Journal of Banking & Finance 36 (2012) 1548–1562

Contents lists available at SciVerse ScienceDirect

Journal of Banking & Finance

journal homepage: www.elsevier.com/locate/jbf

Local financial development and growth

Jake Kendall *

Bill & Melinda Gates Foundation, PO Box 23350, Seattle, WA 98102, United States

ARTICLE INFO

Article history:
Received 2 February 2010
Accepted 2 January 2012
Available online 12 January 2012

JEL classification:
I2
I3
O1
O3
O4
R1
F4
G2

Keywords:
Banking
Financial development
Human capital
India
Regional growth

ABSTRACT

Using unique, district-level, economic growth data, I investigate the connection between banking sector development, human capital, and economic growth in Indian districts. Disaggregate data helps avoid many of the omitted variable problems that plague similar cross-country studies. The data show districts to be financially constrained by the lack of local banking sector development, and the relationship may be non-linear. For districts in the sample, moving from the 75th percentile of credit/net domestic product to the 25th percentile implies an average loss of 4% in growth over the 1990s decade. The data also shows that human capital deepening can reduce the financial constraint. In a district at the 25th literacy percentile, the implied growth loss due to a constrained banking sector is twice as large as in a district at the 75th literacy percentile. The results are robust to the inclusion of various controls and changes in specification.

1. Introduction

The idea that the financial sector has the potential to affect patterns of innovation and growth goes back at least to Schumpeter (1912). Recent studies on the relationship between financial markets and growth have generally concluded that the presence of strong and efficient financial mechanisms enhances growth. A prominent line of empirical research – started by King and Levine (1993), and extended by Levine and Zervos (1998) and Beck et al. (2000a,b), among others – leverages cross-country data to demonstrate that financial development is an important factor in national economic growth.[1] Specifically, this literature shows that future growth in per capita real income is positively correlated with the size and depth of an economy's financial system (usually measured as the value of a financial aggregate, such as credit, to GDP), as well as other measures that relate to banking sector dynamism including banking law harmonization (Romero-Avila, 2007), financial system structure (Carlin and Mayer, 2003), and banking sector stock returns (Hasan et al., 2009b; Cole et al., 2008).[2] However, omitted variable problems systematically contaminate the evidence from these cross-country regressions. We should be particularly skeptical of this evidence because so many researchers have used the data so intensively (see e.g. Levine and Renelt, 1992), who demonstrate the parametric instability inherent in cross-country regressions.

In contrast to these cross-country studies, in this paper I reassess the finance-growth relationship within different regions of the same country, India. This subnational focus helps to remove many of the omitted variable problems pervading the cross-country literature. My level of focus also allows me to address an issue that has received much less attention than the cross-country finance-growth relationship: the importance of promoting geographically diffuse banking sector development across regions *within* a country. This paper demonstrates the potential returns to developing financial capacity by showing that the lack of such

* Tel.: +1 206 770 2018; fax: +1 206 770 1520.
E-mail addresses: kendall_jake@hotmail.com, jake.kendall@gatesfoundation.org

[1] Though it does not purport to address the connection between finance and growth, a cross-country study by Aizenman et al. (2007) shows that countries that finance their growth from local savings have historically grown faster than those that finance growth with foreign borrowing.

[2] Significant work has also been done on the determinants of the level of financial development, including: Djankov et al. (2007), La Porta et al. (1998), and Djankov et al. (2008).

0378-4266/$ - see front matter © 2012 Elsevier B.V. All rights reserved.
doi:10.1016/j.jbankfin.2012.01.001

capacity stymies growth, and that the least financially developed districts in a country suffer a disproportionately greater penalty in terms of suppressed economic growth. I also test the interaction between human capital depth and financial development at the district level and find that human capital may help reduce the dependence of growth on finance. This result is non-obvious, as a model based on a standard production function would likely show the two to be complements, but is in line with other work on the Indian economy which shows that human capital may enable less finance-intensive activities (e.g. Amin and Mattoo, 2008).

For this study, I use a new data set of district level Net Domestic Product (NDP) measurements from the internal records of the Reserve Bank of India (RBI).[3] The data document economic performance and growth during the 1990s at the district level (in India, districts are the geographical government division just below the level of the state). In addition to NDP measurements, the dataset includes measures of adult literacy, credit and deposits in local commercial banks, geographic area, population, and road infrastructure by district in both 1990–1991 and 2000–2001.

The use of disaggregated district-level data limits the omitted variable problems mentioned above. Districts in my sample exist within a unified political, legal, and monetary framework, there are no de jure barriers to trade or capital flows between them, and they are – for the most part – at similar stages of development. These shared characteristics among districts means that relative to a cross-country analysis, a cross-district analysis will suffer from fewer omitted variable problems. Additionally, district borders often correspond to the economic catchments around a single city, making them a natural unit of study.[4]

While disaggregate data help to address some of the methodological issues associated with cross-country data, they also allow me to focus on important substantive issues which have been largely ignored by the finance-growth literature. Studies of the financial sector's influence on growth tend to focus on factors that apply at the national level. They do this explicitly by focusing on markets, such as stock and bond markets, for which access does not vary much across regions.[5] They also do it implicitly by choice of instruments. The inflationary tendencies of the central bank, banking reserve requirements, features of securities law and financial regulations, and features of the judiciary system are examples of instruments that have been used in the cross-country literature on finance and growth.[6] In each case, these factors measure constraints on the financial sector that apply at the national level and affect the entire economy as a whole.

This approach raises the question of whether the positive relationship between financial development and growth obtains at the sub-national level. Suggesting that it does, there is mounting evidence that the distance between borrower and lender is a factor in the production of financial services, especially credit to small and medium enterprises. Petersen and Rajan (2002), for instance, document that even in the United States, the distance between small business borrowers and their banks is less than 20 miles (35 km) for over 75% of loans to these firms. On the other hand, the importance of creditor and borrower location may not be as significant for large enterprises. It seems completely plausible that such enterprises could obtain financial capital from major, though perhaps distant financial centers, rendering the size of the financial sector in the local municipality largely irrelevant.

In one of the few recent papers that addresses the topic of regional financial development, Guiso et al. (2004) study regions in Italy and find that a higher level of local financial development promotes the growth of local firms and increases the probability that an individual will start a business. The paper does not, ultimately, address the issue of aggregate growth and leaves open the possibility that the partial equilibrium results may not translate directly to general equilibrium. Jayaratne and Strahan (1996) find a positive relationship between bank branching law reform and growth in US states. However, while the magnitude of the effect they find is large, they address a very specific legal constraint on competition in the US financial system, which may not apply in other countries and contexts. Another paper, Hasan et al. (2009a), shows that capital market deepening – as measured by the volume of capital market securities issued by local firms – at the provincial level in China is associated with faster local economic growth. Contrary to my results, they find the relationship between banking sector depth and growth is flat or negative, and they attribute this relationship to the high share of public ownership of banks in China. The approach I take here parallels other work in the finance-growth literature in using the relative size of the financial system as a proxy for the level of development of the financial system, while employing instrumental variable techniques to mitigate endogeneity concerns.

The studies mentioned above address topics related to those that I address in this paper; however, none of the aforementioned works investigates whether greater local banking sector depth is associated with faster growth in a city-sized economy. Furthermore, most of the literature focuses on the developed world. Only Hasan et al. (2009a) was conducted in a developing economy, and even their analysis, which centers on China, is of questionable relevance for India given the substantial differences in the Chinese and Indian contexts.[7]

In this paper I address these gaps in the literature by measuring the relationship between the depth of a district's banking sector and the growth of that district. My results demonstrate the potential gains from banking sector outreach by showing that regions with greater banking sector capacity grow faster.[8] I find that a district that moves from the 75th percentile of bank credit/NDP down to the 25th percentile loses 4% points of growth over a decade. I also attempt to measure whether this relationship is non-linear and find evidence that it is. The measured effect of banking sector depth on growth is more than double in districts with credit/NDP below the median. This result is especially relevant in India where many of the past policies designed to foster banking sector outreach have focused in the areas with the lowest banking sector penetration (Burgess et al., 2005). My regressions indicate that it is precisely these areas that were still the most financially constrained in the 1990s.

While there are many cross-country growth studies that investigate financial development, human capital, and their separate

[3] NDP is GDP adjusted for estimated capital depreciation.

[4] Many Indian districts derive from princely city-states that existed in pre-colonial India and whose borders were formed by older historical/economic forces.

[5] See, e.g. Levine and Zervos (1996).

[6] Much effort has been expended to determine the causes of financial development or the lack thereof. La Porta et al. (1998) show that the extent of investor legal protections largely determines the ability of the financial system to extend credit. Other determinants of financial development that researchers have explored are financial repression (Haslag and Koo, 1999; Aizenman, 2008), macroeconomic stability (Rousseau and Wachtel, 2001), politics (Rajan and Zingales, 2003), regulatory features (Jayaratne and Strahan, 1996), social and religious practices (Stulz and Williamson, 2003), regulatory institutional factors such as accounting disclosure practices, enforcement of insider trading rules, and government ownership (Cole et al., 2008) , among others. Some of these factors have not received as much attention as legal institutions, but are nevertheless believed to be important in at least some contexts.

[7] The relationship between banking sector depth and growth is the one most comparable to the line of literature embodied in King and Levine (1993), which tends focus on financial depth measures to proxy for financial development.

[8] Designing policies to promote banking sector outreach is an issue with which Indian policy makers and others around the world continue to struggle. Burgess et al. (2005) document the results of the Indian social banking experiment, Kumar (2006) documents initiatives in Brazil to foster banking sector outreach. In fact, my results demonstrate the importance of geographic banking sector outreach generally, whether it be market or policy driven.