1.23)	(0.37)	(1.23)	(0.39)
GDP_{t-1}	-0.072***	-0.046**	-0.070***	-0.046**
	(-3.08)	(-2.03)	(-3.00)	(-1.99)
R^2	0.210	0.220	0.213	0.222
No. of Obs.	1,421	1,278	1,411	1,268
Bank FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes

Note: This table reports the coefficients and t-statistics in parentheses of the OLS regression models with the change in percentage points of the ratio of loan loss provisions to total loans (ΔLLPL) as the dependent variable and the independent variables listed. Standard errors used are clustered by bank. ***, **, and * denote significance levels of 1, 5, and 10 %, respectively.

Table A8: Ex post analysis - Impact on LATA

Dep. var.	ΔLATA			
	(1)	(2)	(3)	(4)
$SCRT_COUNT_{t-1}$	0.090			
	(0.34)			
$SCRT_COUNT_{t-2}$		0.078		
		(0.34)		
$LN_SCRT_VOL_{t-1}$			-0.071	
			(-0.41)	
$LN_SCRT_VOL_{t-2}$				0.107
				(0.85)
TCR_{t-1}	0.007	0.005	0.006	0.006
	(0.38)	(0.20)	(0.35)	(0.26)
$NPLL_{t-1}$	-0.077	-0.156***	-0.082	-0.155***
	(-1.51)	(-2.97)	(-1.61)	(-2.94)
DTA_{t-1}	-0.019	-0.067	-0.018	-0.068
	(-0.53)	(-1.28)	(-0.52)	(-1.30)
LN_TA_{t-1}	0.965	0.256	0.907	0.216
	(0.68)	(0.15)	(0.63)	(0.13)
LTA_{t-1}	0.148***	0.208***	0.149***	0.207***
	(3.84)	(4.36)	(3.86)	(4.32)
NII_{t-1}	1.278	1.418	1.331	1.407
	(1.34)	(1.24)	(1.39)	(1.22)
ROE_{t-1}	-0.014	-0.004	-0.016	-0.005
	(-0.75)	(-0.17)	(-0.85)	(-0.21)
CPI_{t-1}	-0.601***	-0.674**	-0.614***	-0.686**
	(-2.65)	(-2.07)	(-2.69)	(-2.09)
GDP_{t-1}	-0.153	-0.240*	-0.156	-0.243*
	(-1.18)	(-1.73)	(-1.20)	(-1.74)
R^2	0.217	0.257	0.219	0.257
No. of Obs.	1,388	1,250	1,378	1,240
Bank FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes

Note: This table reports the coefficients and t-statistics in parentheses of the OLS regression models with the change in percentage points of liquid assets to total assets (ΔLATA) as the dependent variable and the independent variables listed. Standard errors used are clustered by bank. ***, **, and * denote significance levels of 1, 5, and 10 %, respectively.

Table A9: Ex post analysis - Impact on LTA

Dep. var.	ΔLTA			
	(1)	(2)	(3)	(4)
$SCRT_COUNT_{t-1}$	-0.106			
	(-0.26)			
$SCRT_COUNT_{t-2}$		0.097		
		(0.40)		
$LN_SCRT_VOL_{t-1}$			0.067	
			(0.45)	
$LN_SCRT_VOL_{t-2}$				-0.005
				(-0.03)
TCR_{t-1}	0.039	0.035	0.039	0.036
	(1.25)	(1.05)	(1.24)	(1.06)
$NPLL_{t-1}$	-0.002	0.068	0.002	0.070
	(-0.03)	(0.91)	(0.02)	(0.93)
DTA_{t-1}	-0.043	-0.053	-0.043	-0.055*
	(-1.45)	(-1.62)	(-1.47)	(-1.68)
$LATA_{t-1}$	0.117***	0.142***	0.117***	0.144***
	(3.71)	(3.56)	(3.75)	(3.59)
LN_TA_{t-1}	0.809	0.193	0.868	0.211
	(0.66)	(0.16)	(0.71)	(0.17)
NII_{t-1}	-0.594	-0.963	-0.635	-0.980
	(-0.82)	(-1.24)	(-0.88)	(-1.26)
ROE_{t-1}	0.014	0.008	0.016	0.009
	(0.48)	(0.23)	(0.52)	(0.26)
CPI_{t-1}	0.264	0.466*	0.275	0.482*
	(1.37)	(1.73)	(1.42)	(1.78)
GDP_{t-1}	0.019	-0.058	0.019	-0.059
	(0.23)	(-0.65)	(0.23)	(-0.65)
R^2	0.232	0.257	0.234	0.257
No. of Obs.	1,388	1,250	1,378	1,240
Bank FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes

Note: This table reports the coefficients and t-statistics in parentheses of the OLS regression models with the change in percentage points of loans to total assets (ΔLTA) as the dependent variable and the independent variables listed. Standard errors used are clustered by bank. ***, **, and * denote significance levels of 1, 5, and 10 %, respectively.

Table A10: Propensity score matching summary - SCRT usage as treatment

	Propensity scores		
	Mean treated	Mean control	Absolute difference
Before matching	0.067	0.013	0.054
After matching	0.067	0.068	0.001

Note: This table reports the mean propensity scores in the matching year before and after propensity score matching and their differences.

Table A11: Ex post analysis - Robustness - Impact on LLPL - Securitization vs. green loan issuance

Dep. var.	ΔLLPL	
	(1)	(2)
$GREEN_LOAN_COUNT_{t-1}$	0.027*	
	(1.89)	
$SCRT_COUNT_{t-2}$	0.049	
	(0.73)	
$LN_GREEN_LOAN_VOL_{t-1}$		0.124***
		(3.23)
$LN_SCRT_VOL_{t-2}$		0.069*
		(1.66)
TCR_{t-1}	0.002	0.001
	(0.40)	(0.20)
DTA_{t-1}	-0.028***	-0.033***
	(-3.21)	(-3.38)
$LATA_{t-1}$	0.006	0.007
	(0.78)	(1.10)
LN_TA_{t-1}	-0.127	-0.023
	(-0.47)	(-0.07)
LTA_{t-1}	0.049***	0.050***
	(3.56)	(3.58)
NII_{t-1}	-0.893**	-0.908**
	(-2.58)	(-2.57)
ROE_{t-1}	0.014	0.011
	(1.12)	(0.81)
CPI_{t-1}	0.035	0.036
	(0.36)	(0.35)
GDP_{t-1}	-0.043*	-0.041*
	(-1.84)	(-1.75)
R^2	0.222	0.241
No. of Obs.	1,278	1,181
Bank FE	Yes	Yes
Time FE	Yes	Yes

Note: This table reports the coefficients and t-statistics in parentheses of the OLS regression models with the change in percentage points of the ratio of loan loss provisions to total loans (ΔLLPL) as the dependent variable and the independent variables listed in an extended setting. Standard errors used are clustered by bank. ***, **, and * denote significance levels of 1, 5, and 10 %, respectively.

Table A12: SCRTs as instrument for self-commitment implementation - SCRT volume

Dep. var.	LN_SCRT_VOL				
	(1)	(2)	(3)	(4)	(5)
STBi	0.887**	0.095	0.306	-0.263	-0.293
	(2.38)	(0.21)	(1.01)	(-0.79)	(-0.90)
SCRT_PRE			0.389	-1.753**	
			(0.89)	(-2.20)	
STBi × SCRT_PRE			2.664***	4.635***	
			(3.50)	(10.23)	
STBi × SCRT_PRE_COM					3.493***
					(4.35)
TCR_{t-1}	0.001	0.011	-0.003	-0.006	0.003
	(0.09)	(1.19)	(-0.43)	(-0.87)	(0.34)
$NPLL_{t-1}$	-0.041***	-0.093	-0.041***	-0.181	-0.144
	(-2.89)	(-0.62)	(-3.11)	(-1.61)	(-1.11)
DTA_{t-1}	0.004	-0.013	0.004	-0.012	0.006
	(0.38)	(-0.31)	(0.37)	(-0.35)	(0.14)
$LATA_{t-1}$	0.007	-0.055	0.007	-0.043	-0.058
	(0.96)	(-1.25)	(0.95)	(-1.49)	(-1.41)
LN_TA_{t-1}	-0.439	-1.141	-0.310	-0.274	-0.327
	(-1.45)	(-1.66)	(-0.99)	(-0.58)	(-0.67)
LTA_{t-1}	-0.000	0.000	0.002	0.021	-0.014
	(-0.03)	(0.01)	(0.23)	(0.58)	(-0.27)
NII_{t-1}	0.002	0.015	-0.005	-0.541	-0.215
	(0.01)	(0.02)	(-0.03)	(-0.75)	(-0.21)
ROE_{t-1}	0.000	0.012	0.001	0.020	0.017
	(0.03)	(0.43)	(0.22)	(1.11)	(0.79)
CPI_{t-1}	-0.056	-0.183	-0.050*	-0.081	-0.135
	(-1.59)	(-0.80)	(-1.76)	(-0.55)	(-0.61)
GDP_{t-1}	-0.009	0.085	-0.002	0.164	0.162*
	(-0.72)	(0.85)	(-0.12)	(1.32)	(1.83)
R^2	0.536	0.616	0.590	0.751	0.689
No. of Obs.	1,283	216	1,283	216	216
Bank FE	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes

Note: This table reports the coefficients and t-statistics in parentheses of the OLS regression models with the SCRT count (SCRT_COUNT) or the logarithmized SCRT volume (LN_SCRT_VOL) as the dependent variable and the independent variables listed. Standard errors used are clustered by bank. ***, **, and * denote significance levels of 1, 5, and 10 %, respectively.

Table A13: Propensity score matching summary - Commitment as treatment

Panel A: Commitment only as treatment

	Propensity scores		
	Mean treated	Mean control	Absolute difference
Before matching	0.075	0.023	0.052
After matching	0.075	0.066	0.009

Panel B: Commitment interacted with SCRT usage

	Propensity scores		
	Mean treated	Mean control	Absolute difference
Before matching	0.036	0.007	0.029
After matching	0.036	0.034	0.002

Note: This table reports the mean propensity scores in the matching year before and after propensity score matching and their differences.

Table A14: Ex ante analysis - Robustness - All CRTs

Dep. var.	CRT_COUNT		LN_CRT_VOL	
	(1)	(2)	(3)	(4)
TCR_{t-1}	-0.002	-0.000	-0.006	-0.003
	(-1.19)	(-0.13)	(-1.34)	(-0.52)
$NPLL_{t-1}$	-0.014**	-0.019**	-0.041**	-0.038**
	(-2.36)	(-2.03)	(-2.18)	(-2.38)
DTA_{t-1}	0.006*	-0.002	0.009	-0.002
	(1.73)	(-1.14)	(1.61)	(-0.57)
$LATA_{t-1}$	-0.008**	0.001	-0.015*	-0.002
	(-2.40)	(0.11)	(-1.80)	(-0.23)
LN_TA_{t-1}	0.028	0.256***	0.126	0.530***
	(0.34)	(3.46)	(0.77)	(4.26)
LTA_{t-1}	-0.006*	0.002	-0.014*	0.003
	(-1.82)	(0.43)	(-1.88)	(0.40)
NII_{t-1}	-0.076	0.055	-0.152	0.085
	(-1.11)	(1.40)	(-1.02)	(1.01)
ROE_{t-1}	-0.001	-0.006*	-0.003	-0.013**
	(-0.58)	(-1.86)	(-0.56)	(-2.07)
CPI_{t-1}	0.009	-0.007	-0.000	-0.039
	(0.40)	(-0.26)	(-0.01)	(-0.51)
GDP_{t-1}	-0.008	-0.008	0.020	0.016
	(-0.75)	(-0.75)	(0.63)	(0.54)
R^2	0.563	0.155	0.583	0.159
No. of Obs.	1,393	1,399	1,374	1,380
Bank FE	Yes	No	Yes	No
Country FE	No	Yes	No	Yes
Time FE	Yes	Yes	Yes	Yes

Note: This table reports the coefficients and t-statistics in parentheses of the OLS regression models with the CRT count (CRT_COUNT) or the logarithmized CRT volume (LN_CRT_VOL) as the dependent variable and the independent variables listed. Standard errors used are clustered by bank. ***, **, and * denote significance levels of 1, 5, and 10 %, respectively.

Table A15: Ex post analysis - Robustness - Impact on TCR - All CRTs

Dep. var.	ΔTCR			
	(1)	(2)	(3)	(4)
CRT_COUNT_{t-1}	0.062			
	(0.88)			
CRT_COUNT_{t-2}		-0.039		
		(-0.38)		
$LN_CRT_VOL_{t-1}$			0.012	
			(0.20)	
$LN_CRT_VOL_{t-2}$				0.048
				(1.05)
$NPLL_{t-1}$	-0.016	-0.000	-0.016	0.004
	(-0.53)	(-0.00)	(-0.53)	(0.16)
DTA_{t-1}	-0.035	-0.026	-0.036	-0.027
	(-1.51)	(-1.32)	(-1.53)	(-1.39)
$LATA_{t-1}$	0.027	0.026	0.027	0.027
	(1.09)	(1.20)	(1.07)	(1.20)
LN_TA_{t-1}	0.319	0.206	0.267	0.215
	(0.66)	(0.40)	(0.55)	(0.41)
LTA_{t-1}	-0.007	-0.007	-0.007	-0.006
	(-0.40)	(-0.36)	(-0.38)	(-0.34)
NII_{t-1}	-0.080	-0.305	-0.044	-0.342
	(-0.20)	(-0.89)	(-0.11)	(-0.99)
ROE_{t-1}	-0.029**	-0.038**	-0.030**	-0.037**
	(-2.15)	(-2.44)	(-2.21)	(-2.42)
CPI_{t-1}	-0.413	-0.207	-0.410	-0.228
	(-1.32)	(-1.11)	(-1.31)	(-1.23)
GDP_{t-1}	0.058	0.090	0.059	0.095*
	(1.29)	(1.65)	(1.34)	(1.73)
R^2	0.084	0.139	0.084	0.140
No. of Obs.	1,376	1,238	1,360	1,223
Bank FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes

Note: This table reports the coefficients and t-statistics in parentheses of the OLS regression models with the change in percentage points of the total capital ratio (ΔTCR) as the dependent variable and the independent variables listed. Standard errors used are clustered by bank. ***, **, and * denote significance levels of 1, 5, and 10 %, respectively.

Table A16: Ex post analysis - Robustness - Impact on NPLL - All CRTs

Dep. var.	ΔNPLL			
	(1)	(2)	(3)	(4)
CRT_COUNT_{t-1}	0.128*			
	(1.87)			
CRT_COUNT_{t-2}		0.138		
		(1.53)		
$LN_CRT_VOL_{t-1}$			0.125**	
			(2.46)	
$LN_CRT_VOL_{t-2}$				0.129**
				(2.46)
TCR_{t-1}	0.003	0.002	0.002	0.002
	(0.30)	(0.20)	(0.25)	(0.22)
DTA_{t-1}	-0.058***	-0.059***	-0.059***	-0.061***
	(-3.83)	(-3.49)	(-3.81)	(-3.55)
$LATA_{t-1}$	-0.003	0.000	-0.001	0.001
	(-0.20)	(0.03)	(-0.09)	(0.11)
LN_TA_{t-1}	-0.083	-0.077	-0.066	-0.089
	(-0.19)	(-0.16)	(-0.15)	(-0.19)
LTA_{t-1}	0.100***	0.109***	0.102***	0.109***
	(4.37)	(3.70)	(4.44)	(3.75)
NII_{t-1}	-1.415**	-1.670**	-1.473**	-1.708**
	(-2.48)	(-2.45)	(-2.56)	(-2.50)
ROE_{t-1}	0.011	0.006	0.011	0.007
	(0.66)	(0.24)	(0.64)	(0.27)
CPI_{t-1}	0.204	0.096	0.205	0.098
	(1.60)	(0.54)	(1.60)	(0.54)
GDP_{t-1}	-0.100**	-0.064	-0.099**	-0.061
	(-2.04)	(-1.36)	(-2.00)	(-1.29)
R^2	0.206	0.210	0.210	0.212
No. of Obs.	1,372	1,234	1,356	1,219
Bank FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes

Note: This table reports the coefficients and t-statistics in parentheses of the OLS regression models with the change in percentage points of the ratio of non-performing loans to total loans (ΔNPLL) as the dependent variable and the independent variables listed. Standard errors used are clustered by bank. ***, **, and * denote significance levels of 1, 5, and 10 %, respectively.

Table A17: Ex post analysis - Robustness - Impact on overall syndicated loan issuance - All CRTs

Dep. var.	LOAN_COUNT		LN_LOAN_VOL	
	(1)	(2)	(3)	(4)
CRT_COUNT_{t-1}	-0.798			
	(-0.14)			
CRT_COUNT_{t-2}		-3.236		
		(-0.61)		
$LN_CRT_VOL_{t-1}$			0.001	
			(0.03)	
$LN_CRT_VOL_{t-2}$				0.016
				(0.61)
TCR_{t-1}	-0.055	-0.022	-0.005	-0.007
	(-0.33)	(-0.12)	(-0.87)	(-1.00)
$NPLL_{t-1}$	-0.613*	-0.604	-0.019	-0.018
	(-1.85)	(-1.55)	(-1.38)	(-1.41)
DTA_{t-1}	-0.003	-0.155	-0.002	-0.006
	(-0.02)	(-0.76)	(-0.21)	(-0.79)
$LATA_{t-1}$	-0.162	-0.162	0.011	0.012
	(-0.54)	(-0.48)	(1.30)	(1.41)
LN_TA_{t-1}	4.090	3.160	0.230	0.287
	(0.41)	(0.28)	(0.75)	(1.02)
LTA_{t-1}	-0.551**	-0.578**	0.002	0.005
	(-2.02)	(-2.04)	(0.25)	(0.44)
NII_{t-1}	-4.577	-5.322	-0.033	-0.095
	(-0.91)	(-0.88)	(-0.20)	(-0.67)
ROE_{t-1}	0.112	0.112	0.002	0.001
	(1.00)	(0.83)	(0.33)	(0.21)
CPI_{t-1}	0.430	2.390	0.057	0.072
	(0.29)	(1.39)	(1.28)	(1.14)
GDP_{t-1}	1.243**	1.191**	0.015	0.019
	(2.08)	(1.99)	(0.93)	(1.14)
R^2	0.950	0.953	0.935	0.941
No. of Obs.	1,393	1,255	1,196	1,071
Bank FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes

Note: This table reports the coefficients and t-statistics in parentheses of the OLS regression models with the loan count (LOAN_COUNT) or the logarithmized loan volume (LN_LOAN_VOL) as the dependent variable and the independent variables listed. Standard errors used are clustered by bank. ***, **, and * denote significance levels of 1, 5, and 10 %, respectively.

Table A18: Ex post analysis - Robustness - Impact on green syndicated loan issuance - All CRTs

Dep. var.	GREEN_LOAN_COUNT		LN_GREEN_LOAN_VOL	
	(1)	(2)	(3)	(4)
CRT_COUNT_{t-1}	1.179**			
	(2.26)			
CRT_COUNT_{t-2}		1.040**		
		(2.57)		
$LN_CRT_VOL_{t-1}$			0.241***	
			(3.84)	
$LN_CRT_VOL_{t-2}$				0.227***
				(3.17)
TCR_{t-1}	0.002	0.007	-0.004	-0.002
	(0.19)	(0.56)	(-0.60)	(-0.37)
$NPLL_{t-1}$	-0.016	-0.021	-0.027**	-0.031**
	(-0.67)	(-0.78)	(-2.22)	(-2.12)
DTA_{t-1}	0.014	0.014	0.004	-0.002
	(1.06)	(0.91)	(0.38)	(-0.19)
$LATA_{t-1}$	-0.005	-0.007	0.008	0.009
	(-0.30)	(-0.36)	(1.16)	(1.27)
LN_TA_{t-1}	-0.605	-0.659	-0.373	-0.347
	(-1.57)	(-1.53)	(-1.22)	(-1.14)
LTA_{t-1}	0.015	0.019	0.003	0.002
	(0.88)	(1.10)	(0.29)	(0.23)
NII_{t-1}	0.266	0.072	0.048	0.001
	(0.76)	(0.19)	(0.32)	(0.01)
ROE_{t-1}	0.003	0.009	0.001	0.003
	(0.42)	(0.97)	(0.14)	(0.57)
CPI_{t-1}	0.064	0.224*	-0.060*	-0.035
	(0.82)	(1.76)	(-1.69)	(-0.78)
GDP_{t-1}	-0.087**	-0.092**	-0.011	-0.009
	(-2.14)	(-2.23)	(-0.82)	(-0.68)
R^2	0.486	0.520	0.536	0.582
No. of Obs.	1,393	1,255	1,269	1,131
Bank FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes

Note: This table reports the coefficients and t-statistics in parentheses of the OLS regression models with the green loan count (GREEN_LOAN_COUNT) or the logarithmized green loan volume (LN_GREEN_LOAN_VOL) as the dependent variable and the independent variables listed. Standard errors used are clustered by bank. ***, **, and * denote significance levels of 1, 5, and 10 %, respectively.

Table A19: Ex post analysis - Robustness - Impact on NPLL - Securitization vs. green loan issuance - All CRTs

Dep. var.	ΔNPLL	
	(1)	(2)
$GREEN_LOAN_COUNT_{t-1}$	0.057**	
	(2.03)	
CRT_COUNT_{t-2}	0.081	
	(0.80)	
$LN_GREEN_LOAN_VOL_{t-1}$		0.253***
		(3.59)
$LN_CRT_VOL_{t-2}$		0.119
		(1.60)
TCR_{t-1}	0.002	0.001
	(0.15)	(0.06)
DTA_{t-1}	-0.060***	-0.070***
	(-3.54)	(-3.72)
$LATA_{t-1}$	0.000	-0.003
	(0.01)	(-0.18)
LN_TA_{t-1}	-0.058	0.203
	(-0.12)	(0.37)
LTA_{t-1}	0.107***	0.109***
	(3.69)	(3.68)
NII_{t-1}	-1.665**	-1.673**
	(-2.46)	(-2.43)
ROE_{t-1}	0.006	0.007
	(0.24)	(0.24)
CPI_{t-1}	0.094	0.080
	(0.53)	(0.43)
GDP_{t-1}	-0.058	-0.052
	(-1.21)	(-1.06)
R^2	0.212	0.230
No. of Obs.	1,234	1,132
Bank FE	Yes	Yes
Time FE	Yes	Yes

Note: This table reports the coefficients and t-statistics in parentheses of the OLS regression models with the change in percentage points of the ratio of non-performing loans to total loans (ΔNPLL) as the dependent variable and the independent variables listed in an extended setting. Standard errors used are clustered by bank. ***, **, and * denote significance levels of 1, 5, and 10 %, respectively.

Table A20: SCRTs as instrument for self-commitment implementation - All CRTs

Dep. var.	GREEN_LOAN_COUNT				
	(1)	(2)	(3)	(4)	(5)
STBi	2.054**	-1.216	0.118	-3.057*	-3.465**
	(2.00)	(-0.99)	(0.34)	(-1.93)	(-2.23)
SCRT_PRE			1.504	-4.507*	
			(1.33)	(-1.71)	
STBi × SCRT_PRE			7.000**	10.967***	
			(2.16)	(6.09)	
STBi × SCRT_PRE_STBi					9.412***
					(3.77)
TCR_{t-1}	0.012	0.057*	0.001	0.012	0.020
	(0.70)	(1.87)	(0.11)	(0.56)	(1.01)
$NPLL_{t-1}$	-0.028	-0.044	-0.021	-0.116	-0.170
	(-1.14)	(-0.11)	(-0.87)	(-0.28)	(-0.44)
DTA_{t-1}	0.014	0.054	0.014	0.037	0.078
	(1.01)	(0.58)	(0.96)	(0.60)	(1.04)
$LATA_{t-1}$	-0.006	-0.240	-0.005	-0.181	-0.214
	(-0.35)	(-1.18)	(-0.30)	(-1.10)	(-1.11)
LN_TA_{t-1}	-0.863*	-6.432**	-0.419	-4.838**	-4.615*
	(-1.87)	(-2.20)	(-0.99)	(-2.34)	(-1.89)
LTA_{t-1}	0.008	0.122	0.023	0.219*	0.163
	(0.44)	(0.72)	(1.35)	(1.71)	(1.33)
NII_{t-1}	0.098	-2.185	0.139	-3.160	-3.393
	(0.25)	(-0.70)	(0.38)	(-1.00)	(-1.10)
ROE_{t-1}	0.001	0.080	0.002	0.100	0.104
	(0.17)	(0.78)	(0.25)	(1.23)	(1.25)
CPI_{t-1}	0.047	-0.065	0.072	0.016	-0.101
	(0.66)	(-0.12)	(0.94)	(0.03)	(-0.19)
GDP_{t-1}	-0.092**	-0.457	-0.084**	-0.404	-0.223
	(-2.39)	(-1.65)	(-2.23)	(-1.62)	(-1.06)
R^2	0.465	0.525	0.536	0.605	0.590
No. of Obs.	1,393	247	1,393	247	247
Bank FE	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes

Note: This table reports the coefficients and t-statistics in parentheses of the OLS regression models with the SCRT count (SCRT_COUNT) or the logarithmized SCRT volume (LN_SCRT_VOL) as the dependent variable and the independent variables listed. Standard errors used are clustered by bank. ***, **, and * denote significance levels of 1, 5, and 10 %, respectively.