Asian Economic and Financial Review

journal homepage: http://www.aessweb.com/journals/5002

RELATIONSHIP BETWEEN FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH, EVIDENCE FROM FINANCIAL CRISIS

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ABSTRACT

This research studies the influence of financial development on economic growth with emphasis on the recent financial crisis. Variables considered in this study are indicators of financial development consisting of the ratio of the banking system credits to GDP, the ratio of services provided by the banking system to the private sector to GDP and the stock exchange to GDP, and variables of effective economy such as the ratio of investment to GDP and the openness of the economy and also the dummy variable of 2008 financial crisis. Starting from the Unites States and then taking the whole economy in the world, the recent financial crisis has had different effects on countries' economy. In order to survey the effects of this crisis on economic growth of different states based on the World Bank classification, three groups of countries have been studied: developed countries members of the OECD, high average income countries and low average income countries. The results of the models estimated using generalized methods of moments demonstrate that the financial crisis has had the most influence on developing countries with high average income and its effect has been less on developed countries and developing countries with low and middle average income. Moreover, indexes of financial development considered in banking sector have had negative effect on all supposed countries, but capital market shows positive effect on economic growth during 1990-2010 in the countries with low average income and negative effect on developed and high average income countries.

Keywords: Economic growth, Financial development, Financial crisis.

JEL Classification: O47, G15, G01.

1. INTRODUCTION

The recent financial crisis, originated from the United States probably, could affect the effectiveness and financial sector of the entire global economy. Many economists believe that the recent financial crisis has been one of the largest crises in US economy after the crisis of 1930 and 1970.

High integration and correlation of financial markets, as well as globalization procedure, increased the intensity and extension of the crisis around the world. Extensive development of financial sector of economy and low growth in effective sector of economy can be known as the main reasons leading to crisis which can be found in theories of economist who believe that transferring savings to investments is one of the most important factors towards economic development. The channel for transferring savings to investment in countries financial markets varies based on development rate including three phases. The first one is the banking now available in most of the developing countries in which banking is the axis of economy. The second phase is economy in which market is the axis and is usually seen in countries which has financial development economically, so providing services and loans and financing is not limited and there is widespread network of financing and investment consists of banks and capital market. In the third phase complete financial system is established, and is entirely based on the market; all three sections, bank, capital market and insurance market have been formed in this phase.

According to this issue, many economic studies have focused on finding the relationship between economic growth and financial market development. Patrick studied the causality between financial development and economic growth and argued that prosecution of demand or conduction of supply can be established. In the first relation, the following demand hypothesis, indeed demand for financial services depends on growth of actual product in different sections of economy.

Therefore, formation and expansion of modern financial institutions and increase in their financial assets and services are reactions to savers and investors' demands for these services. In this situation, economic growth caused the financial system to expand. In the second relation, that is to say the guiding offer hypothesis, the direction of causality is from financial development toward economic growth. Patrick believes that in early stage of development, the direction of causality is from financial development toward economic growth (guiding offer hypothesis) and in high levels of development the direction of causality is from economic growth toward financial development (realization of following demand hypothesis). In addition to surveying the causality between economic growth and financial development, some patterns investigate effectiveness of financial development variables on economic growth, classified in neo-Schumpeterian models. The function of these patterns affects economic growth by rate of capital accumulation and innovation.

The difference between these models and models with endogenous growth are mainly related to technology changes. Also, in models with endogenous growth, assuming non descending efficiency, economic and social policies are affecting economic growth through its influence on physical and human capital accumulation and performance of production factors.

In this article, the indexes of financial development as well as the variables of effective sector of economy are considered in the model of economic growth. The main hypothesis of this study represent that the effect of the financial crisis on economic growth of developed states is less than developing ones. According to this matter, in the second part of the article, background of researches on the effect of financial development on economic growth will be argued. Then, the roots of financial crisis and how it affects will be expressed in the next part. The fourth section introduces the variables, statistical properties and estimation of model and finally conclusion will be presented.

2. LITERATURE REVIEW

Studies done about the effect of financial development on economic growth have shown various results by now. Some of them have concluded positive effect, some negative and some could not show any certain result. For the first time, Schumpeter (1911) studied the relation between financial development and economic growth. Thereafter, many researchers surveyed this relation. Levin was of the main advocates of positive effect of financial development on economic growth. King and Levine (1993) studied the relation between economic growth and financial development by neo-Schumpeterian model. In order to do so, they have studied 77 developing countries during 1960-1989. The result indicates positive relation between each one of the economic growth and financial indexes. Moreover, the level of financial development can determine future economic growth well. It can also be the effect of financial intermediaries on economic growth via increasing investment efficiency. De Gregorio and Guidotti (1998) have been studied longtime relationship between economic growth and financial development. The results have indicated correlation between economic growth and financial development in most of the studied countries. But the significant point in this research is to confirm existence of negative relationship between these two variables in Latin America. Beck *et al.* (2000) surveyed causality between financial intermediaries and economic growth in 71 countries during 1960-1995. The reveals indicate that improvement of financial intermediaries has significant impact on economic growth. Rioja and Valev (2003) did researches on the relationship between the growth and financial development in 74 countries during 1961-1995. They address that there is not monotonic relationship (one to one correspondence) between the growth and financial development and it depends on their level of financial development. The results show that in the countries with low level of financial development, some indexes of financial development have negative effect and some others have positive but very little effect on economic growth. Indexes of financial development have positive and larger effect on economic growth in countries with average level of financial development in comparison with developed countries. In order to determine the direction of causality between financial development and economic growth, Calderon and Liu (2003) examined data of 109 developed and developing countries from 1960 to 1994. Their findings reveal that financial development generally leads to growth. There has also been two-way causality between economic growth and financial development. Financial deepening has played a role in

causality in developing countries more than in developed ones too. Finally, financial deepening has improved economic growth through faster accumulation of capital and productivity growth.

Hermes and Lensik (2003) has surveyed the role of financial development in impact of FDI (Foreign Direct Investment) on economic growth from 1970 to 1995, including 67 less developed countries, from which 37 countries have relatively developed financial system, and others have weak one. This study advises that less developed countries should develop their financial system first, and then release capital account. Liu and Hsu (2006) in a research titled "The role of financial development in economic growth: experience of Japan, Korea and Taiwan" tried to estimate the relationship between financial development and economic growth in Japan, Korea and Taiwan. In this study, they emphasize financial development and structure (including banks and stock markets), monetary and fiscal policy and also the degree of international capital mobility on economic growth. They have concluded that high investment has caused economic growth in Japan and if investment is not allocated efficiently, it would not necessarily lead to better performance (like Korea and Taiwan). Development of stock market has positive effect on Taiwan's economy; Asian crises have had less negative effect on Taiwan's economy rather than Korea and Japan. Drawing out capital from these two countries, has negative effect on their economies while entrance of capital has negative but negligible effect too. Ritab (2007) in a research titled "financial sector development and sustainable economic growth in the regionally co-integrated emerging markets" surveyed financial markets development (banking sector) and economic growth in 7 countries of Middle East and north of Africa from 1965 to 2002. He concluded that in 6 countries banking sector development increased the economic growth. Ang (2007) discussed about the influence of financial development on economic growth via different channels in Malaysia. The results confirm the hypothesis of endogenous financial development and growth, regarding that financial development causes economic growth by improving investment performance, but it seems that various public investment programs have had negative effect on economic development.

3. REVIEW OF THE FORMATION OF 2008 FINANCIAL CRISIS

The origin and root of the financial and economic crisis must be sought in the United States financial markets. In an atmosphere of uncertainty and pessimism in financial markets, banks avoid lending to private sector, and consumers distrust future and economized their consumption.

Decrease in demand for consumption and shortage of bank credit transferred this problem to the effective economy and particularly to housing market. In addition to sharp increase in financial markets during last two decades, large government budget deficit, doubling US public debt and chronic deficit of the trade balance, all underlay the crisis. The US government debt is actually the amount borrowed from the federal government through issuing government bonds by the Treasury or other governmental financial institutions. These bonds, which were to offset the budget deficit, cause deficits in the balance of payments for removing inflationary effects of bank loans. It is not feasible for all countries printing money, since there are zero net imports, which means that if some countries have deficit, some others necessarily have budget surplus. Dollars paid for importing

products to the United States, underlay explosive economic growth in countries like China and India. When dollars were returned as credits to the western countries, their debts and repayments increased annually. Starting the crisis in the United States, Asian lenders looked for a place hopelessly to invest their additional but weakened dollars and preventing them from depreciation.

Although risky mortgages were considered as a regional crisis at first, because of the markets linkage, it was transferred to global financial markets. By emerging financial crisis in the United States and then Europe, countries exporting raw materials encountered decrease of export prices.

However, it can be expected that the financial crisis could have more destructive effect on developed countries which have more open economies than developing ones. The reason can be that industrial states had bought invalid bonds (Stiglitz, 2009). Meanwhile, policies supporting financial markets by industrial countries were being needed to decrease effects derived from this crisis. This government financial assistance supported not only financial institutions, but also large companies. In order to pass this crisis, a global driving package for the economy was needed, but the scope of deciding for implementation was in national economic level. This package was different between developing and developed countries. It was about 700 million dollars in the United States; however, it was not possible for developing countries to afford such package. In result, it could intensify the impact of financial crisis on such countries. Moreover, providing financial assistance of developing countries to banking system, this symmetrical policy could follow by asymmetrical effects. That's because of the fact that supporting banking system by developing countries is not as the same as which is done by developed countries like the United States; since the capital flow will reverse in this situation and banking investment of developing countries will return to the US, the crisis origin again.

4. DATA AND STATISTICS AND ESTIMATING THE MODELS

Statistics mentioned in this article, are based on data collected by the World Bank during 1990-2010. Countries considered in this paper consist of high income countries including OECD countries, high average income countries and low average income countries. Furthermore, regarding that the data mentioned in the research was collected from 1990 to 2010, this information was inadequate for estimating time-series. So as far as it was tried to survey the impact of 2008 financial crisis, if data related to 1970 crisis were used, the model would fail. Models of economic growth considered in this study, consist of financial development and control variables and have been used based on the article of (Kabir Hassan, 2011). Notice that some variables considered in this paper are different so that the variable of gross investment relative to GDP was used instead of the variable of net investment relative to GDP. Moreover, generalized method of moments (GMM) has been used for estimating the model. Such models were formulated and introduced by Hansen (1982) and then have become one of the most common methods for estimating economy. In GMMs, similar to likelihood maximization approach (MLE) there is no need to necessary information for distribution of data. On the other hand, normality of information is not considered in this method, so likelihood maximization approach in some cases such as, logarithmic normal

random uncertainty model, cannot estimate easily. However, GMM method can estimates such models with no errors. The model considered in this article is as follows:

$$Growth = \beta_0 + \beta_1 \log(GDPPER(-1)) + \beta_2 \log(financial\ Development) + \beta_3 \log(Invest/GDP) + \beta_4 (IM + EX/GDP) + \beta_5 Crisis + \varepsilon_{it}$$

As it can be seen in model (1), economic growth is a function of GDP per capita in the first period GDPPER which based on theories should be negative, and financial development variable consisting three indexes: the ratio of credit to private sector relative to GDP, bank credits relative to GDP, and the ratio of stock exchange relative to GDP. Furthermore, the variables of investment to GDP and the degree of openness of the economy have been considered as control variables in economic growth models. The crisis variable, entered to the model as continuous variable, is zero for the years before the crisis and one for the years after that.

Table-1. Descriptive statistic of developed countries

Variable	Mean	Std.dev	Jauraqe-Bera	probability
Growth (%)	1. 4	1.6	49	0.0
GDPPER	25276	2676	1.82	0.4
Invest/GDP (%)	20.55	1.06	7.43	0.02
IM+EX/GDP (%)	42.09	5.79	1.01	0.6
Stock/GDP (%)	178.35	18.46	1.26	0.53
DCBS/GDP (%)	146.1	17.41	0.74	0.69
DCPS/GDP (%)	104	64.54	1.55	0.45

Sources: Authors computation, World Bank database.

According to economic growth of 1.46% in developed countries during 1990-2010, the ratio of credit provided by the banking system to GDP equals 178.35% and the ratio of credit provided by the private sector relative to GDP equals 146.1%. The index of capital market which is the value of traded stocks relative to GDP equals 104% representing the depth of financial markets in the member countries of the economic cooperation. Openness of the economy and GDP per capita equals 42.9 and 25276 Dollars respectively during the period under review.

Table- 2. Descriptive statistic of developing countries with high income

Variable	Mean	Std.dev	Jauraqe-Bera	probability
Growth (%)	3.7	2.04	1.4	0.4
GDPPER	2109	552.06	2.44	0.29
Invest/GDP (%)	24.71	1.57	1.45	0.48
IM+EX/GDP (%)	51.1	7.89	0.92	0.63
DCBS/GDP (%)	75.75	10.51	1.66	0.43
DCPS/GDP (%)	51.39	9.41	4.65	0.09
Stock/GDP (%)	32.36	27.8	7.9	0.01

Sources: Authors computation, World Bank database.

Table (2) indicates the statistical feature used for developing countries with high income in this period. Average economic growth during 1990-2010 in these countries equals 3.78%, higher than other studied countries. The ratio of credit provided by the banking system to GDP equals 75.75% and the ratio of credit provided by the private sector relative to GDP equals 59.23% in these countries. The amount of traded stocks relative to GDP equals 32.36% representing that these indexes are lower in comparison with developed countries. The degree of economy openness equals 51.1, higher than all groups. Finally, GDP per capita equals 2109 $ which is more than 11 times less than developed countries.

Table-3. Descriptive statistic of developing countries with middle and low income

Variable	Mean	Std.dev	Jauraqe-Bera	probability
Growth (%)	3.2	2.2	1.6	0.4
GDPPER	1241	280.55	2.51	0.28
Invest/GDP (%)	24.25	1.61	1.85	0.39
IM+EX/GDP (%)	52.60	1.61	1.85	0.39
DCBS/GDP (%)	68.92	24.31	6.34	0.04
DCPS/GDP (%)	52.09	8.82	1.79	0.4
Stock/GDP (%)	30.82	8.4	3.93	0.13

Sources: Authors computation, World Bank database.

Table (3) shows some of the preliminary statistical indicators in low and middle income countries. On average, the economic growth during 1990-2010 equals 3.23$. The ratio of credit provided by the banking system to GDP equals 68% and the ratio of credit provided by the private sector relative to GDP equals 52.09% in these countries. The ratio of capital market to GDP using the value of traded stock is 30.82. According to this, it can be concluded that financial markets are based on banks in low and middle income countries. In other words, banks play the major role in financing such states. The ratio of investment to GDP, indeed showing the amount of equals 52.60, the amount obtained from imports plus exports divided by GDP. The GDP per capita is 1241 dollars, equaling half of the GDP of developing countries with high income and 4 percent of GDP of developing countries.

Table (4) shows the results derived from estimating the model for high income countries. The coefficient of GDP per capita at the beginning of each period has a negative relationship with economic growth which meets theoretical expectations based on neoclassical economic growth models. The ratio of investment relative to GDP has positive relationship with economic growth and as it was expected, the degree of economy openness has positive and meaningful relationship.

However, the indexes of financial development considered in these countries have negative effect. Among them, DCBS has the most and the stock has the least negative effect on economic growth. Both investment variants and the degree of economic openness variable have positive and meaningful effect on economic growth. Coefficient

Table-4. Effect of financial development and crisis on growth in developed countries

Growth	Bank-based(1)	Bank-based(2)	Market-based
C	122.81** (20.34)	129.21*** (21.92)	113.8*** (23.79)
GDPPER(-1)	-18.44*** (2.36)	-19.13*** (2. 8)	-20.93*** (2.14)
Invest/GDP	4.18** (1.77)	4.30** (1.91)	8.31*** (1.35)
IM+EX/GDP	21.14*** (1.52)	23.8*** (1.68)	20.29*** (1.32)
DCBS/GDP	-4.96** (1.98)	-	-
DCPS/GDP	-	-7.12*** (2.32)	-
Stock/GDP	-	-	-.016 (0.36)
Crisis	-4.52*** (0.33)	-4.96*** (0.496)	-3.96*** (0.18)
R^2	0.86	0.83	0.87
Dorbin-Watson	1.69	1.75	1.67
J-Statistic	0.21	0.23	0.273
Prob(J-Statistic)			

The null hypothesis for a j - statistic is the over identification of all instruments.

* Denotes Significant at 10%

** Denotes Significant at 5%

*** Denotes Significant at 1%

According to results derived from estimating the model for high average income countries in the table (5), all variable coefficients are meaningful and the results cover all variables theoretically. According to studies, two indexes of financial development for bank sector are also negative and approved. The variable of economy crisis indicates dramatic negative effect on economic growth. The reason for that the crisis coefficient is bigger in these countries in models based on banks, is probably purchasing invalid and toxic bonds by banks in these countries. The degree of economy openness has had positive effect on economic growth. INVEST has positive and meaningful effect on economic growth too.

As it was expected theoretically, according to results indicated by table (6), the relationship between investment and economic growth is positive and meaningful. The index of financial development of capital market (STOCK) has positive and meaningful effect on economic growth; however, two indexes of money market (DCPS and DCBS), have negative effect on economic growth. According to theoretical expectations, the variable of GDP per capita for previous period is negative. The degree of economy openness has positive effect on the growth based on the studies.

Table-5. Effect of financial development and crisis on growth in developing countries with high income

Growth	Bank-based(1)	Bank-based(2)	Market-based
C	-145.1*** (3.77)	-127.88*** (4.26)	-64.55*** (5.19)
GDPPER(-1)	-3.64*** (0.48)	-1.11*** (0.6)	-6.77*** (1.04)
Invest/GDP	28.8*** (1.08)	24.29*** (1.28)	11.26*** (0.89)
IM+EX/GDP	23.3*** (1.08)	17.32*** (1.14)	18.97*** (1.12)
DCBS/GDP	-1.68*** (0.39)	-	-
DCPS/GDP	-	-1.42 (0.36)	-
Stock/GDP	-	-	2.88*** (0.29)
Crisis	-4.58*** (0.18)	-4.93 (0.14)	-5.97*** (0.69)
R^2	0.73	0.81	0.77
Dorbin-Watson	1.75	1.45	1.65
J-Statistic	0.22	0.23	0.18
Prob(J-Statistic)			

The null hypothesis for j-statistic is the over identification of all instrument.

* Denotes Significant at 10%

** Denotes Significant at 5%

*** Denotes Significant at 1%

Finally, the coefficient of crisis dummy variable for high average income countries is higher than other considered countries. The reason can be increase of reserves particularly dollar, derived from international trade. Anyway, since offering the dollar and its supply from the US borders exceeded demands of the Asian and emerging countries, these countries returned additional dollars to western countries as credit loan. It enabled American and British banks to provide liquidity through loans for internal sectors such as housing, car, and other general purposes.

The crisis dummy Variable has negative and meaningful effect on economic growth in all three considered models and shows that it could make these countries in crisis. Moreover, J-statistic showing correct determination of considered instrumental variables represents that instrumental variables used in GMM model are correct.

Table-6. Effect of financial development and crisis on growth in developing countries with middle and low income

Growth	Bank-based(1)	Bank-based(2)	Market -based
C	-87.04*** (7.32)	-98.13*** (7.79)	-50.84*** (12.42)
GDPPER(-1)	4.91*** (2.912)	5.02*** (2.51)	-6.44*** (3.01)
Invest/GDP	13.50*** (2.94)	16.89*** (3.13)	14.9*** (3.31)
IM+EX/GDP	9.41*** (2.08)	8.79*** (2.29)	11.49*** (1.92)
DCBS/GDP	-5.68*** (2.29)	-	-
DCPS/GDP	-	-5.55*** (2.73)	-
Stock/GDP	-	-	2.4*** (0.71)
Crisis	-4.45*** (0.52)	-4.48*** (0.50)	-4.48*** (0.28)
R^2	0.8852	0.8594	0.86
Dorbin-Watson	2.32	2.25	1.91
J-Statistic	4.87	4.69	4.73
Prob(J-Statistic)	0.49	0.45	0.49

The null hypothesis for j-statistic is the over identification of all instrument.

* Denotes Significant at 10%

** Denotes Significant at 5%

*** Denotes Significant at 1%

5. CONCLUSIONS

In this article, influence of the recent financial crisis over economic growth model was studied based on variables of financial development. The crisis was a produced by the economy of the United States. During 2007, the global economic growth was borne by emerging economies and countries like Russia, China, India, and Brazil had the greatest proportion of the global economic growth. However, the United States is the engine of the world economic growth and decrease of its economic growth can dramatically affect the global economy. According to results of the study, it can be stated that the crisis has had its most effect on upper middle income countries. The reason should be depreciation of the dollar, rising oil prices, and uncertainty of private sector over investment. Previous experiences reveal that because of proper economic infrastructures, developed states pass the crisis more rapidly; however, the crisis effects are more lasting in developing countries. The variables of financial development have had negative effect on economic growth except in the index of value of traded shares relative to GDP in low middle income countries. The ratio of investment to GDP and also the degree of economy openness have had positive effect on

economic growth in all countries its rate has been more in developing countries with high income. At last, it can be stated that cohesion of financial markets and non-adherence to rules, are of the main reasons which led to decrease of the global economic growth.

REFERENCES

Ang, J., 2007. Financial deepening and economic development in Malaysia, working paper. Asian Busoness Economics Research Paper No. 42.

Beck, T., Levin, King and Loayza, 2000. Financial intermediation and growth: Causuality and causes. Journal of Monetary Economic, 46(1): 31-773.

Calderon, C. and L. Liu, 2003. The direction of causality between financial development and economic growt'h. Journal of Development Economics, 72(1): 321–334.

De Gregorio, J. and P. Guidotti, 1998. Financial development and economic growth. Washington D.C.: International Monetary Fund, July.

Hansen, L., 1982. Large sample properties of generalized method of moments estimators. Econometrica, 50(3): 1029-1054.

Hermes, N. and R. Lensik, 2003. Foreign direct investment, financial development and economic growth. Journal of Development Studies, 40(1): 142-163.

Kabir Hassan, M., 2011. Financial development and economic growth: New evidence from panel data. The Quarterly Review of Economics and Finance, 51(1): 88- 104.

King, R.C. and R. Levine, 1993. Finance and growth: Schumpeter might be right. Quarterly Journal of Economics, 108(3): 717-736.

Liu, W. and C. Hsu, 2006. The role of financial development in economic growth: The experiences of Taiwan, Korea, and Japan. Journal of Asian Economics, 17(4): 667-690.

Rioja, F. and N. Valev, 2003. Finance and the sources of growth of various stages of economic development. Economic Inquiry, 42(1):127-140.

Ritab, S., 2007. Financial sector development and sustainable economic growth in regionally co-integrated emerging markets issues in corporate governance and finance. Advances in Financial Economics, 12: 345-360.

Schumpeter, J.A., 1911. The theory of economic development. Cambridge, MA: Harvard University Press.

Stiglitz, J., 2009. The global crisis, social protection and jobs. International Labour Review, 148: 1–2.

BIBLIOGRAPHY

Patrick, H.T., 1966. Financial development and economic growth in underdeveloped economies. Economic Development and Cultural Change, 14(2): 174–189.