

# The Impact of Financial Development on Economic Growth Around the World

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**Abstract:** *Motivation:* This paper aims to examine the impact of financial development on economic growth.

*Novelty:* The study enriching literatures and provide a baseline for further researches.

*Methodology and Methods:* This article uses the system GMM to analyze data, to ride of the reverse causality problem and considering a dynamic model.

*Data and Empirical Analysis:* The used data for 193 countries around the world, the study used domestic credit to the private sector as a percentage of GDP, board money definition M3, and financial market capitalization as proxies to indicate financial development. Whereas GDP per capita growth rate is used as a proxy for economic growth.

*Policy Considerations:* The study finds that there is a significant mild positive impact of financial development on economic growth, this paper recommended further researches to investigate the impact over the developing and developed countries separately by using dynamic models.

**Keywords:** Financial development, economic growth, developing economies.

## INTRODUCTION

The financial sector is a set of markets, instruments, and institutions, as well as corporate and market governance mechanisms, that manage the relations and transactions between different entities. The development of this sector reduces the cost and required time to receive information and perform transactions.

One can argue that the financial sector can contribute to economic growth, as it is considered a channel between those who have surplus and shortage in financial funds. Thus, the financial sector endorses economic growth through technological progress and capital accumulation by mobilizing and pooling savings, producing information about investment, expediting and encouraging foreign capital inflows, and improving the allocation of resources (Mishkin, 2016). In developing countries, development of the financial sector motivates Small and Medium Enterprises (SMEs) to access alternative funds, which in return contributes to business expansion and development.

Recent theories and works of literature pay increased attention to the nexus between financial development and economic growth; the keystones of the literature can be found in the work of (Schumpeter, 1911). (McKinnon, 1973) (Shaw, 1973) focused their

research on developing countries. They concluded that controlled and stable financial development programmes can promote economic growth; especially when these programmes are designed by the International Monetary Fund (IMF) or the World Bank (WB).

In contrast, to demonstrate the same hypothesis, which argues that there is a relationship between financial development and economic growth, (Fry, 1988) proposes that economic growth is better obtained by liberal financial policies and vulnerable interchange between supply and demand powers rather than the intervention of the government.

As will be discussed later, in the literature review in Section 2, the relationship between financial development and economic growth can be characterised as one of three relation types, based on the findings of previous studies. (Patrick, 1966) suggests that the direction of the relation is from financial development to economic growth: in other words, the supply leads the demand. These findings supported by several studies, e.g. (McKinnon, 1973), (King & Levine, 1993), (Neusser & Kugler, 1998) and (Beck, *et al.*, 2000). On the other hand, (Gurley & Shaw, 1967), (Goldsmith, 1969) and (Jung, 1986) support the opposite relation direction in which the demand for financial market services tends to increase as a result of real growth in the economy. In contrast, (Shan & Morris, 2002) find inadequate direct or indirect indications that financial development causes economic growth.

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The main purpose of this study is to investigate the recent impact of financial development on economic growth around the world, to give further evidence for testing the impact of financial development on economic growth using GMM panel data for 193 countries around the world. The paper is structured as follows; after this introduction, Section 2 reviews the related literature. Section 3 presents the methodology and data sources. The results are reported and discussed in Section 4. Finally, Section 5 concludes with the main results and provides some policy implications.

## LITERATURE REVIEW

Early economic theories stated that two facts about economic growth deserve to be further explained: while the dynamic performance of the economy fluctuates among countries, for prolonged periods of time, GDP per capita has been growing sustainably without decline (Grossman & Helpman, 1991).

Several studies have sought extra evidence that explains economic growth. The first attempts to describe and quantify the role of financial development on economic growth or vice versa were by (Goldsmith, 1969), (McKinnon, 1973) (Shaw, 1973): however, the nexus between financial development and economic growth is still debated among academics and policymakers (De Gregorio & Guidotti, 1995).

Recent growth theories demonstrate that financial markets and financial intermediaries play a critical role in the long-run relation with markets and the economy, and this is implied through the main assumption arising in this field is that financial markets and intermediaries provide more efficient evaluation and monitoring than individuals (Hassan, *et al.*, 2011).

While several studies found a relationship between financial development and economic growth, these studies stated different directions and causalities. Some authors demonstrate that the causal direction moves from financial development to economic growth, which means that it is possible can design policies for the financial sector that lead in the end to development of the economy (McKinnon, 1973) (King & Levine, 1993) (Christopoulos & Tsionas, 2004). Other studies demonstrate the opposite, that the direction of the relationship runs from economic growth to financial development, meaning that as the economy expands and grows, there will be growing need for new financial services (Shaw, 1973) (Goldsmith, 1969).

Another study finds a two-way relationship direction, which means both that financial development cause economic growth and vice versa (Patrick, 1966). Also, some studies assume that there is a positive two-way causal relationship (Blackburn & Huang, 1998) (Khan, 2001). Khan (2001) explains his findings as showing that, in certain conditions, the borrowing process is limited, yet investors can use funds more efficiently using financial intermediaries, and this funds new and vital technologies, which in return increases growth. Contrary to the literature discussed above, some studies find a weak positive or no relation at all between financial development and economic growth. (Shan & Morris, 2002) find an inadequate direct or indirect indication that financial development causes economic growth, and (Bouilila & Trabelsi, 2004) find that there is little evidence that financial development causes economic growth, but do find that growth leads to financial development.

## METHODOLOGY AND DATA

The data in this study were collected from the World Bank development indicators for 193 countries around the world for the period 1994-2018, which covers the last 25 years. Observations are only omitted which have no data for GDP per capita.

In order to investigate the relationship between financial development and economic growth around the world for the period 1994-2018, since the data are multi-dimensional and involve measurements over time, and multiple phenomena observations are obtained over multiple periods for the same country, this article uses panel data analysis.

Several issues are related to the panel data, such as dependent variable dynamicity, fixed individual effects, the problem of endogeneity, heteroskedasticity and serial correlation, the effect of past regressors on the current one and finally the small period T numbers relative to the size of countries N of the sample. Based on all the issues mentioned above, it is better to use the difference and system GMM estimators. These estimators require fewer assumptions about the underlying data-generating process and use more complicated procedures to isolate relevant information (Roodman, 2009).

Difference GMM models correct endogeneity by transforming all regressors through differences and removing the fixed effects (Arellano & Bond, 1991), while in system GMM, the endogeneity problem can be corrected by providing more instruments in order to

improve the model efficiency and transform these instruments in order to decorrelate them with fixed effects, or in other words to consider these as exogenous variables. To achieve this, system GMM builds two equations; original and transformed (Arellano & Bover, 1995) (Blundell & Bond, 1998).

The general formula is as follows:

$$Y_{i,t} = \alpha Y_{i,t-1} + x'_{it} \beta + \epsilon_{i,t}$$

$$\epsilon_{i,t} = \mu_i + v_i$$

$$E(\mu_i) = E(v_i) = E(\mu_i v_i) = 0$$

$$\Delta Y_{i,t} = (\alpha - 1) Y_{i,t-1} + x'_{i,t} \beta + \epsilon_{i,t}$$

Where:

$i = 1, 2, \dots, N$  represents the twenty-one countries in the model.

$t = 1, 2, \dots, T$  is the time among each  $i$ .

$\alpha - 1$  is the coefficient of the lagged dependent variable in the GMM model.

$\beta$  is a column vector of coefficients.

$Y$  as the dependent variable is the logarithmic value of GDP per capita, which indicates economic growth.

$X$  is the  $K$  dimensional vector of regressors, including financial development proxies, which are: the growth of domestic credit to the private sector as a percentage of GDP (DCPSg); the broad definition of money (M3) as a percentage of GDP; and the logarithmic value of financial market capitalization (LogMCAP). These proxies will be used in our analysis alternatively.

The model is controlled by the following variables: (Trade) proxy, represented by the summation of exports and imports as a percentage of GDP; GFCE (general final consumption expenditures) as a percentage of GDP (inflation), which represents the percentage change in consumer price index, and GDP growth rate.

$\mu_i$  is the fixed effects orthogonal components.

$v_i$  represents the idiosyncratic shock's orthogonal components.

In order to decide whether to use difference GMM or system GMM, the rule of thumb set by (Bond, *et al.*, 2001) is applied. The analysis must consider the coefficient of the lagged dependent variable  $\alpha$  by using the OLS estimator as an upper bound, and the fixed effect estimate of the same coefficient as a lower bound. Difference GMM is chosen if the estimated  $\alpha$  lies between the upper and lower bounds; otherwise, system GMM is applied. In this article, following the above-mentioned rule, system GMM is selected.

## RESULTS AND DISCUSSION

It is clear from Table 1 that there are many differences between the countries in the selected sample. Based in this, other researchers would be advised to use the same technique to give significant differences for the impact of financial development on economic growth among different categories; e.g. geographic, regional, or income-based classification. Table 2 shows the matrix of correlation between all the included variables in the proposed system GMM models.

Table 3 summarizes the three proposed GMM models for testing the impact of financial development on economic growth around the world.

**Table 1: Descriptive Statistics**

Variable	Obs	Mean	Std.Dev.	Min	Max
Log GDP Per Capita	4651	9.09	1.231	5.94	11.813
M3 %GDP	3847	54.266	41.887	2.857	395.717
DCPS growth	3999	.116	4.419	-.912	279.236
Log Market CAP	1707	24.55	2.624	14.927	31.101
Trade %GDP	4303	87.717	51.758	.021	442.62
GFCE %GDP	4026	15.89	6.738	.911	135.809
Inflation	4151	19.468	386.97	-18.109	23773.13
GDP growth	4635	3.856	6.074	-62.076	149.973

Source: based on the author's calculations.

Table 2: Matrix of Correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Log GDP Per Capita	1.000							
(2) M3 %GDP	0.375	1.000						
(3) DCPS growth	0.022	-0.072	1.000					
(4) Log Market CAP	0.520	0.491	-0.067	1.000				
(5) Trade %GDP	0.305	0.460	-0.022	0.022	1.000			
(6) GFCE %GDP	0.314	-0.040	0.068	-0.063	-0.129	1.000		
(7) Inflation	-0.281	-0.282	0.006	-0.269	-0.154	-0.219	1.000	
(8) GDP growth	-0.152	-0.081	0.082	-0.036	0.067	-0.192	-0.045	1.000

Source: based on the author's calculations.

Table 3: GMM Analysis of the Impact of Financial Development on Economic Growth

The dependent variable is Log GDP Per Capita			
VARIABLES	GMM (1)	GMM (2)	GMM (3)
L. Log GDP Per Capita	1.009*** (0.00411)	1.001*** (0.00623)	0.995*** (0.00526)
Trade %GDP	-0.0000606* (0.0000353)	-0.0000584* (0.000035)	0.00000899 (0.0000293)
GFCE %GDP	0.0000967 (0.000255)	0.000402 (0.000290)	0.000803* (0.000443)
Inflation	0.0000584*** (0.0000224)	0.0000583*** (0.0000215)	-0.0000509 (0.0000755)
GDP growth	0.0109*** (0.000377)	0.0110*** (0.000406)	0.00945*** (0.000209)
DCPS growth	0.0000194** (0.00000791)		
M3 %GDP		0.000153** (0.0000679)	
Log Market CAP			0.00143* (0.000754)
Constant	-0.101*** (0.0328)	-0.0415 (0.0475)	-0.00889 (0.0305)
Year Dummies	No	No	No
Observations	3,238	2,952	1,512
Number of Groups	164	146	90
F statistics	169249.89	79273.60	79985.50
Number of Instruments	29	53	75
AR(2) $\rho$	0.841	0.948	0.577
Hansen Statistics $\rho$	0.133	0.282	0.128

Standard errors in parentheses ( ), \*\*\* p-value < 0.01, \*\* p-value < 0.05, \* p-value < 0.1,  $\rho$  null hypothesis for Arellano-Bond test for AR(2) in first differences state that there is no serial correlation in disturbances,  $\rho$  Hansen test of overidentified restrictions tests the overall validity of used instruments.

The first GMM model shows that there is a significant positive impact of the growth of domestic credit on the private sector as a percentage of GDP on economic growth. The impact is very low, as a 100% change in DCPS growth will result in a 0.00194% change in GDP per capita growth. The second GMM model demonstrates similar results to the previous one, and a 100% change in the board money definition M3 will lead to 0.0153% change in economic growth.

The third GMM model provides close results to the previous two models, in which a 100% change in financial market capitalization will lead to a 0.00143% change in economic growth in the same direction. These results agree with (Shan & Morris, 2002) and (Bouilila & Trabelsi, 2004).

## CONCLUSION

This paper aimed to investigate the impact of financial development on economic growth, using three different proxies to indicate financial development. These proxies were domestic credit to the private sector as a percentage of GDP, board money definition M3, and financial market capitalization. GDP per capita growth rate was used as a proxy for economic growth.

This article used system GMM estimation to analyze the collected panel data for 193 countries around the world. The study finds that there is a significant positive impact of financial development on economic growth, but that this impact is very weak.

These results add to those of previous studies, with continued uncertainty about the impact of financial investment on economic development. It is recommended that other researchers use the same technique to give significant differences for the impact of financial development on economic growth among different income categories.

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