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Financial development and economic growth: evidence from panel unit root and cointegration tests

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Abstract

In this paper we investigate the long run relationship between financial depth and economic growth, trying to utilize the data in the most efficient manner via panel unit root tests and panel cointegration analysis. In addition, we use threshold cointegration tests, and dynamic panel data estimation for a panel-based vector error correction model. The long run relationship is estimated using fully modified OLS. For 10 developing countries, the empirical results provide clear support for the hypothesis that there is a single equilibrium relation between financial depth, growth and ancillary variables, and that the only cointegrating relation implies unidirectional causality from financial depth to growth.

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1. Introduction

A large and expanding literature tries to shed some light on the roles of policy or "ancillary" variables in the determination of economic growth. Most of this literature has mainly focused on the role of macroeconomic stability, inequality, income and wealth, institutional development, ethnic and religious diversity and financial market imperfections. For an extensive survey of this literature, see Levine (1997). Among these factors

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the role of financial markets in the growth process has received recently considerable attention. In this framework, financial development is considered by many economists to be of paramount importance for output growth. In particular, government restrictions on the banking system (such as interest rate ceiling, high reserve requirements and directed credit programs) hinder financial development and reduce output growth, see McKinnon (1973) and Shaw (1973).

Likewise, the endogenous growth literature stresses the influence of financial markets on economic growth, see among others Bencivenga et al. (1995), Greenwood and Smith (1997), and Obstfeld (1994). These authors include financial intermediaries, information collection and analysis, risk sharing etc in the proposed models. In this line of research, Benhabib and Spiegel (2000) argue that a positive relationship is expected also to exist between financial development and total factor productivity growth and investment. However, their empirical results are very sensitive to model specification. Further, Beck et al. (2000) find that financial development has a large positive impact on total factor productivity (TFP), which feeds through to overall GDP growth. See also Neusser and Kugler (1998).

A problem with the previous studies is that a positive relationship between financial development and output growth can exist for different reasons. As output increases the demand for financial service increases too, which in turn has a positive effect on financial development. Other things being equal, it is financial development that follows output growth and *not the opposite*. This issue was considered in Robinson (1952, p. 86). Others were keener to totally dismiss the impact of financial development on economic growth. Lucas (1988, p. 6) states, for example, that "*the importance of financial matters is very badly overstressed*" while Chandavarkar (1992, p. 134) notes "*none of the pioneers of development economics... even list finance as a factor of development*". See also Luintel and Khan (1999).

Although many empirical studies have investigated the relationship between financial depth, defined as the level of development of financial markets, and economic growth, the results are ambiguous. On the one hand, cross country and panel data studies find positive effects of financial development on output growth even after accounting for other determinants of growth as well as for potential biases induced by simultaneity, omitted variables and unobserved country-specific effect on the finance-growth nexus, see for example King and Levine (1993a,b), Khan and Senhadji (2000) and Levine et al. (2000). On the other hand, time series studies give contradictory results. Demetriades and Hussein (1996) find little systematic evidence in favor of the view that finance is a leading factor in the process of economic growth. In addition they found that for the majority of the countries they examine, causality is bi-directional, while in some cases financial development follows economic growth. Luintel and Khan (1999) used a sample of ten less developed countries to conclude that the causality between financial development and output growth is bi-directional for all countries. All these results show that a consensus on the role of financial development in the process of economic growth does not so far exist.

There are a number of concerns with previous empirical work. Although the nature of $I(1)$ variables has been recognized as critical, and proper estimation techniques (organized around unit roots and cointegration) have been used, the small samples typically used may significantly distort the power of standard tests, and lead to misguided conclusions. Thus,

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