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## Reestablishing stability and avoiding a credit crunch: Comparing different bad bank schemes

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### ABSTRACT

This paper develops a model to analyze two different bad bank schemes, an outright sale of toxic assets to a state-owned bad bank and a repurchase agreement between the bad bank and the initial bank. For both schemes, we derive a critical transfer payment that induces a bank manager to participate. Participation improves the bank's solvency and enables the bank to grant new loans. Therefore, both schemes can reestablish stability and avoid a credit crunch. An outright sale will be less costly to taxpayers than a repurchase agreement if the transfer payment is sufficiently low.

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### 1. Introduction

The worldwide financial crisis, which broke out in August 2007, led to severe losses in the financial sector. Banks suffered from so-called toxic assets in their balance sheets. Uncertainty about the “true value” of these assets and necessary depreciations, which significantly reduced the banks' capital, raised concerns about the stability of the banking sector and about a possible significant reduction in credit supply.

In response to these developments, governments in several countries offered distressed banks to transfer their toxic assets to publicly sponsored special purpose vehicles, so-called bad banks. All implemented bad bank schemes have in common that they clean up the banks' balance sheet at least temporarily. That is their main advantage over other regulatory interventions, like e.g. the

mitigation of capital requirements or capital injections. In particular, they differ with respect to the risk-distribution between the distressed bank and the bad bank, and therefore, the taxpayers. In Germany, for example, the risk remains largely with the distressed bank, while in the US (Troubled Asset Relief Program) the bad bank scheme allows for a more or less complete risk transfer to the bad bank. To mitigate the financial crisis, a couple of other countries like Ireland (National Asset Management Agency) and Switzerland also adopted concepts similar to a bad bank scheme. Moreover, bad bank schemes were occasionally used prior to the worldwide financial crisis. Examples are the US-Savings & Loan Crisis of the 1980s and the banking crisis in Sweden in the early 1990s.<sup>3</sup>

Against this background, this paper develops a model which allows for a comparison of two different bad bank schemes. The

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first is characterized by a full transfer of the risk of toxic assets to the taxpayers. Under the second scheme, the risk of toxic assets remains with the distressed bank.<sup>4</sup> In our analysis, we focus on two particular aspects. First, we investigate whether the different bad bank schemes are appropriate to stabilize the banking sector and to avoid a credit crunch. Second, we compare the different bad bank schemes with respect to their expected costs to taxpayers.

In our theoretical analysis, we consider a single commercial bank whose balance sheet consists of a risky asset that is funded by equity and deposits. Write-offs on the asset have led to a situation in which the bank's equity is just sufficient to meet a minimum capital requirement. Due to a high degree of uncertainty in the banking sector the bank is unable to attract new capital. Therefore, it is neither able to bear further possible depreciations of the toxic asset nor to grant new loans. In this situation, a risk-neutral bank manager has the opportunity to hive off the toxic asset to a bad bank. Concerning the risk allocation between the initial bank and the taxpayers, we consider two extreme cases. In the first case, the bank can make an outright sale of the toxic asset to a state-owned bad bank. As a consequence, the risk of the toxic asset is fully borne by the taxpayers. In the second case, the transfer of the toxic asset to the bad bank involves a repurchase agreement between the distressed bank and the bad bank implying that the risk of the toxic asset remains with the distressed bank. The idea of the second scheme is to give the bank some time to generate profits from its newly granted loans so that it will be able to bear possible losses from the toxic asset at a later date.

Our theoretical analysis reveals that under both bad bank schemes, the price, at which the toxic asset can be transferred to the bad bank, plays a crucial role. First, this transfer price must be high enough to induce the bank manager to participate in the bad bank scheme. Thus, there exists a minimum transfer price which has to be paid to stabilize the banking sector, since the banking sector will only become more stable if the manager transfers the toxic asset. Furthermore, the supply of new loans increases in the transfer price, i.e. if the danger of a credit crunch is high, the transfer payment must be sufficiently high to avert this threat.

From our theoretical analysis we conclude that if the transfer price is sufficiently high, a bad bank will stabilize the banking sector and avoid a credit crunch under both schemes, an outright sale as well as a repurchase agreement. Concerning the superiority of one scheme, the expected costs to taxpayers have to be considered. In case of an outright sale, the taxpayers can benefit from the potential returns on the toxic asset but do not reobtain the transfer payment. On the contrary, a repurchase agreement implies that the potential returns on the toxic asset remain at the distressed bank while the taxpayers reobtain the transfer price at least with positive probability. Therefore, an outright sale will be superior to a repurchase agreement only if the necessary transfer payment is relatively low. Otherwise, if the necessary transfer payment is relatively high, the repurchase agreement concept will involve less expected costs to the taxpayers.

The related literature on bad bank schemes can be divided into three groups. The first group examines bad bank schemes that were implemented prior to the worldwide financial crisis. [White \(1991\)](#) and [Curry and Shibut \(2000\)](#) explore the US-Savings & Loan Crisis of the 1980s. [Macey \(1999\)](#) and [Bergström, Englund, and Thorell \(2003\)](#) analyze the banking crisis in Sweden in the early 1990s.

Particularly the implementation of bad banks in the Swedish banking crisis is often viewed as the textbook case of banking crises resolution. However, its applicability to the recent financial crisis is limited because the Swedish crisis was confined to a relatively small part of Europe while the world economy favored a quick recovery. Moreover, the banks' toxic assets were predominantly book credits. Therefore, problems that are inherent in complex innovative financial products which were a main driving force of the financial crisis of 2007, did not exist. The second group discusses the pros and cons of bad bank schemes from a political economy perspective in the light of the worldwide financial crisis.<sup>5</sup> Our paper is most closely related to the third group of the literature, which develops theoretical models to analyze governmental bank bailout policies. While the effects of different recapitalization plans for distressed banks are, in general, relatively well understood, the theoretical literature particularly focussing on bad bank schemes is still in its infancy. [Tirole \(2012\)](#) analyzes state-sponsored asset purchases to restart an illiquid market. [Aghion, Bolton, and Fries \(1999\)](#), [Corbett and Mitchell \(2000\)](#), [Mitchell \(1998, 2001\)](#), and [Tanaka and Hoggarth \(2006\)](#) investigate the effects of recapitalization plans on a bank manager's incentive to misreport the amount of the bank's loan losses either to avoid recapitalization or to realize excessive government support, respectively. [Mailath and Mester \(1994\)](#), [Osano \(2002, 2005\)](#), and [Acharya and Yorulmazer \(2008\)](#) study the risk of moral hazard inherent in governmental bailouts. While [Mailath and Mester \(1994\)](#) as well as [Osano \(2002, 2005\)](#) analyze the behavior of a single bank, [Acharya and Yorulmazer \(2008\)](#) look at the entire banking sector and the banks' incentive to herd in their investment decisions to increase the risk that many banks may fail together. Several papers compare different forms of policy measures to stop a fall in loan supply following a banking crisis. [Philippon and Schnabl \(2010\)](#) argue that in a crisis capital injections are more efficient than asset purchases and debt guarantees. [Elsinger and Summer \(2010\)](#) support these results. [Bhattacharya and Nyborg \(2010\)](#) propose that capital injections and asset purchases are the most efficient forms of recapitalization. [Dietrich and Hauck \(2012\)](#) show that while debt or capital subsidies can lead to overinvestment and excessive risk taking, a sale of toxic assets to a bad bank does not generate adverse incentives but may have higher fiscal costs. [Wilson \(2012\)](#) point out that bad banks and capital injections both dominate state-sponsored purchases of preferred stock. [Wilson and Wu \(2012\)](#) show that these results are still valid when a policy maker tries to avoid risk shifting of a bank in financial distress. While these contributions compare a single bad bank scheme, which is similar to an outright sale, to other forms of public interventions, our paper is the first that explicitly compares different bad bank schemes in a unified framework. In particular, we investigate two bad bank schemes, an outright sale and a repurchase agreement, with respect to their appropriateness for reestablishing the stability of the banking sector and avoiding a credit crunch as well as with respect to their expected costs to taxpayers.

The paper is organized as follows. Section 2 develops the model and derives the critical transfer payment at which the bank manager is willing to participate in the respective bad bank schemes. Section 3 discusses policy implications, Section 4 concludes the paper.

<sup>4</sup> The first scheme is similar to the one which has been implemented by the US Federal Reserve System to tackle the worldwide financial crisis ([Federal Reserve Bank of New York, 2014](#)). The second resembles the bad bank scheme which has been implemented by the German government in 2009 ([Deutsche Bundesbank, 2009](#)).

<sup>5</sup> See, e.g., [Bebchuk \(2008\)](#), [Fitzpatrick \(2008\)](#), [Bebchuk \(2009\)](#), [Buiter \(2009\)](#), [Hall and Woodward \(2009\)](#), [Panetta and Faeg \(2009\)](#), [Schäfer and Zimmermann \(2009\)](#) and [van Suntum and Ilgmann \(2011\)](#).

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