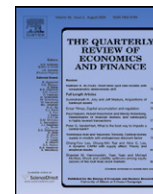




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## Financial development and economic growth: New evidence from panel data

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### ABSTRACT

This study provides evidence on the role of financial development in accounting for economic growth in low- and middle-income countries classified by geographic regions. To document the relationship between financial development and economic growth, we estimate both panel regressions and variance decompositions of annual GDP per capita growth rates to examine what proxy measures of financial development are most important in accounting for economic growth over time and how much they contribute to explaining economic growth across geographic regions and income groups. We find a positive relationship between financial development and economic growth in developing countries. Moreover, short-term multivariate analysis provides mixed results: a two-way causality relationship between finance and growth for most regions and one-way causality from growth to finance for the two poorest regions. Furthermore, other variables from the real sector such as trade and government expenditure play an important role in explaining economic growth. Therefore, it seems that a well-functioning financial system is a necessary but not sufficient condition to reach steady economic growth in developing countries.

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### 1. Introduction

The relationship between financial development and economic growth has received a great deal of attention in recent decades. However, there are conflicting views concerning the role that the financial system plays in economic growth. For example, while Levine (1997) believes that financial intermediaries enhance economic efficiency, and ultimately growth, by helping allocate capital to its best uses, Lucas (1988) asserts that the role of the financial sector in economic growth is "over-stressed." Notwithstanding the controversy, modern theoretical literature on the finance–growth nexus combines the endogenous growth theory and microeconomics of financial systems (Grossman & Helpman, 1991; Khan, 2001; Lucas, 1988; Pagano, 1993; Rebelo, 1991; Romer, 1986; among others).

Early studies on financial development (FD) and economic growth (EG) were based on cross-country analysis. For instance, Goldsmith (1969), King and Levine (1993a, 1993b), and Levine and Zervos (1998) used cross-country analysis to study the relationship between financial development and economic growth. While their

findings suggest that finance helps to predict growth, these studies do not deal formally with the issue of causality, nor do they exploit the time-series properties of the data.<sup>1</sup> Furthermore, conclusions based on cross-country analysis are sensitive to the sample countries, estimation methods, data frequency, functional form of the relationship, and proxy measures chosen in the study, all of which raise doubts about the reliability of cross-country regression analysis (see Al-Awad & Harb, 2005; Chuah & Thai, 2004; Hassan & Bashir, 2003; Khan & Senhadji, 2003).

Panel time-series analysis, on the other hand, exploits time-series and cross-sectional variations in data and avoids biases associated with cross-sectional regressions by taking the country-specific fixed effect into account (Levine, 2005). To mitigate the shortcomings of cross-sectional analysis, this paper examines the dynamic relationship between economic growth and financial development across geographic regions and income groups using time-series analysis.

In retrospect, our interest was motivated by three factors. First, it is argued that well-developed domestic financial sectors, such as those of developed countries [high-income Organization and Economic Cooperation and Development (OECD) countries], can

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<sup>1</sup> However, these studies define control variables and measures of financial development that are typically used in time-series analysis.

significantly contribute to an increase in savings and investment rate and, eventually lead to economic growth (Becsi & Wang, 1997). Following this premise, most developing countries have reformed their economic and financial systems to improve the efficiency of their financial intermediaries with the objective of achieving financial sector development and promoting growth, starting in the 1980s. Therefore, we document the progress achieved by these countries over the last three decades in terms of revamping their financial systems, and assess the links between the reforms and economic performance.

Second, we employ unbalanced panel estimations and various multivariate time-series analysis technique to establish the direction, timing, and strength of the causal link between the real and financial sectors across geographic regions and income groups so that we may explore some policy implications. We also use financial development indicators employed in the literature and draw some conclusions about their impact on economic growth as measured by the annual growth rate of the domestic product (GDP) per capita.

Finally, instead of using heterogeneous cross-country samples, we investigate different geographic regions, each of which has a relatively homogeneous sample of countries. This is adequate for assessing the links between economic growth and financial development. Most time-series studies have analyzed either heterogeneous countries or a set of stand-alone countries.<sup>2</sup> We take a different approach in this paper. Rather than pooling worldwide data or analyzing each country, we study the relationship between finance and growth in geographic regions using World Bank classifications. The World Bank only categorizes geographic regions as low- or middle-income countries. High-income countries are excluded in its classification of geographic regions. Therefore, countries in each geographic region are homogenous with respect to the level of GDP per capita, financial development, and culture. Furthermore, we are able to capture the temporal dimension of the economic reforms by combining time-series with geographic cross-sectional data. The main advantage of this approach is that we are able to use enough data to estimate parameters in panel data regression and other multivariate analysis techniques that otherwise could not be estimated for a single country, and yet document the finance–growth association with the objective of deriving some policy implications for each region (and the countries that belong to the region). Also, to benchmark middle- and low-income countries against high-income countries, we include high-income countries classified by the World Bank as either high-income OECD countries or high-income non-OECD countries.

Using a neo-classical growth model, and in agreement with King and Levine (1993a), and Levine, Loayza, and Beck (2000), among others, we find strong long-run linkages between financial development and economic growth for developing countries. Specifically, as predicted in neo-classical growth models (Pagano, 1993), domestic gross savings is positively related to growth. Moreover, other proxies for financial development, such as domestic credit provided by the banking sector and domestic credit provided to the private sector, are positively related to economic growth.

Furthermore, consistent with the standard results for conditional convergence (Barro, 1997; Bekaert et al., 2005), we find that a low initial GDP per capita level is associated with a higher-rate of economic growth for most regions, after controlling for financial variables and real sector variables.

Likewise, using the Granger causality test developed by Toda and Yamamoto (1995), we find a two-way causality between finance and growth in all regions but Sub-Saharan Africa and East Asia & Pacific. This result is consistent with Shan, Morris, and Sun (2001) and Demetriades and Hussein (1996), who found bi-directional causality between finance and growth, but contrary to Christopoulos and Tsionas (2004), who found that the direction is from finance to growth. The results also provide some support to the theoretical models of Blackburn and Huang (1998) and Khan (2001), which predict a two-way causality between finance and growth.

However, we find that the causality runs from growth to finance in South Asia and in Sub-Saharan Africa, the two poorest regions in our sample. This result supports the views of Gurley and Shaw (1967), Goldsmith (1969), and Jung (1986), who hypothesized that in developing countries, growth leads finance because of the increasing demand for financial services.

The paper is organized as follows. Section 2 provides a literature review. Section 3 describes the data and the proxy measures of financial development, real sector, and economic growth. Section 4 describes the unbalanced panel estimations and multivariate time-series methodologies applied in the paper. Section 5 analyzes the empirical results, and Section 6 provides conclusions.

## 2. Literature review

Since the pioneering contributions of Goldsmith (1969), McKinnon (1973), and Shaw (1973) on the role of FD in promoting EG, the relationship between EG and FD has remained an important issue of debate among academics and policymakers (De Gregorio & Guidotti, 1995). Early economic growth theory argued that economic development is a process of innovations whereby the interactions of innovations in both the financial and real sectors provide a driving force for dynamic economic growth. In other words, exogenous technological progress determines the long-run growth rate, while financial intermediaries are not explicitly modeled to affect the long-run growth rate.

However, a growing contemporary theoretical and empirical body of literature shows how financial intermediation mobilizes savings, allocates resources, diversifies risks, and contributes to economic growth (Greenwood & Jovanovic, 1990; Jbili, Enders, & Treichel, 1997). The new growth theory argues that financial intermediaries and markets appear endogenously in response to market incompleteness and, hence, contribute to long-term growth. Financial institutions and markets, which arise endogenously to mitigate the effects of information and transaction cost frictions, influences decisions to invest in productivity-enhancing activities through evaluating prospective entrepreneurs and funding the most promising ones. The underlying assumption is that financial intermediaries can provide these evaluation and monitoring services more efficiently than individuals.

An important set of authors in the literature agrees that there is a relation between finance and economic growth. However, they disagree about the direction of causality. On one hand, some authors have theoretically and empirically shown that there is causal direction from FD to EG. That is, policies that move toward the development of financial systems lead to economic growth. McKinnon (1973), King and Levine (1993a), Levine et al. (2000), and Christopoulos and Tsionas (2004) support this argument. On the other hand, other authors argue that the direction is from economic growth to financial development. Since the economy is growing, there is an increasing demand for financial services that induces an expansion in the financial sector. This view is supported by Gurley and Shaw (1967), Goldsmith (1969), and Jung (1986).

<sup>2</sup> For instance, Calderon and Liu (2003) and Bekaert, Harvey, and Lundblad (2005) ran regressions using 109 and 95 worldwide countries, respectively. Shan, Morris, and Sun (2001) studied 10 developed countries running regressions for each country.

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