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Financial fragility, sovereign default risk and the limits to commercial bank bail-outs

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ABSTRACT

We show that with intertwined weak banks and weak sovereigns, bank recapitalizations become much less effective. We construct a DSGE model with leverage constrained banks lending to firms and holding domestic government bonds. Bond prices reflect endogenously generated sovereign risk. This introduces a negative amplification cycle: after a credit crisis output losses increase more because higher interest rates trigger lower bond prices and subsequent losses at banks. This further tightens bank leverage constraints, and causes interest rates to rise further. Also bank recapitalizations are then much less effective. Recaps involve swaps of newly issued sovereign bonds for bank equity, the new debt increases sovereign debt discounts, leading to capital losses for the banks on their holdings of sovereign debt that (partially) offset the impact of the recapitalization. The favorable macroeconomic effects of bank recaps on the recovery after a financial crisis are correspondingly lower.

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"*The decision to downgrade the Kingdom of Spain's rating reflects the following key factors*:"

1. The Spanish government intends to borrow up to EUR 100 billion from the European Financial Stability Facility (EFSF) or from its successor, the European Stability Mechanism (ESM), to recapitalize its banking system. This will further increase the country's debt burden, which has risen dramatically since the onset of the financial crisis....."; Moody's downgrades Spanish Sovereign bonds, June 13, 2012. (Moody's Investors Service, 2012a).

"*Today's actions reflect, to various degrees across these banks, two main drivers*:

(i) *Moody's assessment of the reduced creditworthiness of the Spanish sovereign, which not only affects the government's ability to support the banks, but also weighs on banks' standalone credit profiles.....*"; Moody's downgrades 28 Spanish banks by one to four notches 6 days later. (Moody's Investors Service, 2012b).

1. Introduction

The same day Moody's Investors Service (2012a, 2012b) downgraded 28 Spanish banks, the political leaders of the G20 declared that "*Against the backdrop of renewed market tensions, Euro area members of the G20 will take all necessary measures to [...........] break the feedbackloop between sovereigns and banks*" G20 Leaders (2012). And this concern is more than political

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Table 1
Total bank bailouts approved (2008 to September 2012).
Source: European Commission, as reported in International Herald Tribune (2013).

Country	Total billions euros	As a percentage of 2011 GDP
Britain	873	50.0
Germany	646	25.1
Denmark	613	256.1
Spain	575	53.6
Ireland	571	365.2
France	371	18.6
Belgium	359	97.4
Netherlands	313	52.0
Sweden	162	41.8
Italy	130	8.2
Greece	129	59.9
Austria	94	31.3
Portugal	77	45.0
Poland	68	18.3
Finland	54	28.5
Slovenia	13	35.4
Hungary	10	10.3
Latvia	9	46.2
Luxembourg	9	20.9
Cyprus	5	27.0
Total E.U.	5086	40.3

hype, as Fig. 1 shows: sovereign debt exposure to the “own” sovereign is in the order of total bank equity. In all periphery countries, sovereign debt exposure exceeds the Tier-1 capital of the banks holding the debt, sometimes by a very substantial margin; in Spain banks' sovereign debt holdings equal 150% of Tier-1 capital, in Italy almost 200% and in Greece almost 250%. These data should make clear that, with sovereign debt exposure so high among especially the Southern European banks, stress in the sovereign debt market will have a very destabilizing impact on the financial system.

The home bias in those sovereign debt holdings differs across the eurozone. It averages a high 60% in the periphery countries, with Greece as an outlier at almost 80% (European Banking Authority, 2011). The homebias is less in the Northern countries, where the ratio averages about 20%, although again with a possibly surprising outlier: in Germany almost 60% of sovereign debt holdings is domestic sovereign debt.

Moreover, bank interventions led to very substantial increases in public debt, thereby completing the circle of dependence between sovereigns and commercial banks. When the financial crisis hit in October 2008, governments across advanced economies had to recapitalize their financial system. The U.S. adopted the T.A.R.P. program of $700 billion that in the end was mostly used to recapitalize various financial institutions. And interventions in Europe were even larger as a proportion of the intervening countries' GDP. Table 1 shows that the size of European interventions in financial institutions ranges from a relatively low 8.2% of GDP for Italy to the mind boggling number for Ireland, 365.2%. The average for the E.U. is more than 40% of GDP, so the bank interventions have had a major impact on the aggregate stock of outstanding sovereign debt. It should be clear that interventions this large will have an impact on bond prices, and from there potentially feedback on bank's balance sheets through increased risk premia, lower bond prices and further capital losses.

Of course capital losses will only occur if the debt is of a significant maturity. Fig. 2 shows that the average maturity of the sovereign debt portfolios is between 4 and 6 years for the banks in the periphery of the eurozone, and somewhat longer in the core countries of the eurozone (6–8 years).

This implies that sovereign debt problems that cause yields to rise and prices to fall will inflict substantial capital losses on the financial intermediaries. These capital losses will reduce net worth of the banks, which may well start off a vicious circle as banks increase credit spreads and interest rates, thereby crowding out credit to the private sector, with potentially harmful consequences for investment, tax revenues and long term growth. Lower tax revenues and higher interest rates increase deficits further, leading to further rounds of crowding out and a larger stock of debt, again increasing sovereign discounts. This amplification mechanism and the restrictions it implies on the ability of governments to intervene in and rescue their national commercial banks form the topic of this paper. The key point of this paper is that the negative amplification cycle triggered by the feedback loops back and forth between weak banks and weak governments severely limits the ability of governments to support their financial sector in situations of distress. When sovereign risk premia rise and bond prices go down, governments might not even be *able* to intervene and support their financial sector economy, contrary to what is commonly assumed in contemporaneous macroeconomic models used to analyze financial crises, that the government always has pockets deep enough to finance any possible intervention.

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