Research in International Business and Finance 41 (2017) 125–135

Contents lists available at ScienceDirect

Research in International Business and Finance

journal homepage: www.elsevier.com/locate/ribaf

Review

Note on a non-structural model using the disequilibrium approach: Evidence from Vietnamese banks

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ARTICLE INFO

Keywords:
Banking
Performance
Non-structural model
Disequilibrium approach
Vietnam

ABSTRACT

Based on the non-structural model – disequilibrium approach (Goddard and Wilson, 2009), this paper presents an empirical assessment of the degree of competition within the Vietnamese banking system from 1999 to 2009. We examine more environmental covariates and different dependent variables compared to previous applications of this model. Moreover, we use lagged input prices (to avoid endogeneity) and exclude assets (to avoid specification bias) in our models. The results indicate that the Vietnamese banking system operates in a monopolistic environment.

1. Introduction

In the last two decades there has been extensive research on banking reforms in Central and Eastern Europe (CEE) – see Fries and Taci (2005); Bonin et al. (2005) and Staikouras et al. (2008). The common theme of these studies was to examine bank efficiency and the role of bank ownership. Only a few studies analysed the market structure in which commercial banks operate (Nathan and Neave, 1989; DeBandt and Davis, 2000). Particular emphasis was given to the privatisation and the role of foreign banks in the newly established banking system. However, there is limited research on the banking system in less developed economies. In particular, there are only a few studies on the Vietnamese banking system that provide a deep analysis and policy implications for the specific transformation process adopted by the Vietnamese government in the early 1990s. The specific approach applied by the Vietnamese authorities gives us an opportunity to compare the differences between the transition process in CEE and Vietnam. Such knowledge deepens our understanding of the optimal strategies that should be adopted by the authorities in other less developed economies.

Our study contributes to the research on the competitiveness of the banking sector in emerging and developing economies (Claessens and Laeven, 2004; Gelos and Roldos, 2004). We endeavour to provide a broader picture of bank competition in Vietnam. The main novelty of our study is the application of the non-structural model using the disequilibrium approach introduced by Goddard and Wilson (2009). We estimate *H*-statistics using models that exclude assets (to avoid specification bias) and include lagged input prices (to avoid endogeneity). We examine the 'system' and 'difference' generalised method of moments (GMM) estimators with both 'one-step' and 'two-step' specifications based on Arellano and Bond (1991) and Blundell and Bond (1998). The inclusion of time period dummy variables for all periods, in addition to economic covariates, affects the precision of coefficient estimates for some specifications. Hence, a general-to-specific method (GSM) is applied to remove redundant time period dummy variables in each model in an attempt to improve the efficiency of estimation and obtain meaningful *H*-statistics. We also assess whether the *H*-statistics obtained from the dynamic specification motivated by the disequilibrium approach are valid for inference. Furthermore, we employ a unique database of 48 Vietnamese commercial banks from 1999 to 2009. Such a database enables us to assess the impact of

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http://dx.doi.org/10.1016/j.ribaf.2017.04.023
Received 21 February 2017; Accepted 11 April 2017
Available online 17 April 2017

the main structural changes of the last decade and the results of this analysis enhances our understanding of the main differences of the Vietnamese banking system from other (transition) economies.

The paper is structured as follows. The next section details developments in the Vietnamese banking system while Section 3 explores a brief review of the previous empirical literature of the non-structural model. Section 4 focuses on methodology and data. Empirical results are presented in Section 5 and Section 6 gives conclusions.

2. The Vietnamese banking system

The first stage of the banking reform in Vietnam was similar to those in other transition economies, that is, mono-banking was dismantled and replaced by a two-tier banking system in 1986. It is important to note that the reform in Vietnam was launched earlier than the reform in some CEE countries. However, Vietnamese banks operate in a different economic environment. In particular, the geographical location has been a limiting factor in the speed of its development. Although the Asian financial crisis in 1997 did not have such dramatic negative externalities as in other countries in Southeast Asia it still reduced economic growth in Vietnam. The capital inflow was much lower compared with CEE countries in the 1990s. The capital account was fully controlled which discouraged foreign investors from investing in Vietnam in terms of FDI and portfolio investment. Furthermore, a number of Asia-Pacific countries liberalised their domestic financial sectors in the 1980s, making apparent the large interest differential between domestic and world interest rates; this provided an incentive to evade capital controls. In Vietnam, nevertheless, domestic interest rate ceilings supported stringent controls over foreign borrowings, enabling the State Bank of Vietnam (SBV) to regulate flows of short-term capital more efficiently (Leung and Le, 1998, p. 125). Another explanation for the minor effect of the Asian financial crisis in the country was that the weakly-developed financial market did not attract much foreign capital in the first place (Kokko, 1999, p. 84).

Nguyen and Stewart (2013) discussed the development of Vietnamese commercial banks between 1990 and 2009. They suggested that while the number of joint stock commercial banks increased rapidly after 1990, state owned commercial banks still dominate the market.[1] Non-state owned commercial banks include joint stock commercial banks, branches of foreign banks, joint venture commercial banks and foreign commercial banks.[2] In Vietnam, as in other CEEs during the transition period, joint stock commercial banks perform better than state owned commercial banks. Joint stock commercial banks have achieved average returns on equity between 15% and 30% from 1999 to 2009 (SBV, 2009). The growth and expansion of foreign banks have also been solid. The number of branches of foreign banks increased from 18 banks in 1995 to 48 banks in 2009 (SBV, 2009). However, the role of those banks in the Vietnamese banking system is rather marginal. The size of these foreign branches is relatively small compared to domestic banks.

In general, loans, assets, deposits and capital in the Vietnamese banking system increased gradually between 1999 and 2009. Vietnamese commercial banks had a high volume of non-performing loans, particularly during the 1990s; however, these generally decreased from 1999 to 2009. Non-performing loans of non-state owned commercial banks are typically lower than those of state owned commercial banks (Nguyen and Stewart, 2013).

The global financial crisis of 2008 caused a sharp economic slowdown and property boom collapse in Vietnam and many small banks experienced serious liquidity and solvency problems during this period. This led to interventions by the SBV. The reduced lending capacity of the banking sector is one factor that contributed to a sharp slowdown in credit growth. Tighter regulation, for example by limiting interbank lending, has also contributed to this slowdown (Maddock et al., 2015).

3. Literature review

Empirical studies that use the non-structural model to establish the extent of contestability in banking markets are concerned with drawing inferences about market structure indirectly from observing conduct. This is because of contestability, which depends on the extent of potential competition, is not observable directly (Goddard et al., 2001). Panzar and Rosse (1987) formulated simple models for monopolistic, oligopolistic and perfectly competitive markets, and develop a test to discriminate between these market structures. The first market model that Panzar and Rosse investigate is a monopoly. The empirical refutation of monopoly constitutes a rejection of the assumption that the revenue of the banks in question is independent of the decisions made by their actual or potential rivals. The Panzar and Rosse model demonstrates that under monopoly, an increase in input prices will increase marginal costs, reduce equilibrium output and subsequently reduce revenue; hence, the *H*-statistic will be zero or negative. In the case of monopolistic competition, the analysis is based on the comparative static properties of the Chamberlain equilibrium model. In equilibrium, interdependence affects the structural revenue function, and the bank's profit finally becomes zero as the conditions of entry and withdrawal are unlimited; hence, the *H*-statistic will be smaller than 1.[3] In the case of perfect competition, under certain conditions both marginal cost and average cost increase without changing the optimum amount of the individual bank's output. If this condition occurs and some banks withdraw from the market, the remaining banks would individually face increased demand. This increased demand leads to higher prices and revenue which is equal to the increased cost and the *H*-statistic is 1 (Goddard et al., 2001).

[1] Nguyen and Stewart (2013) showed that three out of five state owned commercial banks accounted for 45% of customer deposits, 41% of total assets and 51% of customer loans of the banking system in 2009.

[2] Foreign commercial banks normally transformed out of branches of foreign banks. Data on assets, loans and deposits of branches of foreign banks are very small compared to other banks. Therefore, in our application, non-state owned commercial banks consist of joint stock commercial banks, joint venture commercial banks and one foreign commercial bank.

[3] The *H*-statistic is the sum of the elasticities of the reduced-form revenue function with respect to factor prices (Panzar and Rosse, 1987).