



Heterogeneous lending behaviors and gross loan flows in developing economies



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ABSTRACT

This paper explores gross loan flows in the Bangladesh commercial banking sector between 2001 and 2014. I find evidence that relatively substantial loan reallocation exists in the Bangladesh loan market, while the loan market grows quickly during the study period. Loan flows different in bank ownership show heterogeneous patterns. Furthermore, loan flows exhibit cyclical patterns over the business cycle, which is consistent with prior work in the U.S. and South Korea. We also uncover evidence that aggregate shocks are the main driver for net loan growth, while allocative shocks play an important role in driving loan reallocation.

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1. Introduction

As Bangladesh is an active laboratory of microfinance, there has been extensive policy and academic interest in microfinance in Bangladesh. But, commercial banking in Bangladesh remains unexplored, partly due to simple ignorance and partly due to a lack of available data. Unlike the controversy over the effects of microfinance on poverty reduction and economic development, numerous studies document that the development of a commercial banking sector in less-developed economies plays a crucial role in facilitating economic activity and investment (King and Levine, 1993; Calderón and Liu, 2003; The Economist, 2013, 2014a; Khandker and Samad, 2014). In Bangladesh, bank credit is the most important external financing source for non-financial businesses and households, even in rural areas. On average, commercial bank credit accounted for 90.3% of total lending to the private sector by financial institutions, including microfinance institutions (MFIs) and non-bank institutions, between 2004 and 2013.¹ From 2001 to 2013, outstanding bank credit lent to rural areas was on average 1.7 times MFIs' lending, which indicates that commercial banks play a more important role in financial inclusion than MFIs do. While the Bangladesh banking industry is growing quickly, with an annualized loan growth rate of 16.40% during the last decade, it has experienced a structural change, characterized by the reversal of the loan market share by state-owned banks and private domestic banks. This change resulted from a restructuring of the banking industry during the late 1990s and early 2000s. In the late 1990s, the government implemented a commercial bank restructuring project that improved the regulatory and legal framework for

commercial banks; in addition, several state-owned banks were privatized and new private banks were licensed during the restructuring period, to remove the chronic problems of non-performing loans (NPLs) and illegal loans by state-owned banks.

There is no doubt that the bank restructuring and the subsequent rise in loan market share by private banks has attracted research interest from academics and policymakers. However, the Bangladesh commercial banking industry remains out of the spotlight of academic and policy research.

To fill the gap, this paper takes an early step in the exploration of the commercial banking sector in Bangladesh, using quarterly bank level loan data from 2001:Q1 to 2014:Q2. Specifically, I adopt the gross loan flow approach, which allows us to study loan market dynamics by taking two intrinsically different sources of loan changes into account: loan expansion and contraction. As Dell'Ariccia and Garibaldi (2005) point out, the expansion of new loans and the withdrawal of loans are inherently different activities that result from different incentives and loan decisions by lenders. Thus, looking at these two lending activities enables us to examine the interaction between the bank level heterogeneous lending behaviors and the macroeconomy, on which net aggregate data are silent. Because of the advantages of this approach, an increasing number of studies have adopted this methodology, since the Great Recession, to investigate loan market behaviors and their interactions with the macroeconomy. For instance, Dell'Ariccia and Garibaldi (2005) document several stylized facts about gross loan flows using data about U.S. commercial banks. Craig and Haubrich (2013) explore the intensive and extensive margins of U.S. loan flows, and also find evidence that loan flows respond to monetary policy. Using South Korean bank level data, Hyun (Unpublished Manuscript) presents evidence about how loan flows responded to adverse external shocks and policy shocks between 1983 and 2014. Despite the growing

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¹ Source: Bangladesh Bank Quarterly, by Bangladesh Bank.

literature on gross loan flows, very little is known about loan flows in less-developed countries, where the financial system is not fully mature. Thus, this paper not only sheds light on the dynamic behaviors of gross loan flows in less-developed countries, it also provides a valuable counterpart for comparative studies with earlier work about the U.S. and South Korea. To do so, I construct loan expansion, contraction, gross (excess) reallocation, and net loan growth, employing the methodology suggested by Dell'Ariccia and Garibaldi (2005).

This paper uncovers evidence that loan expansion is much more sizable (4.42) than loan contraction (0.56) at any phase of the business cycle, indicating that the Bangladesh loan market was expanding during the sample period. Due to the large loan expansion, the net loan growth (net loan flow) is quite high (3.84), while excess loan reallocation remains at a moderate level, with an average of 1.16, which is smaller than the average of 2.69 found in the U.S. banking industry, but larger than the reallocation of loans across South Korean banks (0.58).² Considering that the Bangladesh banking industry grew quickly during the sample period, these nominal flows are affected by an upward trend of loan growth. Hence, to avoid a possible bias in measurement, I again construct loan flows that capture the upward trend; these are called idiosyncratic loan flows in the literature. Compared to nominal flows, idiosyncratic loan expansion becomes smaller (1.99), while idiosyncratic loan contraction is larger (2.02). Interestingly, idiosyncratic loan reallocation, which measures aggregate expansion and contraction in excess of trend growth, is 4.01 on average. Remarkably, this magnitude is much larger than the nominal loan reallocation (1.16) and provides evidence that the dynamism of the Bangladesh loan markets is as intense as that observed in the U.S. commercial banking industry (4.20) over the period of 1979–1999, and larger than that of South Korean banks (Dell'Ariccia and Garibaldi, 2005; Hyun, Unpublished Manuscript). The large magnitude of loan reallocation is partially associated with the declining loan share of state-owned banks and the rising share of private domestic banks.

Next, I separate total loans into urban and rural loans, to explore the distinct characteristics and behavior of urban and rural loans. Predictably, since urban and rural areas in Bangladesh have different economic traits, such as dominant industries, financial market development, and borrower profiles, loan flows of the two areas may exhibit different patterns. I find evidence that the nominal reallocation of rural loans (1.56) is relatively more intense than that of urban loans (1.22) mainly due to large rural loan contraction (1.08). These different patterns of loan flows suggest that urban and rural loan markets are affected by different sectoral shocks and seasonality, or that they respond differently to aggregate shocks.

I then categorize banks into 4 groups based on ownership (state-owned banks, private domestic banks, foreign banks, and Islamic banks) to compare the behaviors of loan flows across groups. The banking literature documents that ownership is a crucial factor explaining banks' heterogeneity in efficiency, risk aversion, and lending standards (see, e.g., Kumbhakar and Sarkar, 2003; Micco et al., 2007). Furthermore, loan flows by ownership type provide information about how the loan share reversal of state-owned banks and private banks affects the patterns of gross loan flows for each ownership type. Focusing on idiosyncratic flows, I find that foreign banks' loan flows display different patterns: their loan expansion and contraction are the greatest among the four types of ownership and, consequently, their loan reallocation is notably large (7.46). Their distinct features, such as lending standards and lending operation basis (corporate lending), should be associated with large gross loan flows. Another noteworthy feature is associated with the shrinking loan market share of state-owned banks. Due to the downward sectoral trend, their idiosyncratic loan expansion is modest (0.79), while their loan contraction is quite large (2.56), and

their loan reallocation is the smallest (3.34) among the ownership groups. Private domestic banks and Islamic banks exhibit a relatively high level of loan reallocation (4.35) over the sample period.

I further examine the sources of loan reallocation by considering the reshuffling of loans across groups of banks similar in ownership type. Interestingly, a majority of loan reallocation comes from the reshuffling of loans within sectors that are the same in ownership: only 31.86% of loan reallocation is the reshuffling of loans between groups of banks of different ownership types. This finding implies that intrasectoral heterogeneity in lending behaviors within a group that is homogeneous in ownership type, rather than sectoral shocks or the heterogeneous responses of sectoral loan flows to aggregate shocks, contributes to the different patterns of sectoral loan flows.

Another important question regarding gross loan flows is how they interact with aggregate economic activity. Hence, I explore the time-series properties of gross loan flows. Starting with volatility, loan contraction is much more volatile than loan expansion, suggesting that the two loan flows react asymmetrically to economic shocks. Loan reallocation is more volatile than net loan flow (net loan growth), indicating that net loan flow does not capture heterogeneity in loan markets at the micro level, which is consistent with prior studies on loan flows in other countries.

Next, I turn to cyclical properties. Loan reallocation exhibits countercyclical behavior, implying that the heterogeneity of loan markets decreases in times of economic expansion, but increases during economic downturns. Loan expansion and contraction are procyclical and countercyclical, respectively. These findings about the cyclicity and volatility of loan expansion and contraction are supported by matching theories regarding loan markets (see, e.g., Den Haan et al., 2003; Wasmer and Weil, 2004), as discussed in Section 5.

In the last part of this study, I examine the driving forces behind dynamic loan flows using a structural vector autoregression (SVAR), as proposed by Davis and Haltiwanger (1999). I uncover evidence that aggregate shocks are the main driving force behind the fluctuations in net loan flows. More interestingly, the influence of allocative shocks varies depending on assumptions about the responses of loan expansion and contraction to the shocks. For instance, allocative shocks are a major driving force of loan reallocation in the range where aggregate shocks have relatively symmetric impacts on loan expansion and contraction. However, when aggregate shocks have larger and more instantaneous impacts on loan contraction than loan expansion, allocative shocks have only a moderate influence on loan reallocation.

The rest of the paper is organized as follows. Section 2 describes the banking sector in Bangladesh from 2001 to 2014. Section 3 describes the data and the methodology. Section 4 presents the basic properties of loan flows. Section 5 investigates the dynamic properties of loan flows, such as volatility and cyclicity. Section 6 examines the driving forces behind the evolution of loan flows. Section 7 concludes.

2. The banking sector in Bangladesh

The banking sector in Bangladesh was mired in huge NPLs of state-owned banks, caused by chronic insider lending and political interference in lending decisions. There were several attempts to modernize the banking sector, but none were successful until the late 1990s, when the banking sector underwent a commercial bank restructuring project, funded by the World Bank, that improved the regulatory and legal environment for commercial banks (IMF, 1998, 2002; Chowdhury, 2002). For instance, Bangladesh Bank introduced the CAMEL rating system in 1997, and adopted loan classification and loss provisioning rules that were in line with international standards; these took effect in 1999.³ Along with regulatory reforms, several state-owned banks were privatized, and several new private

² Given that excess loan reallocation measures simultaneous loan expansion and contraction over time, 1.16% of total loans are, on average, reallocated across banks or are simultaneously lent and withdrawn by banks during the sample period.

³ See IMF (1998, 2002) and Chowdhury (2002) for more detail on the banking policies implemented before 2000.

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