



Financial development, real sector, and economic growth



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ABSTRACT

This paper evaluates the interdependence between financial development and real sector output and the effect on economic growth. Using panel data for 101 developed and developing countries over the period 1970 to 2010, we show that the effect of financial development on economic growth depends on the growth of private credit relative to the real output growth. The findings also suggest that the effect of financial development on growth becomes negative, if there is rapid growth in private credit not accompanied by growth in real output. Our findings provide empirical evidence that supports the theories that postulate the existence of an optimal level of financial development given by the characteristics of an economy.

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1. Introduction

Financial development is an important determinant of economic growth. However, due to the broad definition and interdependence with other spheres of economic development, the effect of financial development on economic growth is unclear. Empirical studies periodically re-evaluate the relationship between financial development and economic growth as new theories, datasets, and empirical tools become available. This paper analyzes how the relationship between financial development and economic growth is affected by the development of the real sector of the economy. Based on panel data for developed and developing countries, we show that for smooth economic development, balanced growth of the real and financial sectors is required. Our results are consistent with existing theoretical studies that suggest there is a trade-off between financial and real sector expansion.

The channels through which financial development contributes to economic growth have been discussed extensively in the literature. Related theories can be characterized by optimistic and skeptical approaches. According to the former approach, better financial systems mobilize savings and facilitate efficient allocation of resources (Greenwood, Sanchez, & Wang, 2010; King & Levine, 1993), reduce agency costs and enhance innovation activities (Aghion, Howitt, & Mayer-Foulkes, 2005), and contribute to high-return investments through risk-sharing (Bencivenga & Smith, 1991; Greenwood & Jovanovic, 1990; Saint-Paul, 1992). According to the latter approach, financial development may lead to high systemic risk (Allen & Carletti, 2006; Gai, Kapadia, Millard, & Perez, 2008; Gennaioli, Shleifer, & Vishny, 2012; Wagner, 2007), suboptimal low savings (Jappelli & Pagano, 1994), sub-optimal high allocation of labor to the financial sector (Bolton, Santos, & Scheinkman, 2011; Philippon, 2010), overheated economic capacity (Zeira, 1999), or the exertion of inefficiently high cost on the economy (Santomero & Seater, 2000).

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These theoretical findings suggest that the causal effects of financial development should be considered jointly with the state of development in other sectors that govern economic growth. For example, if financial deepening increases systemic risk because excess financing is allocated to risky investments, technological progress in the productive sector could extend the economy's production capacity and release the demand for funds from more efficient firms. This would stabilize the economy, reduce the probability of systemic crises, and thus increase the average economic growth rates. Otherwise, if high rent resulting from the financial sector's disproportionately fast development attracts too many skilled labor resources, then exogenous growth in other sectors' technologies could restore the optimal allocation of labor. As shown, for example, in [Murphy, Shleifer, and Vishny \(1991\)](#), optimal allocation of labor across sectors is crucial to sustain economic growth rates. Similarly, if financial innovations reduce savings (due to, for example, dampening interest rates), technological progress in the real sector has the opposite effect (increases the demand for funds with a consequent rise in interest rates). Savings, in turn, define the accumulation of capital in the economy, subsequent levels of output, and economic growth rates. Thus, balanced growth of financial sector technologies and real sector technologies might be necessary for financial development to have an unambiguously positive effect on economic growth.

In this paper, we investigate whether the effect of financial development on economic growth depends on the relative speed of the development of the financial and real sectors in a sample of developed and developing countries. Financial development is proxied by the amount of private credit by banks and other financial institutions as a share of the gross domestic product (GDP). This variable has been used extensively in the literature and is considered a good measure compared to available alternatives ([Beck, Demirgüç-Kunt, & Levine, 2007](#)). The variable reflects the state of technology in the financial sector: the amount of financial funds the system transfers within a period of time. For robustness, we also use private credit by banks as a share of the GDP and liquidity as a share of the GDP. These proxies for financial development are also measures of financial sector outputs. Accordingly, we proxy development of the real sector by industrial output growth. Numerous studies have discussed the relationship between financial development and industrial output at the micro level. These studies have shown that the effect of financial development on a particular industry depends on the characteristics of that industry, such as its level of financial dependence (see, for example, [Huang, Fang, & Miller, 2014](#); [Larrain, 2006](#); [Manganelli & Popov, 2013](#); [Raddatz, 2006](#); [Rajan & Zingales, 1998](#)). Our paper considers the relationship between development of the financial and real sectors of the economy at the macro level. We consider a cross-section of 101 countries with the data averaged over the period 1970–2010 to characterize the long-run relationship between the variables of interest and panel data to characterize the relationship between the variables of interest over a shorter time horizon. For the cross-section estimates, we also consider the research and development (R&D) expenditure share of the GDP as a proxy for development of the real sector. This variable is a common proxy for technological progress in a country and is an alternative measure of real sector development.

To control for the simultaneity between financial development and economic growth, we use the first-difference generalized method of moments (FD-GMM) estimator developed by [Arellano and Bond \(1991\)](#), and we use lags of the endogenous variables as instruments in the panel of five-year non-overlapping periods. For the cross-section analysis, we use legal origin indicators as instruments for financial development.

The empirical literature characterizing the role of financial development in economic growth, similar to theoretical studies, follows two history-determined general approaches: optimistic (more popular during the 1990s and 2000s) and skeptical (more popular after 2000).

The first approach seeks to rationalize financial innovations and financial development as necessary components of economic prosperity and sustainable economic growth. This approach developed during the decade of the rapid expansion of financial services and the financial liberalization of the global economy. Representatives of the first approach include [King and Levine \(1993\)](#), [Rajan and Zingales \(1998\)](#), and [Levine, Loayza, and Beck \(2000\)](#).

The second approach describing the role of financial development in economic growth flourished after the financial crises in 1997–1998 and 2007–2008. This approach identifies possible dangers of financial liberalization. In particular, the after-great-crises studies cast doubt on the conclusions of the optimistic approach's representatives.

[Deidda and Fattouh \(2002\)](#) re-estimate [King and Levine's \(1993\)](#) findings by applying the threshold regression model and found support for the nonlinear effect of financial development on economic growth. [Manganelli and Popov \(2013\)](#) show that the effect of financial development on economic growth is nonlinear in the [Rajan and Zingales \(1998\)](#) dataset: The effect weakens for very large financial markets. [Cecchetti and Kharroubi \(2012\)](#) also found that financial development has an inverted U-shape effect. [Ben Gamra \(2009\)](#) shows that partial financial liberalization has a stronger positive effect on economic growth than full liberalization in a sample of East Asian economies. [Owen and Temesvary \(2014\)](#) found that the impact of different types of bank lending on economic growth depends on the level of development of the country's banking sector.

[Kaminsky and Reinhart \(1999\)](#) suggest a possible negative channel of financial development effect on economic growth through triggering financial instability. [Loayza and Ranciere \(2006\)](#) found evidence for the coexistence of a positive relationship between financial intermediation and output in the long run and a negative short-run relationship due to financial instability. [Rousseau and Wachtel \(2011\)](#) argue that the positive effect of financial deepening weakens over time regardless of a country's level of development. [Beck, Degryse, and Kneer \(2014\)](#) reconsider findings of the paper by [Levine et al. \(2000\)](#). The authors suggest that a larger financial sector increases growth and reduces volatility over the long run, while stimulating growth at the cost of higher volatility over short-term horizons. [Arcand, Berkes, and Panizza \(2012\)](#) found similar results using several estimation techniques and controlling for the endogeneity of financial development.

[Calderon and Liu \(2003\)](#) suggest that financial deepening contributes more to growth in developing countries than in industrial countries. A similar result is found by [Masten, Coricelli, and Masten \(2008\)](#) who analyze a sample of European countries and show that less developed countries gain more from financial development. [Rioja and Valev \(2004\)](#) found that financial development has

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