Causal relationship between financial depth and economic growth: evidence from Asia-Pacific Countries

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ABSTRACT

This study investigates the causality between financial depth and the economic performance of five selected large Asia-Pacific Countries consisting of China, India, Korea, Australia and New Zealand. Using pooled OLS regression for 20 year period annual data (1991-2012), the study finds bi-directional long-run causality between financial depth and economic growth. The study also find that ancillary variables such as inflation and investment share significant and positively caused economic growth. However, when financial depth become dependent variable only investment share provide clear relationship. The important implication for policy maker is that they should either improved financial markets or economic activities for future development and sustainability.

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I. Introduction

The issue regarding cause effect relationship between financial development and economic growth has attracted discussion among economists for the past three decades or so. It is popular issues and continue to be debated among researchers and academician around the globe. The reason behind this ambiguity is due to the uncleared answer of whether financial market influences the economic growth or vice versa. Even though there are many empirical studies on the causal between financial development and economic growth, but the results from both the theoretical and empirical studies still reveal ambiguous explanation and remain inconclusive. In fact, there are studies who opined that financial development does influence the economic growth arguing that in a well-functioning financial markets are the key factor in producing high economic growth [see, for example, Obstfeld (1994), and,Greenwood and Jovanovic (1990)]. Also, activities in financial markets would directly affect the personal wealth, the behaviour of businesses and consumers and the cyclical performance of the economy. Indeed, Levine (1997) argues that financial development plays an important role by helping to identify better opportunities for investment, reduce the production cost, enhance the savings among citizen, encourage technologies innovation and increase the number of investor to taking the risk in their investment. However, the other reseachers show the opposite direction [see Mishal (2011) and Christopoulos and Tsionas (2004)]. Moreover, Perera and Paudel (2009) show that financial development is not the main catalyst for growth, whereas financial development is influenced by growth. In fact, Christopoulos and Tsionas (2004), show that economic growth influence the financial development when there is rise of output, the demand for financial intermediaries (services) also rise and it will lead to positive impact for financial development.

Although numurous studies have been conducted on the cause effect relationship between financial development and economic growth, the findings are still inconclusive. Many studies

find evidence of bi-directional causality in most countries[see, for example, Luintel and Khan (1999), Liu and Shu (2002)] while the others find uni-directional, either financial development leads economic growth or otherwise. The contradictory results may be due to the potential biases induces by simultaneity and omitted variables as mentioned by King and Levine (1993). Therefore, the paper investigates the causality between financial depth and the economic performance of five selected large Asia-Pacific Countries consisting of China, India, Korea, Australia and New Zealand taking into consideration previous studies shortcomming and make an effort to utilising the data in an efficient manner. We use the panel-based analysis to properly account for the problem of simultaneity of regressors in order to draw correct inferences.

The remaining sections of the paper are as follows: Literature review is in Section II. Section III discusses data and methods. The results are reported in Section IV. Section V is the conclusion with a summary and policy implications.

II. Literature Review

Many studies on this issue from different perspectives and produced different results. Some of the results proved that the financial development follows the economic growth. For instance, Masoud and Handaker (2012), examine the strength of the correlation between stock market development and the economic growth for 42 emerging markets finds that the effect of stock market have major contributor to economic growth. Hassan, Sanchez, and Yu (2011) find a positive relationship between financial development and economic growth in developing countries. However, the results from multivariate analysis are mixed. They show two-way causality correlation between finance and growth for most regions while for the two poorest regions result shows that there is one-way causality from growth to finance. Mishal (2011) also suggests bi-directional causality between economic growth and banking system development and a uni-directional causality is indicates run from lending interest rate to GDP growth. While, for banking system and stock market development, there is a bi-directional

causality and a uni-directional causality, which runs from lending and interest rate to market capitalization ratio.

Liu and Shu (2002) conduct a study to investigate the causal links between financial development and economic growth in China. They also find two-way causal relationship between economic growth and financial development because both of financial development and economic growth support each other under China's open-door policy.

Mallik and Chowdury (2001) investigate the relationship between inflation and GDP growth for four South Asian Countries and reveals that moderate inflation is good in helping economic growth, but the faster of growth will give negative impact to inflation rate and consequently affect the economic growth too.

Xu (2012) studies the role of the financial system in the foreign direct investment and growth relation and how the financial market conditions affect the FDI benefits in China. He demonstrates that there is positive correlation between financial system and foreign direct investment (FDI) which directly give positive impact towards growth.

Kagochi, Nasser and Kebede (2013) finds correlation between financial market developments and economic growth in selected 7 sub-Saharan Africa countries. The study discovers one-way causality running from economic growth to bank developing indicators and a two-way causality between stock market and economic growth. Hye (2011) demonstrates in both long-run and short-run the financial development index shows negative impact on economic growth. Khan, Senhadji, and Smith (2001) reveal negative significant relation between inflation and financial depth (size of public sector) for 168 countries consisting of both industrial and developing countries as their sample. Risso and Carerra (2009) also find negative relationship between inflation and economy growth in economy of Mexico

III. DATA AND METHODOLOGY

Data

The annually sample data for quantity of real output, the total demand deposits to nominal GDP, investment share and inflation during the period 1992 until 2011 for five large Asia-Pacific Countries including China, India, South Korea, Australia and New Zealand are used. They are retrieved from *World Data Bank-World Development Indicator and International Financial Statistics* published by International Monetary Fund (IMF). The selection of the sample countries is due to their significantly contribution towards economic growth in the Asia-Pacific region. Moreover, these countries provide continous data over the sample period for analysis.

Table 1 shows the summary statistics of sample means, minimums, maximums, variance and coefficient of variation (*CV*) for the quantity of real output, *Y*, the financial depth, *F* investment share, *S* and inflation, *P*.

The quantity of real output, *Y* proxy for economic growth and expressed as an index; financial depth, *F*, is total demand deposits to nominal GDP; share of investment, *S*, is the share of gross fixed capital formation to nominal GDP; and consumer price index, *P*, proxy for inflation.

Table 1: Descriptive Statistics

Stats	Y	F	S	P
Max	14.2	87.46	0.459	24.23
Min	-6.854	0.13	0.170	-1.407
Mean	5.677	13.63	0.284	4.231
CV	0.636	1.806	0.234	0.914
Variance	13.068	606.6	0.0044	14.97

Table 2: Correlation of Coefficient

	Y	F	S	P
Y	1.00			
F	-0.120	1.00		
S	0.651	0.195	1.00	
P	0.317	-0.046	0.153	1.00

Table 2 reports the correlation of coefficient of the variables. From the table above, the relationship between investment share, S and real output, Y is strongest since they have highest correlation of coefficient value of about 65% and the lowest correlation is between inflation, P and Y, which show negative sign (-12.05%).

Methodology

To determine the relationship between variables, the study apply pooled data technique using the following equation:

$$Y_{it} = \beta_{0i} + \beta_{1i}F_{it} + \beta_{2i}S_{it} + \beta_{3i}P_{it} + u_{it} \tag{1}$$

Where, Y is real output in country i and year t, F is a measure of financial depth, S is the output share of investment, P is the inflation, and u is an error term. We also determine the direction of causality using the following equation

$$F_{it} = \beta_{0i} + \beta_{1i}Y_{it} + \beta_{2i}S_{it} + \beta_{3i}P_{it} + u_{it} \tag{2}$$

In equation 2, we replace the real output, Y, with financial depth, F, as the dependent variable. This time real output, Y, becomes independent variable together with inflation and investment. The investment share, S and inflation, P are considered ancillary variables in the equations. Both models are employed to determine the direction relationship and causality. Both equations will examine the cause effect relation in a long-run equilibrium.

VI. Empirical Results

Table 3: Quantity of Real Output, Y as Dependent Variable

Y (Dep)	Coefficient	Std. Error	t	P-Value
Independent Variables				
F	-0..0353	0.0105	-3.35	0.001*
S	36.311	3.967	9.15	0.000*
P	0.1890	0.066	2.85	0.005*
Cons.	-4.951	1.130	-4.38	-7.196
R-Sq: 0.528		F (3, 95): 35.44		Prob > F: 0.000

*Sig. at 5% level

Table 4: Financial Depth, F as Dependent Variable

F (Dep)	Coefficient	Std. Error	t	P-Value
Independent Variables				
Y	-2.990	0.892	-3.35	0.001*
S	177.63	46.63	3.81	0.000*
P	0.124	0.635	0.20	0.845
Cons.	-20.44	11.208	-1.82	-42.69
R-Sq: 0.145		F (3, 95): 5.38		Prob > F: 0.002

*Sig. at 5% level

Quantity of Real Output, *Y* as Dependent Variable

Table 3 reports the results of pooled data method when the quantity of real output, *Y* is considered as dependent variable. The financial depth, *F* of Asia-Pacific Countries is negatively and significantly affect the quantity of real output, *Y*. According to Xu (2013), the reason why the negative impact exists is because the bank's credit gives the loans to low performance cronies firm and also to unproductive state-owned enterprises (SOEs). Moreover, when the bank easily give loan to unproductive or risky borrowers, the tendency

of these borrowers not paying back the debt are high and increase the credit risk. Thus, the risk would affect the bank performance because they cannot generate more return and directly will influence the economic growth of a country.

While for the investment in share, S and inflation show significant positive affect on Y. The results are in line with Kagochi et al. (2013) and Masoud and Handaker (2012) who find positive effect of investment share on economic growth.The results suggest that the more number of investor invest in a country, it will encourage the enhancement of stock market and increase the rate of investment which it will lead to increase the economic activities and hence economic growth of a country. As for inflation, the results show positive effect of inflation on economic growth. Moderate inflation is good in helping economic growth, but faster growth will sometime give negative impact to inflation rate (i.e. high inflation rate) and consequently in a long run it will affect the economic growth too. It is cyclical in nature. The results support the findings of Mallik and Chowdury (2011) and Risso and Carerra (2009).

Financial Depth, *F* as Dependent Variable

Table 4 reports the result of the effect of quantity of real output, Y on financial depth, F. It shows negative and significant influence of Y on F in Asian Pacific countries supporting those studies of De Gregorio and Guidotti (1995) and Loayza and Ranciere (2006). However, there are many studies that have analyzed this relations and the general consensus shows positive correlation between the two indicators (see Levine (1996), Rousseau and Wachtel (2000), Levine, Loayza and Beck (2000)). As for the result of investment share, S, it shows positive and significant influence on F. It indicates that more investment in share will lead to increase in financial depth including demand deposit in financial institutions of a country.

As a whole, the results show bi-directional causality between Y and F. Specifically, the results show the Y is negative and significantly caused F and vice versa with the same magnitute. Thus the results provide clear evidence of lon-run causal relation running from

both directions. The findings support the results of Luintel and Khan (1999), who concluded that the causality between financial development and output growth is bi-directional for the 10 developing countries they studied.

V. Summary and Conclusion

This study investigates the causal relationship between financial depth and economic growth using annually data from year 1991 to 2012 for five large selected Asia-Pacific Countries consisting of China, India Korea, Australia and New Zealand. Using pooled data method, the study finds that the independent variables including ancillary variables are significantly caused dependent variable which is economic growth in a long-run. However, when financial depth become dependent variable only investment share provide clear relationship

The present study can be useful tool for the policy maker to implement an appropriate policy concerning economic and finance. It can help the policy maker to make wise and better decision in helping economic growth by providing more incentives for financial markets to develop or putting more effort in spurring economic activities. Either way will be good in achieving economic property for these countries. However, they should be extra careful since the relationship found is long run in nature.

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