Financial Development, Economic Growth and Volatility

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Abstract: The article mainly investigates the relationships between financial development, economic growth and economic volatility. After introducing the importance of the financial development in economic growth and economic volatility, the article gives a brief literature review about relevant researches. Then the theoretical model is established involving panel model with fixed effect, nonlinear model, endogenous model and logistic model. The empirical results prove that financial development stimulates economic growth, while fails to prove the significance of effect on economic volatility. It verifies the reverse causality between financial development and economic growth, which results the endogeneity issue. Meanwhile, it is found the increasing probability of recession due to financial development. Finally, practical policy recommendations of dynamically adjusting the financial development and some suggestions for further researches are presented.

1. Introduction

Financial development is attached importance to economic circumstances. The interaction between financial development, economic growth and economic volatility is a thesis of both theoretical and practical significance, which has attracted sorts of discussions. The prosperity of financial development in the past decades is significant with the fluctuations between expansion and repression of economic situation over time. Some scholars point out that economic growth cannot be fully explained by the accumulation of physical capital (Jorgenson, 2005). Therefore, it is reasonable to account for the economic growth from the perspective of financial development aggregately or narrowly. Additionally, financial development brings about more frequent fluctuations of economic, involving complex disturbances comparing with economic growth. This research will theoretically and empirically focus on the question that how financial development affect the economic growth and economic volatility. It will test whether financial development has a positive impact on economic growth as well as intensifying economic volatility; and whether the significance of which involves ambiguous differences in advanced and emerging countries during. It also expects whether there is a reverse causality between financial development and economic growth.

Financial development is important in economic growth through making an impact on consumption and investment directly or indirectly. One of the important contributions of financial development is to reduce transaction cost such as information costs involved in evaluating financial assets for investments. Theoretically, financial development brings an efficient market, where prices reflect the information of financial assets, cutting down the information cost. The reduction of transaction cost could facilitate the transaction, investment and capital resources flowing to the most profitable corporates, realizing the efficient resource allocation, which could effectively stimulate the economic growth. In addition, financial market can realize the transformation of monetary funds between surplus and deficit departments. This function plays an important role in economics. Actually, a considerable proportion of saving and investment is unplanned and unintended. The financial development promotes the reduction of this part pf inventory, realizing the balance of savings and investment in the whole society, promoting economic growth. Financial development is actually regarded as an indicator reflecting the economic trend (Levine et al., 2000).

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On the one hand, the financial market has become a barometer of the operation of the national economy. On the other hand, the government, through intervention in the financial market, affects the financial development, affecting the saving, consumption and investment behavior, furtherly affecting business cycle, achieving output effective control of industry, as well as influence on social wealth distribution and social welfare. These are directly reflected in the economic growth.

From the perspective of economic volatility, financial development also plays an important role. In the process of financial deepening, due to the development of financial market and financial intermediary institutions, the influence of international factors on domestic economy is strengthened, thus increasing the fluctuation of domestic economy. Because of this, many countries have experienced "excessive financial development" beyond their optimal economic development level, which has been thought detrimental to the economy of developing countries, particularly. The opposite view exists at the same time. Financial development can also play a role in alleviating the excessive intervention of local governments and thus smoothing the economic fluctuations. Specifically, the higher the level of financial development, the weaker the financial accelerator effect caused by local government intervention. Additionally, financial development benefits the credit market and meets different investment demands, eliminating the mismatches of size, time and cost of raising funds and thus reducing the imbalance of industry or enterprise development. It provides a better market liquidity and abundant vehicles of risk management, which could smooth the economic volatility.

Therefore, it is necessary and significant to explore the relationship between financial development and economic growth and the relationship between financial development and economic volatility generally or specifically from the literature and empirical analysis. The research is motivated to conducted in order to investigate the relationships simultaneously as a test of the previous economic theories, and thus furtherly understanding the significance of financial development to the economy. The following of the article is constructed as: a brief literature review, data demonstration, model establishment, empirical results and conclusion.

2. Literature Review

There are many literatures focus on the relationship between financial development and economic growth and economic volatility. Beck (2000) takes the origin of legal as an instrumental variable to evaluate the relationship between financial development and per capita GDP growth and empirical results lead a strong connection between financial development and long-run economic growth. La Porta et al. (2002) test the relationship between financial development and economic growth through evaluating the financial development by the level public ownership. The research indicates that a higher level of public ownership is related with low level of economic growth. Rewilak (2017) challenges the current studies which claim financial development exacerbates poverty problem and confirms the benefits of financial development on poverty reduction, which could also be regarded as an evidence of economic growth.

It is founded that there is difference in significance between different countries, which therefore requires specific and aimed examination. Santos (2015) examines the relationship between financial development and economic growth for 7 SSA countries. It uses dynamic panel data method and involve bank credit as an instrumental variable and demonstrates an independent relationship between financial development and economic growth in selected countries. While the research conducted by (Greenwood et al., 2013) of cross-country analysis including 45 countries shows a 53% increasing of output with excellent financial practice in a world range. The circumstance in China is analyzed by Zhang et al. (2012), where the relationship between financial development and economic growth is studied from the perspective of city level. With GMM estimators and first difference method, the research concludes a significant positive relationship. Prasad. B (2018) obtains evidence from 16 African and non-African low-income countries from 1995 to 2014 to test the long-run relationship using dynamic OLS vehicles. The results support the positive and significant cross-sectional impact of financial development on economic growth. Studies in EU countries also have been implemented by Vilma and Lina (2014) and the results strongly confirm

the link. However, it should be mentioned that because of the mixture of countries cross EU area, the specific condition for each country has an ambiguous consensus. Actually, just as the fact that conclusion may vary in countries, significance of tests with different lengths of period may also be different. Levine (1997) states that multi-level studies such as individual-level, firm-level and cross-country level have been launched and demonstrate a strong positive relationship between financial development and economic growth, while long-term link involves the evolution of financial system, which requires more theories and researches.

Theories about financial development and economic volatility have different standpoints and empirical tests also show different conclusions due to the various methodologies, specific countries or areas and different periods. McKibbin (2006) states that financial development increases the economic volatility and triggers the financial crisis. Comin and Mulani (2005) establishes an endogenous model to demonstrate the trend of volatility involving R&D as growth factor. The empirical result indicates the diverging trend in firm and general level. Kunieda and Takuma (2008) use dynamic panel model and lead a conclusion of hump-shaped effect on volatility. Specifically, that claim at the beginning of financial development, there is less economic volatility and with the deepening of development the volatility is higher, while as entering a developed stage, the volatility is lowered again. Wang and Wen (2009) then make a unified explanation for impact of financial development. The empirical results present the increasing volatility of firm-level and decreasing in aggregate level by constructing dynamic general-equilibrium model. Arias and Wen (2017) show that financial development leads a lower level of economic volatility and the reduction of volatility is more significant as the increasing of financial development.

Because of the different characteristics of different countries, it is essential to make empirical tests not only in an aggregate way but also from a more particular perspective for a comprehensive and deeper understanding. For instance, many literatures conduct empirical tests, which are specially aimed for some countries. Ibrahim and Alagidede (2017) make an application in sub-Saharan Africa with spectral approach, which concludes that financial development has a nonlinear effect on volatility of business cycle, showing an inhibition of business cycle volatility, while magnifying the fluctuation in the long term. Hazman (2018) establishes a financial development index involving 6 variables to test the relationship between aggregate economic volatility and financial development and trade openness simultaneously in ASEAN 5countries. The empirical results suggest that financial development brings less volatility in these countries except Philippines, which has higher economic volatility.

3. Data Descriptions

Table 1 Descriptive Statistics of Data

Variable	*Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*
GDP Growth	900	3.594957	3.822705	-14.79416	18.31661
Output Volatility	887	0.2735842	0.2017994	0.0149273	0.6275105
Private credit over GDP	889	65.34814	42.35392	5.388793	262.7677
Bank deposit over GDP	887	57.12363	35.45389	3.217819	229.7228
Bank ROE	889	13.04078	16.18762	-275.5243	71.78031
CPI	900	5.976086	35.17753	-4.446039	1037.983
Economy size	900	26.20307	2.061755	16.06858	30.84276
Government expenditure	900	17.37449	4.849021	5.023121	28.42975
Trade openness	900	91.64673	61.30621	18.81639	439.6967
Economic Recession period	900	0.1188889	0.3238377	0	1
Advanced	900	0.48	0.4998776	0	1

The table shows the summarized the results of descriptive statistic for variables in 50 countries from 1997 to 2014. The variable *GDP growth* presents the economic growth, which has a 3.59 mean value with a standard deviation of 3.82. The gap between maximum growth and minimum growth demonstrates a significant value, indicating the difference between countries. *Output volatility* stands for economic volatility, whose mean value is 0.27. *Economic Recession period* is a dummy variable suggesting whether it is a recession period (Recession equals 1). Financial

development is measured by *Private credit over GDP* (%), *Bank deposit over GDP* (%) and *Bank ROE* (before tax %), respectively. *CPI*, *Economy size* (measured as GDP at market prices), *Government expenditure* (measured as general government final consumption expenditure % of GDP) and *Trade openness (measured as % of GDP)* are controlling variables, which may have an impact on dependent variables and therefore are added into the model. *Advanced* means whether the country is a developed country (*Advanced*=1 if it is a developed country). The figures below present the aggregate trend of economic growth, economic volatility and financial development during 1997 to 2014. It could be found that private credit over GDP and bank deposit over GDP both have a growing trend, indicating the prosperity of financial development these years. Bank ROE demonstrates a volatile trend as well as GDP growth. In order to investigate more specific relationship, empirical examinations and analysis are furtherly required.

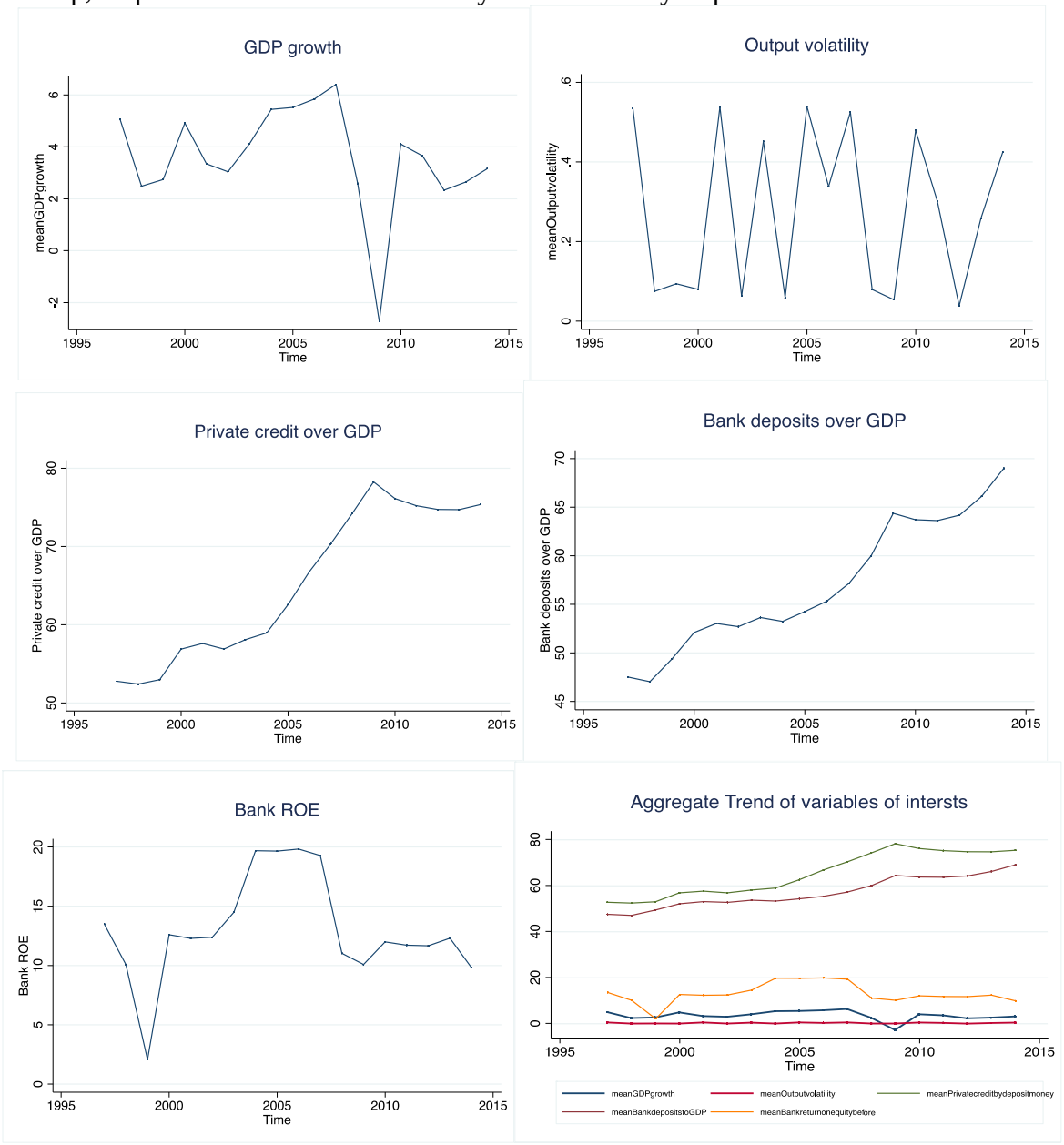

Fig.1 Aggregate Trend of Variables of Interest

4. Empirical Methodology

Generally, we use a panel model to evaluate the relationships of variables with country-fixed effect and time-fixed effect simultaneously, which could be conducted for developing and developed countries, respectively. The basic model is presented as:

(1) $Growth_{it} = \alpha_0 + \beta_1 FIN_{it} + C_{it} + \epsilon_{it}$,

(2) $Volatility_{it} = \alpha_0 + \beta_1 FIN_{it} + C_{it} + \epsilon_{it}$.

Dependent variables are GDP growth, Output volatility, respectively. GDP growth is an indicator of economic growth, which are expressed in annual basis. Output Volatility is measured by volatility of GDP, also in annual basis. Independent variables are indicators of financial development $\mathrm{FIN_{it}}$. Considering a single indicator could not comprehensively and accurately measure financial development, we use three variables including private credit over GDP, Deposits over GDP and Bank ROE to evaluate the financial development, respectively. Private credit over GDP is the private credit divided by GDP. It could reflect the size and amount of credit funds raised through financial intermediaries, which could be used in investing activities. It indicates the service provided by financial institutions as the limitation of financial market. Private credit over GDP is believed as an improved indicator of financial development(Levine et al. 2000). Deposits over GDP is calculated by Bank deposits divided by GDP expressed in percentage. Zhou (2020) states that the proportion of financial industry in GDP is related to a country's saving rate. As long as the mechanism is well done, it is easy to find information about banks and emerging funded companies. This indicates bank deposits stands for the degree of financial development. Another indicator of financial development is Bank ROE, which refers to the bank return on equity before tax. Due to the increase of money stock and the current situation of low interest rates, interest rate spread is the main source of income of financial institutions such as banks. Bank is an important financial institution, so Bank ROE can partially reflect the situation of financial market, and then reflect the degree of financial development. Controlling variables $\mathrm{C_{it}}$ refer to Economic size, Government expenditure, Trade openness and Inflation. Economic size is measure as GDP at market prices. Government expenditure is the general government final consumption expenditure divided by GDP expressed by percentage. Trade openness is expressed by trade in proportion of GDP. Inflation is evaluated by CPI index.

Furtherly, we can establish a nonlinear model by adding square of financial development indicators in order to examine whether there is a nonlinear relationship, which is demonstrated as:

(3) $Growth_{it} = \alpha_0 + \beta_1 FIN_{it} + \beta_2 FIN^2{}_{it} + C_{it} + \epsilon_{it}$,

(4) $Volatility_{it} = \alpha_0 + \beta_1 FIN_{it} + \beta_2 FIN^2{}_{it} + C_{it} + \epsilon_{it}$.

Then, in order to investigate the endogeneity of financial development and economic growth, an endogenous model could be set up using 2SLS method. With the prerequisite of exogeneity of instrumental variables without weakness problem, the endogeneity of the model could be verified. It is widely believed that law system which benefits the investors' right protection would provide an attractive investing environment and thus contributing to financial development. Therefore, variables about law is widely used as the non-economical instrumental variable to evaluate the financial development. In this research, variables including *cumu_vot, c1sh_1vo* and *eff_jud* are selected as the instrumental variables IV_{it}. *cumu_vot* is the cumulative voting for director, *c1sh_1vo* is the corporate law of one share as one vote and *eff_jud* is the efficiency of judicial system. Independence between instrumental variables and disturbance and problem of weakness would be examined to ensure the effectiveness of instruments. After that, if it is proved the existence of endogeneity issue by DWH test, it means there is a mutual causal relationship between economic growth and financial development. The 2SLS process is expressed as:

(5) $FIN_{it} = \alpha + \beta IV_{it} + \gamma C_{it} + \mu_{it}$,

(6) $\widehat{FIN_{it}} = \hat{\alpha} + \hat{\beta} IV_{it} + \hat{\gamma} C_{it} + \mu_{it}$,

(7) $Growth_{it} = \alpha_o + \beta_1 \widehat{FIN_{it}} + \gamma C_{it} + \epsilon_{it}$.

Where formula (5) and (6) is the expression of first stage regression and the fitted value of endogenous variable. Formula (7) is the second stage regression of 2SLS, where GDP growth is finally explained.

Finally, how financial development has an impact on the probability of economic recession will be tested by logistic model with fixed effect. The logit model uses a cumulative logistic distribution to transform the model so that the probabilities follow the S-shape and thus the probabilities will never actually fell to zero, which is consistent with the actual condition in this research, that is, the

probability of recession period is always larger than 0. Maximum likelihood is used to estimate the parameters of the model. Th formula is expressed as:

(8) $P(Recession)_i = \frac{1}{1+e^{-(\beta_1+\beta_2 x_{2i}+\cdots+\beta_k x_{ki}+\nu_i)}}$.

According to the analysis and model established, we give expectations and hypothesis as below :

H1: Financial development indicators would show a significant positive impact on growth.

H2: Financial development could contribute to decreasing economic volatility and the effect. differs between emerging countries and advanced countries.

H3: The effect of financial development on economic growth is nonlinear. The positive effect will be magnified as the deepening of development.

H4: The effect of financial development on economic volatility is nonlinear. The negative effect will be magnified as the deepening of development.

H5: Endogenous issue is supposed to exist between financial development and economic growth.

H6: Financial development is expected to increase the probability of recession.

5. Empirical results

5.1 Fixed-effect model

5.1.1 GDP growth and financial development

The results of measuring financial development by Private credit over GDP to investigate the relationship of financial development and economic growth for developing countries shows a significant but negative coefficient of Private credit over GDP. Each point increasing in Private credit over GDP will lead a 10.4% decreasing in GDP growth, which is opposite to the previous expectation H1. The R-square is 40.83%, showing the goodness of fit. The overall significance is obvious indicated by F value, 57.24. For developed countries, the coefficient indicates a significant negative effect at 95% confidence level. It suggests one unit increasing in private credit over GDP brings 2.4% decline in GDP growth. Different from developing countries, the goodness of fit is better performed for developed countries, 62.19%. The model also shows an overall significance.

For measurement of Bank deposit over GDP in developing countries, there is a strong negative significance effect of the financial development on growth. The one unit increasing in Bank deposits over GDP results 12.4% reduction in annual GDP growth. The result is inconsistent with H1. The goodness of fit is 37.05%, while the overall significance is strong. Things are different for developed countries. The p-value of coefficient of Bank deposit over GDP is insignificant. The results show a better goodness of fit at 59.70% in developed countries and the overall effect is significant.

If financial development is measured by Bank ROE, results of regression show an insignificant but positive effect on economic growth in developing countries. One unit increasing of Bank ROE will lead a 2.8% increasing in GDP growth. The goodness of fit is 35% with an overall significance of the model. In developed countries, the model shows a strongly significant positive effect of financial development measure by Bank ROE on GDP growth as well as an overall significance. Specifically, one-point growth in Bank ROE will have a 5.05% positive impact on economic growth. The goodness of fitness is also better than that in developing countries and shows a 64.05% R-square. This result is consistent with previous hypothesis H1 and H3.

5.1.2 Financial development and output volatility

By measuring with private credit over GDP, deposits over GDP and bank ROE, we find the coefficients of these indicators are all insignificant which is inconsistent with the previous hypothesis H2. It could be explained that the effect of financial development on economic volatility is insignificant. The goodness of fit of the model is all around 98%, which is regarded as a well performance. The model is overall significant, indicated by the large F value.

5.2 Non-linear model

Through establishing a non-linear model by adding square terms, the relationships could be furtherly investigated.

5.2.1 GDP growth and square of Financial development indicators

For economic growth, after adding square terms, the coefficients of original term and square term all become strongly significant. When measuring by private credit over GDP or deposit over GDP, the coefficient of original variable is negative but the square term has a positive coefficient. It could be explained that financial development reduces the economic growth at first and positively affects the economic growth after reaching a certain level, which could be generally regarded as a U-shaped relationship. For ROE indicator, the coefficients of indicator and square term are both positive and strongly significant. The relationship then could be explained that financial development stimulates the economic growth and with the deepening of development, the benefit has a larger effect, which supports our expectation H3. Among three measurements, Credit over GDP, Deposit over GDP and ROE evaluation show a best goodness of fit as 46%, 41.1% and 43.2%, respectively. All of them are overall significant. Results are displayed below.

5.2.2 Output Volatility and Financial development square

After adding square terms, the significance shows few changes. The results show an insignificant effect on volatility when evaluating financial development by credit over GDP and deposit over GDP in nonlinear model, same as the linear model, which is inconsistent with hypothesis H2 and H4. Only when measuring by Bank ROE, the coefficient of square term is strongly significant in statistics with a p-value of 0.041. However, the coefficients of original terms and square terms both are at a low value, indicating although Bank ROE causes a statistically significance effect on volatility but it shows a poor economic meaning.

5.3 Endogenous model and 2SLS

By selecting instruments, we establish a 2SLS model. The results of over identification test show the all selected instrumental variables are significantly exogenous. The first stage test show the explanation of instrumental variables for endogenous variable is 12.98%, where the F-value is significant, denying the issue of weakness of instrumental variable. The goodness of fit endogenous model estimation by using instrumental variables *cumu_vot, c1sh_1vo, eff_jud* is 23.72%. The endogenous model using 2SLS and fixed effect shows the private credit over GDP has a statistically significant effect on growth. 1% growth in private credit over GDP causes a 2.1% decreasing in economic growth, much smaller than 10% calculated from original panel model, which is considered more reasonable, indicating the 2SLS is effective in addressing endogenous issue.

Based on the exogeneity and effectiveness of instrumental variables, endogeneity of the credit over GDP could be tested. Through the DWH test, we could find that at a 5% significance, the null hypothesis should be accepted, that is, there is no endogenous variables in the model; however, at a 10% significance, the null hypothesis should be rejected, indicating the financial development is endogenous in the model, verifying the interaction effect between financial development and economic growth. Therefore, hypothesis H5 is supported.

5.4 Logistic model

The results of investigation of financial development and Recession are presented below. The overall goodness of fit all have a good performance at around 50%. Both of the credit over GDP and deposits over GDP give a statistically positive significant result, which supports the expectation H6, indicating financial development increases the probability of recession. The coefficient of Credit over GDP tells that odds of recession are multiplied by 1.029 with one-unit growth in private credit over GDP. One-unit rising in deposit over GDP increases odds of recession by 5 percent. However, one unit increasing in Bank ROE makes a 1 percent reduction of odds of recession, although it is not significant with a p-value at 0.159. Therefore, it could be concluded that financial

development will increase the risk of recession.

6. Conclusion

In summary, the research focuses on the relationships of financial development, economic growth and economic volatility to examine whether financial development has an impact on them. The article firstly introduces the importance of the financial development in economic growth and volatility, providing the motivation for the research. It makes a review of relevant literature including theories and empirical examinations of the research topics. Then it describes the data selected and presents the empirical methodology, which involves panel data model, nonlinear model, endogenous model as well as logistic model. Finally, it demonstrates the empirical results and analyze the effect of financial development on economic growth and volatility, respectively. It is found that financial development measured by private credit over GDP and deposits over GDP shows a significant negative effect on economic growth both in developed countries and developing countries and the relationship is nonlinear, displaying a U-shaped relationship in general. The Bank ROE evaluation gives another result. It shows financial development stimulates the economic growth, which is significant in developed countries; the effect will be positively magnified with the deepening of development. For economic volatility, the basic panel model and nonlinear model both show insignificant effect statistically and economically. Furthermore, the endogenous issue exists between financial development and economic growth at 10% significance, which verifies the mutual causality between financial development and economic growth. Finally, the result shows that financial development measured by credit over GDP and deposit over GDP will gives a rise to the probability of recession.

Based on the analysis, financial development does have a positive impact on economic growth, while the effect is ambiguous in different countries and different stages. It also brings about volatility and recession risk. Therefore, it could be recommended that government should balance the benefits of financial development as well as influence of fluctuations periodically and dynamically according to national real conditions. As it is found that different indicators of financial development show different results, the research is motivated to be improved furtherly through making a mixed indicator of financial development involving multidimensional variables to eliminate the limitations of evaluation by single variable and present a more comprehensive and convincing result. Besides, the research investigates the aggregate relationship and effect rather than focuses on certain region or countries while things may differ in specific circumstances. Therefore, in order to lead a conclusion and recommendation with practical reference, researches specific in countries could be furtherly conducted for investigation.

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References

[1] Beck, T., Demirgüç-Kunt, A., Levine, R., “A new database on financial development and structure“, World Bank Economic Review, vol.2000, no.14, pp.597–605, 2000.

[2] Comin D. and T. Philippon, “The rise in Örm-level volatility: Causes and consequences“, NBER Working Paper, vol. 2000, no.1, pp.11388, 2000.

[3] Hazman Samsudin, Economic Volatility: Does Financial Development, Openness and Institutional Quality Matter In Case of ASEAN 5 Countries, 2018.

[4] Ibrahim Muazu, Alagidede Paul, “Financial sector development, economic volatility and shocks in sub-Saharan Africa“, Physica A: Statistical Mechanics and its Applications, vol.484, no.1, pp.66-81, 2018.

[5] Jagadish Prasad Bist, “Financial development and economic growth: Evidence from a panel of 16 African and non-African low-income countries“, Cogent Economics & Finance vol.6, no.1, pp.1-17, 2018.

[6] J. Greenwood, J.M. Sanchez, Ch. Wang, “Quantifying the Impact of Financial Development on Economic Development“, Review of Economic Dynamics, vol.16, no.1, pp. 194-215, 2013.

[7] Johan Rewilak, “The role of financial development in poverty reduction“, Review of Development Finance. vol.7, no.2, pp.169-176, 2017.

[8] Jorgenson, D.W., “Accounting for growth in the information age“. In: Aghion, P., Durlauf, S. (Eds.), Handbook of Economic Growth. North-Holland/Elsevier, Amsterdam. This volume, Chapter vol.1A, no.10, pp.12, 2005.

[9] Kunieda, Takuma “Financial Development and Volatility of Growth Rates: New Evidence“, MPRA, 2008.

[10] La Porta, R., Lopez-de-Silanes, F., Shleifer, A., “Government ownership of commercial banks“. Journal of Finance, vol.57, no.1, pp.265–301, 2002.

[11] Levine, Ross. “Financial Development and Economic Growth: Views and Agenda“, Journal of Economic Literature, vol.35, no.1, pp.688-726, 2002.

[12] Levine Ross, Loayza Norman and Beck Thorsten, “Financial intermediation and growth: Causality and causes“, Journal of Monetary Economics, vol.46, no.1, pp.31-77, 2000.

[13] Maria A. Arias, Yi Wen, “Does More Financial Development Lead to More or Less Volatility“, Regional Economist, vol 2. No. July, pp.4-12, 2017.

[14] Mckibbin Warwick J., “Financial Liberalization, Financial Sector Development and Growth: Evidence from Malaysia“, Journal of Development Economics, vol.84, no.2007, pp.215–233. 2006.

[15] R. Santos Alimi, Financial deepening and economic growth: A System GMM Panel Analysis with application to 7 SSA countries, MPRA, 2015, <https://mpra.ub.uni-muenchen.de/65789/>.

[16] Vilma Deltuvaite, Lina Sinevičiene “Investigation of Relationship between Financial and Economic Development in the EU Countries“, Procedia Economics and Finance, vol.14, no.1 pp.173 – 180, 2014.

[17] Wang Pengfei, Wen Yi, “Financial Development and Economic Volatility: A Unified Explanation“, Working Paper 022C, 2009.

[18] Zhang Jin, Wang Lanfang, Wang Susheng, “Financial development and economic growth: Recent Evidence from China“, Journal of Comparative Economics, vol.40, no.3, pp. 393-412, 2012.