

Political Institutions, Federalism and Urban Development:  
Evidence from the US and Canada

Sukkoo Kim

Washington University in St. Louis and NBER

and

Marc Law

University of Vermont

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## Abstract

In this paper, we examine the comparative effect of US and Canadian federalism on urban development using the differential impact of political capitals on city population. In the US, the Jeffersonian-Jacksonian tradition of states rights and localism was transformed into a more nationally centralized form of federalism during the Progressive Era, but states and localities continued to retain significant autonomy. In Canada, on the other hand, federalism came to favor provincial rights but not localism. Consistent with these trends, after controlling for other factors like geography and climate that influence population agglomeration, the national capital effect on population grew over time in both countries but much more so in the US whereas the sub-national (i.e. state or provincial) capital effect rose much more significantly in Canada than in the US.

## 1. Introduction

Political institutions such as federalism, which define the balance of power between national, regional and local governments, can influence the spatial development of nations. In many countries, especially in Latin America, where political centralization at the federal level has historically emasculated the political and fiscal powers of local governments (Sokoloff and Zolt 2006; Nickson 1995), spatial development has been characterized by a condition known as urban primacy where population is concentrated in a few cities that are politically and economically dominant. By contrast, in countries like the US where political and fiscal powers are more decentralized, spatial development has been more balanced.

Because Canada and the US are two former British colonies that adopted federalist constitutional forms of government, albeit under different times and circumstances, scholars have often focused on the similarities in their patterns of development. Factors that determine institutions such as colonial origins, culture, language, climate and factor endowments are quite similar in both countries, with the well known exceptions of Quebec and the southern US.<sup>1</sup> These factors, in turn, are believed to have contributed to high rates of literacy, land ownership, enfranchisement and the rise democratic political institutions conducive to modern economic growth (North 1991; Engerman and Sokoloff 1997, 2002; Acemoglu et. al 2001). In comparison with the rest of the Americas, the similarities in the patterns of development between Canada and the US are undeniable and were reinforced by the migration of US citizens to Canada during the eighteenth and nineteenth centuries, many of whom brought their institutions and customs with

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<sup>1</sup> Egnal (1996) argues that French Canada (Quebec) and the US South diverged culturally and economically from the US North. Egnal attributes the divergence of French Canada to the influence of the seigneurial land tenure system and the Roman Catholic Church; for the US South, he highlights the influence of slavery. In contrast Kim (2009) suggests that various factors that created initial differences in the degree of social equality likely contributed to the divergence in the political and legal institutions in US North and South. In this paper, we focus our attention on the divergence of political institutions in Ontario—Canada most populous province—compared to similar northern US states.

them. The slowing down of migration did not stop the flow of ideas, however, as Canadian leaders studied US institutions closely before designing their own.

Yet, despite notable similarities in American and Canadian institutional developments, scholars also believe that Canadian and US political institutions diverged in important ways. In particular, scholars highlight key differences in the nature of Canadian and American federalism (Riker 1964; Gibbins 1982). Despite attempts by the founding fathers of the Canadian confederation to create a highly centralized national government, the provincial rights movement led by Oliver Mowat of Ontario gradually led to politically and fiscally autonomous provincial governments. In the US, on the other hand, the original Jeffersonian-Jacksonian model of federalism based on decentralized states rights was transformed into a more nationally centralized federalism from the late nineteenth century onwards.<sup>2</sup>

It is not so widely recognized, but no less significant, that the decentralization of political power in Canada away from the national government and toward provincial governments was accompanied by a significant centralization of provincial government power over local governments, whereas in America the states' rights movement was characterized by a continued emphasis on the importance of decentralized local governments. Thus, although cities and local governments in Canada and the US both became "creatures" of their respective provincial or state governments, the ascendancy of Canadian provincial governments was accompanied by a corresponding reduction in the autonomy of local governments.<sup>3</sup> In contrast, even when state and

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<sup>2</sup> The vesting of residual powers in the Canadian and US constitutions indicates differing intentions on the part of the founding fathers of each country regarding the degree of political centralization. Under the "peace, order, and good government" clause of the 1867 British North America (BNA) Act—Canada's original constitutional document—unspecified residual powers were granted to the federal government. In contrast, the US constitution vests residual powers in the states. However, as Gibbins (1982, p.41) writes: "While the American federal system has evolved from the very decentralized, state-oriented federal framework established in 1787 toward a more nationalized and centralized federal system, the Canadian system has evolved away from the centralized form established in 1867 toward something akin in spirit to the 1787 American model."

<sup>3</sup> The rise of provincial restrictions on municipal finance is a major theme in Canadian urban public finance. See

federal governments in the US became more centralized during the Progressive Era, local governments continued to enjoy significant political autonomy through decentralized political representation and the rise of the home rule movement (Campbell 1980; McGoldrick 1967).

In this paper, we examine the impact of US and Canadian federalism on urban development using political capitals as proxies for the importance of political centralization. We motivate our empirical analysis using a simple model of political centralization developed in Galiani and Kim (2010). When governments are decentralized, then all localities choose the level of taxes and local public goods; when governments are centralized, then the central government chooses the level of taxes and local public goods for both the capital and hinterland cities. In the decentralized setting, city populations are largely determined by local productivity; in the centralized setting, however, the capital city may have a larger population than justified by local productivity if the central government's preference skews the distribution of local public goods towards the central city. In addition, there are numerous other reasons for why capital cities might benefit disproportionately under centralized governments.

While the model only contains two levels of government—national versus state, or state versus local—we believe that the insights of the model extend to federal systems with the usual three-levels of government: national, state or provincial, and local. If a country is federally or sub-nationally centralized, then we expect the national or sub-national (i.e. state or provincial) capital city effect on population to be much more significant than if it was decentralized, controlling for other factors such as climate and geography. Because the national and sub-national capitals in Canada and the US were mostly founded for political reasons prior to the

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Bird and Tassonyi (2001), Slack and Bird (2006), and Perry (1974), among others.

onset of industrialization, we believe that the locations of these capitals can be usefully treated as exogenous from the modern perspective.<sup>4</sup>

For our data analysis, we use information on cities with populations greater than 25,000 from 1900 to 2000 and metropolitan areas from 1950 to 1990. As some capital cities in the US are smaller than 25,000, they are not included in our sample. In both countries, capital cities represent a relatively small fraction of the total number of cities with population greater than 25,000—around 4% for US and 7% for Canada in 2000—but they account for a significant share of the urban population, especially in metropolitan form. For municipalities, capitals represent around 10% of the US urban population in 2000 (4% of the total US population) whereas they represent almost 30% of Canada’s urban population (18% of Canada’s total population). For metropolitan areas, however, capital metropolitan areas account for approximately 20% and 40% of metropolitan populations in US and Canada, respectively (15% and 30% of the total population of US and Canada).

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<sup>4</sup> Most of the political capitals were originally small and their locations were chosen in an era when economies were agricultural, extractive or mercantile rather than industrial. As far as we are aware, the locations of capital cities were not chosen with an eye for future industrial development. From the national perspective, Washington DC and Ottawa, both remote and undeveloped places, were chosen as a consequence of sectional compromise even though the seats of national governments during the colonial period in both nations were in major cities such as Philadelphia, New York City, Montreal and Toronto. In the US, after many years of contentious debate, the Compromise of 1790 between Alexander Hamilton and James Madison settled the location of the capital in the undeveloped South along the Potomac in exchange for southern votes in favor of the assumption of state debts by the national government. President George Washington chose the current site of Washington DC (Galiani and Kim 2010). In Canada, Ottawa was chosen by Queen Victoria as a compromise between Ontario and Quebec because it was midway between Toronto and Quebec City. Its distance from the US for military defense was also a consideration (Nader 1976). However, while Washington DC is its own district, Ottawa is part of Ontario and this difference, according to Gibbins (1982), has contributed to greater federal-provincial conflict in Canada. From the sub-national perspective, US state capitals were often located in remote places near a state’s geographic center to promote political decentralization (see Galiani and Kim 2010). In Canada, the location of capitals in some provinces (for instance, Ontario, Quebec, and Nova Scotia) coincided with the more established cities (Toronto, Quebec City, and Halifax, respectively). As in Latin America, the decision to make these larger cities provincial capitals may have been done with the intent to centralize political power in capitals. However, for most of the other provinces, the capitals were originally small and undistinguished places. For instance, Winnipeg and Edmonton, the capitals of Manitoba and Alberta, were mere trading posts at the time these provinces joined confederation. Regina, the capital of Saskatchewan, did not exist when the province was created (Nader 1976).

Based on the regression estimates using city-level data, we find that the national capital city effect on population rose significantly over the twentieth century for both countries, reflecting the increasing centralization of political authority in their respective federal governments. After controlling for other factors, Washington DC's status as the nation's capital increased its population by 68% compared to non-capital cities in 1900, but that figure rose over six-fold to 447% by 2000. In Canada, Ottawa's capital city status raised its population by 159% relative to non-capital cities in 1920, and the effect increased almost four-fold to 589% in 2000.<sup>5</sup>

The data also show that the impact of sub-national capital status on city population diverged between Canada and US over the second half of the twentieth century. While Canadian provincial capital city status increased city population from 48% to over 100% over non-capital cities between 1900 to 2000, the US state capital city effect rose only modestly, from 30% to 49%. This divergence between Canada and the US can be seen even more clearly when we pool the data, especially for samples of contiguous and other near-border states and provinces. By the second half of the twentieth century, the pooled data suggest that the national capital city effect was actually much greater for the US compared to Canada while the reverse pattern continues to hold for the sub-national capital city effect. Thus, to the extent that a capital city's ability to attract a disproportionately greater population as compared to non-capital cities is correlated with levels of political centralization, the data seem to confirm the hypothesis that Canadian and US federalism diverged over the second half of the twentieth century.

The remainder of this paper is structured as follows. In section II, we provide evidence of the diverging patterns of US and Canadian fiscal federalism, especially over the second half of

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<sup>5</sup> Estimating a similar empirical model for Latin American countries, Galiani and Kim (2010) find that in 1900 national capital status increased population by 523% relative to non-capital cities and that this effect increased to 919% by 1990. The corresponding effects for Latin American sub-national capitals were 70% in 1900 and 232% in 1990. These findings suggest substantial political centralization in Latin American countries.

the twentieth century. In section III, we estimate the impact of political centralization on urban development in Canada and US. In Section IV, we investigate the causes of the divergence of Canadian and US federalism. Section V concludes with a summary.

## II. US and Canadian Fiscal Federalism

The US and Canada are perhaps more similar than any two other nations in the world (Lipset 1965; Gibbins 1982). The two nations are former British colonies that share a common culture and language (for the English speaking majority). At independence, both adopted democratic and federal political systems. Settlement began in the east, and gradually, through the acquisition of vast territories to the west, both Canada and the US became large transcontinental nations, sharing the longest common border of 5,525 miles, excluding the 1,538 miles of the Alaska-Canada border. The Canadian colonial economy was initially more dependent on key staples of fish, fur and forest products, but both countries eventually developed into high income, industrialized nations.<sup>6</sup>

Yet, despite these similarities, scholars also believe that the two nations emerged with two different systems of federalism, the US with a more centralized version. Even though the Canadian system is superficially more centralized in a number of ways (for instance, Canadian senators never became guardians of provincial rights), Riker (1964) argues that two key extra-constitutional institutions led to greater Canadian decentralization. First, until 1949, the Judicial Committee of the Privy Council (JCPC) in Great Britain, which served as the final court of

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<sup>6</sup> The staples theory of development has dominated Canadian economic history until recent years. Classic works by Mackintosh (1923), Innis (1956) and Creighton (1937) argue that specialization in Canadian staples, especially fur, led to political centralization in Canada as the organization of trade over a vast continent necessitated centralized coordination. More recent scholarship has abandoned the staples approach on account of its failure to adequately account for industrialization and the more balanced economic development that occurred during the twentieth century.



appeal on matters of constitutional interpretation, systematically curtailed federal authority in favor of provincial authority in its rulings (see also Saywell 2002). Second, and more importantly, the Canadian political party system contributed to decentralization as the splintering of national and provincial party systems hindered national party unification and discipline.<sup>7</sup>

In Canada, however, the movement toward decentralized provincial rights did not translate into additional political decentralization at the local level. Rather, provincial rights have been accompanied by centralization of the power of provincial governments over their local governments (Noel 1990). Unlike the policy of most US states, Canadian provincial governments came to restrict local government revenues, direct their expenditures, limit their access to credit markets and impose a hard budget constraint on municipalities (Bird and Tassonyi 2001). Moreover, Goldberg and Mercer (1986) argue that Canadian federalism has limited the federal government's involvement in local development whereas the federal government in the US has played a major role in local urban development, especially through its involvement in the housing market.

In this section, we examine the diverging patterns of fiscal federalism between Canada and the US. Whereas the central government in a unitary state unilaterally determines the level of public goods expenditures for all geographic regions, central governments in federal systems

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<sup>7</sup> Gibbins (1982, p.109) shares Riker's view that the "differences in the American and Canadian federal systems may be traceable to differences in the respective party systems." While both countries moved toward universal voting using secret ballots, Canadians nationally elect only one local member to the federal parliament whereas Americans elect president, senators, and house members, often on the same ballot. In Canada, elections are localized as no candidate appears on a single ballot across the country or even across a single province. While local candidates in Canada are chosen by local party organizations, a strong degree of party discipline is exercised in the Canadian parliament. Members of Parliament are therefore not always free to represent local or regional interests. This is in contrast with the US, where individual members of Congress often vote differently from their party. As a consequence, in Canada national political parties have difficulty accommodating local or regional interests. Provincial governments and separate provincial political parties have come to fill this role. In addition, Gibbins (1982) argues that the degree of political competition within Canada is much less than within the US. While US and Canada are of similar geographic sizes, US is divided into fifty relatively small states whereas Canada is divided into ten provinces. The largest US states, California, New York and Texas, individually have at most 10% of the population; the two largest Canadian provinces, Ottawa and Quebec, contain 38% and 24% of the population respectively.

allocate the responsibility to the various levels of government. To the extent that American and Canadian federalisms diverge, the institutional rules regarding revenue collection, sharing, and expenditures should systematically diverge between these two nations. Indeed, Bird and Tassonyi (2001) argue that Canadian provincial governments faced few hierarchical fiscal constraints from the federal government, but imposed tight controls on their local governments.<sup>8</sup> While US states also imposed controls on local taxing and spending power, usually in the form of uniformity provisions or property tax rate limitation, the scale and scope of state involvement in local matters differed greatly from their northern neighbors (Fisher 1996; Aronson and Hilley 1986).

#### *A. Fiscal Federalism*

The data on revenues and expenditures across the three levels of government are consistent with the hypothesis that US and Canadian fiscal federalisms diverged significantly in the second half of the twentieth century. Figure 1 shows own source revenues as a share of GNP for federal, state and local governments in the US. At the beginning of the century, local government revenues as a share of GNP were slightly higher than the federal government's but nearly four times more important than state government's. By the mid-twentieth century, state government's position caught up to that of local government's whereas the federal government's share of revenues as a percent of GNP surpassed the other two-levels of government by several-folds. This pattern has remained relatively stable over the twentieth century. As shown in Figure 2, the Canadian pattern was relatively similar to that of the US from the early 1900s until the middle of the century, except that the federal government's revenues exceeded provincial and

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<sup>8</sup> Bird and Tassonyi (2001, p. 85-86) write: "Canada is one of the most decentralized countries in the world. Canadian provinces are responsible for most major social expenditures and have a virtually free hand in levying taxes. They face essentially no constitutional restraints on tax rates, bases, or collection systems and no requirement to harmonize either with each other or with the federal government."

local governments' revenues for most of the early decades of the twentieth century. However, the Canadian pattern diverged significantly after the 1950s as provincial governments' revenues, unlike those of US states, rose sharply and converged to that of the federal government's.

The US and Canada also differ fundamentally with respect to their intergovernmental transfer policies. While intergovernmental transfers exist in both countries, the nature and size of these transfers differ significantly. The US, unlike Canada and other federal countries, does not have an explicit policy of equalizing the fiscal resources of state governments through intergovernmental grants or transfers (Stark 2010). In contrast, Canada's long standing policy of equalizing the fiscal capacity of provinces via a system of "equalization payments" from the federal to provincial governments has been enshrined in its constitution since 1982.<sup>9</sup> In addition to general equalizing grants, the Canadian federal government gives money to provinces for health, education and social assistance, but these grants are largely unconditional and have few strings attached. Provincial government transfers to local governments are also significant but most of these transfers are conditional on municipal expenditures by specific categories such as education and roads (Tremblay 2007).

While there is no widely accepted theory of government transfers, the literature suggests that transfers are likely to impact local development. The standard theory of government grants from the fiscal federalism literature suggests that transfers may be justified if there are inter-jurisdiction spillovers that can be internalized by transfers from higher levels of government, or if higher levels of governments can capture economies of scale in administration of tax

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<sup>9</sup> Since the formation of the Canadian confederation in 1867, the federal government has, through various policies, attempted to equalize the fiscal capacities of the various provinces (Buck 1949; Perry 1955). This practice was eventually incorporated into the Canadian constitution. According to subsection 36(2) of the Canada Act of 1982, "Parliament and the government of Canada are committed to the principle of making equalization payments to ensure that provincial governments have sufficient revenues to provide reasonably comparable levels of public services at reasonably comparable levels of taxation."

collection. Since transfers improve economic efficiency in the standard theory, they are likely to foster local development. Alternatively, Brennan and Buchanan (1980) argue that governmental grants might arise if lower-tier governments desire to collude to limit competition. One arrangement would be to establish a uniform tax system across local jurisdictions that could then be enforced by a central government that doles out financial penalties for cheating. In this scenario, more productive jurisdictions may not be able to attract population as Tiebout-type competition has been stifled. In Canada, many scholars believe that the growth of provincial transfers to local governments has been associated with a reduction in local fiscal autonomy.

### *B. Indirect Taxes and Political Centralization*

Since centralized governments require an administrative bureaucracy to govern their constituent parts, they typically require greater revenue than decentralized states. In Canada, political centralization at the provincial level was facilitated by provincial governments' ability to raise significant sources of non-property tax revenue. These activities led to the rise of a sizeable provincial bureaucracy, often centered in its capital city. By contrast, American states, committed to limited government, generally restricted the scope of taxes to property and deferred the collection duties to local county officials.<sup>10</sup> Few permanent bureaucrats resided in US state capitals. State capitals were small and remote; legislators stayed in temporarily residence for the duration of legislative sessions. To further limit legislative activity and spending, many state legislatures only met biennially (Campbell 1980).

While the differences in the sources of government revenues have narrowed in recent years, Canadian federal and provincial governments have relied more extensively on revenues raised from indirect taxation and other means. While national governments in both countries

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<sup>10</sup> The Bay State Democrat succinctly captured this Jacksonian political sentiment: "Indirect Taxation is a cheat. Unequal taxation is an injustice. Unnecessary taxation is robbery." Quoted in Fisher (1996, p.6).

raised revenues via indirect taxes such as tariffs and internal excises, the scale and scope was much greater in Canada. The most striking difference, however, emerged between Canadian provinces and US states. In the US, after a period of tax-less finance and borrowing between 1820-1840 that culminated in major state government defaults, most states restricted their revenue sources to the property tax (Wallis 2005; Fisher 1986). Thus, even as late as 1902, the property tax generated as much as 53% of state government revenues (Aronson and Hilley 1986). In Canada, on the other hand, the province of Ontario's main sources of revenue in the early twentieth century were timber leases and fees, taxes on corporations, succession duties and other indirect taxes.<sup>11</sup> Over time, Ontario's indirect sources of revenue expanded to include mining profits, liquor control, corporations, and gasoline taxes. A small property tax was imposed as an emergency measure in the 1920s. During this period personal income taxes were also introduced for a short duration (Perry 1955).

### *C. Financing Local Governments*

In both the US and Canada, local governments began their histories as relatively autonomous municipal corporations, an institutional legacy from Great Britain (Teaford 1975; Crawford 1954; Bellan 2003). Over the nineteenth century, however, the gradual centralization of political power at the state-level within the US necessitated the exercise of authority over local governments. Cities like New York were no longer viewed as private corporations but as public property (Hartog 1983). As state legislatures asserted their power over local governments, their authority was recognized in Dillon's Rule, an 1868 Iowa court ruling that narrowly defined the powers of local government.<sup>12</sup> In Canada, rather than through a court ruling, the diminutive

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<sup>11</sup> Resource rents were also significant sources of provincial government revenues in Alberta and Saskatchewan. Emery and Kneebone (2008) argue that Alberta's resource royalties from oil and gas allowed its government to finance high levels of public spending with reduced income taxes and no provincial sales tax.

<sup>12</sup> Under Dillon's Rule, local governments only have three types of powers: those that are granted expressly, those

status of local governments as “creatures” of provincial governments was written into the national constitution.

When governments centralize political power, they usually assume greater control over their geographic constituent parts. In Canada, provincial governments’ authority to generate significant revenues from non-property taxes—a policy popular with their voters—enabled them to centralize authority over local governments as cities were willing to trade political and fiscal autonomy for provincial transfers. By the second half of the twentieth century, the fiscal activities of local governments in Canada became significantly more restricted than their US counterparts raising concerns among Canadian scholars about whether Canadian cities can effectively compete (see Bird and Tassonyi 2001, Slack and Bird 2006, among others).

Local governments by necessity rely heavily on property taxes revenues, as real estate is immobile. However, over the twentieth century, the relative autonomy of Canadian cities over their fiscal resources has diminished over time whereas a different trend is observed for US cities. In Canada during the nineteenth and early twentieth centuries, cities raised revenues through a variety of means, but by the mid-twentieth century their tax base was essentially confined to real property taxes (Perry 1955). In the US, with the rise of home-rule, the municipal tax base in many states expanded to include sales and income taxes. Most strikingly, local governments in Canada cannot borrow except for allowed capital expenditures, and the sums borrowed continue to remain relatively unimportant. In the US, on the other hand, there is a large municipal debt market. Cities in many states issue bonds to finance a wide variety of municipal expenditures (Aronson and Hilley 1986).

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that are fairly or necessarily implied in or incident to the powers granted, and those essential and indispensable to the declared object of the local government. Additionally, Dillon’s Rule states that if there is any reasonable doubt over whether a power has been granted to a local government, the power has not been conferred. One of the political responses to Dillon’s Rule was the “home rule” movement, which urged state governments to amend their constitutions to grant cities the right to government themselves more autonomously.

### III. Federalism, Political Capitals and Urban Development

The empirical specification used in this paper is motivated by a simple model of political centralization and geographic development presented in Galiani and Kim (2010). Although the model contains only two locations or potential levels of government—a capital city and a hinterland—the model captures why differences in political centralization or federalism may impact urban development. When governments are centralized, the model assumes that the capital city government sets the level of tax and public goods provision of both locations; when decentralized, capital city and hinterland governments are both free to choose their respective levels of taxes and public goods. Since workers are assumed to be mobile, exogenous local productivity and levels of public goods provision in each location determine the population distribution between the capital and hinterland locations.

In this model, political centralization determines the geographic distribution of population through its ability to set taxes and local public goods. In the decentralized scenario, as both locations are allowed to independently set taxes and local public goods, the geographic distribution of population between the capital city and hinterland will be determined by differences in economic productivity. In the politically centralized scenario, however, the population distribution between capital city and hinterland depends on the relative weight the central government places on the welfare of capital city versus hinterland residents. If the central government places greater weight on the welfare of capital city residents as compared to those in the hinterland, capital city residents will enjoy higher levels of public goods and will attract greater concentration of population.

There are many other reasons to believe that capital cities will benefit politically when governments are more politically centralized. First, since most government officials reside in

capital cities, government elites have an incentive to increase the allocation of public goods such as roads, infrastructure, and universities to the capital city. Second, because politics and rent-seeking activities are facilitated by frequent face-to-face interactions, lobbying is likely to be concentrated in capital cities. Third, government agencies and workers who administer government programs and policies are also likely to reside in capital cities.

Following Galiani and Kim (2010), we estimate the following regression equation:

$$(1) \ln(\text{population})_i = \alpha_1 + \beta_1 NCAP_i + \beta_2 PCAP_i + \beta_3 \ln(LAND_i) + \beta_4 X_i + \varepsilon_i$$

where  $NCAP_i$  is a dummy variable that equals 1 if city  $i$  is a national capital;  $PCAP_i$  is another indicator that equals 1 if city  $i$  is a state or provincial capital;  $LAND_i$  is the area of city  $i$ ; and  $X_i$  are exogenous controls which consist of the geographic variables—latitude, longitude, and dummy variables for whether a city is a major port or located along a major river—and climate variables, specifically annual average daytime temperature and annual precipitation.

For US, the data consist of cities (i.e. municipalities) with populations greater than 25,000 from 1900 and 2000 and for metropolitan areas from 1950 to 1990. For Canada, the data include cities with populations greater than 5,000 from 1880 onward, as well as for metropolitan areas from 1970 to 1990. We could not extend the US data to cities with population between 5,000 and 25,000 because the US decennial censuses did not report land area for cities smaller than 25,000. The number of years included in the city and metropolitan data sets differ because US decennial censuses did not collect data on land area prior to 1900, and because the Canadian decennial censuses did not report land area for metropolitan areas prior to 1970. We did not collect data on metropolitan areas for 2000 because how metropolitan areas were defined in the US changed too dramatically between 1990 and 2000. For both US and Canada, city size is determined by municipal boundaries. Metropolitan areas in the US correspond with the Census



Bureau's Metropolitan Statistical Areas (MSAs) while for Canada they include Statistics Canada's Census Metropolitan Areas (CMAs) and Census Agglomerations (CAs).

In Table 1, we provide some descriptive information about our data set. Panel A displays data on population and land area (in square miles) for Canadian cities from 1880 to 2000, and US cities from 1900 to 2000. For the Canadian sample, we present summary statistics for all cities in our data set and also separately for cities with population greater than 25,000. For both countries, the average population of cities with more than 25,000 persons increased gradually from the turn of the twentieth century, reaching a peak in 1920. After 1920, the average population declined until around 1980 when it increased again. Over the course of the century, the land area of cities increased in both countries, reflecting municipal consolidation and urban growth. US cities were larger in land area than Canadian cities until 1960, after which Canadian cities became substantially larger. This dramatic increase in city size reflects massive municipal consolidations in Canada that began in during the 1970s and accelerated during the 1990s (Tindal and Tindal 2000). Panel B presents data on US and Canadian metropolitan areas. The average population of Canadian metropolitan areas stayed roughly constant between 1970 and 1990 while the average land area increased by a factor of four. For the US, the average population of metropolitan areas increased steadily, as did average land area. Throughout the sample period, US metropolitan areas had greater population than Canadian metropolitan areas. In terms of land area, US metropolitan areas have always been bigger than their Canadian counterparts, perhaps reflecting greater suburbanization and the more widespread diffusion of urban motorways in the US.

Table 2 displays the percentage of the urban, metropolitan and total population residing in national and sub-national capitals for Canada and the US. These figures allow us to compare the extent to which the population has been concentrated in capital cities in the two countries.

Panel A shows data on municipalities with population greater than 25,000 from 1900 to 2000. In the US, the share of cities larger than 25,000 that were capitals declined steadily from 13.8% in 1900 to 4.4% in 2000 while the share of the urban population living in capitals declined from 12.6% to 10%. For Canada the share of cities that were capitals declined even more rapidly over the same period, from 50% to 7.6%. The share of the urban population living in capitals also declined from almost 50% in 1900 to 20% in 1980 after which it increased to 30% by 2000. This increase during the last 20 years of the century reflects municipal consolidation of capital cities (most notably, the amalgamation of the metropolitan Toronto region into a single municipality). A somewhat different picture emerges, however, when we examine the share of the total population living in capital cities. In both Canada and the US the share of the total population living in capital cities has risen over time; however, population concentration in capitals has been significantly greater in Canada than the US. For Canada, the percentage of the total population living in capital cities rose from 7.8% in 1900 to 17.8% in 2000 while for the US the corresponding figures are 3.3% in 1900 and 4.2% for 2000.

Data on metropolitan areas are shown in Panel B. Throughout the sample period the percentage of the metropolitan population living in capital metropolitan areas was higher in Canada than the US. However, while the share has remained just below 40% for Canada, it has increased slightly for the US, from 16.5% in 1950 to 19% in 1990. Relative to the total population, the percentage living in metropolitan capital areas also increased in both countries. However, for Canada, concentration of the total population in metropolitan capital areas is twice as great as the US (29.5% for Canada versus 14.8% for the US in 1990).

Table 3 presents the coefficients from ordinary least squares estimation of equation (1). Each column represents a separate regression. We estimate the regression separately for each

year for Canada and also for the US. In order to facilitate comparison of the estimates between the two countries, the regressions reported in Table 3 are estimated only using data on cities with population greater than 25,000. Since Canada had very few cities with population greater than 25,000 before 1920, we estimate the regression for 1920 onward for Canada. The estimates reported in Table 3 show that political capital status had a positive and statistically significant effect on population after controlling for a variety of factors that are likely to be correlated with economic activity. This suggests that capital cities receive undue political benefits relative to non-capital cities. To the extent that the capital city effect is positively correlated with political centralization, the estimates also demonstrate that the patterns of political centralization diverged between Canada and US over time. While the national capital city effect between the nations was relatively similar, the sub-national capital city effect was larger for Canada than for the US, suggesting the disproportionate importance of provincial governments in Canada. Additionally, the capital city effect grew over the twentieth century as the importance of regional and national governments—shown earlier by their rising shares of government revenues as percentage of GNP—has grown significantly.

For the national capitals, our estimates suggest that Washington DC attracted 68% more in population due to its status as the nation's capital in 1900 but its impact grew over six-fold to 447% by 2000. For Ottawa, its capital city effect on population agglomeration was around 159% in 1920 and rose to 589% in 2000. For sub-national capitals, American state capitals attracted between 30-34% more in population in 1900-1920. This effect increased only slightly to between 40-49% in 1940-2000. However, the Canadian provincial capital effect on population agglomeration grew from around 48-66% in 1920-1940 to over 100% in 1960-2000.

The geographic controls were generally significant and had the predicted signs. In the US, cities that were located on rivers and major ports possessed significant advantages over other cities in terms of attracting population. Access to rivers increased population from 20-30% between 1920 and 1940-60, but fell back to around 17% in 2000. On the other hand, access to major ports increased population by 62% to 105% between 1920 and 1940 and fell only slightly to 92% in 2000. In Canada, cities on river locations did not possess significant advantages whereas access to major ports became important from 1960 onwards. Canadian cities located near major ports were larger by 73% in 1960 and 118% in 2000.

How does capital city status compare to access to major ports and rivers in determining city population? For the US, a city's access to a major port was more advantageous than if it was home to a state capital in attracting population; however, over time, being a national capital became far more important than having access to a major port. For rivers, until recent years when its impact declined, the effect on population of having access to a major river was comparable to being a state capital. In Canada, the impact on population of having access to a major port was comparable to being a provincial capital, but like the US, much less than being the national capital.

The climate variables were also generally significant with the predicted signs. Precipitation was negatively correlated with population whereas temperature was positively correlated. The positional variables, latitude and longitude, which are likely to control for other unmeasured geographic factors were also jointly significant. These variables are also likely to control for historical factors that contributed to initial population concentration in northeastern locations as colonial settlement began there and moved westward over time.

To control for unobserved regional effects on city population, we include regional dummies for regression estimates in Table 4. For the US (see Panel C), the inclusion of the regional dummy variables significantly lowers the coefficient on Washington DC for 1900 but the results remain relatively similar for all other years. Interestingly, the inclusion of the regional indicators does not improve the fit of the US regressions. Cross-sectional variation in city sizes is apparently not very sensitive to region. This perhaps provides some evidence for a high degree of political decentralization and economic integration in the US. For Canada (see panel B), the results are somewhat different. The inclusion of regional dummies increases the fit of the regressions substantially and the provincial capital effect is generally bigger with region fixed effects than without, suggesting less economic integration across regions and greater political centralization within regions.

To examine the potential role of sample bias due to the restriction of the sample to cities whose populations are greater than 25,000, we also estimated equation (1) for Canadian cities with populations greater than 5,000 (see Table 4, Panel C). Although we do not have similar data for the US, there are a priori reasons to believe that the estimates using cities greater than 25,000 are likely to bias the capital city estimates downwards as a handful of small state capitals are omitted from the sample, especially for the earlier years in our data set. For Canada, however, the direction of bias is not so clear as most provincial capital cities are relatively large. Surprisingly, the table shows that the inclusion of smaller cities actually raises the value of capital city coefficients, indicating that the estimates based on cities with more than 25,000 people are biased downwards even for Canada.<sup>13</sup>

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13 For Latin America, Galiani and Kim (2010) report similar findings. Capital city effects are much greater if smaller cities with populations greater than 2,500 are included in the sample.

Since the urban data for the US and Canada are fairly comparable, we pool the two data sets to more effectively identify the differences in US-Canadian capital city effects. We provide three different pooled sample results. First, in Table 5, we report results for the entire Canada-US pooled sample. Second, in Table 6, we report results using a thin-border sample that consists of Canadian provinces and US states that share borders.<sup>14</sup> Since our goal is to identify how differences in the degree of political centralization influence city population, we believe that this thin-border sample is likely to be the most informative as these border economies are likely to be similar in most other respects such as in geography, climate and resource distribution. Finally, in Table 7, we also report results for a thick-border sample where the US state sample is extended to include another interior layer of states.<sup>15</sup> The regression equation we estimated using the entire pooled sample of cities is the same as equation (1), except that we include three additional variables: an indicator equal to 1 if the city is located in Canada, a national capital-Canada interaction term, and a sub-national capital-Canada interaction term. The inclusion of these additional variables allows us to determine whether the magnitude of the national and sub-national capital city effects differs across the two countries. For the thin- and thick-border samples, the regression omits the national capital effect and its interaction with the Canada indicator since Washington DC is not included in either of these subsamples.

The estimates based on the pooled data for the entire sample indicate three potentially different results from the non-pooled sample analysis. First, from 1940 to 2000, the national capital effect for Canada is consistently smaller than that of the US. Second, the sub-national capital city effect for Canada is greater than that of the US but the effect is only significantly

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14 The thin-border sample consists of BC, AB, MB, SK and ON (Canadian provinces) and WA, ID, MT, ND, MN, MI and NY (US states). We omit Quebec and the states that border it because cross-border differences in language, culture and colonial institutions may bias our comparison.

15 The thick-border sample includes OR, WY, NE, ND, SD, IA, IL, IN, OH, PA in addition to the states within the thin-border sample. As before, we omit Quebec and the states that border it.

different for 1960. Third, while not always significant, Canadian non-capital cities are smaller than their US counterparts.

When we use the thin-border sample that only includes the contiguous border-states and provinces, however, the Canadian provincial capital city-effect is substantially higher than the US state capital effect. In addition, the Canadian provincial capital city effect relative to the US state capital effect rose markedly over the second half of the twentieth century before falling a bit in 2000. Even when the sample is extended to include the next layer US states near the border, the Canadian provincial capital on population effect remains significantly higher than the US state capital effects (see Table 7). As for non-capital cities, the data seem to show that Canadian non-capital cities were bigger than their US counterparts between 1920-1940, but then the pattern reversed in the second-half of the twentieth century.

Due to suburbanization and the expansion of urban populations away from city centers to outlying areas, regression estimates based on municipalities may not fully capture the full impact of capital city status on population. Accordingly, we re-estimated equation (1) using data on metropolitan areas for the period between 1950-1990 for the US and for 1970-1990 for Canada. As shown in Table 8, the capital city effects are generally similar to those based on municipalities except that the figures are generally higher using metropolitan areas. This suggests that capital metropolitan areas attract greater metropolitan population than non-capital metropolitan areas.

Table 9 shows the results when we use the full sample of pooled Canadian and US metropolitan areas. Our findings are largely consistent with those reported for municipalities. Once again, the national capital city effect for Canada is smaller than the US, the non-capital metropolitan areas for Canada are smaller than their US counterparts, and the sub-national

capital city effect is no longer significant and the sign for Canada dummy is even negative between 1970 and 1990. When we use the thin and thick border samples (see Table 10), however, the Canadian provincial capital city effect is greater than the US state capital effect although the estimates for 1970 and 1990 for the thin sample are no longer statistically significant.

#### IV. Why Did Canadian and American Federalism Diverge?

In this section, we explore why American and Canadian federalisms diverged. While identifying the causes of institutional divergence is a challenging task, we believe that the causes are less likely to be tied to factors involving political parties, as argued by Riker (1964) and Gibbins (1982), but more to those factors associated with sources of provincial and state government revenues. Centralized governments need money. The power of government to extract revenue necessarily involves fundamental questions regarding the nature of political authority and property rights. In Canada, in contrast to the US, access to significant non-property revenues allowed provinces like Ontario to decentralize authority away from the national government and to centralize its authority over its local governments.

We highlight two key factors that contributed to Canada's divergence from the US. First, Canadian provinces, unlike US states, possessed centralizing institutional powers such as parliamentary authority largely unchecked by a written constitution and courts.<sup>16</sup> The provincial

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<sup>16</sup> Except by the terms imposed by the BNA Act of 1867, which divided powers between the federal and provincial governments, the authority of Canadian federal and provincial legislatures to make law has been largely unconstrained. The doctrine of "parliamentary sovereignty" has been the norm for most of Canadian history. Three principles define the doctrine of parliamentary sovereignty. The first is that parliament can make laws regarding anything. The second is that no parliament can bind a future parliament. The third is that the courts cannot overturn a valid act of parliament. The role of the courts is principally to interpret law. This is in contrast with the United States, where a written constitution with an explicit bill of rights has entrenched the principle of judicial review. It is also worth mentioning that no Canadian province except British Columbia has its own written constitution, whereas every US state has one. Indeed, the constitution of British Columbia was only adopted in the 1980s, and it can easily



parliaments were thus able to establish public ownership of land and corporations using the institutions of Crown Land and Crown Corporation (Hanson 1961; Hodgetts 1954). In contrast, US state legislatures faced greater checks and balances between the branches of government. Their powers were limited by written constitutions, and enforcement was left to local authorities and the courts. Second, in Canada, in comparison to the US, the large geographic size and small number of provincial jurisdictions limited Tiebout-type competition. In our comparative analysis, we focus our attention on the developments of Ontario since it played a critical role in the development of Canadian federalism.

#### *A. Public Land*

Oliver Mowat, often referred to as the Thomas Jefferson of Ontario, is identified with the provincial rights movement in Canada (Evans 1992). Mowat, who was premier of Ontario from 1872 until 1896, presided over the province during the formative years of the Canadian confederation. Under Mowat's stewardship, Ontario fought several key battles against Sir John A. Macdonald, Canada's Alexander Hamilton and the first prime minister of Canada, who desired a strong centralized federal government (Armstrong 1981; Moore 1997). One key battle involved public lands. To reduce Ontario's potential wealth and revenue, Macdonald attempted to hand over a huge forest area to the new province of Manitoba. Both Mowat and Macdonald recognized that forest and mineral resources were potentially a major source of financial independence for Ontario.<sup>17</sup> Mowat, also the attorney general, delivered the victory for Ontario as the right of ownership was decided before the Judicial Committee of the Privy Council

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be amended or repealed by an act of the provincial legislature. Since the adoption of the Canada Act of 1982, which included as its preamble the Canadian Charter of Rights and Freedoms, parliamentary sovereignty has been weakened. The scope of judicial review of federal and provincial law has been expanded in Canada, although not to the same degree as the US.

<sup>17</sup> The *Globe* wrote: "Shall Ontario be deprived of the railway terminus on Lake Superior, with the city which is certain to spring up there? Shall Ontario be robbed of 60,000 acres of fertile land? Shall Ontario lose the revenue of \$125,000,000, the sum which the pine timber alone to say nothing of other valuable timber on the disputed territory, is computed to be worth?"

(Armstrong 1972, Saywell 2002). Unlike the US Supreme Court under Marshall, which favored federal over states rights, the JCPC sided with the provinces.

Apart from his advocacy of strong provincial government powers, however, Mowat was hardly a Jeffersonian. During his twenty years as the premier of Ontario, as he maneuvered to tilt the federal constitution towards provincial rights, he also built a centralized provincial bureaucracy, created a provincial political machine based on patronage, and asserted greater control over local affairs.<sup>18</sup> His strategy was based on generating significant government revenues from non-property sources, which, for a majority of voters, amounted to a policy of sharing in the “bounty of nature.” Thus, despite the Ontario’s Grits who favored American-style local decentralization and, notwithstanding arguments by individuals such as Alexander Galt to adopt the American system of outright sale of land, Mowat and other political leaders in Ontario deliberately chose a different path (Hodgins 1972; Nelles 1974).<sup>19</sup>

Eschewing the American system, Ontario embraced its British heritage by enacting the Crown Timber Act of 1849 whereby it established natural resources as “public” rather than “private” property. The revenues from the forest were to be shared with all the residents of Ontario, presumably through a reduction of property taxes. Whereas large private firms in the US

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18 Political centralization of provincial government authority over local governments seems to have come about as local governments were willing to trade political and fiscal autonomy for provincial transfers. According to Noel (1990), the roots of the centralization of power in Ontario began with the Municipal Loan Fund Indebtedness Act of 1873. During the railroad boom of the 1850s, while still under British rule, many municipalities borrowed heavily to fund railroad ventures, especially as they were allowed to borrow at lower than market rates from the provincial government. By 1872, however, some 44 municipalities in Ontario were in debt to the provincial government by an amount of about \$12 million. Under the direction of Mowat the provincial government initiated a program of provincial transfers to local governments as it used its fiscal surplus to forgive municipal debt. Those municipalities that were not in debt also received transfers with the provision that they were to be used for local development but only under provincial supervision. In Noel’s (1990; p.282) opinion, Mowat’s approach was not to attack local autonomy directly but to serve as a “benefactor to enact centralizing acts and regulations such as health, education, liquor licensing, and agriculture which cumulatively amounted to a new definition of the role of the province.”

19 On one side, the representatives of the railroads, land companies and American timber interests lobbied for the adoption of the American system of selling clear title to land and minerals; on the other, Canadian lumbermen and timber administrators favored government ownership as a sales system was seen to favor American speculators and the wealthy few who could potentially buy up all the best lands. See Nelles (1974).

like Weyerhaeuser acquired vast forest territories for private gain at relatively low prices, Ontario generated a quarter of its revenues in its early years from timber dues and licenses (Hidy et. al 1963, Hurst 1964; Perry 1954).<sup>20</sup> Importantly, rather than relying on local officials to collect taxes, Ontario developed a centralized administrative bureaucracy which used its coercive power to gather detailed information for revenue collection purposes (Nelles 1974).

Ontario's policy toward minerals was more complex and varied, but it was also designed to claim the "People's Share" of resource rents (Nelles 1974). Due to the perceived difficulties of attracting American expertise and capital, Ontario initially granted mineral lands in fee simple. However, as the potential for mineral wealth became apparent, Ontario freely altered the rights of property in minerals. Public ownership never took hold over mineral lands, but Ontario claimed its share through royalties and profit taxes.<sup>21</sup> Every mine operator was required to submit detailed operating statements to the provincial government and provincial Mine Assessors were vested with wide powers to investigate both the mines themselves and the mining companies' books (Skelton 1909). In the US states, on the other hand, mineral land, like forestland, was treated similarly to nearby agricultural land (Roberts 1944). While policies varied across states, mineral taxes were assessed and collected by local officials with little access to expertise and information (see Hellerstein 1983 for discussion of constitutional debates regarding natural resources).

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20 Americans also saw the potential for government revenues from taxing forest resources; nevertheless, forestland was treated more or less like agricultural land. Hurst (1964, p.505) writes that Wisconsin's tax policy "was to apply the general property tax to timberland and forest products, almost entirely under local administration with no effective central supervision." Because assessing and collecting taxes on timberland presented special challenges, state legislatures struggled to formulate an effective policy but most efforts were based on ad hoc commissions. Small property owners alleged that local assessors were in the pockets of big lumber firms who received favorable treatment. Even new county boundaries were carved with the backing of large landowners so that new local officials could be persuaded to lower taxes (Hurst 1964, p.521).

21 Interestingly, while the Province collected a flat rate of 3% on profits exceeding \$10,000, municipalities at this time were only allowed to tax mining properties at the value of other lands in the neighborhood for agricultural purposes (Skelton 1909).

For Nelles (1974), Ontario's principle of reservation, crown ownership and leasehold tenure and the American principle of private ownership involved two fundamentally different notions of property rights.<sup>22</sup> In Canada, provincial authority was final and unrestrained. Provincial governments could alter existing property rights, as Ontario did with mineral lands and waterpower. For most of the nineteenth century, as in the US, a freehold landowner in Canada possessed extensive riparian rights to waterpower found on his property. However, the Ontario Waterpower Reservation Act, enacted in 1898, declared that all major waterpower would remain vested in the Crown and that the right of usufruct would not be attached to riparian ownership. Waterpower thus became a public resource and a potential source of provincial government revenue.

### *B. Public Corporations*

The divergence in property rights associated with corporations in the US and Canada was likely tied to divergent view of the state. With independence, the power to incorporate, previously a prerogative of the crown, was acquired by state and provincial legislatures. In the US, all corporations, which included businesses, municipalities and religious societies, were initially incorporated to serve the public. But with *Dartmouth v. Woodward* (1819), businesses became private whereas municipalities remained public, increasingly under the direct authority of the state. In Maier's (1993) view, the growth of private corporations in the US was consistent with American-style federalism of decentralization and localism: "For contemporaries, the proliferation of corporations could signal, in effect, an extension of American federalism down

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<sup>22</sup> In the well known case involving the Florence Mining Company, the judge, finding the case in favor of the provincial government wrote: "In short, the Legislature within its jurisdiction, can be anything which is not naturally impossible and restrained by no rule, human or divine. It be that the plaintiffs acquired any rights – which I am far from finding – the Legislature has the power to take them away. The prohibition 'Thou shalt not Steal,' has no legal force upon the sovereign body, and there would be no necessity for compensation to be given." See Nelles (1974, p.173). This is clearly a re-assertion of the doctrine of parliamentary sovereignty.

into day-to-day, local associational relationships... (Maier 1993, 82).” In Canada, by contrast, provincial legislatures adopted the idea of the Crown Corporation to establish public enterprises in a variety of activities as a means of raising revenue for the government. In comparative analyses of public corporations around the world, Canada emerges as one of the most intensive users of the form whereas the US is an opposite outlier (Hodgetts 1954; Abel 1954).

One interesting example of the divergent use of public and private enterprises that has implications for Canadian provincial centralization and US state decentralization involves the alcohol industry. Because of similarities in culture, demographics, and religion, the temperance movement became a major political force in both countries. Yet, the two countries diverged significantly in how federal, state/provincial and local governments controlled the sale of alcohol. In Canada, the control of alcohol fell to provincial-level, executive-based administrative liquor control boards whereas in the US control was exercised through legislative statutes and constitutional amendments combined with local enforcement.<sup>23</sup> In Canada, the control of the liquor trade by public corporations (known as Liquor Control Boards) generated a major source of provincial government revenue; in the US, the tax on alcohol, particularly spirits, was a major source of revenue for the federal government and some localities but was rarely a major source of revenue for state governments (Hamm 1995).<sup>24</sup> The regulation of liquor in Canada not only generated significant provincial revenue, but it also created provincial bureaucracy and positions

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23 In Canada, liquor was initially regulated haphazardly by all levels of government but a 1896 ruling of the Judicial Committee of the Privy Council placed regulation of liquor retail sales under the purview of the provinces while allocating control over the inter-provincial distribution of alcohol to the federal government (Thompson and Genosko 2009). Prior to confederation, the Dunkin Act of 1864 gave municipalities the authority to establish prohibition. However, the Crooks Act, enacted by Ontario in 1876, stripped the municipalities their long-standing power to license and regulate the sale of alcoholic beverages and transferred this jurisdiction to the province (Saywell 2002; Thompson and Genosko 2009). Provincial centralization was achieved with generous financial compensation to municipalities from surplus revenues.

24 Thompson and Genosko (2009) document the detailed information collected on Ontario residents by the Ontario Liquor Control Board, the public corporation responsible for control of alcohol sales. In the US, the federal rather than state governments closely monitored the manufacturing and storing of spirits. When states desired information collected by the internal revenue service to enforce state laws, the court eventually ruled against states (Hamm 1995).

of patronage. However, Mowat was not Boss Tweed of New York as Ontario drew a line between political patronage and outright corruption.

Under the BNA Act, responsibility for education and social services like welfare, hospitals, and unemployment relief, fell to the provinces and it was up to the provinces to decide how to finance and run these programs. Prior the Great Depression, provinces left much of the finance and administration of these services (except education) to municipalities. As the demand for unemployment relief, welfare and other social services skyrocketed during the Great Depression property tax revenues fell and municipal debts grew out of control. Several municipalities defaulted on their bonds. In response, provinces reorganized municipal finance more or less unilaterally. Provincial Municipal Finance Authorities were set up to audit and control municipal spending. Provincial governments assumed the responsibilities for financing and administering social services like welfare and hospitals. Additionally, the provinces imposed restrictions on municipal public finances. Municipalities were forbidden to run deficits; bonds could only be issued for capital projects; and municipal tax bases were restricted to real property taxes. Many believe that these provincial limitations severely disadvantage Canadian cities.

## V. Conclusion

In this paper, we examine the comparative impact of US and Canadian federalism on urban development using the differential effect of political capital status on city population. In the US, the Jeffersonian-Jacksonian tradition of states rights and localism was transformed into a more federally centralized form of federalism during the Progressive Era, but states and localities continued to retain significant autonomy. In Canada, on the other hand, federalism came to favor provincial rights but not localism. While much scholarship on Canadian federalism has focused

on the decentralization of political power away from the central government and toward provincial governments (Riker 1964; Gibbins 1982; Armstrong 1982) less attention has been given to the centralization of local government by provincial governments (O'Brien 1975).

A simple model of how political centralization influences urban development motivates the empirical analysis. Since centralized governments choose the level of taxes and local public goods of all jurisdictions, centralization may lead to greater urban agglomerations in capital cities in comparison to hinterland locations. The US and Canadian urban data seem to confirm the hypothesis that diverging systems of federalism between the US and Canada affected their urban development. Using data on municipalities (1880-2000) and metropolitan areas (1950-1990), the estimates show that the national capital city effect on population rose significantly over the twentieth century in both countries reflecting the increasing political centralization at the federal level. For sub-national capitals, however, the provincial capital city effect in Canada rose sharply in the second half of the twentieth century whereas the US state capital effect remained relatively moderate, suggesting an increase in political centralization within Canadian provinces.

While it is difficult to determine the causes of the divergence of US and Canadian federalism, we believe that they are likely related to the different ways in which governments raised revenues. Rule and revenue are intimately intertwined (Levi 1988). In Canada, the power to generate revenue from non-property taxes facilitated political centralization at the provincial level whereas in the US, the early focus on property taxes by state and local governments fostered decentralization. When US governments became more centralized during the twentieth century, they eventually did so using the Canadian strategy of raising taxes from non-property tax sources.

The divergence in American and Canadian federalism was also influenced by the size and number of sub-national jurisdictions (Gibbins 1982). In the US, Thomas Jefferson, the champion of states rights and localism, argued for the division of the western territories into numerous small states because he believed that political competition would encourage localism (Berkofer 1972).<sup>25</sup> Indeed, until the Civil War, competition between states seems to have fostered decentralization. Yet, ironically, as the scale and scope of state government regulation increased during the late nineteenth and early twentieth centuries, the US moved toward a more federally centralized system, consistent with Alexander Hamilton's vision. The founders of the Canadian federation, on the other hand, believing that excessive states rights in the US contributed its Civil War, determined to establish a more centralized federal government. Yet, Ontario's size and dominance led to greater provincial autonomy, as advocated by Jefferson, but also greater centralization over local governments, as desired by Hamilton.

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<sup>25</sup> Berkofer (1972) writes: "For governments to remain republican, he [Thomas Jefferson] and others believed the size of the state must be small enough to preserve the homogeneity of the interests, opinions, and habits of the citizens; otherwise a stronger, more centralized government than desirable for republicanism would be needed to extend its influence to the far corners of the state." Thus, Virginia agreed to cede its western territories on the condition that they would be composed of many states with small jurisdictions.



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Table 1: Descriptive statistics on US and Canadian cities and metropolitan areas, 1880-2000

Panel A: Canadian and US cities, 1880-2000

Year	Canadian cities with population > 5,000			Canadian cities with population > 25,000			US cities with population >25,000		
	N	Average Population	Average Land Area	N	Average Population	Average Land Area	N	Average Population	Average Land Area
1880	33	19,657 (28,374)	4.55 (4.89)	8	57,087 (39,375)	5.52 (3.59)			
1900	56	22,441 (44,582)	5.62 (4.37)	10	84,517 (82,914)	9.31 (5.83)	160	123,243 (322,758)	20.20 (35.30)
1920	109	29,470 (79,114)	6.79 (8.10)	18	124,136 (168,073)	16.78 (14.24)	252	145,965 (421,523)	20.95 (36.14)
1940	149	33,035 (96,622)	6.20 (8.40)	34	110,580 (183,740)	13.40 (13.73)	411	128,297 (437,467)	19.21 (33.45)
1960	306	30,533 (87,767)	8.10 (11.30)	72	94,967 (165,826)	17.00 (17.28)	672	112,561 (370,922)	23.34 (39.24)
1980	404	40,091 (92,003)	48.08 (189.22)	124	105,471 (145,657)	57.08 (110.68)	944	97,718 (293,991)	34.56 (39.24)
2000	467	48,218 (152,077)	73.35 (183.49)	145	129,725 (255,106)	121.76 (272.09)	1,066	108,637 (293,991)	34.56 (83.61)

Panel B: Canadian and US metropolitan areas, 1950-1990

Year	Canadian metropolitan areas			US metropolitan areas		
	N	Average population	Average Land Area	N	Average population	Average Land Area
1950				170	498,325 (1,188,675)	1,225.45 (1803.72)
1960				211	532,774 (1,078,092)	1,463.45 (2,344.76)
1970	60	229,276 (497,564)	285.12 (369.83)	242	573,737 (1,119,553)	1,596.34 (2,224.48)
1980	76	215,589 (491,660)	537.00 (754.87)	302	558,993 (991,018)	1,888.01 (2,127.95)
1990	91	223,077 (552,696)	1,192.90 (3,790.51)	279	686,869 (1,541,565)	2,067 (2535.58)

Table 2: Percentage of urban, metropolitan and total population residing in national and sub-national (provincial or state) capitals for Canada and the US

Panel A: Canadian and US cities from 1900 to 2000 with population greater than 25,000

Canadian cities with population greater than 25,000					US cities with population greater than 25000			
Year	Percent of city population in capital cities	Percent of total population in capital cities	Number of capital cities	Percent of cities that are capitals	Percent of city population in capital cities	Percent of total population in capital cities	Number of capital cities	Percent of cities that are capitals
1900	49.7%	7.8%	5	50.0%	12.6%	3.3%	22	13.8%
1920	49.0%	12.5%	8	44.4%	11.7%	4.1%	29	11.5%
1940	38.9%	12.7%	8	23.5%	11.1%	4.4%	35	8.5%
1960	29.0%	10.9%	9	12.5%	10.9%	4.6%	41	6.1%
1980	19.9%	9.6%	10	8.0%	10.4%	4.3%	45	4.8%
2000	29.3%	17.8%	11	7.6%	10.0%	4.2%	47	4.4%

Panel B: Canadian and US metropolitan areas, 1950-1990

Canadian metropolitan areas					US metropolitan areas			
Year	Percent of metro population in capital metro areas	Percent of total population in capital metro areas	Number of capital metro areas	Percent of metro areas that are capitals	Percent of metro population in metro areas	Percent of total population in capital metro areas	Number of capital metro areas	Percent of metro areas that are capitals
1950					16.5%	9.3%	32	18.8%
1960					16.6%	10.5%	33	15.6%
1970	39.9%	25.6%	11	18.3%	17.5%	12.0%	36	14.8%
1980	39.5%	23.7%	11	14.5%	18.2%	13.7%	37	12.3%
1990	39.7%	29.5%	11	12.1%	19.0%	14.8%	38	13.6%

Table 3: Log of population on capital city status for US and Canadian cities with population greater than 25,000, 1900-2000

	US	US	Canada	US	Canada	US	Canada	US	Canada	US	Canada
	1900	1920	1920	1940	1940	1960	1960	1980	1980	2000	2000
National capital	0.51* (0.26)	0.69*** (0.19)	0.95** (0.40)	1.50*** (0.14)	0.74** (0.33)	1.68*** (0.08)	1.09*** (0.21)	1.76*** (0.06)	1.50*** (0.13)	1.70*** (0.05)	1.93*** (0.25)
State or provincial capital	0.26** (0.11)	0.26*** (0.08)	0.39 (0.37)	0.38*** (0.10)	0.51* (0.29)	0.32*** (0.10)	0.75** (0.29)	0.35*** (0.11)	0.70** (0.34)	0.40*** (0.10)	0.74** (0.37)
Ln(land area)	0.58** (0.08)	0.66*** (0.06)	0.96*** (0.25)	0.59*** (0.05)	0.73*** (0.18)	0.59*** (0.04)	0.44*** (0.10)	0.50*** (0.03)	0.27*** (0.07)	0.48*** (0.02)	0.20*** (0.05)
Latitude	0.02 (0.03)	0.05* (0.03)	-0.09 (0.21)	0.02 (0.02)	0.02 (0.11)	0.01 (0.01)	0.01 (0.06)	0.02** (0.01)	0.02 (0.06)	0.03*** (0.01)	-0.02 (0.07)
Longitude	-0.02*** (0.01)	-0.02* (0.01)	-0.01 (0.03)	-0.01* (0.00)	-0.02 (0.02)	-0.01*** (0.00)	-0.00 (0.02)	-0.01*** (0.00)	-0.00 (0.01)	-0.00*** (0.00)	0.01 (0.01)
Precipitation	-0.00 (0.00)	-0.00* (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00*** (0.00)	-0.00 (0.00)	-0.00*** (0.00)	-0.00 (0.00)	-0.00*** (0.00)	-0.00 (0.00)
Temperature	0.06 (0.05)	0.07* (0.04)	0.10 (0.20)	0.02 (0.02)	0.13 (0.14)	0.02 (0.02)	0.06 (0.07)	0.04*** (0.01)	0.10 (0.78)	0.05*** (0.01)	0.04 (0.06)
River	0.21** (0.10)	0.18** (0.08)	0.24 (0.38)	0.32*** (0.07)	0.17 (0.28)	0.28*** (0.06)	0.07 (0.15)	0.19*** (0.06)	0.02 (0.12)	0.16*** (0.06)	0.04 (0.12)
Major port	0.50*** (0.14)	0.48*** (0.11)	0.39 (0.53)	0.72*** (0.10)	0.15 (0.30)	0.63*** (0.09)	0.55* (0.26)	0.67*** (0.09)	0.73** (0.29)	0.65*** (0.09)	0.78** (0.30)
R-squared	0.54	0.62	0.59	0.61	0.70	0.62	0.55	0.56	0.36	0.55	0.37
N	160	252	18	411	34	672	72	944	124	1066	145

Table 4: Log of population on capital city status with and without regional indicator variables for Canadian and US cities, 1880 – 2000

Panel A: Canadian cities with population greater than 5,000

	1880	1880	1900	1900	1920	1920	1940	1940	1960	1960	1980	1980	2000	2000
National capital effect	1.61*** (0.28)	2.56*** (0.53)	1.93*** (0.23)	2.07*** (0.21)	1.96*** (0.15)	1.98*** (0.18)	1.83*** (0.17)	1.76*** (0.22)	1.93*** (0.15)	1.94*** (0.28)	2.22*** (0.10)	2.32*** (0.12)	2.54*** (0.16)	2.57*** (0.18)
Provincial capital effect	0.63 (0.46)	1.27*** (0.40)	0.59 (0.40)	0.61* (0.34)	0.61 (0.38)	0.60** (0.30)	0.77** (0.35)	0.91*** (0.31)	0.97*** (0.31)	1.00*** (0.28)	1.38*** (0.36)	1.39*** (0.34)	1.57*** (0.40)	1.63*** (0.39)
Log(land area)	-0.02 (0.16)	-0.27** (0.12)	0.21* (0.11)	0.22* (0.12)	0.48*** (0.11)	0.57*** (0.12)	0.55*** (0.09)	0.64*** (0.10)	0.45*** (0.05)	0.44** (0.05)	0.32*** (0.03)	0.32*** (0.04)	0.23*** (0.03)	0.24*** (0.03_)
Regional indicators?	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
R-squared	0.71	0.76	0.57	0.71	0.60	0.68	0.60	0.64	0.53	0.54	0.43	0.45	0.40	0.41
N	33	33	56	56	109	109	149	149	306	306	403	403	467	467

Panel B: Canadian cities with population greater than 25,000

	1920	1920	1940	1940	1960	1960	1980	1980	2000	2000
National capital effect	0.95** (0.40)	0.61 (0.48)	0.74** (0.33)	0.60* (0.34)	1.09*** (0.21)	1.26*** (0.21)	1.50*** (0.13)	1.76*** (0.18)	1.93*** (0.25)	1.91*** (0.25)
Provincial capital effect	0.39 (0.37)	0.14 (0.21)	0.51* (0.29)	0.46** (0.21)	0.75** (0.29)	0.78*** (0.26)	0.70** (0.34)	0.67** (0.29)	0.74** (0.37)	0.87*** (0.36)
Log(land area)	0.96*** (0.25)	1.07*** (0.15)	0.73*** (0.18)	0.95*** (0.14)	0.44*** (0.10)	0.46*** (.11)	0.27*** (0.07)	0.36*** (0.07)	0.20*** (0.05)	0.25*** (0.06)
Regional indicators?	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
R-squared	0.59	0.98	0.70	0.85	0.55	0.65	0.36	0.42	0.37	0.43
N	18	18	34	34	72	72	124	124	145	145



Panel C: US cities with population greater than 25,000

	1900	1900	1920	1920	1940	1940	1960	1960	1980	1980	2000	2000
National capital effect	0.52* (0.26)	0.14 (0.29)	0.69*** (0.19)	0.57*** (0.17)	1.50*** (0.14)	1.49*** (0.13)	1.68*** (0.08)	1.74*** (0.08)	1.76*** (0.06)	1.88*** (0.08)	1.70*** (0.05)	1.78*** (0.06)
State capital effect	0.26** (0.11)	0.28** (0.12)	0.26*** (0.08)	0.28*** (0.56)	0.38*** (0.10)	0.42*** (0.10)	0.32*** (0.10)	0.34*** (0.10)	0.35*** (0.11)	0.35*** (0.10)	0.40*** (0.10)	0.39*** (0.10)
Log(land area)	0.58*** (0.08)	0.66*** (0.08)	0.66*** (0.06)	0.71*** (0.06)	0.59*** (0.05)	0.64*** (0.05)	0.59*** (0.04)	0.66*** (0.04)	0.50*** (0.03)	0.58 (0.03)	0.48*** (0.02)	0.47*** (0.03)
Regional indicators?	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
R-squared	0.54	0.61	0.62	0.68	0.61	0.66	0.62	0.67	0.56	0.61	0.55	0.59
N	160	160	252	252	411	411	672	672	944	944	1066	1066

Table 5: Log of population on capital city status for pooled sample of Canadian and US cities with population greater than 25,000

	1900	1920	1940	1950	1960	1980	2000
National capital	0.51** (0.25)	0.65*** (0.18)	1.44*** (0.13)	1.39*** (0.13)	1.69*** (0.08)	1.82*** (0.06)	1.77*** (0.05)
Sub-national capital	0.26** (0.11)	0.26*** (0.08)	0.38*** (0.10)	0.31*** (0.14)	0.34*** (0.10)	0.40*** (0.11)	0.44*** (0.11)
Canada	0.17 (0.31)	-0.09 (0.17)	-0.07 (0.13)	-0.03 (0.12)	-0.14* (0.08)	-0.11 (0.08)	-0.15** (0.08)
(National capital)*(Canada)	-0.20 (0.38)	0.19 (0.24)	-0.48*** (0.18)	-0.80*** (0.12)	-0.90*** (0.10)	-0.51*** (0.08)	-0.77*** (0.09)
(Sub-national capital)*(Canada)	-0.24 (0.38)	-0.13 (0.30)	-0.04 (0.27)	0.12 (0.24)	0.36* (0.20)	0.22 (0.27)	0.08 (0.31)
Ln(land area)	0.57*** (0.08)	0.67*** (0.06)	0.60*** (0.05)	0.65*** (0.04)	0.68*** (0.03)	0.46*** (0.03)	0.43*** (0.02)
R-squared	0.54	0.63	0.61	0.63	0.62	0.52	0.51
N	170	270	444	521	743	1069	1199

Other controls include latitude, longitude, precipitation, temperature, major river and major port indicators.

Table 6: Log of population on sub-national capital city status for cities with population greater than 25,000 in border states and provinces (Thin border sample)

	1920	1940	1950	1960	1980	2000
Sub-national capital	-0.06 (0.15)	0.05 (0.17)	0.08 (0.16)	0.21 (0.20)	0.30 (0.30)	0.35 (0.30)
Canada	0.39* (0.20)	0.30** (0.15)	0.08 (0.16)	-0.05 (0.15)	-0.54*** (0.15)	-0.14 (0.14)
(Sub-national capital)*(Canada)	0.39 (0.35)	0.49* (0.30)	0.66** (0.29)	0.71** (0.32)	1.61*** (0.15)	1.12** (0.47)
Ln(land area)	0.95*** (0.11)	0.88*** (0.14)	0.87*** (0.12)	0.66*** (0.10)	0.41*** (0.05)	0.39*** (0.07)
Latitude	-0.10 (0.11)	-0.12*** (0.04)	-0.07 (0.03)	0.01 (0.03)	0.06 (0.05)	0.05 (0.03)
Longitude	-0.01 (0.02)	-0.00 (0.00)	-0.00 (0.00)	-0.01** (0.00)	-0.02** (0.01)	-0.01 (0.01)
Precipitation	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00** (0.00)	0.00 (0.00)
Temperature	0.10 (0.10)	0.03 (0.05)	0.06 (0.04)	0.04 (0.03)	0.19*** (0.04)	0.09*** (0.03)
River	0.14 (0.18)	0.23 (0.17)	0.15 (0.13_	0.09 (0.12)	0.24* (0.14)	0.17 (0.11)
Major port	0.31 (0.21)	0.30 (0.23)	0.22 (0.20)	0.51*** (0.17)	0.98*** (0.19)	0.76*** (0.20)
R-squared	0.47	0.57	0.75	0.66	0.57	0.46
N	52	77	95	139	250	224

Notes: US border states are WA, ID, MT, ND, MN, MI, and NY. Canada border provinces are BC, AB, MB, SK and ON.

Table 7: Log of population on sub-national capital city status for cities with population greater than 25,000 in border states and provinces (thick border sample).

	1920	1940	1950	1960	1980	2000
Sub-national capital	0.10 (0.10)	0.27*** (0.10)	0.26*** (0.09)	0.25*** (0.10)	0.44*** (0.15)	0.54*** (0.16)
Canada	0.36** (0.18)	0.22 (0.15)	0.05 (0.15)	-0.02 (0.13)	-0.07 (0.12)	-0.19* (0.12)
(Sub-national capital)*(Canada)	0.17 (0.29)	0.27 (0.25)	0.48** (0.24)	0.66*** (0.24)	0.86*** (0.01)	0.92*** (0.35)
Ln(land area)	0.90*** (0.07)	0.81*** (0.07)	0.84*** (0.06)	0.73*** (0.06)	0.52*** (0.06)	0.46*** (0.05)
Latitude	0.01 (0.05)	-0.05 (0.04)	-0.01 (0.03)	-0.00 (0.00)	0.02* (0.01)	0.02** (0.01)
Longitude	-0.03*** (0.01)	-0.01* (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	-0.00 (0.00)
Precipitation	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)
Temperature	0.12* (0.06)	0.03 (0.04)	0.06* (0.03)	0.04** (0.02)	0.09*** (0.02)	0.07*** (0.02)
River	0.04 (0.08)	0.08 (0.08)	0.06 (0.07)	0.06 (0.07)	0.12* (0.07)	0.12* (0.07)
Major port	0.30* (0.17)	0.44*** (0.16)	0.32** (0.14)	0.51*** (0.13)	0.72*** (0.15)	0.71*** (0.16)
R-squared	0.77	0.73	0.48	0.71	0.55	0.52
N	131	205	236	307	426	448

Notes: US border states are WA, OR, ID, MT, WY, NE, ND, SD, MN, IA, IL, IN, MI, WI, OH, PA, NY  
Canadian border provinces are BC, AB, SK, MN and ON.

Table 8: Log of population on capital city status for US and Canadian metropolitan areas, 1950-1990.

	US 1950	US 1960	US 1970	Canada 1970	US 1980	Canada 1980	US 1990	Canada 1990
National capital	1.49*** (0.21)	2.03*** (0.21)	2.02*** (0.24)	1.33*** (0.34)	2.02*** (0.20)	1.97*** (0.33)	1.77*** (0.22)	2.14*** (0.25)
State or provincial capital	0.35*** (0.12)	0.55*** (0.12)	0.49*** (0.11)	0.65** (0.30)	0.59** (0.11)	0.78** (0.37)	0.52*** (0.12)	0.94*** (0.36)
Log(land area)	0.62*** (0.1)	0.50*** (0.09)	0.52*** (0.08)	0.45*** (0.08)	0.57*** (0.09)	0.22** (0.09)	0.89*** (0.08)	0.22*** (0.06)
Latitude	0.06 (0.05)	0.04 (0.04)	0.04 (0.04)	-0.14 (0.09)	0.02 (0.03)	-0.11* (0.06)	-0.01 (0.03)	-0.15*** (0.05)
Longitude	-0.02* (0.01)	-0.01 (0.01)	-0.01 (0.01)	0.01 (0.01)	-0.01* (0.00)	0.01 (0.01)	-0.01 (0.01)	0.01 (0.01)
Precipitation	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00** (0.00)	0.00 (0.00)	-0.00** (0.00)
Temperature	0.03 (0.06)	0.00 (0.04)	0.01 (0.05)	-0.07 (0.1)	0.04 (0.04)	-0.01 (0.07)	0.02 (0.04)	0.00 (0.06)
River	0.28*** (0.10)	0.36*** (0.11)	0.26** (0.11)	-0.08 (0.23)	0.24** (0.10)	-0.03 (0.22)	0.30*** (0.10)	0.02 (0.18)
Major port	0.85*** (0.18)	1.02*** (0.17)	0.97*** (0.16)	0.78*** (0.29)	0.97*** (0.15)	1.24*** (0.33)	0.95*** (0.13)	1.27*** (0.34)
R-squared	0.49	0.44	0.46	0.68	0.43	0.57	0.62	.58
N	170	211	242	60	302	76	279	91

Table 9: Log of capital city status on pooled sample of US and Canadian metropolitan areas, 1970-90.

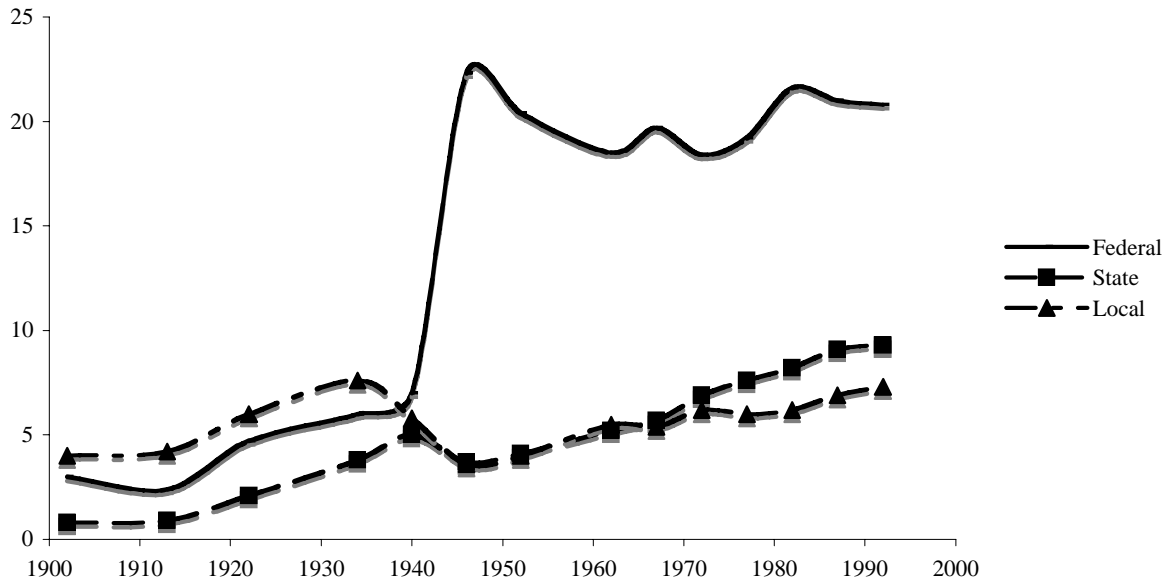
	1970	1980	1990
National capital	2.03*** (0.21)	2.20*** (0.17)	2.32*** (0.17)
Sub-national capital	0.50*** (0.12)	0.68*** (0.12)	0.73*** (0.13)
Canada	-0.37** (0.17)	-0.50*** (0.17)	-0.39** (0.17)
(National capital)*(Canada)	-0.86*** (0.19)	-0.77*** (0.18)	-0.77*** (0.19)
(Sub-national capital)*(Canada)	-0.10 (0.29)	-0.14 (0.34)	-0.16 (0.33)
Ln(land area)	0.49*** (0.05)	0.40*** (0.06)	0.43*** (0.07)
R-squared	0.57	0.52	0.59
N	302	378	370

Other controls include latitude, longitude, precipitation, temperature, major river and major port indicators.

Table 10: Log of population on sub-national capital city status for metropolitan areas in US and Canadian border states and provinces (Thin and thick border samples)

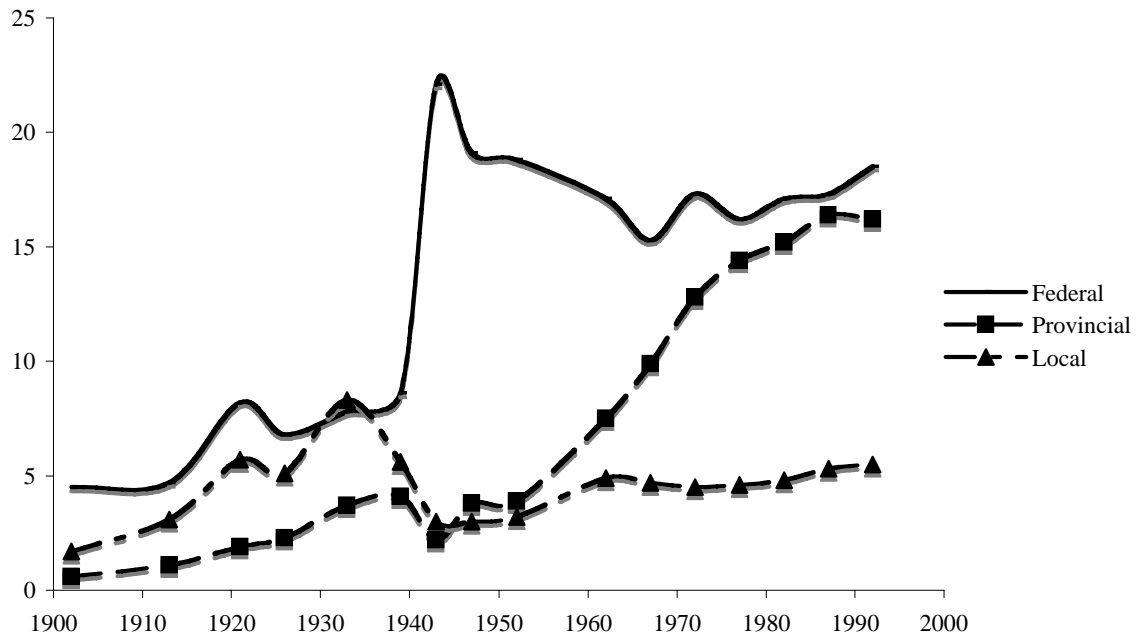
	Thin border	Thin border	Thin border	Thick border	Thick border	Thick border
	1970	1980	1990	1970	1980	1990
Sub-national capital	0.54 (0.54)	0.45 (0.46)	0.59 (0.44)	0.26 (0.23)	0.45** (0.21)	0.48** (0.23)
Canada	0.26 (0.39)	-0.07 (0.30)	-0.02 (0.27)	0.49* (0.30)	0.10 (0.26)	0.08 (0.25)
(Sub-national capital)*(Canada)	0.61 (0.75)	1.18* (0.63)	0.91 (0.57)	0.75* (0.44)	1.04** (0.40)	0.90** (0.39)
Ln(land area)	0.53*** (0.16)	0.33*** (0.12)	0.34*** (0.08)	0.64*** (0.11)	0.43*** (0.09)	0.41*** (0.08)
Latitude	-0.10 (0.08)	-0.10 (0.08)	-0.11 (0.07)	-0.07 (0.08)	-0.05 (0.08)	-0.05 (0.07)
Longitude	-0.00 (0.01)	-0.01 (0.01)	-0.00 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
Precipitation	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Temperature	0.03 (0.09)	0.10 (0.07)	0.07 (0.06)	0.05 (0.08)	0.11* (0.07)	0.10 (0.06)
River	-0.12 (0.29)	0.22 (0.24)	0.22 (0.24)	0.04 (0.17)	0.23 (0.15)	0.28* (0.15)
Major port	0.83*** (.27)	0.91*** (0.25)	1.04*** (0.25)	0.95*** (0.21)	1.11*** (0.20)	1.23*** (0.21)
R-squared	0.60	0.60	0.61	0.60	0.55	0.61
N	60	87	95	121	161	164

Figure 1: Own source revenue as a share of GNP by level of government, United States



Sources: Data taken from Wallis (2000).

Figure 2: Own source revenue as a share of GNP by level of government, Canada



Sources: Data from 1945 onward were taken from Tremblay (2007). For earlier years the data were taken from Perry (1955) and Urquhart (1993), with calculations by the authors.