
Open Access Article**Productivity Growth and Financial Environment in Selected Developing Countries****Amrollah Amini***Assistant Professor of Allameh Tabataba'i University, Faculty of Economics. Tehran, Iran
a.aminij@atu.ac.ir**Hassan Amouzad Khalili**Graduated Ph.D of Allameh Tabataba'i University, Faculty of Economics. Tehran, Iran
Hasankhalili4@gmail.com**ABSTRACT**

Economists' interest in the relationship between financial sector development and growth dates back to Schumpeter (1912) who argued that a country's financial system plays a critical role in technological innovation and economic growth and development through mobilizing savings, monitoring managers, evaluating projects, managing and pooling risks, and facilitating transactions. Goldsmith (1969) and McKinnon (1973) investigated further this relationship on a country-case basis and confirmed that better functioning financial systems, as described by Schumpeter, were supportive of faster growth. Financial environment can be defined as the markets which are created because of the trading of financial securities. Basically, a financial environment comprises of the public sector enterprises, legal authorities, fiscal authorities which are directly or indirectly impact the financial system, monetary institutions, financial institutions, and official organizations. All these organizations have a direct impact on the financial system of the companies including private and public.

Keywords: nomads, migration, livelihood sustainability, multi-criteria decision model

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选定发展中国家的生产力增长和金融环境

抽象的

经济学家对金融部门发展与增长之间关系的兴趣可以追溯到 Schumpeter (1912), 他认为一个国家的金融体系通过动员储蓄、监督管理者、评估项目、管理和发展, 在技术创新和经济增长与发展中发挥着关键作用。分担风险, 促进交易。Goldsmith (1969) 和 McKinnon (1973) 在国家案例的基础上进一步研究了这种关系, 并证实了 Schumpeter 所描述的更好运作的金融体系支持更快的增长。金融环境可以定义为因金融证券交易而产生的市场。基本上, 金融环境包括直接或间接影响金融体系的公共部门企业、法律当局、财政当局、货币机构、金融机构和官方组织。所有这些组织都对包括私营和公共在内的公司的财务系统产生直接影响。本文关注的是计量经济模型对金融环境对GDP增长影响的估计。我们分析的目的是实证地建立发展中国家金融发展与经济增长之间的关系。由于数据的可用性, 金融环境旨在反映对私营部门的信贷水平、国内储蓄、流动负债、周转率和市值。实证上, 采用非平衡面板数据技术, 采用由 52 个选定发展中国家 18 年 (2000–2018 年) 组成的 Translog 函数形式来衡量 GDP 与金融环境要素之间的关系。估计的参数大多在小于 10% 的水平上显著。GDP 相对于资本 (K)、劳动力 (N)、私营部门信贷 (CPS)、周转率 (TR)、流动负债 (LL) 和市值 (MC) 的弹性具有预期的迹象。例如, 对私营部门信贷的估计系数表明, 私营部门信贷增加 10% 与 GDP 增长 3.8% 相关。最后, “金融环境指数” 倾向于从金融角度衡量一个国家促进和维持经济增长的能力, 采用标准偏差 (STD) 方法构建。在我们的样本中, 结果显示黎巴嫩、约旦和马来西亚的金融条件最有利于支持经济增长。

I. Introduction

The main function of financial intermediaries is to facilitate the transmission of savings from surplus households to deficit households. Very often, the former are the consumers who save money, and the latter are the entrepreneurial and government sectors which borrow money, with the financial or banking sector channelling this process appropriately. The banking sector's main role in this process of intermediation is to reduce the asymmetry of information for

lenders and borrowers and to bring about allocation of funds to the most productive opportunities, thus increasing economic efficiency and social welfare. Conventional growth models seldom point out an immediate relationship between financial intermediation and growth of economic output. The canonical neo-classical growth theory (e.g., Burmeister & Dobell, 1970; Meade, 1961; Solow, 1956) establishes the condition for long-run economic growth with the rate of growth of the labour force and technical progress the main determinants.

The theoretical debate on the relation between financial development and economic growth is long-standing once Schumpeter argued as early as 1912 that banks actively spur technological progress by selecting and financing entrepreneurs, thereby fostering innovations of products and production processes. Robinson (1952) and Lucas (1988) claimed that the financial system responds only passively to economic growth. There is a broad consensus in the literature that financial systems arise to overcome information and transactions frictions as well as to facilitate the allocation of resources, across space and time, in an uncertain financial environment (Merton and Bodie, 1995). Financial systems can affect growth by promoting capital accumulation and/or by exerting a positive impact on the pace of productivity growth (Levine, 1997). As they argue, the financial sector is growth-supportive only if financial institutions are subject to proper governance structures symmetric information. Under asymmetric information, banks are subject to moral hazard and adverse selection problems, which are at the core of "poor" banking practices.

The paper aims to measure the relationship between GDP and financial environment in number of developing countries. The report contains four sections. Next section overviews briefly the concept of the financial environment. Section 3 deals with model specification. Data description is presented in section 4. Section 5 presents econometric estimation of the model. Finally, section 6 presents summary and conclusion.

II. Financial Environment

Economists' interest in the relationship between financial sector development and economic growth dates back to Schumpeter (1912) who argued that a

country's financial system plays a critical role in technological innovation and economic growth and development through mobilizing savings, monitoring managers, evaluating projects, managing and pooling risks, and facilitating transactions. Goldsmith (1969) and McKinnon (1973) investigated further this relationship on a country-case basis and confirmed that better functioning financial systems, as described by Schumpeter, were supportive of faster growth. Financial systems can affect economic growth by promoting capital accumulation and/or by exerting a positive impact on the pace of productivity growth (Levine, 1997).

Generally, financial environment can be defined as the markets which are created because of the trading of financial securities. Basically a financial environment comprises of the public sector enterprises, legal authorities, fiscal authorities which are directly or indirectly impact the financial system, monetary institutions, financial institutions, and official organizations. All these organizations have a direct impact on the financial system of the companies including private and public. In short, the financial systems (i) pool savings from disparate depositors allowing for production processes that would otherwise be limited to inefficient scales; (ii) allocate resources through information acquisition about investment projects and selection of the most promising ones, allowing capital to flow to its highest value use; (iii) manage liquidity risks through aggregation and by transferring these risks to those more willing and able to bear it; and (iv) contribute to the monitoring of managers, so that funds allocated are spent as envisaged, which facilitates the separation of management and ownership, and helps harden budget constraints.

III. Model specification

A. Econometric model

Economic theory does neither yield a specification of an estimable equation nor a well-defined causality pattern for economic growth and the stage of financial development. However, theory does suggest a few explanatory variables in particular with capital investment and financial development which is our maintained hypothesis. Let the GDP, from financial prospective, be function of a vector of capital, labour, a set of financial elements and time as:

$$(1) \quad Y = f(X_{ij}, \emptyset)$$

Where "Y" is GDP, "X_{ij}" is a vector of independent variables, and "∅" is a vector of unknown parameters. Assuming the linear relationship between "Y" and vector of "X", the translog functional form of equation (1) by appending an error term can be written as follow:

$$(2) \quad Y_{it} = \beta_0 + \sum_j \beta_j X_{jit} + 1/2 \{ \sum_j \sum_m \beta_{jm} X_{jit} X_{mit} \} + \sum_j \beta_{jt} X_{jit} + \varepsilon_{it}$$

The "βs" are the unknown parameters and "ε_{it}" is the error term decomposed into the effects that are due to country-specific effects "v_i" and those due to white noise "u_{it}". The assumptions made on error components are as follows:

- (i) v_i ~ i.i.d. N(0, σ²_{v_i}),
- (ii) u_{it} ~ i.i.d. N(0, σ²_u),
- (iii) v_i and u_{it} are independent of each other and of the explanatory variables.

Given the estimated parameters in equation (2), the elasticity of the respected variable is defined as the percentage change in GDP due to an increment of independent variable, *ceteris paribus*. Thus,

$$(3) \quad E_j = \delta Y_{it} / \delta X_j = \beta_j + \sum_j \beta_{jt} X_{jit}$$

B. Financial Environment Index- Standard Deviation Method

In this study, financial environment is meant to reflect the level of the following indicators: (i) credit to private sector; (ii)

gross domestic savings; (iii) liquid liabilities; (iv) turnover ratio; and (v) market capitalization. This paper uses 5 variables to calculate the financial environment Index. The data processing methodology for measuring the aggregated data and rankings is as follows: First, for each individual variable, the countries' standardized values are calculated based on the STD Method. All the data have a weight of 1. When data is unavailable for particular countries, the missing values are replaced by a STD value equal to 0. The STD values are then aggregated to determine the Overall Scoreboard of financial environment index. Since all of the statistics are standardized, they can be aggregated to compute indices. To calculate the STD, the standard deviation method is applied. More specifically, the following steps have been taken:

First, we compute the average value of the specific factor (\bar{x}). Then, the standard deviation is calculated using the following formula:

$$(4) \quad S = \sqrt{\frac{\sum (x - \bar{x})^2}{N}}$$

Finally, we compute each of the countries' standardized values (STD) for the ranked criteria. The STD is calculated by subtracting the average value of the countries from the country's original value and then dividing the result by the standard deviation. The STD value for criteria i is calculated as follows:

$$(5) \quad (STDvalue)_i = \frac{x - \bar{x}}{S}$$

Where: x = original value, \bar{x} = average value of the countries, N = number of countries and S = Standard Deviation.

IV. Description of data

The data used in this study covers the 52 developing countries observed during the period of 2000-2018. The data set includes GDP (Y), Capital (K), labor force (N), credit to private sector (CPS), gross domestic savings (GDS), liquid liabilities (LL), turnover ratio (TR), and (v) market capitalization (MC). The sources of data are the various versions of World Economic Indicators. GDP refers to the real value of all officially recognized final goods and services produced within a country during a year. Capital stock (k) data on the national level is calculated according to the perpetual inventory model starting from 1980. Labor force refers to the total number of people employed or seeking employment.

CPS refers to the financial resources provided to the private sector- such as through loans, purchases of non-equity securities, and trade credits and other accounts receivable -that establish a claim for repayment. Providing appropriate credit and loans to the private sector can promote and develop a strong and dynamic private sector. The amount of credit provided to the private sector can be used as an indicator for measuring the tendency of the financial sector to support the private sector. GDS is the difference between GDP and public and private consumption. The close relationship between the gross domestic saving rate of the economy and the economic growth rate is a stylized feature that has been well-documented in a number of empirical investigations¹. These studies have indicated that an increase in savings

translates into higher investment, which in turn stimulates economic growth, as shown by Harrod (1939), Dornier (1946) and Solow (1956).

Liquid liabilities are also known as broad money, or M3. They are the sum of currency and deposits in the central bank (M0), plus transferable deposits and electronic currency (M1), plus time and savings deposits, foreign currency transferable deposits, certificates of deposit, and securities repurchase agreements (M2), plus travelers checks, foreign currency time deposits, commercial paper, and shares of mutual funds or market funds held by residents. Liquid liabilities are widely used in measuring financial deepening, which reflects an increasing use of financial intermediation by savers and investors and the monetisation of the economy, and allows efficient flow of resources among people and institutions over time. Liquid liabilities reflect the extent of transaction services provided by a financial system as well as the ability of the financial system to channel funds from depositors to investment opportunities.

Turnover ratio is the total value of shares traded during the period divided by the average market capitalization for the period. Stock markets may affect economic activity through the creation of liquidity. Liquid equity markets make investment less risky and more attractive because they allow savers to acquire an asset (equity) and to sell it quickly and cheaply if they need access to their savings or want to alter their portfolios. At the same time, companies enjoy permanent access to capital raised through equity issues. By facilitating longer-term, more profitable investments, liquid equity markets improve the allocation of capital and enhance prospects for long-term economic growth.

¹ The relationship between economic growth and gross domestic savings has gained increased popularity in recent macroeconomic analysis (Pagano, 1996; Gavin et al, 1997; Sinha and Sinha, 1998; Saltz, 1999).

Turnover ratio is one of the common indexes for measuring stock market performance. A large turnover ratio indicates an active stock market. Many empirical results support theoretical literature in suggesting that a higher turnover ratio can lead to greater growth. For example, Hamid Mohtadi and Sumit Agarwal (1998) showed that turnover ratio significantly affected economic growth through investment enhancement². Market capitalization is the share price times the number of shares outstanding. Market capitalization is one of the most common indicators used to measure the performance of the stock market. It measures the overall market size and the ability to mobilize capital and diversify risk on an economy-wide basis.

V. Parameter Estimation

The ordinary pooled least squares method was applied by employing Translog functional form using panel data to measure the relationship between GDP and financial environment elements. The results of the estimations are reported in Table 1. The estimated parameters are mostly significant at less than 20% level. The elasticity of GDP with respect to capital (K), labour (N), credit to private sector (CPS), Turnover ratio (TR), liquid liabilities (LL), and market capitalization (MC) are 0.49, 0.36, 0.38, 0.03, 0.23, and 0.02, respectively. For example, the coefficient estimated for credit to private sector suggests that a rise of ten percent in the credit to private sector is associated with a 3.8 percent increase in GDP.

The financial environment index is generated by combining the above five indicators and intends to measure the level of financial intermediation and the efficiency of financial intermediation. Over

the period 1994-2004, the financial environment index ranged from -0.62 in Sierra-Leone to 2.54 in Malaysia. Chart 1 ranks the performance of selected developing countries according to the financial environment index. Malaysia, Kuwait, and Bahrain had the most conducive financial conditions in facilitating economic growth. In contrast, Sierra Leone, Kazakhstan, and Uganda recorded the lowest.

² Stock Market Development and Economic Growth: Evidence from Developing Countries (Hamid Mohtadi and Sumit Agarwal)

Table 1. Unbalanced Pooled Least Squares Parameter Estimates.

Translog Functional Form						
Parameter	Estimate	Std.E	Parameter	Estimate	Std.E	Intercept
-1.27	2.14		KN	-0.22	0.06*	
K	0.76	0.54 *	KCP	0.04		0.11
N	0.02	0.28	KGDS	-0.11		0.09
CP	1.79	0.61*	KLL	-0.44		0.12*
GDS	-0.22	0.51	KMC	-0.10		0.05*
LL	-1.26	0.69*	KTR	0.01		0.02
MC	-0.30	0.28	NCP	-0.28		0.07*
TR	0.27	0.14*	NGDS	0.16		0.06*
(K) ²	0.28	0.07*	NLL	0.35		0.06*
(N) ²	0.06	0.02*	NMC	0.06		0.03*
(CP) ²	0.51	0.13*	NTR	-0.02		0.02*
(GDS) ²	-0.03	0.03	CPGDS	-0.31		0.13*
(LL) ²	0.52	0.18*	CPLL	-0.83		0.30 *
(MC) ²	0.01	0.02	CPMC	-0.05		0.07
(T) ²	-0.01	0.01	CPTR	0.07		0.04*
GDSLL	0.24	0.13 *	GDSMC	0.27		0.05*
GDSTR	-0.13	0.03*	LLMC	0.04		0.07
LLTR	-0.04	0.04	MCTR	0.01		0.01*

R-Square 0.99
 Adj R-Sq 0.99
 Elasticity of K 0.49 Elasticity of LL 0.23
 Elasticity of N 0.36 Elasticity of MC 0.02
 Elasticity of CP 0.38 Elasticity of GDS 0.03
 Elasticity of TR 0.03

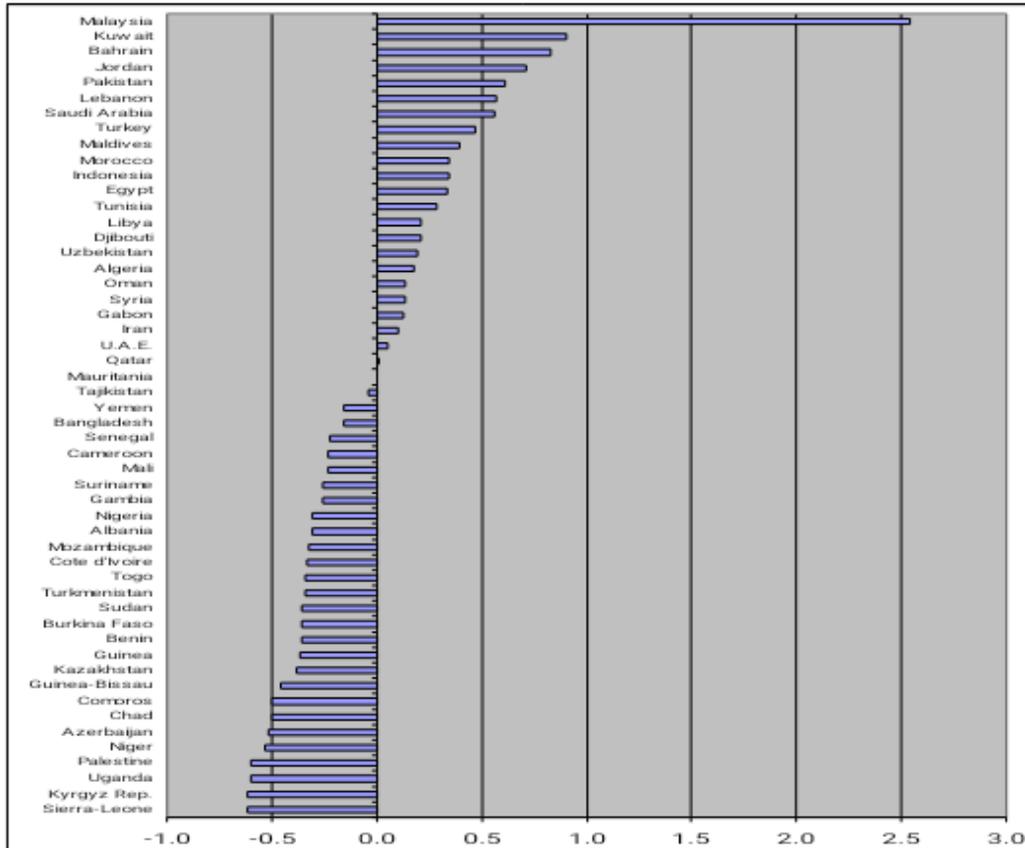


Chart 1. Ranking of the Countries According to the Financial Environment

VI. Summary and Conclusion

This paper seeks to provide empirical answer on the impact of financial environment on economic growth. Financial environment is defined as the markets which are created because of the trading of financial securities. Basically a financial environment comprises of the public sector enterprises, legal authorities, fiscal authorities which are directly or indirectly impact the financial system, monetary institutions, financial institutions, and official organizations. Our main finding is that financial development matters for economic growth and that causality runs from the level of financial intermediation and sophistication to growth. This result indicates that improvement of the financial structure in developing economics may benefit economic development, supporting the old Schumpeterian hypothesis that the financial environment is of great importance for economic welfare.

Finally, the “Financial Institutional Environment index” which tends to measure the ability of a country, from financial perspective, to enhance and sustain economic growth is built by applying the Standard deviation (STD) method. Our results show that Jordan, Malaysia, and Morocco have the most conducive conditions in supporting economic growth.

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