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The Link between Economic Growth and Financial Development: Evidence from Districts of Bangladesh

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Abstract

Since the days of Walter Bagehot, a number of economists have described how financial development facilitates economic growth. An extensive empirical literature has subsequently established that the relationship between financial development and economic growth is conditioned by the cultural and legal environment, so that the positive effects of financial development on economic growth might not exist within any given national context. This study investigates whether financial growth has any role in the economic development of Bangladesh, using district-level data to estimate a spatial model. We find that both too little and too much financial development harms growth. We explain this pattern by arguing that the theoretical literature is indeed correct, that financial development facilitates growth, but that Bangladesh exhibits a pattern previous studies have found in Turkey and China, of widespread political interference with the financial sector, so that financial resources are not allocated to investments with the highest rate of return.

Keywords: Banks; financial deepening; regional economic growth; Bangladesh
JEL Classification Codes: G21, R11

Introduction

Bangladesh has been the site of several innovative economic development programs, and is perhaps best known for the development of micro-lending, an innovation associated with the Grameen Bank. Several studies have examined the effects of micro-lending in Bangladesh, and the consensus appears to be that micro-lending is an effective means of facilitating grass-roots economic development, raising the income, consumption, and net worth of the poor (e.g., Khandker 2001). Fewer studies have been done on the role of the larger Bangladeshi financial system in facilitating economic development (e.g., Beck and Rahman 2006).

The view that financial institutions promote economic growth is of old vintage, dating at least as far back as the late 18th century, to Alexander Hamilton (Levine et al. 2000:32). In the 19th century, Walter Bagehot (1873: Chapter 1) pointed out that the effect of the banking system was such that the English of his time had “entirely lost the idea that any undertaking likely to pay, and seen to be likely, can perish for want of money; yet no idea was more familiar to our ancestors, or is more common now in most countries." Thus, the banking system makes possible "great undertakings" such as railways. John Hicks much later made the similar observation that the large fixed capital investments of the Industrial Revolution were only possible because of the development of financial markets (Hicks 1969:144-145).

Bagehot (1873: Chapter 1) also pointed out that, since the rate of interest on loans is lower than the rate of profit, credit allows small traders to earn high profits on their capital. The new class of credit-using traders is "prompt at once to seize new advantages," considering "…every change of circumstance… as opportunities." And it is the banking system which enables this entrepreneurial class to exist, putting credit "instantly at the disposal of persons capable of understanding the new opportunities and of making good use of them." This emphasis on the role of credit in funding the entrepreneur was later to be echoed by Joseph Schumpeter (1934: Chapter 3).

A large theoretical and empirical literature has developed over the last 50 years, beginning with Goldsmith (1969) and McKinnon (1973). Already by the 1990s a consensus had emerged that "the development of financial markets and institutions is a critical and inextricable part of the growth process" (Levine 1997:689). This literature examines the ways that financial markets and intermediaries reduce the information costs and transactions costs arising in markets for goods. Thus, for example, costs of information acquisition can be reduced by pooling savings, so that a large number of savers share the same information—information used to identify good investments (improving the allocation of resources), or information used to monitor agents managing the investment (improving corporate governance) (Levine 1997:695-697). Similarly, part of the transactions cost of making a long-term investment is the loss of liquidity to the saver who has her funds tied up in the investment. Financial markets can lower this transactions cost by making it possible for the saver to liquidate her investment, which would make these long-term investments more attractive. Since long-term investments typically enjoy high rates of return, their increased attractiveness would favor economic growth (Levine 1997:692-693).

Beginning with Goldsmith's 1969 monograph, the majority of the empirical studies have been cross-national analyses (e.g., Roubini and Sala-i-Martin 1992; Pagano 1993; King and Levine 1993a, 1993b; Jayaratne and Strahan 1996; Levine 1997, 1998 ; Arestis and Demetriades 1997; Rajan and Zingales 1998; Darrat 1999; Levine et al. 2000; Lindh 2000; Al-Yousif 2002; Rioja and Valev 2004). With a few exceptions (e.g., Demetriades and Hussein 1996; Luintel and Khan 1999), the results tend to show some causal effect of financial sector development on economic growth (including mutual causation). The studies also show that there is a great deal of variation across countries in the strength and channels of that effect. Levine et al. (2000) show that this variation is largely attributable to "legal and cultural" differences across countries, and Rioja and Valev (2004), find that the effect in high income countries works through productivity increases, and in low income countries through capital accumulation. Arestis, Demetriades, and Fattouh (2003) find that specific financial policies have quite different effects on capital productivity in different countries. This variation in effects has led some (e.g., Al-Yousif 2002) to conclude that country-specific effects are too strong to speak of a universal relationship between financial development and economic growth.

A number of researchers have conducted country-specific macroeconomic time series studies. There are two studies focusing on Bangladesh. Rahman (2004) uses Structural Vector Regressions (SVARs) to find the long-run impact of financial development on economic growth, and examines the short-run impact by drawing upon Impulse Response Functions (IRFs) and Variance Decompositions (VDCs). The study concludes that there exists both a short-run and long-run influence in the case of Bangladesh. Beck and Rahman (2006:5) similarly conclude that for the case of Bangladesh, there is a positive relationship between economic growth and financial development.

A few studies have emerged that examine variation across regions within a single country, though no study has as yet examined Bangladesh. The countries include the U.S. (Samolyk 1994; Jayaratne and Strahan 1996; Clarke 2004), China (Aziz and Duenwald 2002; Hasan et al. 2009; Cheng and Degryse 2010), Spain (Valverde and Fernandez 2004; Valverde et al. 2003; Valverde et al. 2004), and Turkey (Ardic and Damar 2006). An advantage of these studies is that one can control for the cultural and legal environment (Valverde et al. 2003), making it easier to identify the effect of financial development on economic growth. These studies turn in mixed results. For example, considering only bank credit, some studies show the expected positive effect on economic growth (Cheng and Degryse 2010:196; Valverde and Fernandez 2004:16; Valverde et al. 2004:27), and others show a negative effect (Ardic and Damar 2006:14; Hasan et al. 2009:168). The negative effect is explained as the result of excessive state interference with the banking sector, both for Turkey (Ardic and Damar 2006:5) and for China (Hasan et al. 2009:167). In both cases, the state allocated funds towards its own ends, rather than letting financial intermediaries identify the best uses for their funds.

It is therefore not clear that, for any given country, financial development will necessarily lead to economic growth. In what follows, we propose to extend the existing literature by examining the case of Bangladesh, using regional data with a spatial econometric model to address problems of omitted variable bias and spatial dependency. The next section describes our data and methods, followed by the presentation of our results, then discussion, and then our conclusions.

Data and Methods

Bangladesh is divided into 64 administrative districts, each of which is an observation in our data. Our dependent variable is the 1997 to 2000 growth rate of real per capita district-level GDP (Figure 1). The independent variable measuring financial development is the 1997 to 2000 growth rate of the ratio of bank advances to GDP (Figure 2). Table 1 presents summary statistics on all of our variables. We use a spatial-lag model, which takes the form:

$$y = \rho \mathbf{W} y + \mathbf{X}\beta + \alpha z + \varepsilon \quad (1)$$

The vector y is the dependent variable (economic growth), the vector z is our independent variable of interest (financial deepening), and the scalar α is its coefficient. If financial development causes economic growth, then α should be positive and significantly different from zero. **X** is a matrix of other independent variables, β is the vector of estimated coefficients for these independent variables, and ε is the vector of error terms. **W** is a 64 x 64 matrix whose process of creation begins with each $w_{ij}=d_{ij}^{-2}$, where d_{ij} is the distance between the i^{th} and j^{th} districts. The diagonal of **W** is then set to zero, and each row is normalized so that it sums to one. From this, it can be seen that $\mathbf{W}y$ is a vector, which gives, for each district, a weighted average of the values of y for neighboring districts, where closer districts have a higher weight. $\mathbf{W}y$ thus is the *spatially lagged dependent variable*, and the scalar ρ is its coefficient.

The spatial lag term $\mathbf{W}y$ explains variation in the dependent variable in two ways. First, there may be spatial dependency, in which each district’s economic growth is directly affected by the economic growth of neighboring districts, such as the “backwash effects” and “spread effects” described by Myrdal (1957). For example, if a district’s neighbors grow rapidly, those neighbors may buy more of the district’s products, causing it to also grow. Second, there may be spatial heterogeneity, where districts do not directly affect each other, but neighboring districts are similar in many characteristics. For example, a district may resemble its neighbors in features such as soil or rainfall, so that the district’s agricultural production is likely to rise and fall in a pattern similar to that of its neighbors. In the case of spatial heterogeneity, the spatial lag term will capture many of the omitted variables explaining economic growth, since those omitted variables should have similar values in neighboring districts.

Figure 1: The exponential growth rate of real per capita GDP 1997-2000, for the 64 districts of Bangladesh. Darker colors represent higher growth rates. The histogram shows the distribution of the variable, and the scatter plot shows the relationship between the growth rate (y axis) and the initial 1997 value of real per capita GDP (x axis). The red dotted line is the lowess smoother (Cleveland 1979).

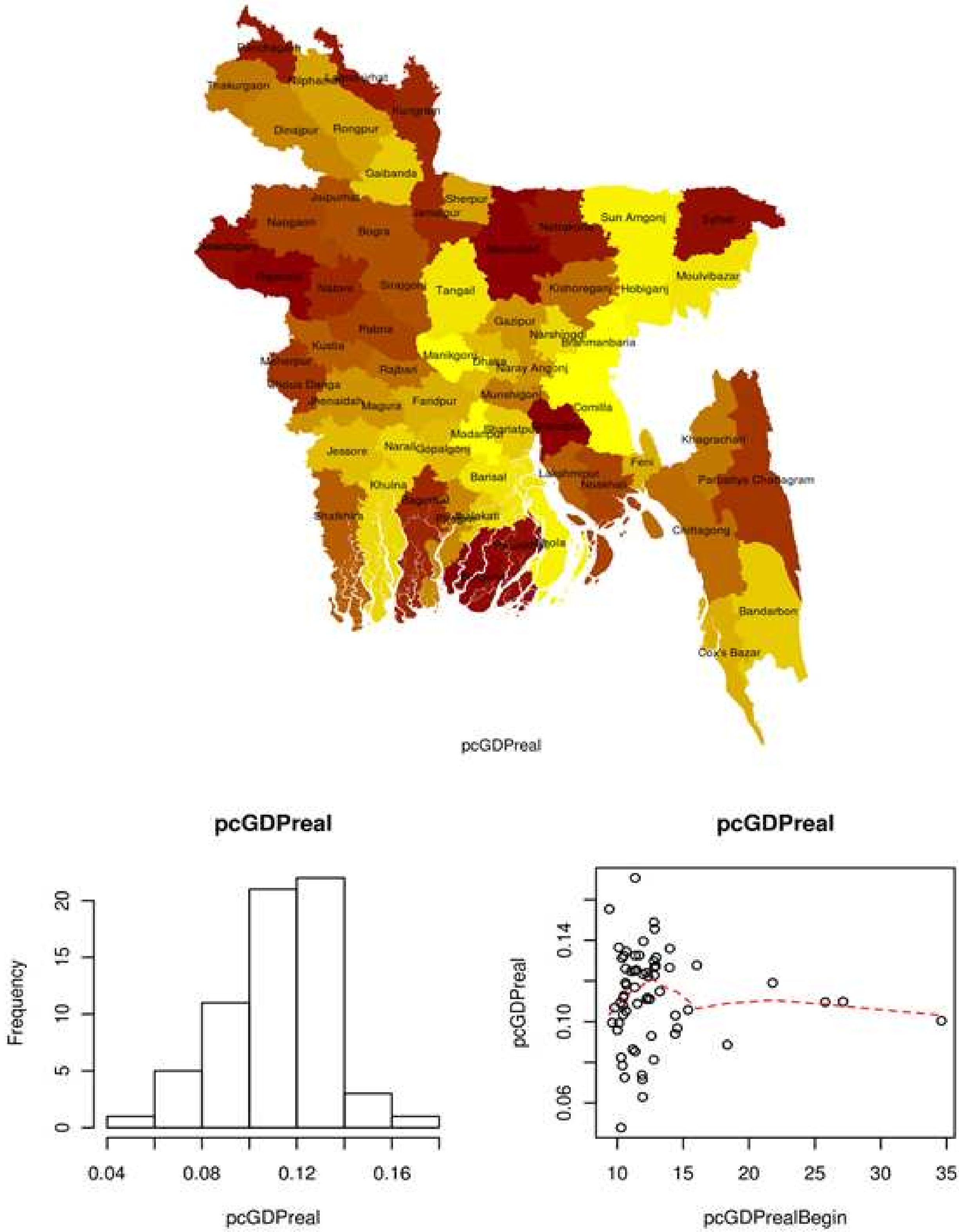
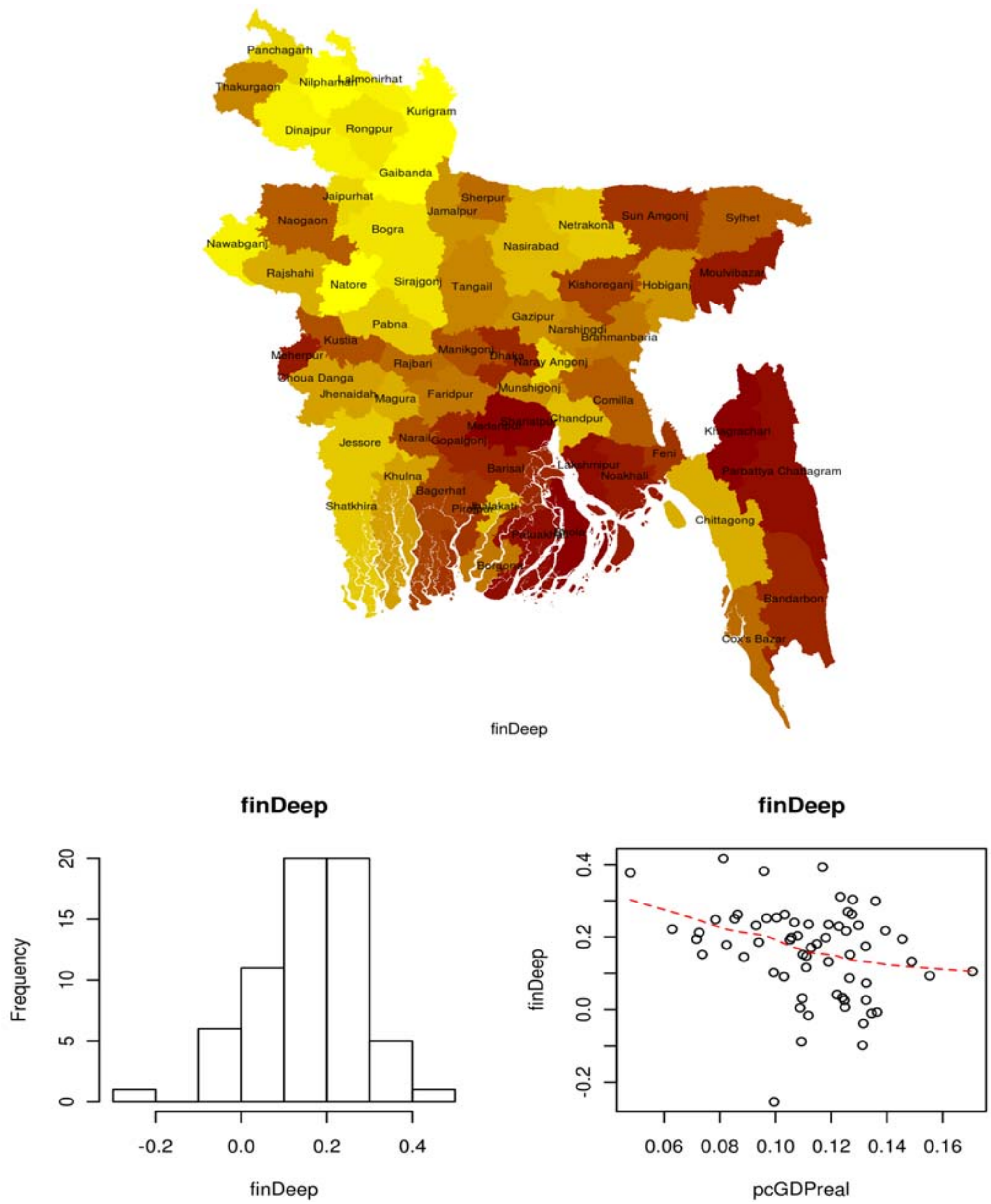


Figure 2: The exponential growth rate of financial deepening (advances as a share of GDP) 1997-2000, for the 64 districts of Bangladesh. Darker colors represent higher growth rates. The histogram shows the distribution of the variable, and the scatter plot shows the relationship between the growth rate of financial deepening (y axis) and the growth rate of real per capita GDP (x axis). The red dotted line is the lowess smoother (Cleveland 1979).



Since a district not only is affected by its neighbors, but affects them, $\mathbf{W}y$ is endogenous, and the model must be estimated using two-stage least squares. Kelejian and Prucha (1998) suggest using the spatially lagged exogenous independent variables as a suitable set of instrumental variables—i.e., estimate the vector of parameters g in $\mathbf{W}y=\mathbf{WX}g + \varepsilon$, to produce $\hat{y} = \mathbf{WX}\hat{g}$, which is substituted for $\mathbf{W}y$ in equation 1:

$$y = \rho\,\hat{y} + \mathbf{X}\beta + \alpha z + \varepsilon \qquad (2)$$

The independent variables in **X** are listed in Table 1. The variable *pcGDPrealBegin* is the district's real per capita GDP in 1997, the beginning of the growth period. Theory is ambiguous regarding the expected sign of the coefficient: growth may be more likely in the relatively prosperous districts, due to agglomeration economies (Myrdal 1957), or growth may shift to less prosperous districts where factor prices would be lower (Hume 1906:28).

The infrastructure location quotient is created from GIS data by calculating the share each district holds in the total length of Bangladesh's roads, highways, and railroads, dividing each of these measures by—first—the share each district holds in Bangladesh's land area, and then—separately—dividing each by the share each district holds of Bangladesh's population. Each district thus has six infrastructure location quotient measures; these are normalized and the mean taken to give the value of *infraLQ*. High values represent districts with more abundant infrastructure, which should facilitate economic growth.

Dhaka is the primate city, and would be the most attractive location for activities requiring easy access to the world outside Bangladesh. Hence growth may be more likely in Dhaka or its immediate hinterland. We model this with the variable *distDhaka*, which gives the distance, in 1000 kilometers, of the district centroid from Dhaka. Similarly, more densely populated areas would be likely to have agglomeration economies, making growth more likely; the variable *popDens* gives the district population density.

Early work in growth theory (e.g., Kuznets 1955) viewed the growth of low-income regions as largely the transfer of labor out of agriculture and into sectors with higher productivity. We introduce the variable *pfarmHold*, the percentage of holdings that are farm, to represent the degree to which a district has realized this process. Small farm holdings are likely to produce for their own subsistence (subsistence production is not counted in GDP), but large farm holdings may be able to take advantage of improvements in productivity or higher output prices to increase production and set in motion a cycle of circular and cumulative causation leading to overall higher production in rural areas. We introduce the variable *pLarge*, the percentage of farm holdings that are large, to model the effect of farm holding size.

Finally, we introduce three variables to describe the degree to which the district's political culture may affect growth. The general election of 1996 gave the Bangladesh Awami League narrow control of Parliament, which they held until the 2001 general election reinstalled the Bangladesh Nationalist Party. Throughout the 1997-2000 period, the various parties worked to develop patronage networks, which may have involved politically motivated public investments. One can therefore interpret the district-level results of the 2001 elections as reflecting the pattern of public investments throughout the period. Our three variables are the percentage of Members of Parliament in each district that belong to each of the three largest parties: Bangladesh Awami League (*BnglAL*), Bangladesh Nationalist Party (*BnglNP*), and Jamaat-e-Islami (*Jmt..I*). There is, of course, the danger that these variables will be endogenous.

Table 1: Variables used in model

variable	Description	Mean	Sd	min	max	Pearson: pcGDPreal	Moran's I p-value
pcGDPreal[1]	Exp. Growth real per capita GDP 1997-2000	0.112	0.023	0.048	0.171	1	0.0396
Ylag	Spatial lag term	0.111	0.006	0.102	0.124	0.41	0.0000
distDhaka[2]	Distance from Dhaka	10	1.5	7.08	13.516	0.27	0.0000
popDens[1,4]	Population density	9.589	6.272	0.611	49.261	-0.12	0.0000
pLarge[3]	Pct. farm holdings that are large	0.029	0.019	0.002	0.09	0.14	0.0005
pfarmHold[3]	Pct. holdings that are farm	0.671	0.072	0.501	0.817	0.01	0.0000
infraLQ[2]	Infrastructure location quotient	10	1.5	6.843	13.958	0.12	0.0000
finDeep[1]	Exp. growth in financial deepening 1997-2000	0.16	0.126	-0.254	0.417	-0.31	0.0000
pcGDPrealBegin[1]	Real per capita GDP 1997	12.82	4.281	9.398	34.607	-0.04	0.0004
BnglAL[5]	Pct. MPs from Bangladesh Awami League	0.196	0.281	0	1	-0.27	0.1319
BnglNP[5]	Pct. MPs from Bangladesh Nationalist Party	0.634	0.343	0	1	0.23	0.0026
Jmt..I[5]	Pct. MPs from Jamaat-e-Islami	0.058	0.134	0	0.6	-0.03	0.0012

Notes: N=64. *Moran's I* H0: series is not spatially autocorrelated. *Pearson: pcGDPreal* is the Pearson correlation coefficient between pcGDPreal and the row variable. *Sources*: (1) modified data from Bangladesh Bureau of Statistics (various issues); (2) modified data from DIVA-GIS (n.d). ; (3) modified data from Bangladesh Ministry of Agriculture (2001); (4) modified data from Bangladesh Agricultural Research Council (n.d).; (5) LCG Bangladesh (2004), data from 2001 election.

Table 1 includes a column reporting the Pearson correlation coefficient between each variable and *pcGDPreal*, our dependent variable. Note that the growth of financial deepening is negatively correlated with the dependent variable. The last column in Table 1 shows the p-value of the Moran's I test for spatial autocorrelation: all variables except *BnglAL* are autocorrelated at the .05 size of test, indicating that these data contain a great deal of spatial information that could be introduced in a model.

Table 2: Exogenous variables used as instruments

Variable	mean	min	max	Sd
AnnualMeanTemperature(1)	255.6	244.2	261.8	4.5
MeanDiurnalRange(MeanOf Monthly(MaxTemp-MinTemp))(1)	95.9	81.5	111.3	7.7
Isothermality(P2/P7)(*100)(1)	42.9	40.1	48.8	1.8
TemperatureSeasonality(StandardDeviation*100)(1)	3636.9	2649.5	4287.6	363.4
MaxTemperatureOfWarmestMonth(1)	341.7	316.3	371.6	12.9
MinTemperatureOfColdestMonth(1)	120.8	100.8	144.1	9.8
TemperatureAnnualRange(P5-P6)(1)	220.9	177.9	258.2	18.7
MeanTemperatureOfWettestQuarter(1)	283.6	266.6	291.9	5.0
MeanTemperatureOfDriestQuarter(1)	199.8	187.4	211.9	5.4
MeanTemperatureOfWarmestQuarter(1)	287.0	273.0	299.6	5.5
MeanTemperatureOfColdestQuarter(1)	198.6	182.3	211.9	6.8
AnnualPrecipitation(1)	2176.0	1381.1	3612.8	490.6
PrecipitationOfWettestMonth(1)	461.9	296.9	947.7	130.6
PrecipitationOfDriestMonth(1)	5.0	0.8	9.9	2.3
PrecipitationSeasonality(CoefficientOfVariation)(1)	91.0	81.0	109.0	6.5
PrecipitationOfWettestQuarter(1)	1264.6	824.6	2517.5	336.6
PrecipitationOfDriestQuarter(1)	34.0	20.8	55.8	6.8
PrecipitationOfWarmestQuarter(1)	880.1	462.8	1601.3	269.1
PrecipitationOfColdestQuarter(1)	34.3	21.5	55.8	6.5
alt(1)	25.0	4.7	202.1	36.1
meanElev(1)	21.6	4.1	174.9	28.8
sdElev(1)	11.2	1.3	171.4	27.9
ConifEvrgrnMtnForest(2)	0.004	0	0.04	0.008
ConifBrdlfMtnForest(2)	0.002	0	0.028	0.005
ForestMosaic(2)	0.015	0	0.357	0.063
Grass(2)	0	0	0.001	0
EvrgrnShrubWShiftingCult(2)	0.005	0	0.031	0.008
SparseShrubWGrass(2)	0.064	0	0.649	0.136
DecidThornyScrub(2)	0.016	0	0.097	0.025
ShiftingCultMosaic(2)	0.809	0.017	0.999	0.249
MxdCashcropCrop(2)	0.023	0	0.219	0.051
BareSoil(2)	0.058	0	0.471	0.095
TempFlood(2)	0	0	0.001	0
Rocks(2)	0.005	0	0.105	0.019

Notes: N=64. (1) Hijmans et al. (2005)—mean value of BIOCLIM data by district; (2) modified data from DIVA-GIS (n.d).—percent of district area covered with specified land type.

Endogeneity is a potential problem for several variables. The literature has long recognized the potential for endogeneity for the financial deepening variable (Levine 1997). In addition, infrastructure could develop as consequence of growth, and not simply as one of the causes. And since the political variables represent end-of-period information, these could also be endogenous. Our strategy is to test each independent variable for endogeneity, using as instruments the exogenous variables in our data, as well as a set of variables describing the physical geography of each district (Table 2). As it turned out, only two variables were endogenous: the two location quotients for highways. We created instruments for these, and used the instruments when creating *intraLQ*. It is this exogenous version of *intraLQ* that is used in the results reported in the next section.

Results

Table 3 reports the results of our unrestricted model containing the model in Equation 2. For each of the variables in **X**, we include the square term, to consider potential quadratic effects. The standard errors and R^2 are adjusted for two stage least squares. The diagnostics reported in the table notes show that the model appears to be of the correct functional form, and has normally distributed homoskedastic residuals. The body of the table shows that none of the independent variables are endogenous (the Hausman p-values), but that there exists a great deal of multicollinearity (high VIFs are to be expected with a quadratic model), and that only one of the independent variables is significant at the 0.10 size of test. The last column shows the partitioned R^2 for each independent variable: the top variables are *finDeep.2*, *ylag*, and *BnglNP*.

Table 3: Unrestricted model

Variable	Description	Estimate	Std.Error	P-value		Hausman p-value	VIF	R^{2p}
(Intercept)	Intercept	0.2009	0.3153	0.5274				
ylag	Spatial lag term	1.2167	0.8624	0.1651		0.7559	2.8	0.0712
distDhaka	Distance from Dhaka	0.0298	0.0304	0.3320		0.2412	236.8	0.0286
popDens	Population density	-0.0040	0.0033	0.2384		0.6159	49.7	0.0154
pLarge	Pct. farm holdings that are large	-0.1362	0.8710	0.8765		0.6659	30.3	0.0127
pfarmHold	Pct. holdings that are farm	-0.6587	0.7897	0.4086		0.6194	370.8	0.0077
infraLQ	Infrastructure location quotient	-0.0208	0.0258	0.4232		0.3522	170.6	0.0072
finDeep	Financial Deepening	-0.0103	0.0476	0.8296		0.2290	4.1	0.0368
pcGDPrealBegin	Real per capita GDP 1997	-0.0020	0.0073	0.7806		0.3325	110.5	0.0029
distDhaka.2	distDhaka – squared	-0.0014	0.0014	0.3108		0.8115	220.3	0.0253
popDens.2	popDens – squared	0.0001	0.0001	0.4024		0.3315	45.3	0.0084
pLarge.2	pLarge – squared	-1.3011	8.0534	0.8724		0.4045	19.1	0.0092
pfarmHold.2	pfarmHold – squared	0.5037	0.5887	0.3968		0.3837	361.9	0.0084
infraLQ.2	infraLQ – squared	0.0010	0.0012	0.4423		0.6443	166.1	0.0070
finDeep.2	finDeep – squared	-0.2586	0.1402	0.0717	*	0.7763	3.5	0.0831
pcGDPrealBegin.2	pcGDPrealBegin - squared	0.0001	0.0002	0.7340		0.6850	152.1	0.0037
BnglAL	Pct. MPs from Bangladesh Awami League	0.0024	0.0196	0.9021		0.1307	3.5	0.0289
BnglNP	Pct. MPs from Bangladesh Nationalist Party	0.0161	0.0163	0.3271		0.6396	3.6	0.0392
Jmt..I	Pct. MPs from Jamaat-e-Islami	-0.0208	0.0291	0.4790		0.2996	1.7	0.0083

Notes: The dependent variable is exponential growth rate of per capita real GDP 1997-2000. N=64; R^2 (adjusted for 2SLS) =0.2438; Breusch-Pagan test. H0: residuals homoskedastic, p-value=0.0898; RESET test. H0: model has correct functional form, p-value=0.8777; Shapiro-Wilkes test. H0: residuals normal, p-value=0.0942. R^{2p} is the R^2 partitioned to each independent variable (Chevan and Sutherland 1991; Grömping 2006). The Hausman p-value column has H0: variable exogenous.

These three variables turn out to be significant in our final restricted model (Table 4), which also includes *pfarmHold.2*, the square of the percentage of holdings which are farm. Model diagnostics in this final model are fully satisfactory: residuals are homoskedastic and normally distributed; the model appears to have the correct functional form; the set of variables dropped from the unrestricted model is irrelevant to the model; all independent variables are exogenous; and multicollinearity is not a problem.

Table 4: Restricted model

Variable	Description	Estimate	Std. Error	P-value		Hausman p-value	VIF	R^{2p}
(Intercept)	Intercept	-0.0740	0.0638	0.2506				
ylag	Spatial lag term	1.2908	0.5060	0.0133	**	0.8372	1.1052	0.1329
pfarmHold.2	pfarmHold – squared	0.0610	0.0410	0.1423		0.2879	1.1494	0.0153
finDeep.2	Financial Deepening -squared	-0.1877	0.0775	0.0185	**	0.9639	1.2194	0.1098
BnglNP	Pct. MPs from Bangladesh Nationalist Party	0.0154	0.0082	0.0638	*	0.9266	1.0291	0.0511

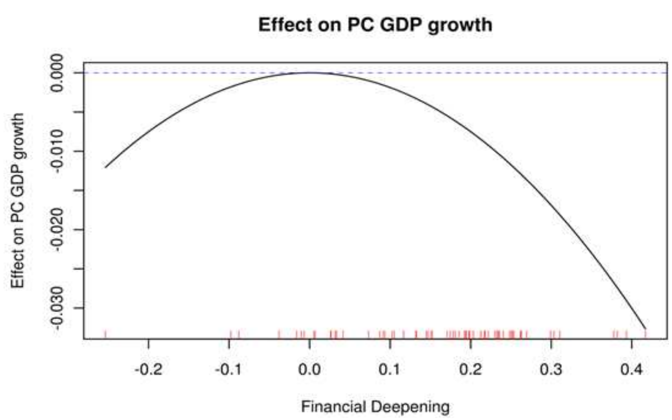
Notes: The dependent variable is exponential growth rate of per capita real GDP 1997-2000. N=64; R^2 (adjusted for 2SLS) =0.1366; Breusch-Pagan test. H0: residuals homoskedastic, p-value=0.2317; RESET test. H0: model has correct functional form, p-value=0.6278; Shapiro-Wilkes test. H0: residuals normal, p-value=0.9026; Wald test. H0: appropriate variables dropped, p-value=0.9276. R^{2p} is the R^2 partitioned to each independent variable (Chevan and Sutherland 1991; Grömping 2006). The Hausman p-value column has H0: variable exogenous.

Discussion

The spatial lag term accounts for the largest portion of the model R^2. The exact nature of the spatial effect is nevertheless not clear—does it reflect primarily spatial dependency, via spread effects, or simply spatial heterogeneity, where districts with similar characteristics have similar growth patterns? So while the spatial lag term reveals no specifics about the Bangladeshi economy, it serves the valuable function of correcting for omitted variable bias, giving us greater confidence in the other estimated coefficients.

The second strongest effect is the negative relationship between the square of financial deepening and economic growth. Financial deepening can be either positive or negative, while the square is always positive, so the effect is never positive, as shown in Figure 3. The negative effect is much stronger both for districts with large declines in financial deepening or large increases in financial deepening. The marginal effect (Figure 3) is therefore positive when financial deepening declines, and negative when financial deepening grows. This suggests that Bangladeshi growth is harmed by both a shrinking and expanding banking system. One can explain the deleterious effect of a shrinking banking system by invoking the theory discussed in the introduction: financial development facilitates economic growth by reducing information costs and transactions costs in product markets. Thus, a shrinking banking system will raise those costs and stifle economic growth. The deleterious effect of an expanding banking system can most likely be attributed to the same sources Ardic and Damar (2006:5) found for Turkey, and Hasan et al. (2009:167) found for China: excessive state interference in the financial sector.

Figure 3: The effect of the growth of financial deepening on real per capita GDP growth. The curves represent the effects as given in the restricted model, while the red rugplot indicates the values of financial deepening growth found in the data.



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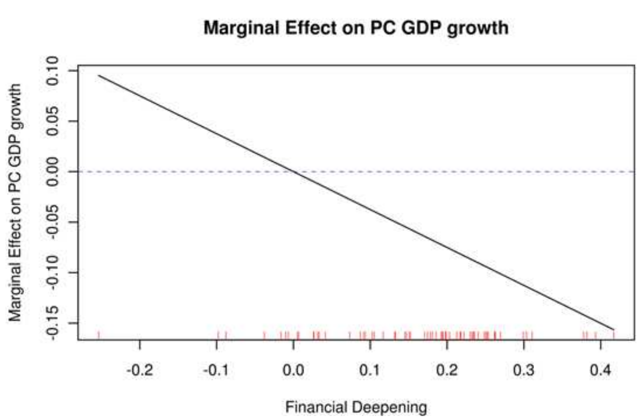

The credit disbursement process of developing countries is often affected by the exercise of political power over disbursing authority, and it comes as no surprise that this occurred in Bangladesh, especially before the financial liberalization reform of 1991. Khalily and Meyer (1992), for example, found that the workings of political patronage networks in rural financial market could undermine the effectiveness of measures to improve loan allocation and recovery. As Ahmed (2007) observes,

"Government dictated the credit disbursement in the early years and political influence also played its part in the decision making for loans from the banking sector… Vested groups have political connections and often exert political pressure, which can result in a lack of discipline in the financial sector… A number of the private sector commercial banks have current or ex lawmakers and influential business people with political contacts in their Board of Directors. Loan default or bad loans are afflicting the banking sector and the issues of politicization are often considered as one of the root causes of loan default or bad loans."

Political claims on bank loans were made even more acute by the demands of public enterprises: as Ahmed (2007) noted, "State Owned Enterprises also borrowed from the banking sector and these loans were never fully repaid." Thus, as these statements indicate, loanable funds were channeled through political patronage networks, where they were used for investment projects with sub-optimal returns or even used for consumption.

The third strongest influence in our model is the positive effect for *BnglBN*. That districts loyal to the Bangladesh Nationalist Party experienced the most growth is interesting, because this party was in *opposition* during the period. As an opposition party, BNP would have had less access to political resources, and would have been less able to interfere with the financial system in favor of its loyalists. Thus, it appears likely that it is districts receiving *fewer* political favors that grew the most. We interpret this to mean that the interference of political actors can cause low-growth sectors to be privileged over high-growth when political loyalists happen to be concentrated in low-growth sectors. Thus, resources are misallocated so that overall growth is low. This interpretation fits well with the story we told above about political interference in the banking system.

Finally, the percentage of district holdings that are farm is positively related to growth, though insignificant; the effect is strongest for districts specializing most intensively in agriculture. This provides weak evidence that labor leaving agriculture is not finding employment in sectors with higher productivity, and that agriculture is itself a source of growth in Bangladesh. This pattern may in fact result from the failure of the financial system to create investments in non-agricultural sectors.

Summary and Conclusion

Our goal in this paper was to examine the relationship between financial development and economic growth, using regional data from Bangladesh. Theoretical perspectives, articulated already by the time of Walter Bagehot in the 1870s, argue that financial development can cause economic growth by encouraging entrepreneurship, pooling capital for large-scale long-run projects, and reducing information costs and transactions costs. An extensive empirical literature has grown, containing mostly cross-national studies, but also some single-country time series studies and a few regional studies, like our own. That literature has established that the finance-growth nexus varies a great deal across different legal and cultural environments, which suggests an important role for studies focusing on a single country. Our study covers new ground in that it is the first study of the finance-growth nexus in Bangladesh to use regional data, and it is the first regional study of the finance-growth nexus to use spatial econometric methods.

Our results show that, in Bangladesh, a shrinking financial sector stifles economic growth, as does an expanding financial sector, while a constant-size financial sector has a neutral effect. This generally negative effect is similar to that found in a few other regional studies, in China and Turkey, where it is attributed to state control of the banking system, such that funds are allocated to state ends (public enterprises or budget deficits), rather than to the most profitable opportunities. Our results are consistent with these, since we find considerable evidence for political interference in the financial system in Bangladesh. Nevertheless, we differ from these previous studies in that we find the effect to be quadratic, with both low and high rates of financial development harming growth. We interpret this as an indication that financial development does indeed support economic growth, as theory suggests, so that too little is detrimental. But, in the Bangladeshi context, too much is also detrimental, since high rates of financial development may simply signal heightened political activity.

This interpretation is strengthened by a second result, showing that districts with higher growth were associated with the opposition party in the Bangladeshi Parliament during this period, and were thus less likely to receive resources through national patronage networks. Taken together, our results indicate that political interference with the economy leads to misallocation of resources and dampens economic growth. It seems clear that economic growth in Bangladesh requires the creation of a financial system free of cronyism and political manipulation.

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