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FINANCE AND GROWTH: DOES ONE SIZE FIT ALL? EVIDENCES FROM A NONPARAMETRIC ESTIMATION

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Monica Das and Sudip Ranjan Basu

Monica Das, Department of Economics, Skidmore College, 815 N Broadway, Saratoga Springs, NY 12866; mdas@skidmore.edu; 518-580-5096 and Sudip Ranjan Basu, Economic Affairs Office, ESCAP

For more information, contact:

Macroeconomic Policy and Financing for Development Division (MPFD)
Economic and Social Commission for Asia and the Pacific
United Nations Building, Rajadamnern Nok Avenue, Bangkok 10200, Thailand
Email: escap-mpdd@un.org

Dr. Aynul Hasan
Director
Macroeconomic Policy and Financing for Development Division

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Abstract

The objective of the paper is to use nonparametric methodology to examine the relationship between indicators of financial development and economic growth. The paper uses the Li-Racine (2004) generalized kernel estimation methodology to examine the role of financial development in understanding economic performance across countries and country-groups. We also control for other factors that influence economic performance such as, trade openness, government policies and institutional quality. The paper supports the view that countries with larger and well-diversified financial markets are in a better position to reap benefits from financial sector deepening and forward-looking public policies. This holds true irrespective of the initial size of the financial sector in the country as well as the strength of institutional quality.

Keywords*:* Bank, Capital market, nonparametric estimation, growth.

Authors' e-mail addresses: mdas@skidmore.edu and basu@un.org.

I. Introduction

The financial sector activity is significantly linked to economic growth. From Armenia to America, and from Bangladesh to Botswana, the countries have not only seen the progression in the deepening of the financial sector, but it has also raised challenges in policymaking that require balancing between the size and depth, and its impact on economic growth. Increasingly, over the past decades, the volatility and stress in the financial sectors have created concerns both for the prospects of sustainable growth as well as in ensuring jobs creation. The transmission channel from finance and economic growth is not uni-directional, rather there are multiple ways in which these two macroeconomic factors are related.

This paper uses nonparametric regression methodology to estimate the impact of the financial system on growth at the cross-country level during the past two decades. Therefore, the key issue here is to understand the following: Is financial sector deepening positively linked to economic growth at all levels of development? or does it depend on the size of the economy and the nature of the financial system? The paper provides empirical evidence on the issue that “a one-size-fits-all” policies is not applicable across countries, and during the period.

In the traditional macroeconomic theory, the financial sector development is intertwined to capital accumulation, one of the input factors in the production function. In particular, an improvement in the financial market can produce positive outcomes through: reducing the loss of resources required to allocate capital; increasing the capital saving ratio; and raising capital productivity. A development in financial sector therefore contributes to capital accumulation and effectively that subsequently ensure robust economic growth, and also helps to increase the productivity by selecting the most profitable investment projects. This linkage between financial sector development and productivity growth is particularly critical in periods of rapid technological progress and innovation, which allow countries to benefit and enjoy higher rates of economic growth.

Another discussion that has taken centre stage of the current policy regimes is that of the expansion of integrated capital market, the evolution of financial structure in different economies on growth. The countries financial structure is mostly defined either in the form of a bank-based or market-based financial system. In the bank-dominated financial system, banks take the dominant role in mobilizing resource, identifying bankable projects, and managing risk, and incentivizing technological progress and innovation. On the other hand, with the market-dominated financial system, market operations provides the necessary lead in identifying investment portfolios, devising risk management activities, and supporting for high-risk high-return projects, thus reducing the inherent inefficiencies associated with banks-based financing system.

With the growth of financial services around the world, it is argued that financial structure does not have added valued to economic growth. Importantly, for finance and growth to work towards increasing the overall economic prosperity, there is a role of the property rights and institutional quality to improve the effectiveness of the financial system in facilitating the economic growth process.

The contribution of the paper is in the application of the Li and Racine (2007) nonparametric methodology to estimate the relationship between the size of an economy and the size of its financial sector in a panel with both time and country effects. In the estimation of any parametric model, misspecification bias and endogeneity/omitted variable bias could be present.

The nonparametric estimates in the paper effectively deal with misspecification bias. Another advantage of the nonparametric methodology is that the paper obtains estimates of slope coefficients ($\Delta Y/\Delta X$) for every data point. In other words, paper estimates the impact of every finance variable on economic growth for every country in every time period. This allows to provide several group specific aggregates of the slope coefficients. The standard errors of the group aggregates are obtained via bootstrapping.

Apart from key role of the size and composition of financial institutions to boost economic performance, there are growing number of research papers in literature to document the critical role of efficient domestic institutional conditions as well as human capital accumulation and geography (Acemoglu et al. 2001; Sachs, 2003; Easterly and Levine, 2003; Rodrik et al. 2004; and Basu, 2008). Among other group aggregates, paper provides the nonparametric estimates the *economy-finance* relationship for country groups based on property rights (*pr*) and strength of institutional quality (*ief*). These results add to the discussion on the role of institutional quality in shaping the linkages between financial sector development and economic growth performance.

The nonparametric estimates find strong support for positive significant impact of higher level of financial sector development on GDP per capita, by using several control variables. For majority of the countries examined, the impact of higher level of financial sector development on the GDP per capita are quite favorable, while the role of trade policies and institutional quality remain key complementary policy initiatives. Since the Li-Racine methodology provides weighted estimates (weights determined by all observations) of the regression function and its slope at every data point, the paper also examines the nonparametric estimates for various sub-groups by continents and country characteristics.

The impact of financial sector development, both bank-based and market-based on GDP per capita is far from uniform across countries or time periods. However, the favorable relationship between these two or minimal support for a negative relation between the two variables, is robust to most sub groups and country characteristics. The paper employs nonparametric methodology that conducts the analysis without pre-specifying any functional form. Also, it obtains the estimates of the slope coefficients for every data point. The slope estimates can be aggregated for every sub groups based on several criteria, such as quality of institutions or size of the financial sector.

We now sketch a course for the rest of the paper. Section 2 presents a brief survey of the most relevant papers in the literature. Section 3 provides the Li-Racine estimation technique for mixed data, utilized in the paper to the estimation of economy-finance relationship. Section 4 discusses the data set and the empirical model. Main results of the paper are presented in section 5 and section 6 concludes the paper.

II. Literature

A large body of literature dating as far back as Schumpeter (1911) argues for the positive relationship between development of a country's financial sector and the rate of growth of its per capita income (see Levine 1997). The paper by Rajan and Zingales (1998) argues a reason why financial development leads to economic growth could be that it reduces the costs of external finance. Their paper demonstrates that industrial sectors that are relatively more in need of external finance develop disproportionately faster in countries with more-developed financial markets. Most empirical works seem to agree with the Schumpeterian arguments.

Similarly, King and Levine (1993) present cross country evidence of a positive relationship between financial development and economic growth via the mechanism of physical capital accumulation and growth of economic efficiencies, using data from 80 countries from 1960 to 1989 after controlling for numerous country and policy characteristics. Furthermore, Levine and Zervos (1998) shows that stock market liquidity and banking development both positively predict growth, capital accumulation, and productivity improvements when entered together in regressions, even after controlling for economic and political factors. Levine et al (2000) estimate a GMM dynamic panel model with data from 74 countries averaged over 5-year intervals during 1960 – 1995. They find that legal and accounting reforms can boost financial development and accelerate economic growth.

Some of the papers in the empirical literature question the previous findings. Easterly and Stiglitz (2000) take a different view that financial development is desirable up to a point. They find that financial systems that feature debt more prominently than equity are more vulnerable to growth collapses. Cecchetti and Kharraoubi (2012) conclude as is the case with many things in economic literature, with financial development countries can have too much of a good thing. The relationship between financial development and economic growth is a non-linear inverted-U relationship.

The discussion on this issue can further be grouped into two key areas as follows:

A. Impact of financial sector development on growth

A large number of studies have identified empirically the positive role of financial