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Why are banks in Africa hoarding reserves? An empirical investigation of the precautionary motive

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Abstract

For two decades now, many banks in Africa have been holding large amounts of liquid assets. Prevailing explanations of this phenomenon rely on credit rationing models. Yet, while modern models of financial intermediation show that high exposure to liquidity risk may prompt banks to hoard large amounts of (precautionary) liquid reserves, this hypothesis has often been overlooked. We try to fill the gap in this paper. More specifically, we hypothesize and confirm that bank liquidity hoarding in Africa reflects, at least partially, a precautionary strategy to guard against the risks associated with liquidity services to depositors.

JEL classification: G11; G21; O16

Keywords: Bank Liquidity hoarding; Liquidity risk; Deposit volatility; African banking systems

1. Introduction

For two decades now, many banks in Africa have been holding large amounts of liquid assets (see, Caprio and Honohan, 1993; Freedman and Click, 2006; Saxegaard, 2006). For instance, over the period 1990 and 2009, the ratio of liquid reserves to total assets for the median bank in sub-Saharan Africa (SSA) has varied between 11% and 19%. In comparison, over the same period, the liquid reserves to total assets ratio for the median bank in OECD has not exceeded 5% (see Fig. 1).[1]

The issue of persistent large bank reserve holdings is critical, especially in Africa where lack of finance if often cited as one the most important constraints on the growth of firms (World Bank, 2007). In fact, the accumulation of large bank reserves displaces funding which could be used to increase the supply of credits to the private sector. It is thus important to find ways of getting a greater share of bank resources flowing to support private sector development.

Academics and policymakers are confronting this issue (see, Freedman and Click, 2006; Saxegaard, 2006; Honohan and Beck, 2007; Owoundi, 2009). Yet, the build-up of bank reserves in many African countries has mostly been viewed as a consequence of low levels of perceived expected returns on credit.[2] In particular, most authors base their analysis on credit rationing models (Stiglitz and Weiss, 1981; Jaffee and Stiglitz, 1990) and suggest that efforts to address the credit market deficiencies would help increase the extent of bank intermediation.

The main contribution of this paper is to show that another channel may also be effective. More specifically, we hypothesize and confirm that bank liquidity hoarding in Africa reflects, at least partially, a precautionary strategy to guard against liquidity risk. This result is consistent with the liquidity insurance role of banks as put forth by the modern theory of financial intermediation (see, Bryant, 1980; Diamond and Dybvig, 1983; Diamond and Rajan, 2001; Kashap et al., 2002; Tirole, 2011). It

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[1] The statistics are from the World Development Indicators Database (WDI), The World Bank.

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[2] This is related to credit market deficiencies such as the poor quality and scarcity of information about individual borrower risks, and the weak legal and judicial and contract enforcement infrastructures (see, Honohan and Beck, 2007).

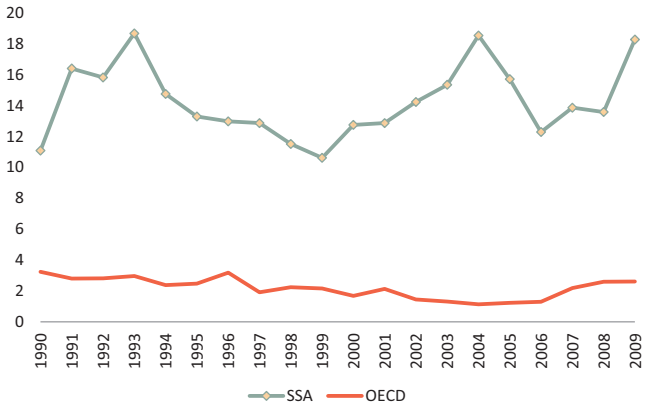

Fig. 1. Median bank liquid reserves-to-bank assets ratio.

suggests that the share of deposits banks can channel into credits is constrained by the risks associated with liquidity services to depositors.[3] Our empirical analysis shows that a reduction of deposit volatility, which is our primary measure of liquidity risk, will lead banks to significantly reduce their holdings of reserves for precautionary motive. Consequently, it will help expand the availability of loanable funds and eventually the supply of credit to the domestic private sector.

Besides this new result, our paper also contributes to the literature with a new measure that capture bank's exposure to liquidity risk. In fact, our primary measure of liquidity risk is constructed based on the standard deviation of deposit inflows. An important feature of this indicator is that annual observations are computed from monthly data, which allows us to exploit substantial variation in the time series of deposit inflows and, also, to have a time-varying measure for our analysis. On other hand, an indicator of bank's exposure to liquidity risk based on the distribution of deposit inflows is especially relevant in the African context, because, as documented in EIB (2013), deposits are the main source of banks' liabilities in most African countries.

Finally, our paper is related to a recent strand of empirical literature that investigates the importance of the precautionary motive in explaining the holding of bank reserves, by examining the build-up of bank reserves in developed countries since the recent financial crisis (Ashcraft et al., 2009; Acharya and Merrouche, 2012; Cornett et al., 2011). Like most of this literature, we find that there is a powerful relationship between large bank reserves and high exposure to liquidity risk; but our contribution is different as we are concerned with developing countries.

We are only aware of two papers, namely Agenor et al. (2004) and Saxegaard (2006), which carried out an empirical analysis closely related to ours, most notably by their focus on developing countries: both papers estimate a demand function for excess reserves (or liquid assets) by commercial banks that captures, in particular, the precautionary motive for holding liquid assets. Nevertheless, our contribution is different from theirs in the approach we use to capture liquidity risk. Moreover, both papers relied on time series data and as such, their findings are likely to suffer from the "individual heterogeneity bias" (see Baltagi, 2008). By using panel data, we are able to control for country specific unobserved time-invariant variables; this enables us to obtain more reliable estimates.

The rest of this paper is organized as follows. Section 2 motivates the hypothesis of precautionary hoarding of bank liquidity in Africa. Section 3 describes the data. Section 4 presents the econometric analysis and results. Section 5 concludes.

2. Hypothesis motivation

The hypothesis of precautionary hoarding of bank liquidity flows from the modern theory of financial intermediation (e.g., Bryant, 1980; Diamond and Dybvig, 1983; Diamond and Rajan, 2001; Kashap et al., 2002; Tirole, 2011). In this literature, the fundamental role of banks is to make illiquid loans to borrowers while providing liquidity on demand to depositors. This liquidity insurance role, however, exposes banks to liquidity risk: demand for cash withdrawals may arrive before the loans mature and force banks to liquidate early and to fail. Hence, to carry out their job effectively, the models of financial intermediation show that banks must invest in a certain costly volume of liquid assets as a hedge against a state of the world where there are unexpected demand for cash withdrawals.

A glance at banking systems in Africa shows that the precautionary motive for banks to hoard liquidity may be especially important. For example, underdeveloped and unreliable payment systems in many countries are such that cash is largely used as medium of exchange. This implies that banks are likely to face frequent demand for cash withdrawals. In addition, the lack of deposit insurance in several countries implies that there is a significant risk that banks may unexpectedly face large outflows of deposits (bank runs). Finally, the fact that capital markets are less developed suggests that banks cannot accommodate liquidity shocks simply by raising new external finance on a moment's notice.[4] In such a context, hoarding liquid assets is critical as a strategy to mitigate the risk of liquidity shortage.

It is of course true that banks may resort to borrowing from the central bank as a more or less permanent source of funds to cope with liquidity shocks: banks can make use of the central bank's standing facilities to meet extraordinary liquidity needs at a particular point in time. With this possibility, the precautionary motive to hoard liquid assets may no longer be plausible. However, refinancing conditions are in principle determined by the central banks. For example, virtually all liquidity provisions by central banks are necessarily based on adequate collateral, where the criteria of adequate collateral are defined by the central banks. This implies that if a central bank is more conservative in selecting the underlying collateral, banks would be restricted in their access to refinancing facilities.

More formally, Nautz (1998) shows that bank's demand for liquid assets increases if access to central bank credits is

[3] In the next section, we present a collection of facts that suggest banks' exposure to liquidity risk is particularly salient in much of SSA.

[4] This point is stressed in Kashap et al. (2002) and in Tirole (2011).