The Law of the Primate City in the Americas

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October 2008

Abstract

In this paper, we explore the causes of urban primacy in the Americas using the insight that primate cities are often political capitals. Using extensive data on cities, we estimate the impact of capital city status on urban concentration after controlling for geographic, climatic and economic factors. We find that political capitals, both national and provincial, contribute significantly more to urban concentration in Latin America than in North America although there are important country variations within these areas. We suggest that one possible cause of the differing patterns of urban development in the Americas is the differences in the centralization of political power in the Americas, a factor which has deep colonial roots.

"All over the world it is the Law of the Capitals that the largest city shall be super-eminent, and not merely in size, but in national influence." Jefferson (1939) "The Law of the Primate City"

1. Introduction

In his pioneering article, Jefferson (1939) extolled the virtues of the primate city: everywhere around the world, the primate city, usually a capital city, housed the finest wares, the rarest articles, the greatest talents and skilled workers, and, more importantly, was the center of its national culture, pride and influence. Yet, rather than focusing on these benefits of population agglomeration, subsequent scholars have highlighted the costs of urban primacy - masses of urban workers living in crowded tenements, traffic congestion, environmental degradation, and greater exposure to diseases. Indeed, many scholars believe that the primate city, especially in developing countries, is excessively large and inefficient and is caused by political favoritism and corruption. In Latin America, where urban primacy has a long history, it is often viewed as an unhealthy legacy of Spanish and Portuguese colonialism.

In their equally influential papers by contrast, Auerbach (1913), Goodrich (1925) and Singer (1936) observed that the size distribution of cities, especially in the U.S. and a few European countries, appeared to follow the rank-size rule.[1] This seeming empirical regularity elicited a vast literature in the social sciences, especially those based on stochastic growth models, city hierarchy or central place theory, among others (Carroll (1982)). While there continues to be considerable debate, this literature provides an economic rationale for why city sizes vary. Since it seems difficult to theoretically generate a primate city in a system of cities,

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[1] More generally, the size distribution of cities is defined as a Pareto distribution: $R = AS^{-a}$ where R is the rank or the number of cities with population S or more, A is a constant, S is the population of city and a is the Pareto exponent. The rank-size rule is met if the Pareto coefficient is equal to one. If the Pareto coefficient is less than one, then the city size distribution is skewed toward larger cities and is believed to be more primate and vice versa if the Pareto coefficient is greater than one.

urban primacy or an unbalanced distribution of city sizes is often interpreted as being caused by non-economic factors.

In recent years, a number of cross-country studies on urban primacy has appeared in the urban economics literature.[2] These papers generally find that urban primacy is not monocausal but that economic, demographic and geographic factors all seem to contribute to explaining primacy. For example, GDP per capita and total population seem to increase primacy whereas total land area, share of trade in GDP, and transportation density decrease primacy. The most important factor, however, seems to be political as the concentration of government expenditures, non-federalist governments, political corruption, and dictatorships all seem to raise primacy significantly. In addition, when a capital city dummy was included in the study, the correlation with primacy was always strongly positive.

In this paper, we attempt to identify the importance of political factors on urban primacy by estimating the impact of capital city status on population growth. Capital cities may become significantly larger due to their advantage as the centers of governments.[3] First, government agencies and workers are concentrated in capital cities. Second, since governments make laws and redistribute income, capital cities may attract significant lobbying activity. To the extent that political corruption or rent seeking behavior contributes to primacy, their impact is likely to be manifested in the growth of capital cities.[4] Finally, capital cities may attract a disproportionate share of government resources for local infrastructure and amenities. In many Latin American

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2 See Rosen and Resnick (1980), Wheaton and Shishido (1981), Ades and Glaeser (1995), Henderson (2002), Moomaw and Alwosabi (2004) and Soo (2005) among others.
3 Ades and Glaeser (1995) argue that the political power of the capital city is greater when governments are weak and respond to local pressure, have large rents to dispense, and do not respect the political rights of the hinterland. They also argue that the benefits of proximity to political actors is likely to increase when influence comes from the threat of violence, distance makes illegal action more difficult to conceal, and distance lowers access to information and communication between political agents and government.
4 The primacy of Seoul, Korea has been associated with the need to locate in the capital city to lobby and obtain export and import licenses and loans from the Korean government bureaucracy (Henderson (2002)).

countries, the political and economic elites who disproportionately reside in capital cities may have little political incentives to distribute resources to smaller cities.[5]

Our study is closest in spirit to Ades and Glaeser (1995) and Henderson (2002) who regress log of population on national capital city dummy and other economic and political variables.[6] Our study, however, differs from these papers on several important dimensions. First, we investigate the impact of provincial/state capital status on population as well as that of the national capital. Second, our data are much more comprehensive: they consist of all cities with populations above 25,000 and, for many countries, all places designated as a city. By contrast, Ades and Glaeser use the 100 largest cities whereas Henderson uses those cities whose populations are above 750,000. Finally, our control variables include important geographic variables such as land area, longitude, latitude, coastal perimeter, and nearness to port or navigable river, climate variables such as temperature, rainfall, and sunshine and, in the case of U.S. and Canada, some economic variables as well.

We find that the national and provincial capital statuses have a much bigger impact on the populations of Latin American countries than those of North America but with some important variations across the countries within these areas as well. Using only land area as the control variable, as these estimates are most consistent across countries and are fairly robust to the inclusion of other controls, we find that a national capital status in Latin America increases population by 232% as compared to 175% and 154% for U.S. and Canada respectively; for provincial capital status, the Latin American figures are 120% as compared to only 32% for the

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5 In Argentina, for example, Walter (1993) writes that economic and political elites, including the agricultural land owners of the Pampas, live in their capital city of Buenos Aires. A similar story unfolds in Chile where the landed and capitalist elites intermarried and formed tight political bonds in their capital city of Santiago (Zeitlin and Ratcliff (1988), Walter (2005)).

6 However, because 77 out of 85 cities in Ades and Glaeser's (1995) sample are national capitals, their paper provides limited comparison between capital and noncapital cities. Indeed, when they drop noncapital cities, no results changed.

U.S. state capitals but somewhat comparably higher than 102% for Canada.[7] Variations across the Latin American countries were also significant. The national capital effect was significantly higher for Argentina, Columbia, and Mexico but was much lower for Bolivia and Brazil; the provincial capital effect was much higher for Brazil, Columbia, and Mexico than countries like Nicaragua, Guatemala, El Salvador, Paraguay, Honduras, and Panama.

While Ades and Glaeser (1995) are concerned that the capital city variable may be subject to an endogeneity bias in that capitals may locate in larger cities, we believe that such bias is likely to be limited to the extent that a great majority of the national and provincial capital cities in the Americas were founded long ago. Many Latin American capital cities began as modest places in their early histories and were chosen for political rather than economic reasons (Eisenstadt and Shachar (1987), Nickson (1995)); in the United States, if a bias exists, it is likely to be reversed as many states chose to locate their capital cities in small cities near their geographic centroids, often in rural hinterlands.[8]

Our results suggest that capital cities, both national and provincial, are much more likely to contribute to urban primacy in Latin America than in North America. Yet, the cross-country variations on the relative importance of the national and provincial capital status seem to suggest important differences in the distribution of political power between the national, provincial/state and municipal governments across the Americas even within the two countries in North America. While the U.S. and Canada are often seen as similar non-primate city countries, our

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7 In earlier papers, Ades and Glaeser (2005) find that a national capital dummy increased population by 44-56% and Henderson (2002) by 25-39%. Our estimates, which are significantly higher, are much more likely to be accurate as we compare the capital city status against cities in the same country whereas the earlier studies compare capital cities against non-capital cities around the world.
8 In Argentina, many of the cities which became provincial capitals after independence were initially located by the Spanish Crown to serve as administrative and military centers, were located in intervals of 150 miles, and started with fewer than 100 settlers (Scobie (1988)).

data analysis shows that Canadian provincial capital cities may benefit more substantially from their capital statuses than their American state counterparts.

A variety of evidence seems to suggest that urban primacy in Latin America is related to the centralization of national political power in capital cities (Myers (2002)). The case of Mexico City provides an illustrative example. From the times of the Aztecs and the Spanish conquistadors, Mexico City served as a political and military center that extracted rents from its surrounding hinterlands. Under Porfirio Díaz, the era between 1876-1911, Mexico City received more than 80% of all government investments in infrastructure (Kandell (1988)). By contrast, other municipalities possessed little political and fiscal autonomy (Sokoloff and Zolt (2007)). Property tax collection and assessments were controlled by state governments and the proceeds were distributed to local governments at their discretion (Nickson (1995)). Like most capitals in Latin America, the political and policing powers of Mexico City was under the control of the president and the federal government until recent times.

In North America, by contrast, the lack of urban primacy is related to the history of decentralized political power. From the early colonial times, local towns and counties possessed considerable political and fiscal autonomy. Even though cities in the U.S. became "creatures of states" under Dillon's Rule in the late nineteenth century, local government expenditures represented the highest shares of government expenditures between 1840 and 1900 (Wallis (2000)). Furthermore, the over-representation of rural constituents in many state legislatures often diverted state and federal resources for rural development. In North America, the national capitals were not primate cities; in the U.S., state capitals were often located in small cities.

This paper is organized as follows. In section 2, we present evidence of urban primacy in the Americas using two standard measures found in the literature. In section 3, we estimate the

impact of national and provincial capital statuses on population concentration for the countries in the Americas between 1900 and 1990. In section 4, we explore the causes of urban primacy in the Americas. In section 5, we conclude our paper with a summary.

2. Evidence of Urban Primacy in the Americas

While there is no single widely accepted definition of urban primacy, there are two general types of measures. One type, motivated by Jefferson (1939), uses the ratio of the population of the largest city against that of the second largest city, or the sum of the next five largest cities, or the total urban population, or the total population. The second type, motivated by the rank-size literature, uses the size distribution of cities based on the Pareto distribution (see footnote 1). If the Pareto coefficient is less than one, then the distribution skewed toward the concentration of population in the largest cities is considered to be more primate. While these two types of measures are related, Rosen and Resnick (1980) find that the correlation between the two is not particularly high. Various alternative measures related to these two types have been proposed in the literature (Carroll (1982)).

Scholars generally believe that urban primacy is a salient character of development in Latin America but not in North America. While opinions vary, many believe that urban primacy arose in Latin America in the early nineteenth century or even earlier. Morse (1971), using the share of the population of the largest city as a measure of primacy, finds that urban primacy emerged in Argentina and Cuba around 1800, in Colombia, Mexico, and Peru in 1850, and in Brazil and Venezuela by 1900 (Table 1). In all of these cases, the primate city was also the national capital city. McGreevey (1971), however, using a measure based on the Pareto distribution of city sizes, dates the rise of primacy in Mexico to as early as 1750, Cuba to 1825,

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Chile to 1830, Argentina to 1850, Brazil to 1880, Peru to 1925, and Venezuela and Colombia to 1950. By 1970, Portes (1976) argues that most Latin American countries, except for perhaps Brazil and Colombia, exhibited significant urban primacy characteristics.

In Tables 2 and 3, we present our estimates of urban primacy based on the share of the urban population accounted for by the largest city and the Pareto coefficient, respectively. The data are based on municipalities whose sizes are greater than 25,000.[9] In Table 2, we find that the largest city in the U.S., New York city, accounted for 17% of the urban population greater than 25,000 in 1900 but that figure gradually declined to 6.5% in 2000. By this measure, Toronto, Canada at 13% was much more primate in 2000. In Latin America, the largest cities in Bolivia, Chile, Colombia, Ecuador, Honduras, Nicaragua, Panama, Peru and Uruguay contained a much higher share of their urban population than their counterparts in North America. Importantly, in contrast to the U.S. and Canada, the largest cities in the respective countries in Latin America, except for Brasilia, Brazil, were national capitals.

In Table 3, we find that the Pareto coefficient for the U.S. rises from 1.06 to 1.23 between 1900 and 2000, suggesting a shift in the skewness of the size distribution of cities toward those in the smaller-sized categories. While the Pareto coefficient for Canada and the Latin American countries were close to one, suggesting a balanced distribution of city sizes, the coefficient was relatively much smaller than those of the U.S. The Latin American countries, however, exhibited much greater primacy when we defined cities using a lower population threshold of 2,500. As expected, the Pareto coefficients for Argentina, Bolivia, Chile, Ecuador, Mexico, Panama, Peru, Uruguay and Venezuela were less than 0.9 suggesting a significantly skewed distribution toward the largest cities in those countries.

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9 We have also estimated primacy measures using cities whose populations were greater than 2,500. While the absolute values differ significantly from those reported in Tables 1 and 2, the relative cross-national and time series patterns are very similar.

The data shown in Tables 2 and 3 generally support the view that cities in Latin America are more primate than those in North America. At any point in time, these measures both indicate that cities in the U.S. are less primate than those in Latin America; over the twentieth century, the data also indicate that cities in the U.S. are becoming less primate whereas the pattern is reversed for those in Latin America. Thus, the difference in the level of primacy between Latin America and the U.S. seems to have widened over time.

Despite the usefulness of these two types of measures of urban primacy, it has been extremely difficult to derive a consistent set of explanatory variables which explain their cross-country or time series variations (Carroll (1982)). One important reason may be that these measures are extremely sensitive to sample size and subtle variations in the relative importance of a few large cities. Thus, in this paper, rather than focusing on these urban primacy measures, we devote our energies into identifying the causes of why capital cities, often the primate cities, are disproportionately larger than other cities.

3. Capital Cities and Urban Primacy

It is well known that urban primacy in Latin America is primarily caused by disproportionately large national and provincial capital cities relative to their non-capital cities (Myers (2002), Portes (1976)). By contrast, the national capitals in the U.S. and Canada are not their largest cities and, in the U.S., state capitals are the largest city in their respective states in only half the cases. While economic forces alone may explain urban primacy, many suspect that the excessively large capital cities in Latin America are caused by political forces such as the centralization of political power, corruption, and rent-seeking behavior. By contrast, the relatively small capital cities in the U.S. probably reflect its political decentralization.

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Our empirical strategy is motivated by Ades and Glaeser's (1995) political model of urban primacy. In their model, the concentration of political power in capital cities attract migrants and cause population concentration these cities. Since spatial proximity to power increases political influence, economic agents relocate to capital cities if they need political influence for the success of their businesses. In addition, the concentration of power and population may facilitate the transfer of federal resources from the hinterland to capital cities.

We estimate the following equation:

(1) $\ln(\text{population})_i = a_1 + \beta_1 \text{Ncapital}_i + \beta_2 \text{Pcapital}_i + \beta_3 \text{Excapital}_i$

$$+ \beta_3 \ln(\text{landarea}_i) + \beta_4 X_i + e_i$$

where the Ncapital and Pcapital are dummy variables for whether a city is a national or provincial/state capital, Excapital for whether a city was a ex-national capital, landarea is the area of the city in km^2, and X_i are exogenous controls. For Latin America, the X_i control variables consist of the positional variables - latitude, longitude, altitude; the geographic variables – coastline and river dummies; and the climate variables – January, July, annual average temperatures and annual average precipitation. For U.S. and Canada, our control variables differ somewhat due to data availability.

The data consist of all cities greater than 2,500 and/or 25,000 for 7 Latin American countries and U.S. circa 1900, U.S. for 1950, and for 18 Latin American countries, U.S. and Canada for circa 1990. Cities in general are defined as municipalities rather than as urban or metropolitan areas. In Latin America, we use the second administrative division; in the U.S., we use the municipality; in Canada, due to data availability, we use the census consolidated subdivisions (CCS). For the larger CCSs, the data should correspond to municipalities; for the smaller CCSs, it may be a consolidation of smaller adjacent towns, villages and municipalities.

Thus, the smaller CCSs may be an aggregation of rural areas. We provide detailed information on definitions and sources of our data in the appendix.

Table 4 presents the basic descriptive information on the provinces and states of the countries in the Americas. There were considerable variations in the number, average population and land area of provinces/states across the countries. In general, the larger countries such as the U.S., Brazil, Canada and Mexico generally had a greater number of provinces/states as well as higher average population per province/state.

Table 5 reports descriptive statistics of the cities in our regression data sample. As expected, the data suggest an increase in the urban concentration of population in the largest cities in Latin America as compared to those in North America over time. In 1900, for cities with populations greater than 25,000, the average size of cities in Latin America was less than half of those in the U.S.; however, by 1990, it was larger than those of U.S. and Canada. In addition, whereas the number of cities in this size-category rose over 9 fold for the U.S. during this period, the increase in the number of cities in Latin America was much more modest.

In Table 6, we report the regression estimates for the pooled sample of Latin American countries for the period around 1900 and 1990. In Tables 7 and 8, we present similar regressions for the U.S., Canada and the individual countries in Latin America, respectively.

The national and provincial capital statuses increased population in all countries but did so to a much greater extent in Latin America than in North America. Based on the subset of Latin American countries in 1900, the data show that the importance of national capital status on population was already very high in 1900 and remained so through 1990; however, the relative importance of provincial capital status rose significantly over this period. By contrast for the U.S., the importance of national capital status rose over time but that of state capital status

remained relatively unimportant over time. For Canada, the provincial capital status was much more significant than that of the states of the U.S. in 1990.

The absolute values of the capital city coefficients were sensitive to the choice of sample size (population greater than 2,500 or 25,000). When cities are defined as those greater than 2,500, the national capital and provincial capital coefficients were much larger, especially for the latter. The coefficient on land area also differed by city cutoff values for Latin America. For cities in Latin America whose population was greater than 25,000, land area was surprisingly negatively correlated with population size.

Due to the differences in the control variables and data samples, our basic cross-country comparisons are done using only land area as controls for cities with population greater than 25,000. Since the capital city coefficients are fairly robust to the inclusion of the various control variables, these comparisons are likely to be meaningful. For Latin America, cities with greater land area (except for cities greater than 25,000), higher latitude, lower longitude, lower altitude, and a coastline generally had greater population. Interestingly, cities with higher rainfall were larger in 1900 but smaller in 1990. For the U.S., higher temperature, seaport and river dummies were positively correlated with population. For the U.S. and Canada, share of agricultural labor force was negatively correlated with population, share in services and manufacturing (except U.S. in 1900) was positively correlated with population. The F-tests for the joint significance of these control variables were usually significant.

The national capital status increased population by 182% for the 7 Latin American countries in 1900; for the same sample of countries in 1990, the figure rose slightly to 205%. For full sample of the 18 Latin American countries in 1990, the national capital status increased population by 232%. By contrast, for the U.S., the national capital status increased population by

53% in 1900 which then rose to 119% and 175% in 1950 and 1990, respectively. For Canada, the figure was 155% in 1990.

The provincial capital status increased population by 82% for the 7 Latin American countries in 1900, but the figure rose to markedly to 151% in 1990 for the same sample of cities. For the full sample of 18 countries in 1990, the impact was slightly smaller at 120%. For the U.S., the state capitals remained a much less influential magnet for population as their impact ranged from 26-32% between 1900 and 1990. However, the provincial capital city coefficient for Canada in 1990 was much higher (81-102%) and was closer to the Latin American levels.

Within the Latin American countries, there were significant variations in how national and provincial capitals contributed to their urban primacy. In some countries like Mexico, Colombia and Peru, both the national and provincial capitals played important roles; in Argentina and Chile, national capitals were more important than provincial capitals; and in Bolivia and Brazil, provincial capitals were more important than national capitals. However, Brazil's case is a bit unusual since its national capital was changed from Salvador to Rio de Janeiro and then to Brasilia. For most of the 7 Latin American countries, the main difference between 1900 and 1990 was the general increase in the importance of the provincial capital coefficient.

In 1990, the impact of national capital status on population was the highest for Mexico (Mexico City) at 495% and then for Peru (Lima), Colombia (Bogota) and Argentina (Buenos Aires) at over 300%; by contrast, capitals in El Salvador (San Salvador), Brazil (Brasilia), Bolivia (Santa Cruz) and Costa Rica (San Jose) had lower impact than those of the United States (Washington D.C.) and Canada (Ottawa). Interestingly, Brazil's previous capital, Sao Paulo, enjoyed a greater ex-capital status benefits than its current capital.

For the same year, provincial capital status increased population by 254% in Brazil, 197% in Mexico, 173% in Colombia and 156% in Cuba. In Bolivia, Venezuela and Peru, the figure was around 130%; Argentina, Ecuador, and Chile was around 100%; only Honduras and Panama's provincial capitals had smaller impacts than the U.S. state capitals.

4. Political Centralization and Urban Primacy in the Americas

In this section, we investigate the role of political centralization and fiscal federalism in causing the differential patterns of urban development in the Americas. Following Willis et. al (1999), political centralization refers to the formal division of powers and responsibilities between the federal, provincial and local governments whereas fiscal (functional) federalism refers to the expenditure shares and revenue-raising powers of the various levels of governments.

Table 10, adapted from Willis et. al (1999), indicates that there was significant variation in the level of political centralization in the Americas around 1995. Based on whether the constitutional structure is unitary (centralized) or federal (decentralized) and whether provincial and local executives are appointed (centralized) or elected (decentralized), the table shows that Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Panama and Paraguay were most centralized; Bolivia, Chile, Honduras, Nicaragua, Peru and Uruguay were moderately decentralized; and Argentina, Brazil, Colombia, Mexico and Venezuela were decentralized.

Table 11, using data from Myers (2002), presents data on the formal political centralization of capital cities and other municipalities during the period between 1944-1962 and 1978-1982. In the mid-twentieth century, the most centralized countries were Mexico, Colombia and Peru who appointed both the capital city and other city mayors; the next group of countries, Brazil and Argentina, appointed capital city mayors but used a mixture of elections and

appointment for mayors of other cities; Venezuela appointed its capital city mayor but elected other city mayors; and, the least centralized were Cuba, Guatemala, and Chile who elected capital city mayors and those of other cities. By the second half of the twentieth century, however, most countries moved toward political decentralization as they allowed the election of mayors in their capital and other cities. The major exceptions were Havana and Buenos Aires whose mayors were appointed. Cuba also appointed the mayors of other cities as did Venezuela.

We find little correlation between a country's current formal level of political centralization and the political importance of capital cities as measured by our regression results. In fact, when we compare the cross-country variations in the formal level of centralization with the coefficients on capital city dummies, there seems to be an inverse relationship between the level of centralization and the size of these coefficients. The least centralized countries, Argentina, Brazil, Colombia, and Mexico, all exhibited high levels of urban primacy whereas the most centralized countries, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Panama and Paraguay, all exhibited lower levels of urban primacy in their capitals. In addition, whereas capital and other cities all became formally less centralized over time, the national capital effect on population remained extremely important over time.

Yet, despite the seemingly inverse correlation between capital city primacy and the formal measures of political centralization, there is considerable evidence that political power in Latin America is extremely centralized in comparison to that in North America (Nickson (1995)). For example, despite the fact that Mexico is a federalist nation, Nickson argues that Mexico is an extremely centralized state even by the standards of Latin America. In Mexico and elsewhere, political power was centralized in its national capital as it received a majority of the

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national government resources. Similar stories emerge in Argentina, Colombia, Chile and elsewhere in Latin America (Nickson (1995)).

The political centralization in capital cities was aided by a policy of general neglect of other municipalities. Sokoloff and Zolt (2007) and Willis et. al (1999) find that local governments in Latin America possessed little political autonomy and fiscal resources. Whereas local governments in the U.S. and Canada relied heavily on property taxes to fund local public goods such as roads, infrastructure and education, those in Latin America were restricted from doing so by their national and state governments. Many countries in Latin America also preferred to rely on the more regressive taxes on consumption such as excise taxes and taxes on foreign trade rather than on personal or corporate income. In 1930, taxes on international trade accounted for 44% of central government in Brazil, 48% in Argentina, 54% in Chile, 55% in Colombia, 41% in Mexico, and 51% in Venezuela (Sokoloff and Zolt (2007)). Because tariffs collected at the port of Buenos Aires constituted a major source of the national government income, Scobie (1974) argues that the control of the city meant the control of the nation.

[Case Studies. Mexico City, Buenos Aires, etc.]

Why are governments in Latin America much more centralized than those in North America? Many scholars believe that the varying concentrations of political power in the Americas have deep colonial roots (North (1991), Engerman and Sokoloff (1997, 2002), Acemoglu, Johnson and Robinson (2001)). In colonial Iberian Latin America, in contrast to colonial British North America, many contend that the Spanish and, to a lesser extent, the Portuguese, left a deep imprint of strong central governments and weak local governments (Portes (1976), Nickson (1995)). Whereas the cities and towns in the British American colonies, especially in the North, possessed considerable political autonomy in the election of city leaders,

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those in Latin America were often appointed or auctioned. Sokoloff and Zolt (2006) argue that the differences in early colonial inequality influenced the sources of revenues and expenditures for federal, state and local governments in the Americas. In the U.S., localities were allowed to choose instruments of taxation such as property tax (Becker (1980)) whereas those in Latin America possessed a weak capacity to raise revenues as direct taxes on property were not allowed (Nickson (1995)).

5. Conclusion

This paper examines the causes of urban primacy in the Americas using the insight that the law of primacy is highly correlated with the "Law of Capitals." Using extensive data on cities in Latin America and North America, we estimate the impact of national and provincial capital city dummies on population controlling for a variety of factors which might contribute to urban growth. We find that national and provincial capital city statuses played a much greater role in causing population concentration in Latin America than in North America. However, there were important variations across the countries within Latin America. The "Law of Capitals" seems to have held to a much greater extent in countries like Mexico, Argentina and Brazil but to a lesser extent in countries like Paraguay and El Salvador.

Scholars have proposed a variety of theories for urban primacy in Latin America (see Chase-Dunn (1985)). The list given here is not exhaustive but includes some of the major ones. Cardoso (1975) and Portes and Walton (1976) argue that urban primacy was caused by the political power exercised by the Spanish colonial municipalities over their rural hinterlands; McGreevey (1972) points to the development of large scale agricultural exports and the growth

of port cities; Smith (1980) suggests the cause is the relatively freer labor markets in large cities; and Hardoy and Langdon (1978) highlight the role of international immigration.

We suggest that the disproportionate concentration of population in the capital cities in Latin America is most likely caused by the historical concentration of political power in a few elites. In many Latin American countries, the political and economic interests of landowners and capitalists were intimately intertwined by marriage (Zeitlin and Ratcliff (1988)) and many sought the control of national affairs from their capital cities. In Argentina, the powers of the federal government were centralized in Buenos Aires; the capital city had substantial representation in national politics as it elected 20% of the congressional deputies and 2 of 30 senators. In addition, the president was the "immediate and local head of the Capital of the Nation" and appointed the municipal executive or the intendente (Walter (1993)).

In North America, especially in the U.S., by contrast, capital cities, especially state capitals were much less likely to be centers of population or significant political power. In numerous states, capitals were intentionally located in the middle of states which were likely to be rural. Because rural and small town interests were often over-represented in state legislatures of many states, the large urban centers, unlike their counterparts in Latin America, did not possess disproportionate political advantages. The national and state expenditures on infrastructures such as roads and highways and education were often biased toward rural areas and small towns and fostered the growth of smaller municipalities. Thus, even in the U.S., the colonial legacies of political decentralization had a profound impact on its urban development.

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Data appendix: Definitions and Sources

I. Latin America
Population is the total for second administrative division (municipality in general).
Sources for 1900: Argentina: National Census (1914); Brasil: National Census (1937); Chile: National Census (1907); Costa Rica: National Census (1892); Cuba: National Census (1097); El Salvador: National Census (1930); Uruguay: National Census (1908).
Sources for 1990: Argentina: INDEC, Censo Nacional de Población, Hogares y Viviendas (2001); Bolivia: INE, Censo Nacional de Población y Vivienda (2001); Brazil: IBGE, Contagem da População (2007) y Estimativas da População (2007); Chile: INE, XVII Censo Nacional de Población y VI de Vivienda (2002); Colombia: DANE, Censo General (2005); Costa Rica: INEC, IX Censo Nacional de Población y V de Vivienda (2000); Cuba: ONE, Anuario Estadístico Cuba (2006); Ecuador: INEC, VI Censo de Población y V de Vivienda (2001); El Salvador: DIGESTYC, VI Censo Nacional de Población y V de Vivienda (2007); Guatemala: INE, XI Censo Nacional de Población y VI de Habitación (2002); Honduras: INE, Censo de Población y Vivienda (2001); Mexico: INEGI, II Conteo de Población y Vivienda (2005); Nicaragua: INEC, VIII Censo Nacional de Población y IV de Vivienda (2005); Panama: DEC, X Censo de Población y VI de Vivienda (2000); Paraguay: DGEEC, Censo Nacional de Población y Viviendas (2002);Peru: INEI, X Censo de Población y V de Vivienda (2005); Uruguay: VIII Censo General de Población, IV de Hogares y VI de Viviendas - Fase I (2004); Venezuela: INE, XIII Censo General de Población y Vivienda (2001).
Landarea is squared kilometers for second administrative division.
Sources for 1900: Except for the case of Brazil, where the data were available, the land area of other countries was estimated using that of the contemporary second administrative division.
Sources for 1990: Argentina: INDEC, Censo Nacional de Población, Hogares y Viviendas (2001); Bolivia: INE, Estadísticas Departamentales 2005; Brazil: IBGE; Chile: INE, División Político-Administrativa y Censal 2001; Colombia: DANE, Costa Rica: Non Official Web Site (www.sitiosdecostarica.com) ; Cuba: ONE, Anuario Estadístico (2007); Ecuador: INEC; El Salvador: DIGESTYC; Guatemala: INE; Honduras: Asociación de Municipios de Honduras; Mexico: INEGI; Nicaragua: Instituto Nicaragüense de Estudios Territoriales; Panama: DEC; Paraguay: DGEEC; Peru: INEI; Venezuela: INE.
Latitude, Longitude, Altitude.
Sources: Google Earth: Release 4.3. Sea dummy, coastal perimeter (coast perimeter divided by total perimeter), river dummy were defined using country maps.
Average summer temperature (January), average winter temperature (July), average annual temperature, precipitation (mm).
Sources: World Meteorological Organization and National Statistical Institutes.

II. Canada
In Canada, the census subdivision usually corresponds to a municipality. The data used in this paper are the census consolidated subdivision (CCS) which is composed of a grouping of adjacent census subdivisions. Generally, smaller, more urban census subdivisions (towns, villages, etc.) are combined with surrounding, larger, more rural census subdivision to create CCSs. Census subdivision with a land area greater than 25 square kilometers can form CCS of its own; census subdivisions smaller than 25 square kilometers are usually included as part of the CCS formed by surrounding census subdivision. A census subdivision with population greater than 100,000 usually forms a CCS on its own. The CCS data for Canada were graciously provided by C-RERL (Canada Rural Economy Research Lab at the University of Saskatchewan).

III. United States
1900: U.S. Census Bureau, Abstract of the 12th Census 1900. The river and port variables constructed using Google. map. Longitude, latitude from various websites.
1950: U.S. Census Bureau, Statistical Abstract of the U.S., 1955
1990: U.S. Department of Commerce, City and County Data Book, 1994

Table 1: Urban Primacy in the Americas, 1750-1920

A. Percent Share of National Population of the Largest City: Morse (1971)

Country	1750	1780	1790	1800	1810	1820	1830	1840	1850	1860	1870	1880	1890	1900	1910	1920
Argentina		13		12		10		8		7	10			17	20	
Brazil		3		2		2			2		3		4	4		4
Chile	11		8		6			7			6	7	7	9	10	14
Colombia		2					3		2		1				2	2
Cuba			19				13	12						16	14	14
Mexico	3			2		2					2				3	4
Peru			5							4				3		5
Venezuela		7		4	5						3	3	3			4

B. Chi-Square Value for Size Distribution of Cities: McGreevey (1971)

Country	1750	1780	1790	1800	1810	1820	1830	1840	1850	1860	1870	1880	1890	1900	1920	1960
Argentina		1.8		2.7		16.8	11.0		**22.8**	**78.5**		**439.4**		69.3	**1270.5**	**4590.0**
Brazil		14.2			23.4	16.0			16.6		17.5	**73.6**		69.3	103.0	1140.0
Chile	2.3				3.6		**15.0**		20.7		50.4	59.0		51.1	123.2	1381.0
Colombia						2.3			2.6	4.0		8.1		6.4	14.4	**74.9**
Cuba		4.1	**5.5**			**35.5**	**40.1**		57.4					67.5	159.4	601.0
Mexico	**7.1**			**34.1**		**35.8**					38.0		40.0	30.7	147.5	291.0
Peru			10.0						10.2		10.2			6.7	**37.1**	950.0
Venezuela		2.7		3.0	4.3						13.5		8.2		1.5	**504.0**

Table 2: Urban Primacy in the Americas
(percent share of urban population of the largest city)

Country	1870	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000
Argentina	64.1	-	45.6	-	29.5	-	-	22.1	-	18.1	14.8	11.7	10.0	8.3
Bolivia	-	-	-	23.1	-	-	-	-	19.8	-	-	-	23.5	24.2
Brazil	-	-	-	-	-	-	-	-	-	-	-	-	9.2	8.1
Chile	-	-	-	-	-	-	-	25.4	19.1	12.7	8.5	-	3.0	3.9
Colombia	-	-	-	-	-	-	-	14.3	-	-	-	-	-	20.5
Costa Rica	-	-	-	-	-	-	-	-	-	-	19.3	13.6	-	9.3
Cuba	-	-	-	-	28.4	21.5	18.9	17.0	-	-	-	-	-	-
El Salvador	-	-	-	-	-	-	-	-	-	27.9	20.4	-	13.0	-
Equador	-	-	-	-	-	-	-	-	-	14.8	-	19.3	18.9	18.9
Guatemala	-	-	-	-	-	-	-	19.0	33.4	-	-	23.9	-	10.9
Honduras	-	-	-	-	-	-	-	-	-	33.1	-	-	-	22.5
Mexico	-	-	-	-	-	-	-	-	-	24.6	20.2	-	-	9.9
Nicaragua	-	-	-	-	-	-	-	-	-	46.6	-	-	-	28.2
Panama	-	-	-	-	-	-	-	-	-	51.7	47.7	38.4	33.4	47.1
Paraguay	-	-	-	-	-	-	-	-	-	-	-	28.8	21.1	15.0
Peru	-	-	-	-	-	-	-	9.1	-	19.8	-	27.4	27.4	28.0
Uruguay	-	-	-	-	30.7	-	-	-	-	46.8	44.8	44.4	42.5	40.9
Venezuela	-	-	-	-	-	-	14.1	16.2	-	-	-	-	11.8	8.8
Canada	-	-	-	-	-	-	-	-	-	-	-	-	-	13.2
United States	-	-	-	17.4	16.7	14.8	14.1	14.1	12.7	10.2	9.0	7.6	6.6	6.5

Primate cities are as follows: Toronto, Canada; Mexico City, Mexico; New York City (+ includes Brooklyn), USA; Buenos Aires, Argentina; Santa Cruz, Bolivia; Sao Paulo, Brazil; Santiago, Chile; Bogota, Colombia; San Jose, Costa Rica; Habana, Cuba; San Salvador, El Salvador; Guayaquil, Equador; Guatemala City, Guatemala; Tegucigalpa (Distrio Central), Honduras; Managua, Nicaragua; Panama City, Panama; Asuncion, Paraguay; Lima, Peru; Montevideo, Uruguay; Caracas, Venezuela. All of the primate cities are national capitals except for Sao Paulo, Brasil (Brasilia since 1960 and Rio de Janeiro from 1763-1960), Toronto, Canada (Ottawa), New York, USA (Washington DC) and Guayaquil, Equador (Quito);
** Uruguay's sample of cities consist of 19 largest cities.

Table 3: Size Distribution of Cities in the Americas
(Pareto coefficient estimates of log rank on log population)

Country	1870	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000
Argentina	-	-	1.00	-	1.40	-	-	1.24	-	1.19	1.12	1.06	1.05	1.04
Bolivia	-	-	-	1.54	-	-	-	-	1.31	-	-	-	0.65	0.99
Brazil	-	-	-	-	-	-	-	-	-	-	-	-	1.21	1.17
Chile	-	-	-	-	-	-	-	1.35	1.36	1.31	1.19	-	1.16	1.15
Colombia	-	-	-	-	-	-	-	1.53	-	-	-	-	-	1.06
Costa Rica	-	-	-	-	-	-	-	-	-	-	1.56	1.58	-	1.49
Cuba	-	-	-	-	1.21	1.55	1.43	1.28	-	-	-	-	-	-
El Salvador	-	-	-	-	-	-	-	-	-	1.22	1.42	-	1.34	-
Equador	-	-	-	-	-	-	-	-	1.17*	1.36	0.96*	1.09	1.15	1.11
Guatemala	-	-	-	-	-	-	-	1.69	0.92	-	-	1.56	-	1.66
Honduras	-	-	-	-	-	-	-	-	-	-	-	-	-	1.13
Mexico	-	-	-	-	-	-	-	-	-	1.42	1.31	-	-	1.12
Nicaragua	-	-	-	-	-	-	-	-	-	-	-	-	-	1.31
Panama	-	-	-	-	-	-	-	-	-	-	-	-	0.98	0.93
Paraguay	-	-	-	-	-	-	-	-	-	-	-	1.31	1.35	1.30
Peru	-	-	-	-	-	-	-	1.59	-	1.38	-	1.17	1.14	1.11
Uruguay**	-	-	-	-	1.30	-	-	-	-	0.95	0.95	0.94	0.89	0.89
Venezuela	-	-	-	-	-	-	1.59	1.71	-	-	-	-	1.17	1.14
Canada	-	-	-	-	-	-	-	-	-	-	-	-	-	1.07
United States	-	-	-	1.06	1.07	1.08	1.09	1.11	1.10	1.18	1.22	1.27	1.24	1.23

The Pareto distribution for city-sizes is defined as: $R = AS^{-a}$ where R = number of cities with population S or more, A is a constant, S is population of city and a is the Pareto exponent reported in the table.

Note: Mexico City is defined as Distrito Federal and includes the 16 boroughs. Data for Canada consists of 100 largest cities.

** Uruguay's sample of cities consist of 19 largest cities.

Table 4

Descriptive Statistics of the Provinces/States in the Americas

	Number	Population (1,000) Average (sd)
Argentina	24	1510.8 (2757.6)
Bolivia	9	919.4 (820.2)
Brazil	27	6230.6 (7624.9)
Chile	53	283.2 (647.1)
Colombia	33	1256.6 (1534.7)
Costa Rica	7	544.3 (382.0)
Cuba	15	745.2 (474.8)
Ecuador	22	549.3 (803.1)
El Salvador	14	365.6 (350.9)
Guatemala	21	498.1 (506.5)
Honduras	18	337.6 (298.4)
Mexico	32	3046.4 (2664.8)
Nicaragua	17	256.3 (233.7)
Panama	9	253.4 (319.0)
Paraguay	18	286.8 (315.6)
Peru	25	1046.1 (1479.1)
Uruguay	-	
Venezuela	24	960.5 (733.6)
Canada	10	3311.9 (4117.8)
United States	49	5042.0 (5486.6)

Table 5

Descriptive Statistics: Cities in the Americas

	1910* Urbanization	2000	c1900 (2,500+) Number Average (sd)		c1900 (25,000+) Number Average (sd)		c1990 (2,500+) Number Average (sd)		c1990 (25,000+) Number Average (sd)	
Argentina	31.2%	89.4%	365	21257 (84654)	73	67779 (182644)	489	74074 (180553)	245	136022 (239671)
Bolivia	4.3	64.8	-		-		109	75865 (190537)	68	113769 (233706)
Brazil	10.7	81.3	1469	28764 (60656)	566	51163 (93238)	5270	34777 (203018)	1222	116848 (411055)
Chile	14.5	84.6	79	41016 (48918)	50	54250 (57539)	52	290655 (652191)	44	341547 (698033)
Colombia	7.1	74.9	-		-		1054	39256 (237986)	251	130904 (476827)
Costa Rica	9.0	51.9	29	8260 (7887)	2	32505 (9343)	81	47039 (49750)	49	67782 (54715)
Cuba	15.1	75.3	124	17417 (29380)	17	60058 (64878)	155	72510 (180618)	134	80959 (192977)
Ecuador	9.1	62.4	-		-		214	56454 (191369)	97	110426 (275365)
El Salvador	6.3	46.6	159	7985 (10576)	5	53572 (30379)	244	23425 (38600)	54	71327 (60901)
Guatemala	5.1	40.4	-		-		327	34294 (62755)	141	61554 (88378)
Honduras	3.9	46.9	-		-		285	21234 (61564)	46	82289 (138620)
Mexico	7.6	74.4	-		-		2049	50174 (228685)	689	128414 (382572)
Nicaragua	7.0	64.7	-		-		151	33847 (79242)	61	65866 (117904)
Panama	11.1	57.7	-		-		72	39354 (92250)	20	111664 (155244)
Paraguay	14.1	56.0	-		-		217	23740 (45541)	47	72851 (80402)
Peru	5.0	72.8	-		-		195	133843 (508984)	162	158037 (555587)
Uruguay	28.7	91.3	19	54878 (63493)	17	59216 (65916)	19	170579 (295890)	19	170579 (295890)
Venezuela	3.6	87.4	-				322	71549 (188929)	179	116782 (244356)
Latin America			2244	25831 (61622)	730	53396 (102350)	11337	45092 (213940)	3559	120644 (370708)
Canada			-				-		175	106935 (174519)
United States			-		160	123243 (322758)	-		1072	104007 (306830)

Sources: Urbanization for circa *1910-1914 is defined as proportion of population living in major cities; in 2000, as proportion living in urban areas by various national definitions: see Bulmer-Thomas (2003, 7, 85)

Table 6

Log of Population on Capital City Status for Pooled Latin America: 1900 and 1990

	1900				1990 (1900 sample)				1990			
	2,500+		25,000+		2,500+		25,000+		2,500+		25,000+	
National Capital	2.69***	2.81***	1.82***	2.05***	2.67***	2.71***	2.05***	2.06***	2.78***	2.74***	2.32***	2.29***
	(0.60)	(0.50)	(0.56)	(0.43)	(0.64)	(0.48)	(0.52)	(0.42)	(0.34)	(0.32)	(0.29)	(0.27)
Provincial Capital	0.82***	1.14***	0.53***	0.75***	2.72***	2.32***	1.51***	1.48***	2.14***	1.93***	1.20***	1.22***
	(0.13)	(0.11)	(0.11)	(0.12)	(0.12)	(0.13)	(0.12)	(0.11)	(0.07)	(0.07)	(0.07)	(0.07)
Ex. National Capital	-	-	-	-	-	3.03***	-	3.16***	-	3.58***	-	3.32***
						(0.20)		(0.20)		(0.13)		(0.13)
ln(landarea)	0.14***	0.11***	0.01	0.05***	0.18***	0.13**	-0.04***	-0.06***	0.19***	0.18***	-0.006	-0.03***
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.009)	(0.01)
Latitude	-	0.02***	-	0.02***	-	0.02***	-	0.02***	-	-0.005**	-	0.010***
		(0.00)		(0.01)		(0.003)		(0.004)		(0.002)		(0.002)
Longitude	-	-0.02***	-	-0.02***	-	-0.001	-	-0.012***	-	0.003***	-	-0.004***
		(0.00)		(0.00)		(0.001)		(0.001)		(0.001)		(0.001)
Altitude	-	-0.00***	-	-0.00	-	-0.00***	-	-0.00	-	-0.00*	-	-0.00
		(0.00)		(0.00)		(0.00)		(0.00)		(0.00)		(0.27)
Coastline dummy	-	0.16***	-	0.11	-	0.72***	-	0.19**	-	0.77***	-	0.21***
		(0.07)		(0.11)		(0.09)		(0.09)		(0.07)		(0.07)
Coast line perimeter (0-1)	-	-0.49***	-	0.06	-	-0.24	-	0.42	-	-0.43***	-	-0.25
		(0.21)		(0.37)		(0.27)		(0.28)		(0.21)		(0.21)
River dummy	-	0.05	-	0.01	-	0.31***	-	0.17***	-	0.07***	-	-0.01
		(0.04)		(0.04)		(0.04)		(0.04)		(0.02)		(0.03)
Summer avg. temperature	-	-0.04***	-	0.01	-	0.03***	-	-0.02	-	-0.007	-	0.008
		(0.01)		(0.01)		(0.01)		(0.01)		(0.006)		(0.007)
Winter avg. temperature	-	0.04***	-	0.01	-	-0.02***	-	0.00	-	-0.011***	-	-0.02***
		(0.01)		(0.01)		(0.006)		(0.00)		(0.004)		(0.005)
Average annual temperature	-	-0.04***	-	-0.00	-	0.04***	-	0.01	-	0.002	-	0.007
		(0.01)		(0.01)		(0.008)		(0.01)		(0.005)		(0.007)
Average annual precipitation	-	0.00***	-	0.00	-	0.00	-	-0.00***	-	-0.000***	-	-0.000***
		(0.00)		(0.00)		(0.00)		(0.00)		(0.000)		(0.000)
R^2	0.15	0.42	0.24	0.31	0.16	0.22	0.21	0.29	0.20	0.24	0.22	0.27
Number of Observations	2232	2222	728	726	6309	6307	1767	1767	11300	11286	3528	3506
F-test	-	41.96	-	10.06	-	-	-	-	-	65.62	-	19.67

Notes: Robust standard errors are shown in parethesis. The F-test tests the joint significance of the controls included in the regression.
*Significant at 10% level; ** Significant at 5% level; *** Significant at 1% level.

Table 7

Log of Population on Capital City Status for North America: 1900, 1950 and 1990

	United States							Canada		
	1900 (25,000+)			1950 (25,000+)		1990 (25,000+)		1990 (25,000+)		
National Capital	0.53***	0.33	-0.06	1.19***	1.20***	1.75***	1.46***	1.55***	1.54***	1.65***
	(0.18)	(0.22)	(0.18)	(0.10)	(0.13)	(0.05)	(0.12)	(0.07)	(0.08)	(0.12)
State/Provincial Capital	0.14	0.26**	0.25***	0.26***	0.26***	0.32***	0.27***	1.02***	0.94***	0.81***
	(0.14)	(0.11)	(0.10)	(0.09)	(0.10)	(0.11)	(0.11)	(0.33)	(0.33)	(0.29)
ln(landarea)	0.58***	0.59***	0.71***	0.71***	0.70***	0.53***	0.55***	-0.08***	-0.03	0.06*
	(0.08)	(0.08)	(0.06)	(0.06)	(0.06)	(0.03)	(0.03)	(0.02)	(0.03)	(0.04)
Latitude	-	0.01	0.03	-	-	-	-	-	-0.04	-0.06**
		(0.03)	(0.03)						(0.03)	(0.03)
Longitude	-	0.02**	0.01	-	-	-	-	-	-0.007	-0.013
		(0.01)	(0.01)						(0.009)	(0.009)
Altitude	-	-	-	-	-	-	-	-	-0.000	-0.000
									(0.000)	(0.000)
Seaport dummy	-	0.48***	0.32***	-	-	-	-	-	-	-
		(0.16)	(0.12)							
River dummy	-	0.34***	0.25***	-	-	-	-	-	-	-
		(0.10)	(0.08)							
Precipitation (annual avg)	-	-0.005	-0.003	-	0.00	-	-0.003***	-	-0.000	-0.000
		(0.009)	(0.01)		(0.00)		(0.001)		(0.000)	(0.000)
Temperature (annual avg)	-	0.01	0.02**	-	0.007*	-	0.006***	-	-	-
		(0.01)	(0.01)		(0.004)		(0.01)			
Sunshine	-	-	-	-	-	-	-	-	0.005	0.007*
									(0.004)	(0.004)
Snow	-	-	-	-	-	-	-	-	-0.002**	-0.002
									(0.001)	(0.001)
Share of Agriculture	-	-	-48.9***	-	-3.02*	-	-	-	-	-11.2***
			(7.81)		(1.81)					(2.41)
Share of Manufacturing	-	-	-1.09**	-	0.19	-	0.006***	-	-	0.07
			(0.48)		(0.31)		(0.002)			(0.84)
Share of Services	-	-	-	-	-	-	-0.03***	-	-	4.80***
							(0.007)			(1.06)
FIRE	-	-	-	-	-	-	0.04***	-	-	-
							(0.007)			
R²	0.44	0.56	0.73	0.60	0.61	0.44	0.55	0.16	0.25	0.41
Number of Observations	160	156	156	304	304	1072	1072	175	175	175
F-test	-	5.37	11.39	-	1.45	-	21.14	-	3.79	7.65

Notes: Robust standard errors are shown in parethesis. The F-test tests the joint significance of the controls included in the regression.
*Significant at 10% level; ** Significant at 5% level; *** Significant at 1% level.

Table 8

Log of Population on Capital City Status by Country in Latin America: 1900 and 1990

Country		1900				1990			
		2500+		25000+		2500+		25000+	
		(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Argentina	National Capital	4.95***	4.52***	3.54***	3.42***	3.93***	3.82***	3.17***	3.56***
	Provincial Capital	0.59***	0.69***	0.49***	0.65***	2.02***	2.04***	1.10***	1.17***
	R^2	0.11	0.32	0.56	0.66	0.25	0.35	0.35	0.41
	Number of Observations	365	365	73	73	489	489	245	245
	F-test	-							
Bolivia	National Capital					1.11	0.57	1.12	1.14
	Provincial Capital					1.97***	2.20***	1.35***	1.43***
	R^2					0.31	0.51	0.45	0.51
	Number of Observations					109	106	68	67
	F-test								
Brazil	National Capital	4.48***	4.85***	3.81***	3.94***	0.89***	1.87***	1.39***	1.30***
	Provincial Capital	1.72***	1.89***	1.14***	1.30***	3.89***	3.46***	2.54***	2.46***
	R^2	0.13	0.30	0.30	0.36	0.13	0.23	0.23	0.28
	Number of Observations	1469	1459	566	564	5629	5267	1222	1222
	F-test	-							
Chile	National Capital	2.20***	2.00***	2.05***	1.97***	2.35***	2.12***	2.33***	2.00***
	Provincial Capital	0.62***	0.60***	0.38***	0.41***	1.51***	1.44***	0.95***	1.13**
	R^2	0.39	0.52	0.45	0.55	0.33	0.75	0.46	0.70
	Number of Observations	79	79	50	50	52	52	44	44
	F-test	-							
Colombia	National Capital					3.50***	3.34***	3.31***	3.03***
	Provincial Capital					2.49***	2.64***	1.73***	1.87***
	R^2					0.26	0.42	0.46	0.50
	Number of Observations					1052	1051	251	251
	F-test								
Costa Rica	National Capital	1.09***	1.08***			1.07***	1.19***	1.01***	0.95***
	Provincial Capital	0.94***	0.96***			1.31***	1.11***	0.80***	0.77***
	R^2	0.66	0.80			0.25	0.41	0.37	0.61
	Number of Observations	29	29			81	81	49	49
	F-test	-							

Notes: The F-test tests the joint significance of the controls included in the regression. *Significant at 10% level; ** Significant at 5% level; *** Significant at 1% level.

Table 8 - continued

Log of Population on Capital City Status by Country in Latin America: 1900 and 1990

Country		1900				1990			
		2500+		25000+		2500+		25000+	
Cuba	National Capital	2.23***	2.11***	1.96***	1.45	2.28***	2.33***	2.28***	2.36***
	Provincial Capital	1.42***	1.49***	0.40***	0.77***	1.70***	1.71***	1.56***	1.55***
	R^2	0.42	0.47	0.63	0.96	0.60	0.62	0.71	0.73
	Number of Observations	120	120	16	16	155	155	134	134
	F-test								
Equador	National Capital					2.78***	3.19***	2.66***	2.73***
	Provincial Capital					1.54***	1.47***	1.01***	1.15***
	R^2					0.29	0.50	0.42	0.53
	Number of Observations					214	212	97	96
	F-test					-			
El Salvador	National Capital	1.84***	1.67***			1.90***	1.45***	1.45***	1.20***
	Provincial Capital	1.11***	1.02***			1.31***	1.11***	0.40**	0.42***
	R^2	0.52	0.67			0.31	0.54	0.21	0.44
	Number of Observations	151	151			244	244	54	54
	F-test	-							
Guatemala	National Capital					2.79***	2.53***	2.63***	2.34***
	Provincial Capital					0.89***	0.84***	0.45***	0.46***
	R^2					0.41	0.50	0.30	0.43
	Number of Observations					327	327	141	141
	F-test					-			
Honduras	National Capital					2.49***	2.48***	2.30***	2.19***
	Provincial Capital					0.87***	0.70***	0.31	0.36
	R^2					0.53	0.73	0.46	0.65
	Number of Observations					284	184	46	46
	F-test								
Mexico	National Capital					5.86***	5.52***	4.95***	5.09***
	Provincial Capital					2.94***	2.88***	1.97***	1.94***
	R^2					0.22	0.32	0.25	0.31
	Number of Observations					2049	2049	689	689
	F-test					-			

Notes: The F-test tests the joint significance of the controls included in the regression. *Significant at 10% level; ** Significant at 5% level; *** Significant at 1% level.

Table 8 - continued

Log of Populat ion on Capital City Status by Country in Latin America: 1900 and 1990

Country		1900		1990			
		2500+	25000+	2500+		25000+	
Nicaragua	National Capital			2.87***	2.01***	2.69***	2.06***
	Provincial Capital			1.21***	1.13***	0.57***	0.60***
	R^2			0.51	0.64	0.59	0.70
	Number of Observations			151	151	61	61
	F-test			-			
Panama	National Capital			2.80***	2.34***	2.46***	1.88***
	Provincial Capital			0.89***	0.80*	0.25	0.80***
	R^2			0.28	0.49	0.52	0.90
	Number of Observations			72	72	20	20
	F-test			-	-		
Paraguay	National Capital			3.76***	3.93***	2.25***	2.30***
	Provincial Capital			1.25***	1.30***	0.34	0.57***
	R^2			0.17	0.34	0.34	0.52
	Number of Observations			217	214	47	47
	F-test			-			
Peru	National Capital			3.44***	2.97***	3.40***	3.03***
	Provincial Capital			1.58***	1.52***	1.30***	1.28***
	R^2			0.39	0.55	0.48	0.57
	Number of Observations			195	193	162	161
	F-test			-			
Uruguay	National Capital	2.12***	3.44***	1.71	3.61*	1.71	3.61*
	Provincial Capital	-	-	-	-	-	-
	R^2	0.62	0.87	0.57	0.85	0.57	0.85
	Number of Observations	19	19	19	19	19	19
	F-test	-	-	-		-	
Venezuela	National Capital			2.66***	2.49***	2.54***	2.38***
	Provincial Capital			1.89***	1.90***	1.34***	1.41***
	R^2			0.27	0.35	0.38	0.45
	Number of Observations			321	320	179	179
	F-test			-			

Notes: The F-test tests the joint significance of the controls included in the regression. *Significant at 10% level; ** Significant at 5% level; *** Significant at 1% level.

Table 9

Rank Order of National and Provincial/State Capital Coefficients, 1990

	National Capital (= 2,500)		Provincial Capital (= 2,500)		National Capital (= 25,000)		Provincial Capital (= 25,000)	
Mexico	5.86	Brazil	3.89	Mexico	4.95	Brazil	2.54
Argentina	3.92	Mexico	2.94	Peru	3.40	Mexico	1.97
Paraguay	3.76	Colombia	2.49	Colombia	3.31	Colombia	1.73
Colombia	3.50	Argentina	2.02	Argentina	3.17	Cuba	1.56
Peru	3.43	Bolivia	1.97	Nicaragua	2.69	Bolivia	1.35
Nicaragua	2.87	Venezuela	1.89	Ecuador	2.66	Venezuela	1.34
Panama	2.80	Cuba	1.70	Guatemala	2.63	Peru	1.30
Guatemala	2.79	Peru	1.58	Venezuela	2.54	Argentina	1.10
Ecuador	2.78	Ecuador	1.54	Panama	2.45	Equador	1.04
Venezuela	2.66	Chile	1.51	Chile	2.33	Canada	1.02
Honduras	2.49	El Salvador	1.31	Honduras	2.30	Chile	0.95
Chile	2.35	Costa Rica	1.31	Cuba	2.28	Costa Rica	0.80
Cuba	2.28	Paraguay	1.24	Paraguay	2.25	Nicaragua	0.57
Brazil*	2.19	Nicaragua	1.21	Brazil*	2.24	Guatemala	0.45
El Salvador	1.90	Panama	0.89	U.S.	1.75	El Salvador	0.40
Bolivia	1.11	Guatemala	0.89	Canada	1.55	Paraguay	0.34
Costa Rica	1.07	Honduras	0.87	El Salvador	1.45	U.S.	0.32
Brazil	0.89			Brazil	1.39	Honduras	0.31
				Bolivia	1.12	Panama	0.25
				Costa Rica	1.01		

Regression coefficient of the log of population on capital dummies with land area control
* Ex-national capital

Table 10

Political Decentralization in Latin America circu 1995

Country	Constitutional Structure	Selection of Executive Provincial	Local	Democratic Transition	Formal Overide Authority
Centralized					
Costa Rica	Unitary	Appointed	Elected (1970)	1948	Yes
Dominican R.	Unitary	Appointed	Elected	1966	Yes
Ecuador	Unitary	Elected/App.	Elected	1978	Yes
El Salvador	Unitary	Appointed	Elected	1982-1984	Yes
Guatemala	Unitary	Appointed	Elected (1985)	1985	Yes
Panama	Unitary	Appointed	Elected (1994)	1990-1994	Yes
Paraguay	Unitary	Appointed	Elected (1991)	1991	Yes
Moderately Centralized					
Bolivia	Unitary	Appointed	Elected (1987)	1985	No
Chile	Unitary	Appointed	Elected (1992)	1990	No
Honduras	Unitary	Appointed	Elected (1990)	1986-1990	No
Nicaragua	Unitary	Appointed	Elected (1992)	1990	No
Peru	Unitary	None	Elected (1987)	1980	No
Uruguay	Unitary	Elected (1984)	None	1984	-
Decentralized					
Argentina	Federal	Elected (1983)	Elected (1983)	1983	No
Brazil	Federal	Elected (1982)	Elected (1982)	1985	No
Colombia	Unitary	Elected (1992)	Elected (1988)		No
Mexico	Federal	Elected	Elected		No
Venezuela	Federal	Elected 91989)	Elected (1989)		No

Source: Willis et. al (1999), Nickson (1995).

Table 11

Political Decentralization of Capital City and Other Municipalities, 1944-1962 and 1978-1990

	1944-1967					
	Selection of Capital Mayor		Selection of Other City Mayors			Power Sharing with Municipal Council
Centralized	Elected	Appointed	Elected	Appointed	Mixed	
Mexico		X		X		No
Peru		X		X		Yes
Colombia		X		X		Yes
Argentina		X			X	Partial
Brazil (Rio de J.)		X			X	Yes
Brazil (Brazilia)		X			X	Yes
Venezuela		X	X			Partial
Less Centralized						
Guatemala	X		X			Yes
Cuba	X		X			Some
Chile	X				X	Yes
Brazil (Sao Paulo)	X				X	Yes

	1978-1990s							
	Selection of Capital Mayor		Selection of Other City Mayors			Muncipal Council Powers		
Centralized	Elected	Appointed	Elected	Appointed	Mixed	Increase	Decrease	No Change
Cuba		X		X			X	
Argentina		X	X					X
Less Centralized								
Mexico	X		X				X	
Peru	X		X					X
Guatemala	X		X			X		
Brazil (Rio de J.)	X		X			X		
Brazil (Brazilia)	X		X			X		
Brazil (Sao Paulo)	X		X			X		
Colombia	X		X			X		
Venezuela	X		X			X		
Chile	X		X			X		

Source: Myers (2002).