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Guarantees, transparency and the interdependency between sovereign and bank default risk

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ABSTRACT

Bank debt guarantees have traditionally been viewed as costless measures to prevent bank runs. However, as recent experiences in some European countries have demonstrated, guarantees may link the coordination problems of bank and sovereign creditors and induce a functional interdependence between the likelihoods of a government default and bank illiquidity. Employing a global-game approach, we model this link, showing the existence and uniqueness of the joint equilibrium and derive its comparative statics properties. In equilibrium, the guarantee reduces the probability of a bank run, while it increases the probability of a sovereign default. The latter erodes the guarantee's credibility and thus its effectiveness *ex ante*. By setting the guarantee optimally, the government balances these two effects in order to minimize expected costs of crises. Our results show that the optimal guarantee has clear-cut welfare gains which are enhanced through policies that promote greater balance sheet transparency.

1. Introduction

1.1. Motivation

Following the collapse of Lehman Brothers in September 2008, a great many, in particular European, countries issued sizable bank debt guarantee programs to stave off bank runs. The prevailing popularity of such schemes was rooted in the widely held belief that they were largely costless measures. For example, one may argue on grounds of the seminal model by Diamond and Dybvig (1983) that the credible promise of a bank liability guarantee alone would suffice to keep bank creditors from running the bank, so that the guarantee would in fact never be paid out. But such considerations usually abstract from potential funding problems of the government, thereby implicitly assuming that the guarantee is perfectly credible. However, given the enormous size of some of the recent guarantee schemes, the question arises whether these guarantees can in fact be considered as financially viable and therefore credible. If the government has to pay out the guarantee following the bank's default, this would impinge on its finances, which in turn would deter sovereign creditors from continuing to finance the government. This would erode the guarantee's credibility. Or, as one market participant put it in the Wall Street Journal (2011) with respect to the euro area crisis, "How useful would bank guarantees from [euro area] member states be if these member states are themselves shut out of financial markets?"

In this paper, we analyze conditions conducive for the success of bank debt guarantee schemes. We model the coordination problem between a bank's creditors and sovereign creditors that arises from the government's guarantee of the bank creditors' claims. The guarantee induces a functional interdependence between the likelihood of a sovereign default and a banking crisis which crucially depends on the transparency of bank and government. By applying the global games approach, we derive the impact of guarantee programs on the *ex ante* probabilities of bank and sovereign defaults as well as on the likelihood of a simultaneous default. Assuming that such defaults are associated with welfare losses, we consider the optimal guarantee that minimizes expected welfare costs and we analyze how the optimal guarantee scheme is affected by the transparency of bank balance sheets and government finances.

Fig. 1 further motivates our analysis of guarantee schemes and the resulting relationship between bank and sovereign default risk. Panel 1(a) shows the increases in bank and sovereign CDS premia

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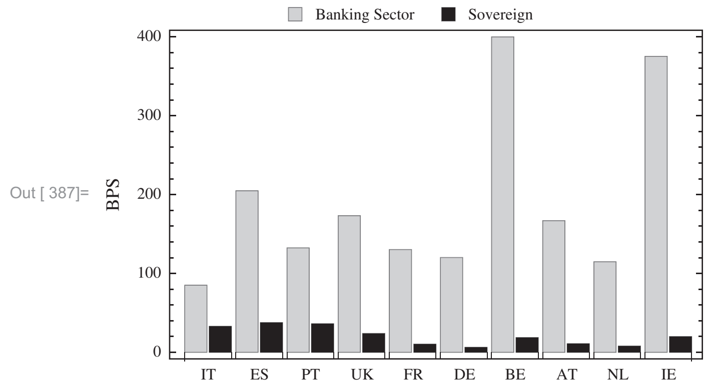
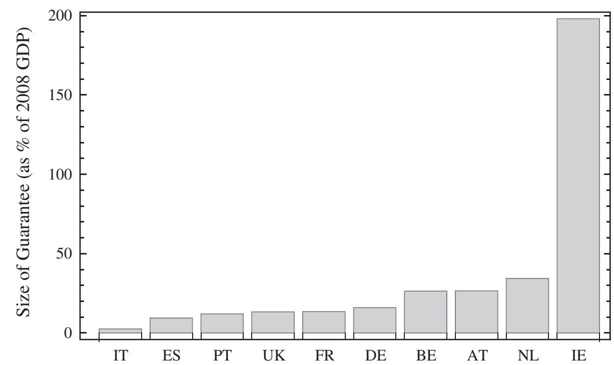
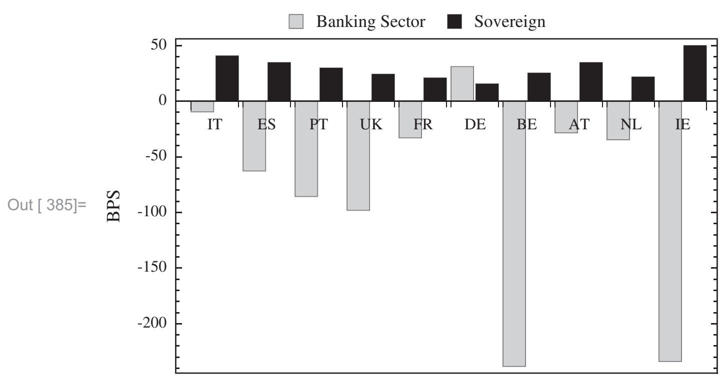


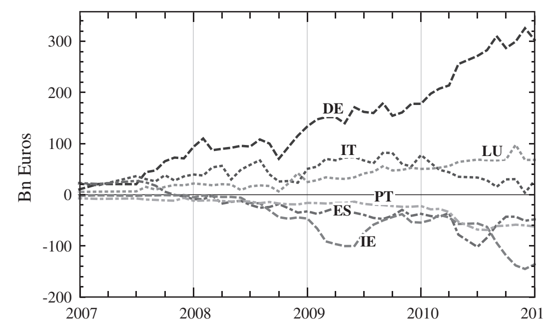
Panel (a): Change in CDS spreads for banks and sovereigns between 1 January 2007 and 25 September 2008. Bank CDSs are unweighted averages of banks with headquarters in respective countries. Source: *Bloomberg*.



Panel (b): Guarantee sizes in % of GDP. Source: *European Commission, OECD and Levy and Schich (2010)*.



Panel (c): Change in CDS spreads for banks and sovereigns between 26 September 2008 and 21 October 2008. Bank CDSs are unweighted averages of banks with headquarters in respective countries. Source: *Bloomberg*.



Panel (d): Net TARGET2 Liabilities of selected euro-area national central banks against the Eurosystem in millions of euro. Negative values reflect a Target2 liability, positive numbers a Target2 asset. Source: *National Central Banks*.

Fig. 1. Stylized facts.

(as a measure for default risks) during the financial crisis in different countries prior to the introduction of bank debt guarantees. Increases in sovereign default risk were rather small compared to the massive increase in banking sector risks. Prompted into action, governments issued bank debt guarantees in order to strengthen their domestic banking sectors. The size of these schemes relative to the respective countries' gross national product (GDP) is shown in Panel 1(b). While the schemes in Italy, Spain and Portugal amounted to about 3%, 9% and 12% of GDP, respectively, in Austria and the Netherlands they totaled roughly 30% of GDP. Albeit sizable, these programs were dwarfed by the comprehensive guarantee introduced by Ireland, which amounted to roughly 193% of GDP. In most circumstances, the guarantees were indeed successful in alleviating default risks within domestic banking sectors. Yet, they led to, albeit smaller, increases in sovereign default risk for the issuing governments as shown in Panel 1(c). This suggests that the guarantees not only led to a reallocation of risk from banks to governments, but they may also have contributed towards reducing economy-wide risks. However, in the euro area crisis countries Ireland, Spain, Italy and Portugal, the guarantees were apparently not sufficient to stop the protracted funding drains from these countries' banking sectors as can be seen from these countries' Target balances shown in Panel 1(d).[1] Moreover, in the case of Ireland, the overly large guarantee burden contributed to the ensuing financing problems of its government, forcing the country to seek financial support from the IMF and EU in late 2010.[2] Hence, the crisis that ensnared Ireland ran counter to the beliefs held by many with regards to how bank debt guarantee schemes should actually operate.

1.2. Preview of the paper

In our model, bank and sovereign creditors simultaneously decide whether to roll over their respective claims or to withdraw. By introducing a credible guarantee scheme, the government provides incentives for bank creditors to continue financing the bank and thereby reduces the likelihood of a bank run. Yet, in case the bank is run despite the provision of the guarantee, the government faces additional financial strains. Anticipating this situation, sovereign creditors become more reluctant to roll over their claims against the government. This, in turn, increases the likelihood that the government defaults.

By using the global games approach, we solve for the unique monotone (or threshold) equilibrium. Moreover, we prove that there are no other equilibria in non-threshold strategies. Essentially, the guarantee lowers the likelihood of a banking crisis because it reduces the strategic uncertainty on the side of bank creditors; yet, this comes at the expense of higher uncertainty of

[1] For Italy, where guarantees were small compared to other crisis countries, Target2 balances became negative not until 2011.

[2] See Honohan (2010) for details on the Irish banking and sovereign crisis and Levy and Schich (2010) for an overview of government guarantees during the recent crisis.