

Globalisation and Bank Performance in Vietnam

Hien Thi Kim Nguyen^a

Dung Tien Nguyen^b

Quy Nhon University

Abstract: The purpose of this study is to shed some crucial light on the relationship between globalisation and profitability of the banking system in Vietnam. We use a range of bank-characteristic determinants, country-specific factors and three different dimensions of globalisation including economic globalisation, social globalisation and political globalisation to explain bank performance. Using the random effect model based on secondary data for commercial banks in Vietnam from 2007-2014, we find evidence that the actual flow index and the restriction index have significant and positive effects on bank profitability, while the cultural proximity and political indexes show significant and negative impacts. Therefore, Vietnamese banking regulators should widen the openness of the banking sector to attract more foreign investors and improve global competitiveness. Banks are also recommended to develop their credit risk management, diversify products and services, expand their network along with enhancing management practices, and improve forecasting of macroeconomic fluctuations in order to achieve greater efficiency levels.

Keywords: Bank, globalisation, profitability, Vietnam

JEL classification: C23, E44, G21, G28

1. Introduction

Globalisation, one of the striking characteristics of today's world, was defined as "the ongoing process of greater economic interdependence among countries, reflected in the increasing amount of cross-border trade in goods and services, the increasing volume of international financial flows and increasing flows of labour" (Fischer, 2003, p. 3). Along with these dynamic transitions, banks and other financial institutions – the backbone of a modern economy – are tremendously affected. The most obvious channels attribute to deregulation, economic integration and information technology advances (Claessens & Van Horen, 2012). In this context, the intensification of cross-border competition promotes bank profitability and larger institutions having better adoptions of innovative technologies perform more efficiently than smaller ones (Tsionas, Lolos, & Christopoulos, 2003). Other elements may comprise the emergence of new business models, challenging competitors and changing perspectives of banking workforce to the international banking industry (Osamor, Akinlabi, & Osamor,

^a Faculty of Finance-Banking and Business Administration, Quy Nhon University, 170 An Duong Vuong, Quy Nhon, Binh Dinh, Vietnam, 590000. Email: nguyenkimhien@qnu.edu.vn (Corresponding author)

^b Faculty of Finance-Banking and Business Administration, Quy Nhon University, 170 An Duong Vuong, Quy Nhon, Binh Dinh, Vietnam, 590000. Email: nguyentindung@qnu.edu.vn

Article Info: Received 1 May 2017; Revised 18 September 2017; Accepted 9 March 2018

2013). For example, the introduction of the Economic and Monetary Union brought about a new environment with lower inflation, lower interest rates, more enhanced competition, more financial innovation and new activities to Greek banks (Chortareas, Girardone, & Ventouri, 2009). According to Andrieş and Căpraru (2012), European integration had a positive impact on efficiency convergence of the EU27 banking markets during the pre-crisis period (2003-2008). However, the collapse of two giants in financial markets including American International Group and Lehman Brothers Holdings during the 2008 global financial crisis exposed some backlash related to international economic integration.

The open door policies towards international integration initiated by the Communist Party of Vietnam since 1986 have brought about great socio-economic achievements, including the motivation for banking reforms. Vietnam has also participated in many regional and international organisations (such as ASEAN, APEC and WTO) with significant contributions to building common rules and standards. All of these enhance Vietnam's position in the international arena further.

Vietnamese banks are following international practices and gradually becoming more effective financial intermediations, which in turn benefits the industrialisation and modernisation of the whole country. However, they have faced certain challenges during the integration which prevent them from improving their performance. Moreover, there is a real paucity of evidence on banking performance in Vietnam both in terms of research and methodology, partly due to the difficulties in accessing the confidential data of banks. Most of the studies of the Vietnamese banking industry focused on the cost/profit efficiency undertaking either data envelopment analysis (DEA) (Ngo, 2012; Vu & Nahm, 2013), stochastic frontier analysis (Vu & Turnell, 2010, 2012), or new index approach (Nahm & Vu, 2013). This paper is the very first empirical study aiming to explore the potential impacts of globalisation on profitability of the banking sector in Vietnam over the recent years. To achieve this purpose, this research employs the random effect model (REM) for the panel data of 16 commercial banks in Vietnam over 2007-2014 with a comprehensive range of bank-characteristic determinants and country-specific factors, specifically three globalisation dimensions including economic globalisation, social globalisation and political globalisation. It is the capacity of examining how bank profit is sensitive not only to the changes of internal characteristics and macroeconomic conditions but also to the integration that makes it different from previous studies.

This research is structured as follows. Section 2 presents the related literature. Section 3 describes the methodology. Section 4 shows the regression results with REM. Summarised conclusions and recommendations are stated in Section 5.

2. Literature Review

There are two alternative approaches to consider banking performance in literature. The first is the static neoclassical microeconomic analysis of how individual banking units sought profit-maximisation while they are affected by the market structure and competition (Klein, 1971). As an alternative, the dealership model based upon the extension and integration of the hedging and expected utility models into analysing the

determinants of trading bank margins views banks as the dealers setting optimal net loan/deposit interest margins to balance the asymmetric flows of loans and deposits (Ho & Saunders, 1981). Banks tend to apply similar business strategies, irrespective of their ownership, with four factors influencing bankers' mark-up decisions including the degree of risk aversion, market structure, average size of bank transactions and interest rate uncertainty. In a further modification of the dealership model, banks are considered as risk-averse dealers whose business target is also related to the measures of market power (McShane & Sharpe, 1985).

To investigate the market and institutional effects on bank performance, academics have mostly taken bank profitability as a function of internal and external determinants. The internal factors easily seen in the literature are size, capital strength, credit risk, expenses management, embedded network and diversification. As for external determinants, apart from inflation and output, other variables representing the market characteristics such as banking sector's risk and market concentration play a role.

Existing studies of the impacts of bank characteristics on its performance give inclusive findings, depending on the sample, period and specification. The conclusions on the relationship between bank size and profitability are ambiguous. While some researchers favour economies of scale such as Goddard, Molyneux and Wilson (2004), and Lee, Yang and Chang (2014), others support diseconomies of scale, for instance, Athanasoglou, Brissimis and Delis (2008) and Berger, Hasan and Zhou (2010). In terms of capital adequacy, Athanasoglou et al. (2008) found positive granger-causality effects from capital on earnings of the US banks in the 1980s and negative effects over 1990-1992. Regarding credit risk, Hadriche (2015) demonstrated a negative and significant impact on return of conventional banks but a positive and insignificant impact on Islamic banks in GCC countries. Bourke (1989) is among the few researchers detecting positive evidence on the nexus. The hypothesis that better expenses management forces efficiency is true in the case of Greece banking system, characterised by higher personnel costs and lower labour productivity (Athanasoglou et al., 2008). However, a study on European banks suggested that higher wages for highly-qualified workers could promote bank performance (Molyneux & Thornton, 1992). Furthermore, the impact magnitude of operational efficiency was shown to be very small and not always significant as different specifications were conducted (Tregenna, 2009). Similarly, while Lim and Randhawa (2005) depicted a positive relationship between larger branch network and greater profitability, the relationship was not the case in the study of Sufian and Habibullah (2012). In addition, it is expected that profits of financial intermediaries including banks may derive from non-traditional operations from asset sales to fees and services charges. Diversification was found to be associated with higher costs and lower profits (Berger et al., 2010). However, Lee et al. (2014) suggested that the impacts of non-interest activities were greatly affected by the type of bank and income level of the country. That is, they raise risk for banks in high-income countries while benefiting banks in middle and low-income countries. Trivedi (2015) also agreed that the income generated from non-interest activities was necessary for the success of Indian banks.

Regarding controllable variables, the effects of output-gaps – deviations of real GDP from its segmented trend – on bank performance were found to be significantly positive

if output was above the trend and insignificant otherwise (Athanasoglou et al., 2008). In many cases, significantly positive impacts of inflation expectations on bank profitability were found (Athanasoglou et al., 2008; Sufian & Habibullah, 2010, 2012). This indicates that good anticipation of future variations in inflation allows a bank to adjust its interest rate to generate profits. However, unanticipated inflation could result in inappropriate management of interest rate and higher costs (Pasiouras & Kosmidou, 2007).

Among the characteristics of banking industry, risk should be controlled as assessing the effects of strategic factors on profitability to avoid bias estimates (Aaker & Jacobson, 1987). Both types of risk, including systematic risk stemming from economy-wide disturbances and unsystematic risk which is not associated with economy-wide conditions, have significant influences on returns (Aaker & Jacobson, 1987). Referring to the market concentration and profitability nexus, the structure-conduct-performance (SCP) hypothesis suggests that higher concentration level in a banking market will result in lower cost of collusion and higher monopoly rent. This hypothesis was true for both US banking system (Bourke, 1989) and EU banking system including the foreign banks in EU (Pasiouras & Kosmidou, 2007). However, the effects were insignificant on smaller firms (Chappell & Cottle, 1985) and domestic banks in EU (Pasiouras & Kosmidou, 2007), and even significantly negative on unit cost (price less costs) (Peltzman, 1977). In addition, a case study of Greek banking system showed no evidence of the SCP hypothesis (Berger, 1995).

Most of the studies on Vietnamese banks focused on efficiency, including efficiency trend, efficiency level, efficiency gap between state-owned commercial banks and joint-stock banks, or between foreign banks and domestic banks, and efficiency effects of capital ratio using different input-output combinations and methodologies. Though the concept of efficiency does not reflect profitability exactly, higher efficiency probably indicates higher profit levels. Vu and Turnell (2010) applied a Bayesian stochastic frontier approach for 2000-2006 and found that the decreasing cost efficiency was driven by the increasing costs of managing diverse activities, the branch network enlargement, and the banking technology upgrading. In another study of the 1998-2004 period employing two-stage DEA approach, cost efficiency of the banking systems in five South East Asian countries including Vietnam was shown to be affected positively by capital ratio and economic growth but negatively by size (Gardener, Molyneux, & Nguyen-Linh, 2011). In considering the period of 1990-2010 as the decades of financial liberalisation for the industry in Vietnam, Ngo (2012) applied a modified DEA analysis and suggested that the banking performance decreased along with larger bank size and a more liberated financial market. However, this conclusion on banking performance–liberalisation nexus is ambiguous since there is no variable of liberalisation in the study. Based on the DEA method and Tobit's model over 2000-2006, Vu and Nahm (2013) showed that bank profit efficiency was promoted by larger size, better management, economic growth and low inflation while it was impeded by low quality of assets and too high level of capitalisation. Nahm and Vu (2013) developed a new index approach based on ratios between distances and found a negative impact from state-owned bank size on productivity for the period of 2000-2006. Furthermore, better operation management and upgraded information technology were shown to be necessary to promote the productivity growth of domestic banks.

An overview of the literature exposes some research gaps. While the theoretical hypotheses are successful in explaining the impacts of internal and external factors on banking performance, available empirical researches have taken different variables, different specifications, and even come up with contradictory findings. In the literature taking globalisation as a factor affecting banking performance, the developing countries often put at the top of the debate include China, Pakistan, Malaysia, and Thailand but not Vietnam. Moreover, the conclusions are not clear-cut. Apparently, it is impossible to establish a clear-cut conclusion for a specific country without taking into account the particular context of that country. Hence, this study is the first effort that exploits a range of bank characteristics, macroeconomic conditions and globalisation features simultaneously to explain the profitability changes of the banking sector in Vietnam.

3. Data and Model Specification

This study investigates the impacts of globalisation on the profitability of commercial banks in Vietnam over 2007-2014. The first year in the studied period is chosen as the benchmark for tremendous socio-economic changes in Vietnam beginning with WTO accession. Table 1 lists all the variables used as proxies for bank profitability and its determinants.

Due to the recent consolidations and exits of some commercial banks, this research exploits an unbalanced panel dataset for 16 commercial banks including domestic banks and foreign banks. The general model to be estimated is as follows.

$$\Pi_{it} = c + \sum_{j=1}^J \beta_j X_{it}^j + \sum_{k=1}^K \beta_k X_{it}^k + \sum_{l=1}^L \beta_l X_{it}^l + \varepsilon_{it} \quad (1)$$

where i denotes the bank, t denotes time period, ε is the disturbance term, Π_{it} is the proxy of profitability of the bank i at year t , and X_{it} are the explanatory variables which are grouped into bank specific characteristics X_{it}^j , macroeconomic conditions X_{it}^k , and globalisation variables X_{it}^l . Appendix 1 summarises the definitions and component weights of the globalisation variables.

3.1 Banking Performance Measure

The profitability of banks is represented by the return on average assets (ROAA). In principle, ROAA indicates the management ability to generate profits for a bank from the financial and real investment resources rather than by using leverage. ROAA shows how efficiently a bank's policy decisions utilise its assets to earn profits in dealing with uncontrollable factors from the economy and government interference without distortions from equity multiplier, or financial leverage. Therefore, ROAA is considered as the best measure of profitability rather than other ratios, such as ROAE – the return on average equity (Hassan & Bashir, 2003). However, it may be biased due to off-balance sheet activities (Athanasoglou et al., 2008).

3.2 Bank Characteristics

This paper employs six widely used variables to proxy bank-specific determinants. Regarding *credit risk*, the ratio of loan loss provisions to total loans (LLP_TL) is used

Table 1. Description of the variables

Variable	Description	Database	Expected sign
Dependent variable			
ROAA	Return on average assets	Bankscope	
Independent variables			
<i>(a) Bank characteristics</i>			
LLP_TL	Loan loss provision/total loans to measure credit risk	Bankscope	-
EQASS	Equity/total assets to measure capital	Bankscope	+/-
NIE_TA	Non-interest expense/total assets to measure operating expenses management	Bankscope	+/-
NII_TA	Non-interest income/total assets to measure diversification	Bankscope	+/-
LDEPO	Natural logarithm of total deposits to measure network embeddedness	Bankscope	+
LTA	Natural logarithm of total assets to measure bank size	Bankscope	+/-
<i>(b) Macroeconomic factors</i>			
LGDP	Natural logarithm of gross domestic product	World Development Indicators	+/-
INF	Rate of inflation	IMF International Financial Statistics	+/-
CR3	Three largest banks asset concentration ratio	IMF International Financial Statistics	+/-
Z-SCORE	Z-score index to measure banking sector's risk to default	IMF International Financial Statistics	+/-
<i>(c) Globalisation variables</i>			
AF	Actual flow index	Dreher (2006)	+
RI	Restriction index	Dreher (2006)	+
PC	Personal contact index	Dreher (2006)	+
IF	Information flow index	Dreher (2006)	+
CP	Cultural proximity index	Dreher (2006)	+
PI	Political globalisation index	Dreher (2006)	+

Note: Bankscope is no longer available from 1 January 2017. A close alternative can be obtained from Orbis Bank Focus (see references).

and expected to affect ROAA negatively. Theoretically, banks having more exposure to higher risk loans are associated with increasing accumulation of unpaid loans and lower profit levels.

To proxy *bank capitalisation*, we use ratio of equity to assets (EQASS). According to conventional wisdom and the expected bankruptcy costs hypothesis, banks, especially the riskiest ones, standing below the optimal capital levels, increase capitals along with higher profits which mainly come from reduced interest rate paid on uninsured debts.

This happened as a result of reduced probability of bank failure costs that uninsured debt holders have to bear. However, if banks overshoot their optimal capital levels, a negative relationship could be the potential result.

To evaluate *expenses management*, ratio of non-interest expenses to total assets (NIE_TA) is included in the model. Non-interest expenses including staff expenses and operation costs appear to be the key outcome of cost management rather than other expenses such as taxes and depreciation. On one hand, NIE_TA is expected to be negatively related to profitability, which means higher expense will reduce profit level. However, the opposite sign could be a possibility as what Molyneux and Thornton (1992) concluded for European banks.

Intuitively, non-interest income is particularly important for a bank to make profits when interest rate is low. Hence, ratio of non-interest income to total assets (NII_TA) is incorporated as an independent variable to recognise whether income generated in the Vietnamese banking system during recent times involves off-balance sheet business activities and fees, or *non-traditional operations*. The relationship between NII_TA and profitability measure is ambiguous.

Total deposits is also entered in the model in natural logarithm form (LDEPO) to proxy *network embeddedness*. Lim and Randhawa (2005) suggested that bigger banks with a wider network of branches had more exposure to larger depositors, a huge amount of deposits, which made them a cheaper source of funds and higher efficiency relative to smaller banks. On the contrary, smaller banks with limited deposits possibly have to purchase funds, which are costlier, in the inter-bank market to transform into loans, hence suffering from lower efficiency and profits.

To access the effects of *bank size* on profitability, natural logarithm of total assets (LTA) is included. While growing size likely have a positive impact on performance based on the hypothesis of significant economies of scale (Goddard et al., 2004), the reverse effect could be possible for banks which are extremely large and bearing enormous costs related to bureaucracy (Athanasoglou et al., 2008). Furthermore, it may refer to the case when higher risk diversification leads to increasing credit risk and lower earnings (Sufian & Habibullah, 2012).

3.3 Macroeconomic Determinants

Generally, bank performance is sensitive to *macroeconomic fluctuations* even if banks are doing better in diversifying operations and managing risk that is well forecasted. In essence, banks will find it harder to lend during recessions while provisions tend to surge because of bad loans. This will reduce bank performance. By contrast, increasing demand for credit and stock transactions during economic booms will strengthen interest margins earned by financial intermediaries. Thus, it is reasonable to assume pro-cyclical changes of both bank loans and capital. And counter-cyclical behaviour should be a good signal for a strong banking system. However, due to a small time dimension in this study, we use GDP in natural logarithm form (LGDP) as a proxy of macroeconomic output rather than output gap, a direct measure of business cycle. This paper also takes *inflation rate* (INF) into account as another macroeconomic variable that potentially influences bank profit depending upon inflation expectations.

There are competing hypotheses explaining mixed effects of *concentration* level on bank earnings. In this paper, concentration ratio reflecting the three largest banks regarding assets (CR3) is used to investigate the impact of Vietnamese financial market structure on bank profitability, or the SCP hypothesis.

Furthermore, we take Z-SCORE as a proxy of failure probability. There are three components including profitability, leverage and return volatility in Z-index formula, which is $(ROA+K)/S$ (De Nicoló, Bartholomew, Zaman, & Zephirin, 2004). The first component is given by a period average return on assets (ROA), the second is given by the period average equity-to-asset ratio (K), and the last is given by the period standard deviation of returns on asset (S). Normally, it is expected that a higher (lower) Z-SCORE means lower (higher) risk profile of banks, and hence higher (lower) profitability. However, a reverse correlation is still possible. Boyd and De Nicoló (2005) explained the latter expectation based on a model with a loan market where banks tend to increase loan rates as they obtain more market power. Potential entrepreneurs, featured by moral hazard, turn out to be the ones with riskiest projects. Under regulatory hypothesis, a higher risk level forces individual banks to increase their capital level to pursue the riskiest investments (Buser, Chen, & Kane, 1981).

3.4 Globalisation Variables

To investigate the impacts of globalisation on profitability of the banking system in Vietnam, this study employs six specific independent variables including *actual flows* (AF), *restrictions* (RI), *personal contacts* (PC), *information flows* (IF), *cultural proximity* (CP) and *political globalisation* (PI) to represent three dimensions of globalisation including *economic globalisation*, *social globalisation* and *political globalisation*. They are retrieved from the 2010 KOF Index of globalisation (Dreher, 2006; Dreher, Gaston, & Martens, 2008). All the indices are calculated based on a 100-point scale. The specific indices and component weights are presented in Appendix 1.

4. Results and Discussion

4.1 Descriptive Statistics

This study uses an unbalanced dataset of 16 commercial banks in Vietnam from 2007 to 2014 with 117 observations in total. Data on profitability measure and characteristics of banks is extracted from Bankscope. Table 2 presents the descriptive statistics of the variables used in this study.

Figure 1 expresses fluctuations of profitability and variables of bank characteristics, including their maximum, minimum and mean values for 2007-2014. Along with the downward trend of bank profitability, the other internal indicators performed really differently over the period of time. In addition, it can be shown from Figure 2 that the economic growth and concentration level of the banking industry have increased over the period whereas inflation and the banking sector's risk to default tended to decrease. Globalisation variables have also changed in different ways.

Prior to estimating the regressions, multicollinearity is checked from the correlation coefficient matrix presented in Table 3. The matrix shows that, in most cases, correlations between the independent variables are not strong, suggesting that multicollinearity problem is not severe. Multicollinearity issue may only occur between six pairs of variables, namely LTA and LDEPO, LGDP and Z_SCORE, LGDP and RI, CR3 and RI, CR3 and PC, and Z_SCORE and RI, with the correlation coefficients ranging from approximately 85 percent to 97 percent. However, this problem can be safely ignored since the regression model chosen is REM.

4.2. Regression Analysis

The relationships between dependent variable, ROAA, and the group of independent variables are explored via Pooled OLS, Fixed Effects model (FEM) and Random Effects model (REM) in turn. It is noteworthy that seven separate models are regressed in each case, without and with six globalisation variables respectively. After conducting regression for both Pooled OLS and FEM, redundant fixed effects test is applied where FEM is identified to be more appropriate than Pooled OLS. In the next step, we employ the robust Hausman specification test and determine that REM, rather than FEM, should be the most appropriate model. It is important to emphasise that the robust Hausman specification test is based on bootstrap and does not require one of the two estimators to be fully efficient under the null hypothesis, which strictly needs following in the traditional Hausman test. The robust Hausman test results based on 400 bootstrap repetitions for all models with and without globalisation variables are

Table 2. Descriptive statistics of variables

Variables	Mean	Median	Maximum	Minimum	Standard deviation
ROAA	1.227	1.076	6.403	-0.469	0.906
LLP_TL	1.032	0.843	3.064	-0.209	0.683
EQASS	13.862	9.040	94.290	4.130	15.815
NIE_TA	1.987	1.802	4.552	0.353	0.892
NII_TA	0.968	0.805	4.662	-0.533	0.743
LDEPO	10.881	11.139	13.435	3.029	1.772
LTA	11.156	11.324	13.546	6.981	1.496
LGDP	14.627	14.645	14.807	14.415	0.123
INF	10.318	8.862	23.116	4.086	5.896
CR3	57.001	40.606	99.998	36.693	25.566
Z_SCORE	6.913	6.836	8.709	5.867	0.779
AF	77.459	77.212	81.708	73.547	2.291
RI	43.588	41.603	50.746	36.711	4.910
PC	17.301	17.460	17.925	16.425	0.557
IF	67.328	66.963	74.742	62.818	4.050
CP	1.824	1.556	3.192	1.309	0.646
PI	55.703	52.956	71.126	52.347	6.238

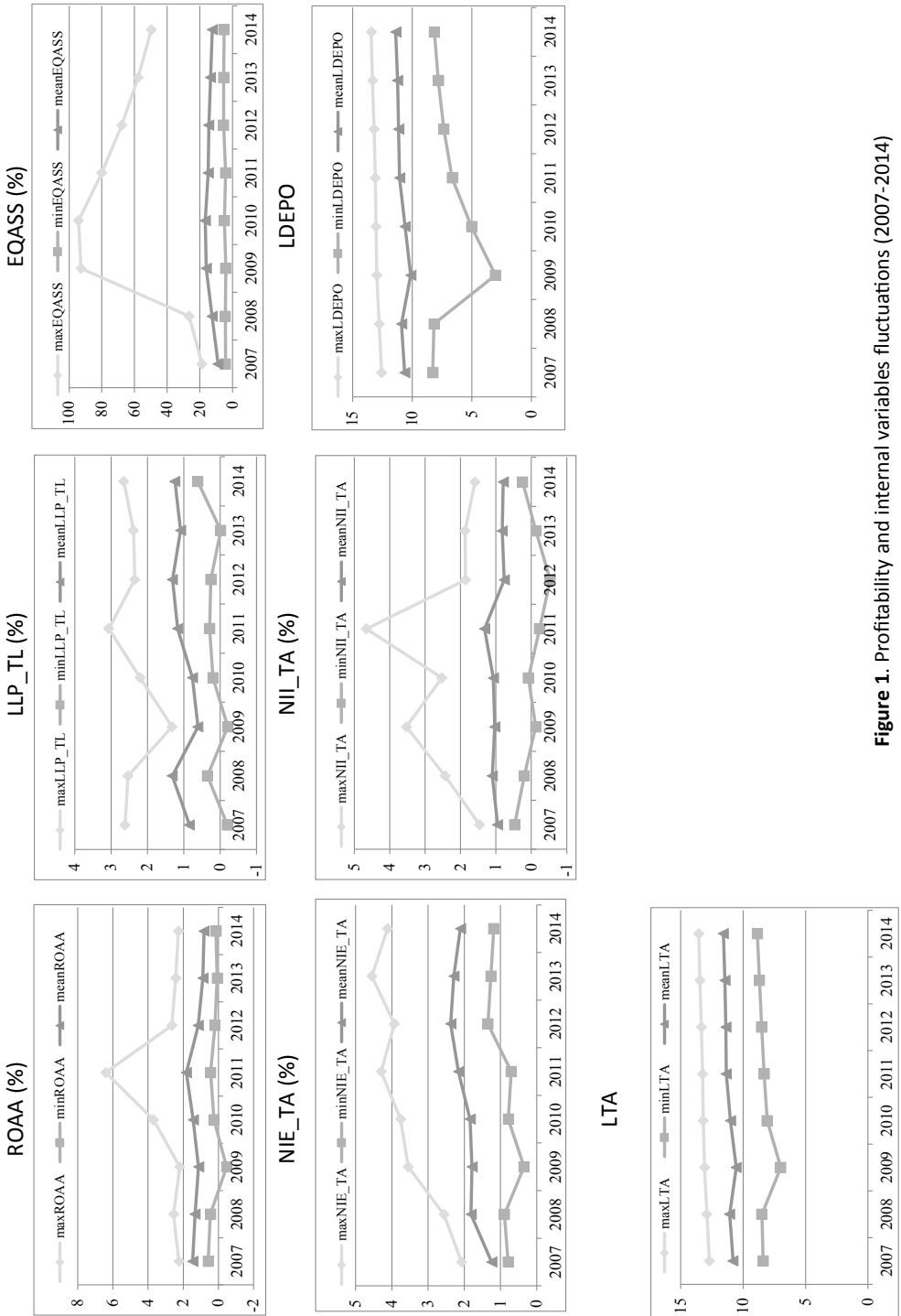


Figure 1. Profitability and internal variables fluctuations (2007-2014)

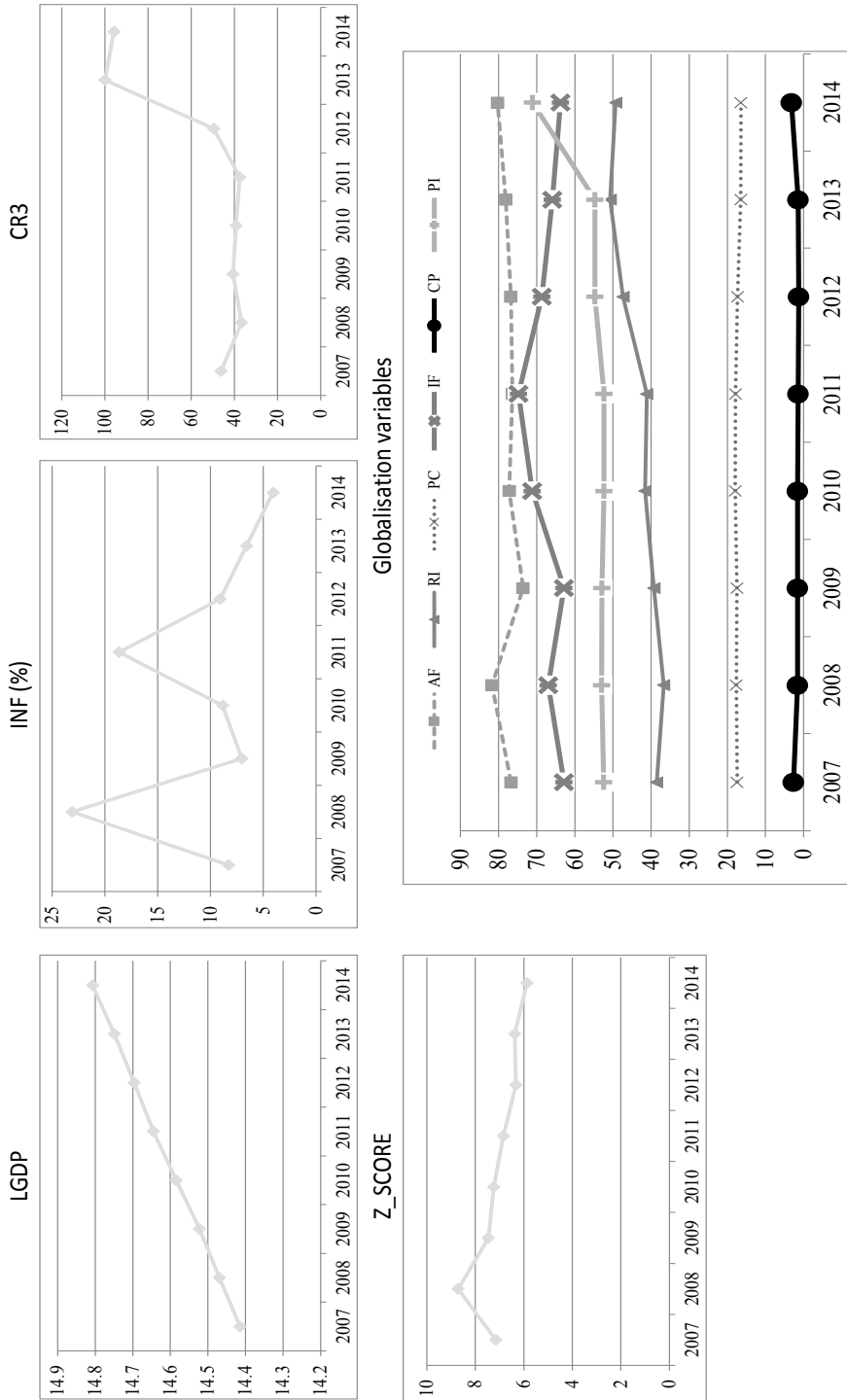


Figure 2. Trends of macro and globalisation variables (2007-2014)

Table 3. Pearson correlation coefficients

	ROAA	LLP_TL	EQASS	NIE_TA	NII_TA	LDEPO	LTA	LGDP	INF	CR3	Z_SCORE
ROAA	1										
LLP_TL	-0.239***	1									
EQASS	0.353***	-0.119	1								
NIE_TA	-0.011	0.113	0.205**	1							
NII_TA	0.584***	0.120	0.113	0.444***	1						
LDEPO	-0.302***	0.246***	-0.799***	-0.210**	-0.200**	1					
LTA	-0.314***	0.260***	-0.665***	-0.220**	-0.250***	0.972***	1				
LGDP	-0.171*	0.210***	0.024	0.301***	-0.103	0.187**	0.205**	1			
INF	0.222**	0.096	-0.014	-0.032	0.145	-0.020	-0.031	-0.422***	1		
CR3	-0.270***	0.130	-0.039	0.156*	-0.156*	0.155*	0.152	0.765***	-0.588***	1	
Z_SCORE	0.127	-0.144	-0.007	-0.218**	0.105	-0.162*	-0.176*	-0.852***	0.657**	-0.689***	1
AF	-0.118	0.229**	-0.079	0.035	-0.087	0.135	0.115	0.279***	0.235**	0.419***	0.009
RI	-0.224**	0.182**	0.003	0.268***	-0.159*	0.179*	0.189**	0.925***	-0.594***	0.863***	-0.869***
PC	0.300***	-0.128	0.052	-0.134	0.181*	-0.137	-0.129	-0.687***	0.616**	-0.964***	0.649***
IF	0.258***	0.094	0.065	0.130	0.153	0.047	0.068	0.098	0.574***	-0.416***	0.034
CP	-0.121	0.026	-0.078	-0.118	-0.076	0.056	0.041	0.179*	-0.440**	0.442**	-0.348***
PI	-0.214**	0.150	-0.038	0.091	-0.122	0.131	0.130	0.662***	-0.470**	0.689***	-0.604***

Note: ***, **, * are significant at 1%, 5% and 10% respectively.

presented in Appendix 2. In addition, the Lagrange multiplier test is performed to specify the potential individual effects. The final results from these tests, once again, support our choice of REM. However, to save on space, this section only focuses on the final regression results by REM adjusted with cluster-standard errors to avoid specifying the nature of heteroskedasticity and autocorrelation. Regression results of all the models are summarised in Table 4.

Values of R-square for all regression models are greater than 73 percent. It reveals that the models are of good fit where at least 73 percent of the variations of ROAA can be explained by the independent variables. The empirical findings also suggest that all the explanatory variables have the expected signs and, in most of the cases, are significantly different from zero.

4.2.1 Bank Characteristics

As can be seen, the coefficients of LLP_TL are significantly and negatively correlated to ROAA in all models, suggesting that banks with higher credit risk tend to exhibit lower efficiency levels. These empirical findings clearly indicate that commercial banks in Vietnam should focus more on credit risk management, which has been proven to be increasingly problematic especially in recent years. The greater exposure to high-risk loans, the higher the accumulation of unpaid loans and reserves created for writing off these assets and hence the lower profitability would be. Immense help towards smoothing these anomalies could be provided by improving the transparency in the banking sector, which in turn assist banks to evaluate credit risk more effectively and avoid problems associated with hazardous exposure. Therefore, it is necessary for banks to enhance their monitoring, including forecasting future risk well in order to ensure greater earnings. Besides, the central bank can support the banking system with specific standards for loan loss provision levels upon which they are able to adjust their provisions for loan losses.

Referring to the impact of capitalisation, EQASS is positively related to ROAA and statistically significant in all regression models. During this period, Vietnamese domestic commercial banks were restructured to fresh their capital and minimise bad debts. The results reveal that they were successful along with achieving their optimal capital ratios. This means that well-capitalised banks faced lower expected bankruptcy costs, which in turn reduced their costs of funding and increased their profitability during the period 2007-2014.

Concerning the effects of overhead expenses, operating expenses measured by NIE_TA consistently exhibit a negative relationship with bank profitability. Based on the “bad management” hypothesis, the banking system in Vietnam was shown to have a low efficiency level – a signal of poor senior management practices related to input-usage and day-to-day operations. Therefore, efficient cost management becomes a prerequisite to improve the efficiency of this sector.

It can also be observed from Table 4 that the coefficients of NII_TA are significantly positive in all the models, indicating that a higher proportion of banks’ income was derived from non-interest sources. Banks’ non-interest income mainly results from service and penalty charges, asset sales and property leasing. This positive relationship

Table 4. Random effects regression results with cluster-standard errors

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Constant	22.683***	22.562***	31.230***	22.221***	24.158***	24.553***	21.373***
<i>Bank characteristics</i>							
LLP_TL	-0.427***	-0.435***	-0.437***	-0.426***	-0.424***	-0.426***	-0.425***
EQASS	0.059***	0.058***	0.057***	0.059***	0.059***	0.058***	0.058***
NIE_TA	-0.312***	-0.309***	-0.335***	-0.312***	-0.311***	-0.319***	-0.318***
NII_TA	0.800***	0.804***	0.822***	0.798***	0.797***	0.803***	0.801***
LDEPO	1.148***	1.129***	1.106***	1.150***	1.150***	1.146***	1.147***
LTA	-0.973***	-0.953***	-0.939***	-0.976***	-0.978***	-0.974***	-0.976***
<i>Macroeconomic factors</i>							
LGDP	-1.426***	-1.497***	-2.128***	-1.452***	-1.560***	-1.541***	-1.320***
INF	0.041***	0.037***	0.044***	0.040***	0.038***	0.041***	0.040***
CR3	-0.003***	-0.005***	-0.006***	-0.002	-0.003	-0.003***	-0.003***
Z_SCORE	-0.433***	-0.457***	-0.396***	-0.433***	-0.421***	-0.449***	-0.430***
<i>Globalisation</i>							
AF		0.018***					
RI			0.039***				
PC				0.047			
IF					0.006		
CP						-0.033*	
PI							-0.004**
R-square	0.736	0.737	0.763	0.736	0.736	0.736	0.736
F-statistic	29.548	26.773	25.117	26.620	26.646	26.675	26.669
Prob (F-statistic)	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Durbin-Watson stat	1.001	1.008	1.176	0.999	0.998	0.998	0.998

Note: ***, **, * are significant at 1%, 5% and 10% respectively.

indicates that more income can be generated when banks are engaged in a number of business activities. The reason is that banks with more diversified activities are likely to reduce their costs due to economies of scope.

The impact of network embeddedness (LDEPO) on bank profitability is positive, demonstrating that large banks are relatively more managerially efficient. Large banks with extensive branch networks across the nation may have an advantage over their smaller counterparts as they attract more deposits and loan transactions, command larger interest rate spreads, and subsequently achieve a higher level of profitability.

The relationship between LTA, a proxy of bank size, and ROAA is reverse. It means that when bank size increases, the bank is less likely to earn more. Larger banks are often claimed to have an advantage in accessing additional financing sources and more likely to survive than smaller ones. However, this empirical finding exposes such a false belief due to the ignoring of potential liquidity problems and threats that huge entities may face.

4.2.2 Macroeconomic Factors

Firstly, the coefficients of LGDP are negative and statistically significant at 1 percent level. Effects of macroeconomic variables on profit naturally originate from the sensitivity of the banking sector against changes in the economy. Intuitively, an increase in real GDP is expected to promote bank profitability. In other words, bad economic conditions might worsen the quality of loan portfolio, generate credit losses and eventually reduce bank profits. In this situation, however, a negative relation between economic growth and ROAA is probably the result of severe competition between banks for more market share during recession.

This study also suggests that inflation rate (INF) is positively related to bank profitability. It implies that, during the investigated period, the fluctuations of inflation rates were well anticipated by the banks. This turns out to give them an opportunity to adjust interest rates and consequently earn higher profits.

Regarding the impact of concentration towards the banking sector, it can be observed that the coefficients of CR3 enter most of the regression models with a negative and statistically significant sign. The fact is that lower concentration may lead to more competitive practices of banks, each of which possesses less market power and tries to achieve greater efficiency. A higher level of concentration leads to greater market power or lesser competition, and hence a lower efficiency level. In a nutshell, reducing concentration in the banking sector in Vietnam will force bank profitability. This finding strongly supports the SCP hypothesis, predicting that increasing market power yields monopoly, higher product market concentration, lower competition and lower performance.

Furthermore, ROAA has a statistically negative relationship with Z-SCORE, indicating that increasing bank soundness accompanies decreasing profitability. During the past few years, the State Bank of Vietnam has drawn a strategy in compliance with Basel II to develop a system of credit institutions as per international standards and practices. Basel II demands more capital requirements as well as more restrictions on banks' involvement in riskier areas. Therefore, the negative effect may result from the increasing cost of raising capital experienced by most commercial banks in this period, which are required to increase their charter capital to reach the minimum level (VND3,000 billion). Higher operating cost in turn reduces the profitability of banks. However, it is noticed that Z-SCORE is not a perfect measure of bank probability of default (De Nicoló, 2000). Being a single period measure of risk, this index cannot capture a sequence of negative realisation. Moreover, the mean and standard deviation are not enough to approximate the negative tail of return distribution.

4.2.3 Globalisation Variables

Columns 2 and 3 of Table 4 summarise regression results for *actual flow* (AF) and *restrictions* (RI), two different measures of *economic globalisation*. *Actual flow index* is calculated based on trade, foreign direct investment stock, portfolio investment and income payments to foreign nationals. Increasing AF, indicating more transnational trading volume and investment activities between Vietnam and its foreign partners,

is significantly associated with higher bank profitability. *Restrictions index* reflects the mitigated tariff and non-tariff barriers exerted on international trade and capital account. Higher RI, implying less intensified restrictions on trade and capital account, is accompanied with greater profitability of banks. Normally, domestic financial institutions in developing countries including Vietnam are considered rather weak and can hardly compete in a globalised environment where capital account is open to liberalisation and foreign ownership in the financial services sector is encouraged. In other words, limiting access of citizens to foreign capital markets or raising restrictions on foreign access to domestic capital markets can work as a protection for the domestic financial sector. However, it is interesting to consider the reversed trend in Vietnam when capital account liberalisation exerts a positive effect on bank profitability. All in all, the econometric evidence calls for an emphasis on increasing cross-border economic integration, trade and financial capital.

To address the impact of *social globalisation* on bank profitability, three measures of social globalisation are introduced in models 4, 5 and 6, including *personal contacts* (PC), *information flows* (IF), and *cultural proximity* (CP). While CP has a negative and significant influence on the profitability of banks, the other two variables show no significant effects. In fact, it is hard to clearly identify the changes in bank performance from social globalisation. Western culture has widely spread and extremely impacted on all aspects of life in Vietnam, including economic performance. It is noticeable that there has been an increasing participation of foreigners and Vietnamese labour trained from abroad in the banking industry. They are working together in management positions in foreign banks while domestic commercial banks also have more strategic shareholders and foreign executives. It is the increasing corporate culture and their professional work style that strongly influence the performance of commercial banks. The marketing views, credit growth policies, risk management policies and customer engagement policies of these executives may conflict with local managers, thereby affecting the development strategy and impacting negatively on bank performance.

Lastly, it can be observed from model 7 that *political globalisation* (PI) is significantly and negatively related to bank performance. After joining the WTO and signing the free bilateral and multilateral trade agreements, the Vietnamese government has launched a series of policies and created a legal corridor for international financial institutions and foreign investors to enter the banking sector. The State Bank of Vietnam granted licences to five foreign banks to operate as wholly foreign-owned banks in 2006. These banks usually have only two branches located in Hanoi and Ho Chi Minh City, which are the most competitive places in the banking market. Foreign banks must invest heavily in marketing to expand their market share. The increasing competitive pressures from foreign rivals resulted in a lot of difficulties for domestic banks. Domestic banks have made great efforts to adopt international standards such as the Basel capital framework that is considered to enhance governance and risk hedging. Moreover, domestic banks must take quick responses to banking system restructuring, along with recapturing their customers through compelling services that best meet customer needs with the adoption of updated technology and suitable reform policies. As a result, operating expenses increased rapidly and had a negative effect on the efficiency of banks in Vietnam during this period.

5. Conclusion and Recommendations

By using an unbalanced panel dataset, this study provides empirical evidence regarding the effects of globalisation on the profitability of the banking sector in Vietnam from 2007-2014. We find significantly negative relationships between ROAA (return on average assets) and internal determinants proxied by LLP_TL (loan loss provision/total loans), NIE_TA (non-interest expense/total assets) and LTA (natural logarithm of total assets). In contrast, the relationships between profitability and internal variables proxied by EQASS (equity/total assets), NII_TA (non-interest income/total assets), LDEPO (natural logarithm of total deposits) are positive and significant. With regard to the impacts of external factors, LGDP (natural logarithm of gross domestic product), CR3 (the three largest banks asset concentration ratio), and Z-SCORE (Z-index to measure banking sector's risk to default) affect profitability negatively. On the contrary, INF (the rate of inflation) is shown to have a positive effect. Based on these findings, banks are recommended to enhance their credit risk management, diversify their products and services beyond more conventional activities, expand their network embeddedness along with improving management practices to reduce operating expenses, and forecast macroeconomic fluctuations well in order to achieve a greater efficiency level. However, it is necessary to emphasise that the impact from LGDP towards banking performance may be inconsistent since LGDP inherently is not a good proxy to control economic cyclical changes. This is due to a small time dimension of the dataset. Hence, it would be inappropriate to give a clear-cut conclusion on the relationship between bank profitability and business cycle.

Regarding globalisation variables, AF (the actual flow index) and RI (the restriction index) have significant and positive effects on bank profitability, while CP (the cultural index) and PI (the political globalisation index) shows significant and negative effects. This indicates that higher profitability was a result of wider market coverage of banks in the country, both locally and internationally. In other words, globalisation greatly improves bank performance in Vietnam. The study recommends that a more open environment for global competitiveness should be enabled for the banking system to attract more foreign investors. A more open environment, in this sense, means fewer barriers on trade, FDI and portfolio investment. More global competitiveness will enhance banks' ability to deliver higher-quality services to customers at a more competitive price, and hence obtain a higher profitability level. However, policy makers and the State Bank of Vietnam should promulgate supportive policies for banks to gradually improve their competitiveness and governance along with applying international standards. Perhaps the commercial banks should avoid over-competition for short-term goals that have negative impacts on long-term growth. Corporate governance with the participation of foreign experts also needs adjusting to suit Vietnamese culture, so that policies will be consistent and efficient when implemented.

To have a better understanding of banking performance in Vietnam, further research can take more internal variables into account such as liquidity rate and foreign ownership, which are absent from this paper. As the time period lengthens, this study can also be extended using more advanced methodologies to check the results'

robustness as well as modifying GDP series to be a more consistent proxy of economic cyclical changes.

References

- Aaker, D.A., & Jacobson, R. (1987). The role of risk in explaining differences in profitability. *The Academy of Management Journal*, 30(2), 277-296. doi: 10.2307/256274
- Andrieş, A.M., & Căpraru, B. (2012). Impact of European integration on banks' efficiency. *Procedia – Social and Behavioral Sciences*, 58(October), 587-595. doi: 10.1016/j.sbspro.2012.09.1036
- Athanasoglou, P.P., Brissimis, S.N., & Delis, M.D. (2008). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. *Journal of International Financial Markets, Institutions & Money*, 18(2), 121-136. doi: 10.1016/j.intfin.2006.07.001
- Bankscope. (2017). Available from Bureau van Dijk databases. Retrieved from <https://www.bvdinfo.com/en-apac/our-products/company-information/international-products/orbis-banks>
- Berger, A.N. (1995). The profit-structure relationship in banking – Tests of market-power and efficient-structure hypotheses. *Journal of Money, Credit and Banking*, 27(2), 404-431. doi: 10.2307/2077876
- Berger, A.N., Hasan, I., & Zhou, M. (2010). The effects of focus versus diversification on bank performance: Evidence from Chinese banks. *Journal of Banking and Finance*, 34(7), 1417-1435. doi: 10.1016/j.jbankfin.2010.01.010
- Bourke, P. (1989). Concentration and other determinants of bank profitability in Europe, North America and Australia. *Journal of Banking & Finance*, 13(1), 65-79. [https://doi.org/10.1016/0378-4266\(89\)90020-4](https://doi.org/10.1016/0378-4266(89)90020-4)
- Boyd, J.H., & De Nicoló, G. (2005). The theory of bank risk taking and competition revisited. *The Journal of Finance*, 60(3), 1329-1343. <https://doi.org/10.1111/j.1540-6261.2005.00763.x>
- Buser, S.A., Chen, A.H., & Kane, E.J. (1981). Federal deposit insurance, regulatory policy, and optimal bank capital. *The Journal of Finance*, 36(1), 51-60. doi: 10.2307/2327463
- Claessens, S., & Van Horen, N. (2012). Being a foreigner among domestic banks: Asset or liability? *Journal of Banking & Finance*, 36(5), 1276-1290. <https://doi.org/10.1016/j.jbankfin.2011.11.020>
- Chappell, W.F., & Cottle, R.L. (1985). Sources of concentration-related profits. *Southern Economic Journal*, 51(4), 1031-1037. doi: 10.2307/1058375
- Chortareas, G.E., Girardone, C., & Ventouri, A. (2009). Efficiency and productivity of Greek banks in the EMU era. *Applied Financial Economics*, 19(16), 1317-1328. doi: 10.1080/09603100802599506
- De Nicoló, G. (2000). *Size, charter value, and risk in banking: An international perspective* (FRB International Finance Discussion Paper No. 689). Washington DC: Federal Reserve Board. <http://dx.doi.org/10.2139/ssrn.255465>.
- De Nicoló, G., Bartholomew, P., Zaman, J., & Zephirin, M. (2004). Bank consolidation, internationalization, and conglomeration: Trends and implications for financial risk. *Financial Markets, Institutions & Instruments*, 13(4), 173-217. doi: 10.1111/j.0963-8008.2004.00076.x
- Dreher, A. (2006). Does globalization affect growth? Evidence from a new index of globalization. *Applied Economics*, 38(10), 1091-1110. <https://doi.org/10.1080/00036840500392078>
- Dreher, A., Gaston, N., & Martens, P. (2008). *Measuring globalisation: Gauging its consequences*. New York: Springer-Verlag. doi: 10.1007/978-0-387-74069-0
- Fischer, S. (2003). Globalization and its challenges. *The American Economic Review*, 93(2), 1-30. doi: 10.1257/000282803321946750
- Gardener, E., Molyneux, P., & Nguyen-Linh, H. (2011). Determinants of efficiency in South East Asian banking. *The Service Industries Journal*, 31(16), 2693-2719. doi: 10.1080/02642069.2010.512659

- Goddard, J.A., Molyneux, P., & Wilson, J.O. (2004). The profitability of European banks: A cross-sectional and dynamic panel analysis. *The Manchester School*, 72(3), 363-381.
- Hadrliche, M. (2015). Banks performance determinants: Comparative analysis between conventional and Islamic banks from GCC countries. *International Journal of Economics and Finance*, 7(9), 169-177. doi: 10.5539/ijef.v7n9p169
- Hassan, M.K., & Bashir, A.-H.M. (2003). *Determinants of Islamic banking profitability*. Paper presented at the 10th ERF annual conference, Morocco. Retrieved from https://www.kantakji.com/media/3016/kabir_bashir.pdf
- Ho, T.S.Y., & Saunders, A. (1981). The determinants of bank interest margins: Theory and empirical evidence. *The Journal of Financial and Quantitative Analysis*, 16(4), 581-600. doi: 10.2307/2330377
- International Financial Statistics (IFS). (2017). Available from International Monetary Fund. Retrieved from <http://www.imf.org/en/Data>
- Klein, M.A. (1971). A theory of the banking firm. *Journal of Money, Credit and Banking*, 3(2), 205-218. doi: 10.2307/1991279
- Lee, C.-C., Yang, S.-J., & Chang, C.-H. (2014). Non-interest income, profitability, and risk in banking industry: A cross-country analysis. *The North American Journal of Economics and Finance*, 27(January), 48-67. doi: 10.1016/j.najef.2013.11.002
- Lim, G.H., & Randhawa, D.S. (2005). Competition, liberalization and efficiency: Evidence from a two-stage banking model on banks in Hong Kong and Singapore. *Managerial Finance*, 31(1), 52-77. <https://doi.org/10.1108/03074350510769479>
- McShane, R.W., & Sharpe, I.G. (1985). A time series/cross section analysis of the determinants of Australian trading bank loan/deposit interest margins: 1962-1981. *Journal of Banking and Finance*, 9(1), 115-136. doi: 10.1016/0378-4266(85)90065-2
- Molyneux, P., & Thornton, J. (1992). Determinants of European bank profitability: A note. *Journal of Banking & Finance*, 16(6), 1173-1178. doi: 10.1016/0378-4266(92)90065-8
- Nahm, D., & Vu, H. (2013). Profit efficiency and productivity of Vietnamese banks: A new index approach. *Journal of Applied Finance and Banking*, 3(1), 45-65.
- Ngo, D.-T. (2012). Measuring the performance of the banking system: Case of Vietnam (1990-2010). *Journal of Applied Finance and Banking*, 2(2), 289-312.
- Osamor, I.P., Akinlabi, H., & Osamor, V.C. (2013). An empirical analysis of the impact of globalisation on performance of Nigerian commercial banks in post-consolidation period. *European Journal of Business and Management*, 5(5), 37-45.
- Pasiouras, F., & Kosmidou, K. (2007). Factors influencing the profitability of domestic and foreign commercial banks in the European Union. *Research in International Business and Finance*, 21(2), 222-237. doi: 10.1016/j.ribaf.2006.03.007
- Peltzman, S. (1977). The gains and losses from industrial concentration. *The Journal of Law and Economics*, 20(2), 229-263. doi: 10.1086/466902
- Sufian, F., & Habibullah, M.S. (2010). Does economic freedom fosters banks' performance? Panel evidence from Malaysia. *Journal of Contemporary Accounting & Economics*, 6(2), 77-91. <https://doi.org/10.1016/j.jcae.2010.09.003>
- Sufian, F., & Habibullah, M.S. (2012). Globalizations and bank performance in China. *Research in International Business and Finance*, 26(2), 221-239. <https://doi.org/10.1016/j.ribaf.2011.12.005>
- Tsionas, E.G., Lolos, S.E.G., & Christopoulos, D.K. (2003). The performance of the Greek banking system in view of the EMU: Results from a non-parametric approach. *Economic Modelling*, 20(3), 571-592. doi: 10.1016/S0264-9993(01)00101-8
- Tregenna, F. (2009). The fat years: The structure and profitability of the US banking sector in the pre-crisis period. *Cambridge Journal of Economics*, 33(4), 609-632. doi: 10.1093/cje/bep025

- Trivedi, S.R. (2015). Banking innovations and new income streams: Impact on banks' performance. *Vikalpa: The Journal for Decision Makers*, 40(1), 28-41. doi: 10.1177/0256090915573616
- Vu, H., & Nahm, D. (2013). The determinants of profit efficiency of banks in Vietnam. *Journal of the Asia Pacific Economy*, 18(4), 615-631. doi: 10.1080/13547860.2013.803847
- Vu, H., & Turnell, S. (2010). Cost efficiency of the banking sector in Vietnam: A Bayesian stochastic frontier approach with regularity constraints. *Asian Economic Journal*, 24(2), 115-139. doi: 10.1111/j.1467-8381.2010.02035.x
- Vu, H., & Turnell, S. (2012). A parametric measure of productivity change from hyperbolic distance function: Application to the Vietnamese banking industry. *Journal of Applied Finance and Banking*, 2(5), 1-4.
- World Development Indicators. (2017). Available from the World Bank. Retrieved from <http://www.worldbank.org/>

Appendix 1. Indices and component weights of globalisation variables

Indices and variables	Weights
<i>A Economic globalisation</i>	36%
i) Actual flows	50%
Trade (percent of GDP)	21%
Foreign direct investment, stocks (percent of GDP)	28%
Portfolio investment (percent of GDP)	24%
Income payments to foreign nationals (percent of GDP)	27%
ii) Restrictions	50%
Hidden import barriers	22%
Mean tariff rate	28%
Taxes on international trade (percent of current revenue)	26%
Capital account restrictions	24%
<i>B Social globalisation</i>	37%
i) Data on personal contact	33%
Telephone traffic	25%
Transfers (percent of GDP)	2%
International tourism	26%
Foreign population (percent of total population)	21%
International letters (per capita)	25%
ii) Data on information flows	36%
Internet users (per 1000 people)	37%
Television (per 1000 people)	39%
Trade in newspapers (percent of GDP)	25%
iii) Data on cultural proximity	32%
Number of McDonald's restaurants (per capita)	47%
Number of Ikea (per capita)	47%
Trade in books (percent of GDP)	6%
<i>C Political globalisation</i>	[27%]
Embassies in country	(25%)
Membership in international organisations	(27%)
Participation in U.N. Security Council missions	(22%)
International treaties	(26%)

Source: Dreher (2006).

Appendix 2. Robust Hausman specification test based on 400 bootstrap repetitions

The test statistic is of the form

$$H = (b1 - b2)' [V(b1 - b2)]^{-1} (b1 - b2) \sim \chi_k^2$$

where $b1$ and $b2$ are $(k \times 1)$ vectors of estimated coefficients from models robust fixed effects and random effects, respectively, and $V(b1 - b2)$ is the covariance matrix of $(b1 - b2)$ computed from the bootstrapped joint distribution.

Null hypothesis: Difference in coefficients is not systematic (REM is preferred)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Chi-Sq (10)	1.63	1.55	1.85	1.61	1.97	1.75	1.48
Degrees of freedom	10	11	11	11	11	11	11
p-value	0.9985	0.9996	0.9990	0.9995	0.9986	0.9992	0.9996