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Macro-financial linkages in Egypt: A panel analysis of economic shocks and loan portfolio quality☆

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ABSTRACT

This paper investigates macro-financial linkages in Egypt using two complementary methods, assessing the interaction between different macroeconomic aggregates and loan portfolio quality in a multivariate framework as well as through a panel vector autoregressive method that controls for bank-level characteristics. Using a panel of banks over 1993–2010, the authors find that a positive shock to capital inflows and growth in gross domestic product improves banks' loan portfolio quality, and that the effect is fairly similar in magnitude using the multivariate and panel vector autoregressive frameworks. In contrast, higher lending rates may lead to adverse selection problems and hence to a drop in portfolio quality. The paper also reports that a larger market share of foreign banks in the industry improves loan quality.

1. Introduction

The regular monitoring of loan quality is crucial to alert regulatory authorities on potential bank weaknesses and ensure financial system soundness in the context of macro-prudential regulation.

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Macroeconomic shocks can feed into banks' balance sheets through the credit risk transmission channel following deterioration in the credit quality of loan portfolios that can cause significant losses for banks and may even mark the onset of a banking crisis (Reinhart and Rogoff, 2010).

The determinants of bank loan portfolio quality are well documented in the literature using multivariate frameworks. A large body of research finds that bank loan portfolio quality can be explained by both macroeconomic conditions and other idiosyncratic features. Recent studies show that factors like borrower type (Bofondi and Ropele, 2011), loan category (Louzis et al., 2011), quality of institutions (Breuer, 2006), and form of banking organization (Salas and Saurina, 2002) are major determinants of credit risk. Further, the presence of second-round effects of the deterioration of banks' loans quality on the macro economy has also been investigated using the vector autoregressive (VAR) method (Hoggarth et al., 2005; Dovern et al., 2008; Marcucci and Quagliariello, 2008). Recently, the panel vector autoregression (PVAR) system was employed to account for specificities at the banking sector level in a cross-country framework and assess macro-financial linkages between credit markets and macroeconomic performance (Espinoza and Prasad, 2010; Nkusu, 2011).

In this paper, we build on the extant literature and analyze the transmission of macroeconomic shocks to the credit portfolios of banks as well as the presence of second-round feedback effects from loan portfolio quality to macroeconomic performance. We first examine the determinants of loan portfolio quality in a multivariate panel context using both static and dynamic models while controlling for bank-specific effects. We then assess macro-financial linkages using the PVAR model developed by Love and Zicchino (2006) that allows for endogeneity in our variables of interest and more importantly introduces fixed effects at the bank level to account for differences in bank activities or business models. Whereas prior studies using the PVAR method consider loan quality data that is aggregated at the industry level and do not control for individual bank characteristics, we include in the PVAR system both macroeconomic and bank-level variables, a procedure that, to our knowledge, has not been implemented in the literature yet.

To assess macro-financial vulnerabilities and the transmission of macroeconomic shocks to the banking sector, we use Egypt as an empirical fieldwork for different reasons. The banking sector in Egypt has historically been dominated by state banks, notwithstanding an on-going process of financial liberalization that began in the early 1990s and which led to a rising presence of foreign banks. Unlike state banks that generally direct lending to designated priority sectors in the economy as well as to politically connected or influential entities and individuals, foreign banks seek a more efficient allocation of funds and use more sophisticated credit risk management techniques compared to state-owned banks. They may also have greater incentives to monitor the performance of their credit portfolios compared to state banks that benefit from the explicit protection of the government. In addition to these unique structures, Egypt presents itself as an interesting case study for two other reasons. First, similar to other developing economies, the banking sector in Egypt is the main provider of credit and it thus plays a crucial role in funding the economy, given that financial markets lack depth and breadth. Second, the advent of the Arab spring in January 25, 2011 has recently subjected the country to aggregate economic shocks that are likely to be persistent in the future, with possible negative repercussions on the main providers of credit in the economy. To better understand the effect of macroeconomic shocks on the banking sector and whether they are likely to further destabilize the economy, we investigate the strength of macro-financial linkages using a panel of banks over the eighteen-year period of 1993–2010 prior to the uprising.

Multivariate analyses suggest that macro-financial vulnerabilities in Egypt work their way to the banking sector through the credit channel and that larger shares in foreign bank assets have a favorable impact on bank loan portfolio quality. Also, capital inflows and GDP growth improve loan quality while lending rate shocks may lead to adverse selection problems and hence to a drop in portfolio quality. The results from the PVAR framework additionally indicate that shocks to the capital account and to GDP growth have the greatest impact on loan portfolio quality and they also have a larger explanatory power for loan reserves compared to other bank-level variables.

The rest of the paper is organized as follows. Section 2 reviews the theoretical and empirical literature on macro-financial linkages, focusing on the determinants of loan portfolio quality and on second-round effects between banks' balance sheets and business cycles. Section 3 presents the data