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Short-term wholesale funding and systemic risk: A global CoVaR approach

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ABSTRACT

We use the CoVaR approach to identify the main factors behind systemic risk in a set of large international banks. We find that short-term wholesale funding is a key determinant in triggering systemic risk episodes. In contrast, we find weaker evidence that either size or leverage contributes to systemic risk within the class of large international banks. We also show that asymmetries based on the sign of bank returns play an important role in capturing the sensitivity of system-wide risk to individual bank returns. Since short-term wholesale funding emerges as the most relevant systemic factor, our results support the Basel Committee's proposal to introduce a net stable funding ratio, penalizing excessive exposure to liquidity risk.

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1. Introduction

The fact that financial markets move more closely together during times of crisis is well documented. Conditional correlations between assets are much higher when market returns are low in periods of financial stress (see King and Wadhvani, 1990; Ang et al., 2006). Co-movements typically arise from common exposures to shocks, but also from the propagation of distress associated with a decline in the market value of assets held by individual institutions, a phenomenon we dub 'balance sheet contraction' and which is of particular concern in the financial industry. The recent crisis has shown how the failure of large individual credit institutions can have dramatic effects on the overall financial system and, eventually, spread to the real economy. As a result, international financial policy institutions are currently designing a new regulatory framework for the so-called systemically important financial institutions (SIFIs) in order to ensure global financial stability and prevent, or at least mitigate, future episodes of systemic contagion.¹

In this paper, we analyze the main determinants of systemic contagion from an individual institution to the international financial system, i.e., the empirical drivers of tail-risk interdepen-

dence. We examine a sample of large international banks that are the target of current regulatory efforts and that would likely be considered too-big-to-fail by central banks. These banks are characterized by their large capitalization, global activity, cross-border exposures and/or representative size in the local industry. Using data spanning 2001–2009, we explicitly measure the contribution of the balance sheet contraction of these institutions to international financial distress. As regulators seek for meaningful measures of interconnectedness (Walter, 2011), this paper contributes to the current debate on prudential regulatory requirements.

Our study builds on the novel procedure put forward by Adrian and Brunnermeier (2011), the so-called CoVaR methodology, and generalizes it in several ways in order to deal with the characteristics of a sample of 54 international banks and to address the asymmetric patterns that may underlie tail dependence. The main empirical findings of our analysis can be summarized as follows:

First, we find that short-term wholesale funding is the most reliable balance sheet determinant of a bank's contribution to global systemic risk. Financial institutions use short-term wholesale funding to supplement retail deposits and expand their balance sheets. These funds are typically raised on a short-term rollover basis with instruments such as large-denomination certificates of deposit, brokered deposits, central bank funds, commercial paper and repurchase agreements. Whereas it is agreed that wholesale funding provides certain managerial advantages (see Huang and Ratnovski (2011) for a discussion), the effects on systemic risk of an overreliance on these liabilities were under-recognized prior to the recent financial crisis. Banks with excessive short-term funding ratios are typically more interconnected to other banks, exposed to

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E-mail addresses: glespinosa@unav.es (G. López-Espinosa), antmoreno@unav.es (A. Moreno), antonio.rubia@ua.es (A. Rubia), LValderramaFerrando@imf.org (L. Valderrama).¹ A rapidly growing literature discusses how contagion can occur through spikes in counterparty risk within a network of credit-interdependent institutions or through fire sales of securities (Adrian and Shin, 2010; IMF, 2010). Section 2 in this paper offers a survey of the literature in this field.