

# *Vietnam's Financial Liberalization and Its Correlative Mechanism with Economic Growth*

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**Abstract**—To analyze and measure the degree of financial liberalization in Vietnam in the past 20 years, this paper quantifies the Vietnam's financial liberalization policies, uses the principal component analysis to measure its financial liberalization index. The regression result reflects a long-term and stable relationship between financial liberalization index and economic growth.

**Keywords**—*financial liberalization index; economic growth; principal component analysis*

## I. INTRODUCTION

Under the background of multi-polarization and economic globalization, Vietnam has gradually strengthened the economic growth and trade cooperation, accelerated financial reforms and innovations, and expanded the financial openness to the world. The financial services has been more effective. Now, China's "One Belt and One Road" initiative is receiving widespread attention and recognition from the international community. Vietnam will join in China's "two corridors and one ring" to promote cooperation between the two countries. In the past 10 years, China's investment in Vietnam has increased by four times. In 2015, China-Vietnam bilateral trade volume reached \$95.819 billion, and the economic ties between China and Vietnam have become increasingly close.

In 2007, Vietnam joined the WTO and made a series of promises. As an economic pillar, finance has become the core of the modern economy and played a decisive role in the process of modernization. The financial liberalization index can reflect the current openness and the future direction of Vietnam's financial industry.

The implementation of financial liberalization policies in developing countries is the core content of the financial development theories proposed by McKinnon et al. in the 1970s. The greatest contribution of the theory of financial deepening proposed by McKinnon and Shaw [1] is to advocate the reduction of excessive government finances intervention. Huang Jinlao [2] used eight simplified indicators to measure the degree of financial marketization in China, and graded the

corresponding indicators. Each level was put a weight, and the financial liberalization degree in each country was calculated. Yi Wenfei and Ding Dan, extracted eight indexes that represent China's financial liberalization based on the theory of Huang Jinlao [3]. When Abiad et al. constructed the financial reform index and measured financial liberalization by several dimensions. Based on the institutional changes of China's financial system, the financial index was finally measured by seven indicators: 1) credit control and reserve requirements; 2) interest rate control; 3) barriers to entry; 4) state-owned bank; 5) capital account restrictions; 6) bank prudential supervision; 7) securities market reform policy [4]. The dimensions adopted by Abiad, Bandiera, and Huang Jinlao do not differ significantly. That is to say, the division of financial liberalization dimensions is determined in seven aspects.

The impact of financial liberalization on the economy has become an indispensable part of many scholars' studies. Bekaert, Chinn and Ito, and Edwards et al. believe that financial liberalization policies will have different impacts on economic growth, subject to the constraints of economic development stages in various countries. Silke Bumann et al. [5] found that financial liberalization has a positive impact on economic growth, while Abdullahi D. Ahmed [6] found opposite conclusions when he studied the south of sub-Sahara that financial liberalization had a negative impact on the economic growth of these countries.

## II. THE CURRENT FINANCIAL DEVELOPMENT OF VIETNAM

In 1992, Vietnam implemented a series of reforms at the core of finance. In order to establish a diversified financial system, the banking system was adjusted to clarify the leading position of the central bank and supported by specialized banks in industry, agriculture, foreign trade and investment. The exchange rate policy was more flexible. The current financial development in Vietnam lies in banking, securities and insurance.

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### A. Banking

The four state-owned banks in Vietnam dominate the banking industry. In the 1990s, the development of limited private banks was allowed. The banking industry expanded and its strength increased. By the end of 2014, 11 banks in Vietnam were listed as the world's top 1,000 banks. In 2015, the total assets of Vietnam's banking system were 7,300 trillion VND. The capital reached 578 trillion VND, an increase of 16.4% from 2014. The legal funds increased by 5.65% to 4,600 trillion VND. The minimum capital security ratio remains unchanged at 13%.

While the economic reforms implemented in Vietnam have achieved remarkable results, there are also problems in the banking industry. The main problem is the unreasonable interest rates level. It has a negative impact on the lending behavior between state-owned enterprises and state-owned banks. It is not conducive to giving full play to banks' rational allocation of social resources. The inefficiency hinders the further deepening of Vietnam's financial marketization. Because state-owned commercial banks are an indispensable part of the financial system, their assets and loans account for more than 80% of the entire financial system, resulting in a high non-performing loan ratio, further increasing the risk of banks and inhibiting the development of the banking industry. In the future financial development, deepening the property rights reform and improving the efficiency of the banking industry are the priorities in the development of financial liberalization.

### B. Securities Market

Compared with the banking industry, Vietnam's securities industry started relatively late. When it was first established, there were only two listed stocks. In 2016, more than 1,000 companies were listed on the Vietnam Stock Exchange. The total market value was equivalent to 65% of GDP. The total funds raised were as high as 2,000 trillion VND, which accounted for 23% of the total investment in the society. Since then, the Vietnamese securities market has gradually matured. Today, the market has attracted a large number of domestic and foreign investors to actively enter the market. The securities accounts number has increased from 3,000 in 2000 to 1.67 million in October 2016. Among them, overseas investors have opened 18,500 securities accounts in Vietnam. The investors are mainly from Japan, South Korea, Singapore, and the United States. The increase in foreign bank accounts has greatly promoted the introduction of foreign capital. At the same time, it has also helped to develop listed companies into world-renowned brand enterprises and further promote Vietnam's economic image.

The development of the securities market is inseparable from the investors' behavior. At present, the investment market of the Vietnamese funds is not yet mature. Investors are lack of risk awareness. Therefore, strict market access approval has been made necessary and the implementation effect in practice is good. However, due to the effectiveness and marketization of the registration system, the eligibility criteria for promoters have declined. Therefore, in the future, the access of Vietnamese funds should reduce market access for funds [7].

The five-year plan (2016-2020) of Vietnam was formally

launched in 2016. This year is of great significance for Vietnam. It is an important year for Vietnam to integrate into the ASEAN and join the Trans-Pacific Partnership Agreement. The securities market will play an important role.

### C. Insurance Market

The current low level of insurance depth and density in Vietnam's insurance market determines that its development is still in its infancy. In 2013, the insurance depth is lower than the ASEAN average (3.4%) by 2 percentage points, and the insurance density is lower than the ASEAN average (USD 132) of 109 dollars. The lower insurance coverage revealed the weak insurance awareness of the Vietnamese. The economic growth potential of Vietnam makes the lower level of the insurance market not seriously affect the people's living standards. Insurance demand will enter in a period of strong growth as the ageing population growing. During 2015 and 2025, Vietnam's GDP growth rate is expected to remain at 6%.

At present, there are still some problems that need to be solved in the Vietnam insurance market. First, the laws and regulations of Vietnam's domestic insurance are not perfect. Second, the anti-fraud related laws and regulations have not been enacted. Finally yet importantly, there are no specific provisions on the acquisition and closure of insurance companies. For these problems, Vietnam should continue to improve the legal system of the insurance market, establish relevant laws and regulations to ensure the stable operation of the insurance market strengthen risk prevention and avoid unnecessary losses [8].

## III. FINANCIAL LIBERALIZATION INDEX

Financial liberalization is divided into six dimensions. The related liberalization policies are showed at Table 1. Liberalization indicators are dummy variables. Cumulative values are used for the assignment of variables. Values are no longer limited to 0-1. Values are as follows: General events that represent financial liberalization or general policies and regulations are 0.25 or 0.5. The important event is 1, and the major policies and regulations are implemented as 1.5 or 2. Depending on the degree of influence, the value assigned to multiple events or policies is allowed. Events or policies that oppose liberalization are given negative values.

TABLE I. 1993-2015 FINANCIAL LIBERALIZATION POLICY

Index	Liberalization policy
<i>Interest rate control</i> ( $X_1$ )	1993-1995, Minimum deposit rate and maximum loan rate.
	1996-1999, loan interest rate cap. After 1997, the cap was abolished.
	Since 2000, The basic interest rate was introduced. The basic interest rate ceiling is the percentage of the basic interest rate.
	Since 2010, there is no ceiling on lending rates.
	Since 2010, the implementation of the deposit interest rate cap regulation has imposed a ceiling of 5.5% on short-term deposits of 1-6 months and a floating interest rate on longer-term deposit rates.
	2010, maintain 9% of the benchmark interest rate.
	2013, the Vietnam Development Bank funded infrastructure and business development, provided interest-rate support programs.
	2017, loan interest rate was cut by 0.5%.

<i>Credit control</i> ( $X_2$ )	Since 1995, mandatory directional credit has been abolished. Since 2001, the deposit reserve has been less than 10 % (2008). 2007-2010, specifically, non-production sector credit has been controlled.
<i>Barriers to Entry</i> ( $X_3$ )	1997, after the approval of the CI Law, the foreign banks got the full permission to enter. 2006-2010, foreign banks have entered Vietnam. 2007, as Vietnam's WTO entry promises taking effect, 100% foreign-owned banks officially entered Vietnam's banking sector. According to CI law in 2010, the restrictions on MA has gradually been alleviated to achieve national treatment.
<i>Privatization</i> ( $X_4$ )	2004-2010, Vietnam Foreign Trade Bank, Vietnam Industrial and Commercial Bank had been privatized. Since 2005, 1,472 state-owned enterprises have been equalized, transferred, sold, and closed. By the end of 2006, about 1,800 enterprises have retained 100% of state-owned enterprises. They were reduced to 1,500 by the end of 2007. Over the next few years, 100% of state-owned enterprises will be further reduced and limited to the national security sector and large enterprises.
<i>Security Market</i> ( $X_5$ )	1997-1999, foreign participation was allowed with the upper limit (20%). 2000, the stock market was brought into operation. 2007, foreign holdings were up to 30-49 %. 2010, 49% listed and unlisted shares were held by foreigners.
<i>Foreign exchange</i> ( $X_6$ )	2000-2010, the foreign exchange market had been formed. 2001, procedures for opening foreign exchange accounts in authorized foreign exchange banks and registering accounts in national bank branches were enacted. 2005, all remaining payment and transfer foreign exchange limits for current account transactions have been eliminated, and international current account transaction rules that meet the International Monetary Fund's definition have been specified. 2011, Vietnam raised foreign exchange reserve rate. 2014, VND intermediate exchange rate was cut by 1%.

Source: WTO official website <https://www.wto.org/>; Economic and Commercial Counselor's Office of the Chinese Embassy in Vietnam <http://vn.mofcom.gov.cn/>

The subjective allocation of the policies is shown in Table 2

TABLE II. QUANTIZED DATA

Year	$X_1$	$X_2$	$X_3$	$X_4$	$X_5$	$X_6$
1993	0.5	0.25	0.25	0	0	0
1994	0.5	0.25	0.25	0	0	0
1995	0.5	1	0.25	0	0	0
1996	0.75	1	0.25	0	0	0
1997	0.75	1	0.5	0	0.25	0
1998	1	1	0.5	0	0.25	0
1999	1	1	0.5	0	0.5	0
2000	1.5	1	0.5	0	1	1
2001	1.5	1.5	0.5	0	1	1.25
2002	2	1.5	0.5	0	1	1.25
2003	2	1.5	0.5	0	1	1.25
2004	2	1.5	0.5	1	1	1.25
2005	2	1.5	0.5	1	1	1.75
2006	2	1.5	2	1.5	1	1.75
2007	2	2.5	2.25	2	1.5	1.75
2008	2	2	2.5	2	1.5	1.75
2009	2	2.5	2.75	3	1.5	1.75
2010	3.75	2.25	3	3	1.75	1.75
2011	3.75	2.25	3	3	1.75	2
2012	3.75	2.25	3	3	1.75	2
2013	3.75	2.25	3	3	1.75	2

2014	4	2.25	3	3	1.75	2.25
2015	4	2.25	3	3	1.75	2.25

Source of data: Report "Strengthening the Financial System Capacity of Vietnam and Completing the Financial Liberalization Under the GATS Framework" (Table 8)

In order to quantify the financial liberalization degree of Vietnam, it is necessary to process data and perform principal component analysis (PCA). From the correlation matrix (Table 3), it can be seen that there is a high degree of correlation between variables, indicating that the information overlaps, so it is necessary to extract the principal component (PC) as the main explanatory variable for analysis.

The number of PCs is mainly judged by eigenvalues, because the eigenvalues can be used to reflect the influence of the principal component index. The principal component corresponding eigenvalues greater than 1 are the first  $m$  principal components, indicating that the principal components can explain other ingredients. It can be seen from the variance decomposition analysis that the eigenvalue of the first component is greater than 1. The variance explains about 90.5% information, so the first component is analyzed as PC (Table 4).

TABLE III. TABLE 3 CORRELATION MATRIX

	$X_1$	$X_2$	$X_3$	$X_4$	$X_5$	$X_6$
$X_1$	1	0.835	0.867	0.881	0.920	0.886
$X_2$	0.835	1	0.872	0.876	0.929	0.885
$X_3$	0.867	0.872	1	0.975	0.874	0.816
$X_4$	0.881	0.876	0.975	1	0.873	0.836
$X_5$	0.920	0.929	0.874	0.873	1	0.956
$X_6$	0.886	0.885	0.816	0.836	0.956	1

TABLE IV. TOTAL VARIANCE EXPLAINED

Component	Initial Eigenvalue			Extract square and loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.428	90.464	90.464	5.428	90.464	90.464
2	0.279	4.643	95.107	-	-	-
3	0.165	2.758	97.865	-	-	-
4	0.075	1.246	99.112	-	-	-
5	0.036	0.604	99.716	-	-	-
6	0.017	0.284	100.00	-	-	-

TABLE V. COMPONENT MATRIX

Component	composition	
		1
<i>Interest</i>		0.944
<i>Credit control</i>		0.946
<i>Barriers to Entry</i>		0.947
<i>Privatization</i>		0.953
<i>Security Market</i>		0.973
<i>Foreign exchange</i>		0.943

According to the component matrix (Table 5), the principal component loading is divided by the square root of the eigenvalue to derive the coefficient FLI between the principal component and each factor, i.e. financial liberalization. The formula is:

$$FLI = 0.405X_1 + 0.406X_2 + 0.406X_3 + 0.409X_4 + 0.418X_5 + 0.405X_6 \quad (1)$$

Substituting the data in the quantized data table into the above linear combination gives the following table:

TABLE VI. FLI

Year	FLI	Year	FLI	Year	FLI	Year	FLI
1993	0.4055	1999	1.223	2005	3.15775	2011	6.41875
1994	0.4055	2000	2.0395	2006	3.97125	2012	6.41875
1995	0.71	2001	2.34375	2007	4.89225	2013	6.41875
1996	0.81125	2002	2.54625	2008	4.79075	2014	6.62125
1997	1.01725	2003	2.54625	2009	5.50425	2015	6.62125
1998	1.1185	2004	2.95525	2010	6.3175	--	--

#### IV. FINANCIAL LIBERALIZATION INDEX AND ECONOMIC GROWTH

Taking Vietnam's actual GDP from 1993 to 2015 as an explanatory variable, the financial liberalization index FLI is an explanatory variable.

##### A. Processing data and verifying data for stationarity

The logarithmization of the explanatory variable RGDP and the explanatory variable FLI was performed to obtain the LNRGDP sequence and the LNFLI sequence, respectively, and the two time series were tested for stationarity.

According to the test results (Table 7), the actual GDP sequence is an unstable sequence, and t-test thresholds are all greater than the critical values at the levels of 1%, 5%, and 10%. Therefore, the assumption of the unit root cannot be rejected. The sequence is non-stationary. The stationary sequence is obtained after the first-order difference of the original sequence. The t-test threshold is -2.996274, which is less than the critical value at the levels of 1%, 5%, and 10%. There is an assumption that the unit root can be rejected. Therefore, the LNRGDP sequence is first-order single integer. Similarly, we can see that the financial liberalization index LNFLI is a first-order single integer sequence.

TABLE VII. ADF TEST RESULTS (1993-2015)

Variables	LNRGDP	LNFLI	$\Delta$ LNRGDP	$\Delta$ LNFLI
ADF test value	1.8602	-2.579	-9.2963	-4.5697
1% Significant level	-3.8086	-3.7696	-3.8315	-3.788
5% Significant level	-3.0207	-3.0049	-3.03	-3.0124
10% Significant level	-2.6504	-2.6422	-2.6552	-2.6461
stationarity	No	No	Yes	Yes

##### B. Co-integration test

The co-integration test was performed on the two first-order single integer sequences, and it was determined that there was no long-term stable relationship between the two variables. Regressing  $\Delta$ LNRGDP and  $\Delta$ LNFLI to establish the co-integration relationship between real GDP and financial liberalization index from 1993 to 2015, and obtain regression results as follows:

$$LNGDP_T = 4.66 + 0.44LNFLI_T \quad (2)$$

(0.017) (0.030)

$N=23 \quad R^2=0.910$

The residuals of the regression use the stationarity test. The results are shown in Table 8. The Prob is small, and the ADF test value of residual is less than the critical value at each level of significance. Therefore, the assumption that there is a unit root can be rejected, indicating that the residual sequence is stable. It can be verified that there is a long-term stable relationship between LNRGDP and LNFLI.

TABLE VIII. RESIDUAL TEST RESULTS

Variables	ADF test value	Prob	Critical value
resid	-1.788854	0.0705	-2.674290 (1%)
			-1.957204 (5%)
			-1.608175 (10%)
stationary	Yes (Significant level)		

#### V. CONCLUSIONS

This paper uses the data from 1993 to 2015 to measure Vietnam's financial liberalization index and conducts empirical research on economic growth. Combined with the current financial development status in Vietnam, the following conclusions are obtained:

The financial liberalization index in Vietnam shows that Vietnam's financial liberalization has shown a significant upward trend. The financial liberalization index increased from approximately 0.4055 in 1993 to 4.89225 in 2007, an increase of approximately 11 times from 4.797905 in 2008 to 6.62125 in 2015. The growth rate was 38%. Prior to joining the WTO, Vietnam's financial liberalization accelerated, economic growth accelerated, and the overall national strength further improved. This made it possible to join the WTO in 2007. Since then, Vietnam's financial liberalization process has slowed, but it still shows growth. In the study of the linkage mechanism between financial liberalization and economic growth in Vietnam, it shows that the actual GDP represents the economic growth index. There is a co-integration relationship between the financial liberalization index and economic growth, that is, there is a long-term and stable relationship. From the regression equation, it can be seen that the financial liberalization index has changed by 1% as a whole, and the leading role in economic growth has increased by 0.44%. This has reached a level where financial development has had a positive impact on the economy.

Based on the above conclusions, it can be seen that the level of liberalization of Vietnam's financial industry has been increasing and it has gradually integrated into the process of world economic integration. Financial liberalization is beneficial to the development of bilateral trade between China and Vietnam. In 2014, Vietnam joined the Asian Infrastructure Investment Bank and promoted the interconnection between China and Vietnam. In the context of the One Belt and One Road, the bilateral trade level between China and Vietnam will be further strengthened. Vietnam's economic development will be faster.

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