



## Credit risk transfer in U.S. commercial banks: What changed during the 2007–2009 crisis?

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### ABSTRACT

Following the debate on the role of credit risk transfer (CRT) in exacerbating the 2007–2009 crisis, this paper investigates the usage and effects of loan sales, securitization, and credit derivatives in U.S. commercial banks over the last decade, with special emphasis on the financial crisis. We find that in times of severe funding constraints, the need to raise financial resources becomes the principal incentive behind CRT. We document some beneficial effects of CRT on the economy, since the funds released through CRT are subsequently invested by banks to sustain credit supply, also in recession. However, we report higher overall riskiness in banks that engage intensively in loans sales and securitization, which translates into higher default rates during the crisis. Interestingly, the benefits and drawbacks of CRT are much stronger for loan sales and securitization than for credit derivatives.

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### 1. Introduction

Loan sales, securitization, and credit derivatives are credit risk transfer (CRT) tools that have been extensively used by banks over the last decades to actively manage credit risk. Loan sales and securitization are techniques through which banks sell future streams of payments arising from underlying loans to third parties. Unlike a straight loan sale, securitization involves the creation of a special purpose vehicle and the issuance of new securities. In contrast, credit derivatives are contracts that insure banks against the default risk of their borrowers in exchange for a fee. While all CRT instruments enable banks to release capital, loan sales and securitization also generate cash (hence the term *funded tools*).

The contribution of CRT instruments to the 2007–2009 financial turmoil has been widely debated. A common view argues that CRT practices spurred excessive credit growth and increased risk taking as a result of reduced monitoring incentives in CRT users (Brunnermeier, 2009). Market agents have since called for tighter regulation of those activities. However, when most securitization segments stalled during the crisis, regulators rushed to approve emergency measures aimed at preserving sufficient liquidity in CRT markets. Examples of those measures in the U.S. include the

federal bailout of Fannie Mae and Freddie Mac, as well as the acceptance of certain asset-backed securities as collateral in monetary policy operations (see Adrian and Shin, 2010, and references therein). Regulators justified these measures with the role CRT may have had in broadening the funding base of financial institutions and, ultimately, in supplying credit to the economy in times when most short-term funding channels had frozen (Brunnermeier, 2009).

To date, empirical evidence on the actual role played by CRT during the crisis is still scarce and this paper attempts to address some open questions. How did CRT strategies evolve in response to the financial crisis? Did banks resort to CRT primarily to release capital and raise funds during the turmoil? Were those resources employed to provide lending to the economy? Were CRT users more stressed than other banks during the credit crunch? Did the benefits and drawbacks of CRT differ according to the specific instruments used to transfer credit risk?

Addressing those issues has relevant policy implications. First, it provides a direct assessment of the actions undertaken by regulators to preserve CRT during the crisis. Since such measures were originally intended to reduce credit rationing, it is important to verify to what extent active CRT users contracted their lending less than other institutions. Second, a better understanding of the benefits and drawbacks of CRT across the cycle may help gauge whether the new regulatory initiatives involving CRT (e.g., Basel III and the Dodd-Frank Act) are well suited to promote a

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sustainable CRT market, where recourse to riskier segments is discouraged and CRT can ensure effective credit risk management without undermining financial stability (Bank for International Settlements, 2011).

Specifically, our research aims at analyzing: (1) the incentives behind CRT and the impact of CRT practices on bank lending and riskiness, (2) how and why they have changed since the crisis, and (3) how they differ across various CRT instruments available to banks. We do so by examining CRT practices in a sample of medium-sized and large U.S. commercial banks both before the crisis (2001:Q2–2007:Q2) and during the crisis (2007:Q3–2009:Q2). To provide a comprehensive analysis of CRT strategies, we include all types of instruments available to banks, that is, loan sales, securitization, and credit derivatives. This also enables us to test for substitution effects across different tools.

We document a contraction in CRT during the crisis, which turns out to be much more significant for medium-sized banks than for large banks and for structured CRT tools than for loan sales and credit derivatives. The drop in securitization, due to the uncertainty surrounding the evaluation of asset-backed securities, is partly compensated in this period by an increase in outright asset sales, which represent a cheaper, more flexible, and more transparent alternative to transfer credit risk. In light of the severe funding challenges experienced by banks during the credit crunch, we find that loan sales and securitization become essentially driven by the need to raise additional financial resources. In line with the regulators' view on the beneficial effects of CRT on the real economy, our estimates confirm that the resources generated via CRT are invested to boost bank loans, since we find higher loan growth rates in banks heavily involved in CRT practices, even during the financial crisis. However, while in the pre-crisis years we notice a positive impact of CRT on all loan categories, in the following period the effect is significant only for business and consumer loans, consistent with the sharp contraction in the demand and supply of mortgages due to the burst of the housing bubble. Despite the positive impact of CRT on bank lending, extensive involvement in loan sales/securitization turns out to be significantly associated with higher bank risk, which leads to higher default rates in recession. Finally, we observe that the effects of CRT are fairly heterogeneous across different instruments, since banks that use loan sales and securitization exhibit both higher loan growth rates and higher riskiness than net buyers of credit protection via credit derivatives.

Our paper is closely related to recent literature that investigates the effects of CRT instruments on bank lending. Loutskina (2011) shows that securitization in U.S. banks has a positive impact on lending since it reduces the need to hold liquid assets and weakens the traditional monetary channel. Similar findings are reported by Altunbas et al. (2009) for a European sample and by Panetta and Pozzolo (2010) and Gambacorta and Marques-Ibanez (2011) for large international samples. Hirtle (2009) finds only limited evidence that the use of credit derivatives in U.S. bank holding companies is associated with higher loan growth. Looking at detailed bank- and firm-level data from Spain, Carbó-Valverde et al. (2011) find that firms whose lenders are actively involved in securitization are less credit constrained in normal times but more severely rationed in recession.

A second strand of related papers analyzes the empirical effects of CRT on bank risk taking. While early evidence suggests that CRT activities help manage bank risk (Cebenoyan and Strahan, 2004), recent studies report detrimental effects on bank stability. Keys et al. (2010) document a significant decline in lending standards in U.S. banks following the securitization boom. Similarly, Kara et al. (2010) observe more aggressive loan pricing strategies prior to the crisis in European banks involved in securitization. Purnanandam (2011) shows that U.S. banks more active in CRT before

the crisis reported higher mortgage charge-off ratios during the turmoil. For Europe, Michalak and Uhde (2010) find that securitization activities are negatively linked to banks' distance to default.

Finally, our research is linked to previous work on the motivations behind CRT usage. The literature on this topic is very rich and most papers agree in identifying the main determinants of CRT as funding and capital constraints (Pennacchi, 1988) and with the adoption of more effective credit risk management policies. Affinito and Tagliaferri (2010) and Panetta and Pozzolo (2010) provide exhaustive literature surveys in this respect.

This paper's contribution to the literature is twofold. First, we investigate the usage and effects of CRT activities both in the years leading up to the financial crisis and during the crisis, while most of the extant research stops at the onset of the recession.<sup>1</sup> The incentives to engage in CRT, as well as the impact of CRT on lending practices and risk, can vary across the business cycle. During the 2007–2009 credit crunch, uncertainty concerning the fair value of bank assets increased dramatically. As a result, recourse to CRT markets became much more expensive or even unfeasible in segments where asymmetric information issues were perceived to be particularly severe, such as for structured credit products. Following the impressive drop in wholesale short-term funding, the need to raise fresh resources is likely to become the predominant motivation behind CRT usage in this period. Under the assumption that CRT helps mitigate the underinvestment problem in the business sector, one would expect the impact of CRT on loan growth to strengthen during the crisis (Stanton, 1998). However, in a context where the financial sector is also distressed, banks may be tempted to use the resources generated through CRT to reconstitute liquidity or reduce leverage rather than to provide credit to the real economy. Therefore the net effect of CRT on loan growth is uncertain. Finally, we expect the overall risk of CRT users to increase during the turmoil, when CRT is limited to good-quality assets and thus its credit risk management function is significantly resized.

Second, we consider all CRT tools available to U.S. commercial banks, while the vast majority of existing studies focus on a single instrument, typically loan sales or securitization. As discussed, analysis of the entire set of tools enables us to comprehensively assess CRT strategies and to verify whether substitution effects arise for different instruments.<sup>2</sup> This becomes especially relevant over the recession period, when the severe frictions observed in some CRT segments are more likely to favor these substitution effects.

The paper is structured as follows. Section 2 presents the dataset and our measures of CRT activity. Section 3 illustrates descriptive findings on the usage of CRT instruments. The motivations for accessing the CRT market are investigated in Section 4. Section 5 analyzes the effect of CRT practices on bank lending and riskiness. Section 6 concludes the paper.

## 2. Data and CRT measures

We use quarterly data from the Consolidated Reports of Condition and Income (Call Reports), whose filing is compulsory for all insured commercial banks and trust companies operating in the U.S. Our sample includes all domestic commercial banks having total assets greater than USD 1 billion on the reporting date over the

<sup>1</sup> Notable exceptions include Gambacorta and Marques-Ibanez (2011), Carbó-Valverde et al. (2011), and Kara et al. (2010) on the effects of securitization in international and European banks, respectively. Purnanandam (2011) examines the impact of CRT measures on mortgage charge-off ratios in U.S. banks during the crisis.

<sup>2</sup> Some relevant contributions in terms of comparative analyses of different CRT tools can be found in the theoretical literature. Duffee and Zhou (2001), and Parlour and Winton (2012) propose theoretical models aimed at explaining how banks choose among alternative instruments and under which conditions either credit derivatives disrupt the loan sales market or different tools can coexist.

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