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Linking the missing market: The effect of bond markets on economic growth[☆]

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ABSTRACT

Past studies have largely focused on the positive role of banks and stock markets on economic growth. This paper adds bond markets as a third key component of the financial system. Using a panel data set of 38 countries, and applying the generalized method of moments techniques for dynamic panels, we find that (i) stock market development is positively related to economic growth; (ii) the contributing role of bank credit to economic growth diminishes as domestic bond markets develop; (iii) government bonds are positively related to economic growth, while the effects of corporate bonds change from negative to positive, as domestic financial structures expand in size and diversity.

1. Introduction

The neoclassical economists' view, that financial markets play subordinate roles to the real sector of economy, has long lost its fulcrum. This view has been replaced in the literature by the general proposition that financial markets promote economic growth by not only promoting capital accumulation but also fostering efficient allocation of resources and technological innovations (Levine, 1997; Wachtel, 2001). It should be pointed out at the outset that economic growth is both country-specific and time-specific. It is a complex process of innovation which is shaped by the dynamic interplay between the industrial structure and financial system peculiar to individual countries at a given point in time.[1]

While it appears that there exists a general consensus around the idea that an efficient mechanism of financial intermediation is critical in mobilizing savings and diversifying investment risks, growth literature shows sharply divided views on the specific direction of causality between financial development and economic growth. (Beck & Levine, 2004; Hassan, Sanchez, & Yu, 2011) On the one hand, *a priori* intuition and empirical evidence have given rise to a positive relationship between financial development and economic growth. For instance, LaPorta, Lopez-de-Silanes, Shleifer, and Vishny (1998) find that countries with legal systems which promote good corporate governance and creditors' rights had faster economic growth, while Goldsmith

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(1969), King and Levine (1993a, 1993b), Rousseau and Wachtel (2000) and Beck and Levine (2004) affirm the positive impact that well-functioning banks and stock markets have had on economic growth.

Alternatively, Lucas (1998) and Favara (2003) are skeptical about the positive role of financial markets that has had on economic growth. Rajan and Zingales (2003), Allen, Qian, and Qian (2005), Shyn and Oh (2008), Ergungor (2008) and Jalil, Feridun, and Ma (2010) each refute the validity of the premise that determinants of economic growth would feature such a positive role for financial markets. In particular, Ergungor (2008) shows that economic growth effects and financial system development are bidirectional, and thus, a country's financial system's structure is irrelevant to economic growth. Rajan and Zingales (2003) draw attention to "a great reversal" of economic growth experienced by Argentina during the twentieth century despite her earlier success in financial development, while Allen et al. (2005), and Shyn and Oh (2008) point to recent rapid economic growth achieved by South Korea and China without the benefit of a well-developed domestic financial markets.

The overwhelming majority of literature on the relationship between financial markets and economic growth has focused on two key institutions – banks and stock markets – with scant attention to bond markets. There are two major reasons for researchers' collective inattention to bond markets: First, bond financing is subsumed as part of debt financing, which has been historically dominated by banks. This point is especially relevant in many economies where banks have preempted bond markets in general and corporate bond markets in particular with their high capitalization and liquidity (Ma, Remolona, & He, 2006). Second, while stocks are traded at exchanges or their equivalent and their price discovery process can be analyzed by trading data, which is publicly available, bonds, are traded over-the-counters, where transaction data are not transparent nor made publicly available.

The motivations for our study are: First, little is known about the micro-structure of bond markets, such areas as price formation and how the liquidity necessary for bond purchases is supplied. This is true even for the U. S. bond market, the world's largest and most liquid market. (Biais, Decierck, Dow, Portes, & von Thaddden, 2006) Second, the development of domestic *government* bond markets historically took place well before domestic stock markets came into being (Litan, Pomerleano, & Sundararajan, 2003). As a result, in many countries, especially in Europe, the total amount of bonds outstanding is greater than that of credit provided by banks, and the size of government bond markets trump that of the respective stock markets (Biais et al., 2006; Fink, Haiss, & Hristoforova, 2003).[2] Third, bond markets are expected to experience rapid growth worldwide for two reasons: i) Many countries now nurture their domestic bond markets as a defensive measure against the type of financial crises which many Asian and Latin American countries faced in the 1990's and ii) growing numbers of affluent investors in developing countries are pouring their savings into bond markets in search of high yield and portfolio diversification (See Braun & Briones, 2005; de la Torre, Gozzi, & Schumukler, 2007; Herring & Chtusripitak, 2000; Tudor, 2012). Finally, as Levine (1997) notes, any debate which focuses solely on bank or equity market-based systems may be misdirected, and future research on financial structure relative to economic growth should include more diverse countries other than the U. S., U. K. and Euro-zone countries.

The dearth of transaction data notwithstanding, several studies including Herring and Chtusripitak (2000), Braun and Briones (2005) and Fink, Haiss, Kirchner, and Moser (2006) examine the relationship between bond markets and economic growth. On balance, their finding is that the relationship is positive. It should be noted that none of these studies have used panel data methods. These methods enable regression analysis of a pooled data set involving a spatial and temporal dimension and allow for control of the effects of missing variables and the bias arising from simultaneity of key cross-sectional data being analyzed.[3] Recently, Beck and Levine (2004) employed a panel data analysis on the effects of two sectors of financial markets — banks and stock markets — on economic growth.

Our paper extends the Beck and Levine (2004) study by introducing the third major financial sector; the domestic bond market, which we divide into two subsectors; government and corporate bonds. In addition, as shown in Section 5 and Appendix II, we also refine Beck and Levine's *system* estimator by including the small-sample correction for two-step standard errors developed by Windmeijer (2005). We analyze, in this study, 38 countries: Argentina, Australia, Austria, Belgium, Canada, Chile, China, Czech Republic, Denmark, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, India, Ireland, Italy, Japan, South Korea, Malaysia, Mexico, the Netherlands, New Zealand, Norway, Philippines, Poland, Portugal, Singapore, South Africa, Spain, Sweden, Switzerland, Thailand, Turkey, the U. K. and the U. S.

Our findings are that; (i) stock market development is positively related to economic growth; (ii) the contributing role of bank credit to economic growth diminishes as domestic bond markets develop; (iii) government bonds are positively related to economic growth, while the effects of corporate bonds change from negative to positive, as domestic financial structures expand in size and diversity.

The remainder of the paper is organized as follows. Section 2 starts with a preliminary description about the bond market including its role and the historical development in various parts of the world. Section 3 provides a brief survey of literature. Section 4 describes definitions of key variables, descriptions of data, descriptive statistics, and preliminary findings from OLS. Section 5 discusses the model and presents the empirical results. Concluding remarks are found in Section 6.

2. The bond market

The bond market plays a critical role in the efficient functioning of capital markets. By channeling savings, it makes funds available to long-term borrowers. In doing so, it sets the benchmark interest rates for debt instruments with varying maturities

[2] A notable exception would be several Asian emerging economies, such as China and Korea, where the development of their stock markets preceded the emergence of their domestic *government* bond markets. See Park (2008, p. 15).

[3] A good survey article on the subject is found in Wachtel (2001).