

Political Centralization, Federalism and Urban Development:
Evidence from US and Canadian Capital Cities

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Abstract

A growing empirical literature links political centralization with urban development. In this paper we present evidence showing how different patterns of political centralization in the US and Canada affected urban agglomeration during the twentieth century, with a specific focus on the impact on the population of capital cities. Using data on Canadian and US cities and metropolitan areas, we find that 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. provincial or state) capital effect rose much more significantly in Canada than in the US, controlling for other factors like geography and climate. We argue that these patterns in the national and sub-national capital city effects reflect different trends in federalism in the two countries. 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, federalism came to favor provincial rights but not localism. We believe that that these diverging trends were driven by institutional differences that gave the various levels of governments in Canada and the US different access to revenue sources.

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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 heavily concentrated in a few cities that are politically and economically dominant. On the other hand, in countries like the US where political and fiscal powers are more decentralized, urban development has been more spatially balanced.¹

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.² 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 1990; Engerman and Sokoloff 1997, 2002;

1 For contemporary evidence on how political centralization affects population agglomeration see Ades and Glaeser (1995) and Henderson and Wang (2007). See Kim and Law (2012) for a historical analysis of how differences in political centralization affected various dimensions of urban development in the Americas.

2 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 draw attention to the divergence of political institutions in Ontario—Canada most populous province—relative to similar northern US states.

Acemoglu et. al 2001). Compared 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 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 (Moore 1997; Buckley 2014).

Yet, despite notable similarities in American and Canadian institutional developments, scholars also believe that Canadian and US political institutions diverged in important ways (Riker 1964; Gibbins 1982). In spite of 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.³

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

³ 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—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.”

characterized by a continued emphasis on the importance of decentralized local governments. Thus, although cities and local governments in Canada and the US 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.⁴ In contrast, even when state and 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). These diverging trends in political centralization had consequences for the size distribution of cities, as well as the form, number, and density of city governments in US states and Canadian provinces (Kim and Law 2012).

In this paper, we argue that the diverging trends in political centralization in the US and Canada were driven by institutional differences that gave the various levels of government in the two countries differential access to revenue sources. We then show how differences in national and sub-national (i.e. state or provincial) political centralization in US and Canada affected another dimension of urban development, namely the population of capital cities. Our empirical analysis is motivated using a simple model of political centralization developed in Galiani and Kim (2011) which predicts that if country is federally or sub-nationally centralized, then the national or sub-national capital city effect on population is more significant than if it was decentralized, controlling for other factors such as climate and geography. While we caution against drawing strong causal inferences from these estimates, since the location of capital cities may be correlated with

⁴ The rise of provincial restrictions on municipal finance is a major theme in Canadian urban public finance. See Bird and Tassonyi (2001), Slack and Bird (2006), and Perry (1974), among others.

unobservable factors that influence urban development, we believe our estimates are highly suggestive of a causal relationship because the national and sub-national capitals in Canada and the US were mostly chosen for political reasons prior to the onset of industrialization.⁵

For our primary empirical analysis, we use data on cities with populations greater than 25,000 from 1900 to 2000 and metropolitan areas from 1950 to 1990. 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 and revenue sources 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

⁵ 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. Washington DC and Ottawa, once 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, Queen Victoria chose Ottawa 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 2011). In Canada, the location of capitals in three of the original four provinces (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).

raised its population by 159% relative to non-capital cities in 1920, and the effect increased almost four-fold to 589% in 2000.⁶

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% in 1900 to over 100% in 200 over non-capital cities, the magnitude of 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 large population is correlated with levels of political centralization, the data suggest how the divergence in Canadian and US federalisms affected spatial development in the two nations.

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 the twentieth century. Section III investigates the historical causes of the divergence of Canadian and US federalism. Section IV presents estimates of the national and sub-national capital city effects on city and metropolitan populations in Canada and the

⁶ Estimating a similar empirical model for Latin American countries, Galiani and Kim (2011) 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.

US to illustrate how the divergence the two nations federal systems influenced urban development. Finally, section V concludes.

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.⁷

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 appeal on matters of constitutional

⁷ 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.

interpretation, systematically curtailed federal authority in favor of provincial authority in its rulings (see also Saywell 2002). Second, the Canadian political party system contributed to decentralization as the splintering of national and provincial party systems hindered national party unification and discipline.⁸

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 most US states, Canadian provincial governments came to restrict local government revenue sources, direct their expenditures, limit their access to credit markets, and impose a hard budget constraint on municipalities (Bird and Tassonyi 2001). Additionally, 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

⁸ 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 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 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, Ontario and Quebec, contain 38% and 24% of the population, respectively.

determines the level of public goods expenditures for all geographic regions, central governments in federal systems allocate the responsibility to the various levels of government. If American and Canadian federalisms diverge, the institutional rules regarding revenue collection, sharing, and expenditures should differ between these two nations. 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.⁹ 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, the position of state governments caught up to that of local governments whereas the federal government's share of revenues as a percent of GNP surpassed the other two-levels of government by several-folds. As shown in Figure 2, the Canadian pattern was relatively similar to that of the US from the early 1900s

⁹ 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."

until the middle of the century, except that the federal government's revenues exceeded provincial and local governments' revenues for most of the early decades of the 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 1982.¹⁰ 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). In Canada, many scholars believe that the growth of provincial transfers to local governments has been associated with a reduction in local fiscal autonomy.

¹⁰ 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."

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. American states, meanwhile, generally restricted the scope of taxes to property and deferred the collection duties to local county officials.¹¹ 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 raised revenues via indirect taxes such as tariffs and internal excises, the scale and scope was much greater in Canada. The most significant 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

¹¹ 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).

leases and fees, taxes on corporations, succession duties and other indirect taxes (see Table 1 for more detailed data on Ontario's revenue sources). 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 in the 1920s. Personal income taxes were also introduced.

What is particularly striking is the extent to which Canadian provinces, following Ontario's lead, have historically generated revenues from two particular sources: natural resource rents (for instance, timber dues, stumpage, mining taxes, fees and royalties from petroleum), and profits and fees from provincial liquor control boards. Table 2 presents data on the share of own source provincial revenues derived from these sources for nine of the provinces between 1901 and 1950.¹² While the combined share of total revenues generated from these two sources declined gradually for most provinces (due to the development of other revenue sources, most notably from motor vehicle licenses and gasoline taxes), and their relative importance varied over time and by province, by 1950 they remained economically significant, generating between one-fifth (Quebec) and three-fifths (Manitoba) of provincial government revenue.¹³

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

¹² In interpreting these figures it is important to note that provincial liquor control boards did not emerge until the 1920s.

¹³ Resource rents remain an important revenue source for some provinces. For British Columbia, Alberta, and Saskatchewan, the shares of own source revenues in 2012 generated from natural resources were 7 percent, 25 percent, and 31 percent, respectively (Lavoie 2012, with calculations by authors). Emery and Kneebone (2008) argue that ongoing resource royalties from oil and gas have allowed the government of Alberta to finance high levels of public spending with reduced income taxes and without a provincial sales tax.

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.¹⁴ In Canada, the diminutive 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

¹⁴ Under Dillon's Rule, local governments only have three types of powers: those that are granted expressly, those 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 autonomously.

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).

III. 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.¹⁵ Provincial 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 comparison to the US, Canada's large geographic size and small number of provincial jurisdictions limited Tiebout-type competition. In our analysis, we focus attention on developments of Ontario since it played a critical role in the development of Canadian federalism, with the other provinces emulating its public policies toward land and public corporations. Indeed, as shown in Table 2, the other provinces followed Ontario's heavy reliance on revenues from public lands (i.e. natural resource rents) and public corporations (notably, liquor control boards).

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

15 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 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.

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 influence, 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.¹⁶ 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 (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.¹⁷ His strategy was based on

16 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?"

17 Political centralization of provincial government authority over local governments seems to have arisen 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

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).¹⁸

Eschewing the American system, Ontario enacted 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 like Weyerhaeuser acquired vast forest territories for private gain at relatively low prices, Ontario generated a substantial portion of its revenues in its early years from timber dues and licenses (Hidy et. al 1963, Hurst 1964; Perry 1955; see also Table A).¹⁹ Importantly, rather than relying on local officials to collect taxes, Ontario developed a centralized administrative bureaucracy which used its coercive powers to gather detailed information for revenue collection purposes (Nelles 1974).

“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.”

¹⁸ 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).

¹⁹ 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).

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 perceived difficulties of attracting American expertise and capital, Ontario initially granted mineral lands in fee simple. However, as the enormous value of this resource became apparent, Ontario freely altered property rights over minerals. Public ownership never took hold over mineral lands, but Ontario claimed its share through royalties and profit taxes.²⁰ 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 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.²¹

According to 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.²² In Canada, provincial authority was final and unrestrained. Provincial governments could alter existing property rights, as Ontario did with mineral lands. Property rights to waterpower furnish another example. For most of the nineteenth century, as in the US, a freehold landowner in Canada possessed

20 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).

21 See Hellerstein 1983 for discussion of US constitutional debates regarding natural resources.

22 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.

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 another source of provincial government revenue.²³

B. Public Corporations

The divergence in property rights associated with corporations in the US and Canada was likely tied to divergent views 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 into day-to-day, local associational relationships... (Maier 1993, 82)." In Canada, on the other hand, 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 emerged by the 1950s as one of

²³ While we do not have data on the significance of waterpower as a revenue source for Ontario, Perry (1955) presents data showing its importance in Quebec, which, like Ontario, declared waterpower a public resource. According to Perry, in 1950 waterpower generated approximately \$1.7 million (in current dollars) for the province of Quebec, accounting for approximately 15 percent of Quebec's revenues from natural resources.

the most intensive users of the form whereas the US was (and remains) 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 distribution and sale 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.²⁴ 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).²⁵ On the other hand, in Canada, the Liquor Control Boards not only became a significant source of provincial revenue—in Ontario, it generated almost 20 percent of provincial government revenue in 1950 (see Tables 1 and 2)—but they also created a provincial bureaucracy and positions of

²⁴ 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.

²⁵ 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).

patronage.²⁶ 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.

IV. 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 (2011).

Although the model contains only two locations or potential levels of government—a

²⁶ As shown in Table 2, by 1950 Liquor Control Boards were also an important source of revenue for the other provinces, generating 15 percent of provincial revenues of Quebec, 39 percent in Prince Edward Island, 40 percent in Nova Scotia, 33 percent in New Brunswick, 43 percent in Manitoba, 27 percent in Saskatchewan, 28 percent in Alberta, and 22 percent in British Columbia.

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 (2011), we estimate the following regression equation:

$$(1) \ln(\text{population})_i = \alpha_1 + \beta_1 \text{NCAP}_i + \beta_2 \text{PCAP}_i + \beta_3 \ln(\text{LAND}_i) + \beta_4 X_i + \varepsilon_i$$

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 use data on metropolitan areas for 2000 because how metropolitan areas were defined in the US changed too dramatically between 1990 and 2000. For both the 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 3, 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 4 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 5 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 5 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 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 how differing trends in political centralization affected the urban landscapes in the two countries. 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 political centralization within Canadian provinces. 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 (see Figures 1 and 2)—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. It is noteworthy that the timing of this shift in the magnitude of the provincial capital effect occurs in the middle decades of the century, around the time that the own source revenues of provincial governments increased dramatically relative to the own source revenues of local governments (see Figure 2). This is consistent with our view that access to revenue sources was a driving factor behind the political centralization of Canadian provinces.

The geographic controls are generally significant and have 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. 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 6.²⁷ 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 (i.e. the adjusted R-squared statistic) 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 different. The inclusion of regional dummies increases the fit of the regressions substantially and the

²⁷ We divide Canada into four regions (West, Ontario, Quebec, and Atlantic). For the US we use the nine census regions (Pacific, Mountain, West North Central, East North Central, West South Central, East South Central, South Atlantic, Middle Atlantic, New England).

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 6, 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 may overestimate the true state capital city effect as a handful of very small state capitals are omitted from the sample, especially for the earlier years in our data set. For Canada, our estimates using cities larger than 25,000 will likely underestimate the true provincial capital city effect since most Canadian capitals are relatively large. As anticipated, the table shows that the inclusion of smaller cities raises the value of capital city coefficients, indicating that the estimates based on cities with more than 25,000 people are biased downwards for Canada.²⁸

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 7, we report results for the entire Canada-US pooled sample. Second, in Table 8, we report results using a thin-border sample that consists of Canadian provinces and US states that share borders.²⁹ Since our goal is to identify how differences in the degree of political centralization influence city

28 For Latin America, Galiani and Kim (2011) report similar findings. Capital city effects are much greater if smaller cities with populations greater than 2,500 are included in the sample.

29 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.

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 natural resources. Finally, in Table 9, we also report results for a thick-border sample where the US state sample is extended to include another interior layer of states.³⁰ 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 suggest the following. 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 different for 1960. 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 larger 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 slightly 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

³⁰ 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.

state capital effects (see Table 9). Strikingly, the statistical and economic significance of the interaction term begins in 1950 and becomes larger in subsequent decades. Accordingly, the timing of this shift coincides with the growth of own source provincial government revenues.

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 agglomeration. 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 10, the capital city effects are generally similar to those based on municipalities except that the figures are generally larger using metropolitan areas.

Table 11 shows the results when we use the full sample of pooled Canadian and US metropolitan areas. Our findings are roughly consistent with those reported for municipalities. The national capital city effect for Canada is smaller than the US, the sub-national capital city effect is no longer significant, and the sign for Canada dummy is negative between 1970 and 1990. When we use the thin and thick border samples (see Table 12), 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.

V. Conclusion

In this paper, we examine how different patterns of federalism in Canada and the US affected the population of capital cities. In the US, the tradition of states right and localism

was gradually transformed into a more national centralized form of federalism during the Progressive Era, but states and localities continued to retain significant autonomy. In contrast, in Canada, federalism came to favor provincial rights but not localism. Using data on municipalities (1880-2000) and metropolitan areas (1950-1990), the estimates show that the national capital city effect on population rose increased over the twentieth century in both countries reflecting 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. While our empirical strategy does not allow us to make definitive causal claims, our findings are consistent with the hypothesis that diverging patterns of political centralization the US and Canada affected population agglomeration in capital cities in different ways.

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). The ability of national governments in both countries to raise revenues increased dramatically in both countries, facilitating political centralization at the federal level (but more so in the US than Canada). However, 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 (Berkhofer 1972).³¹ Indeed, until the Civil War, competition between states seems to have fostered decentralization. Yet, ironically, as the scale and scope of 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.³² 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.

31 Berkhofer (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.

32 According to Buckley (2014) the growth of the regulatory state, which is largely under the control of the presidency, has played a key role in centralizing political power in the US in the national government.

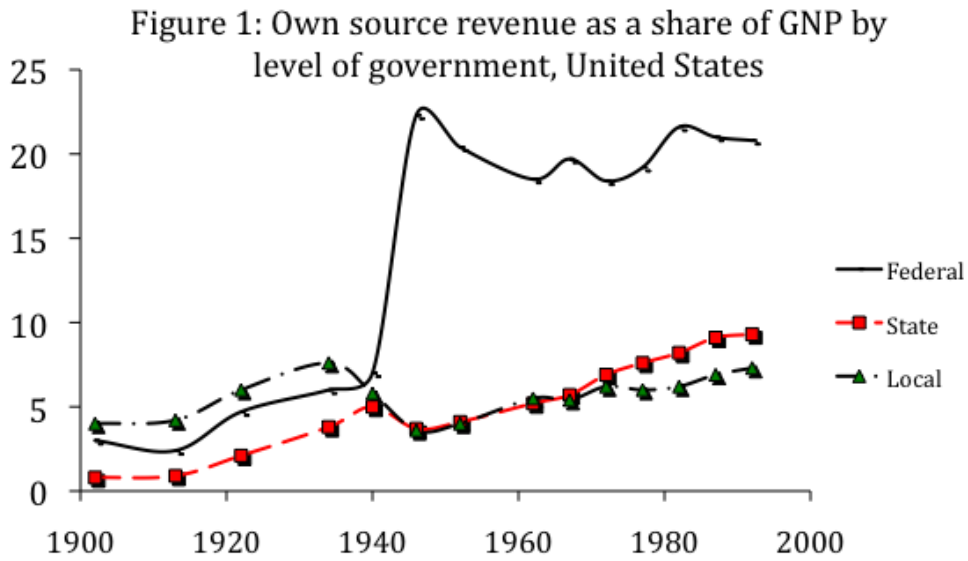
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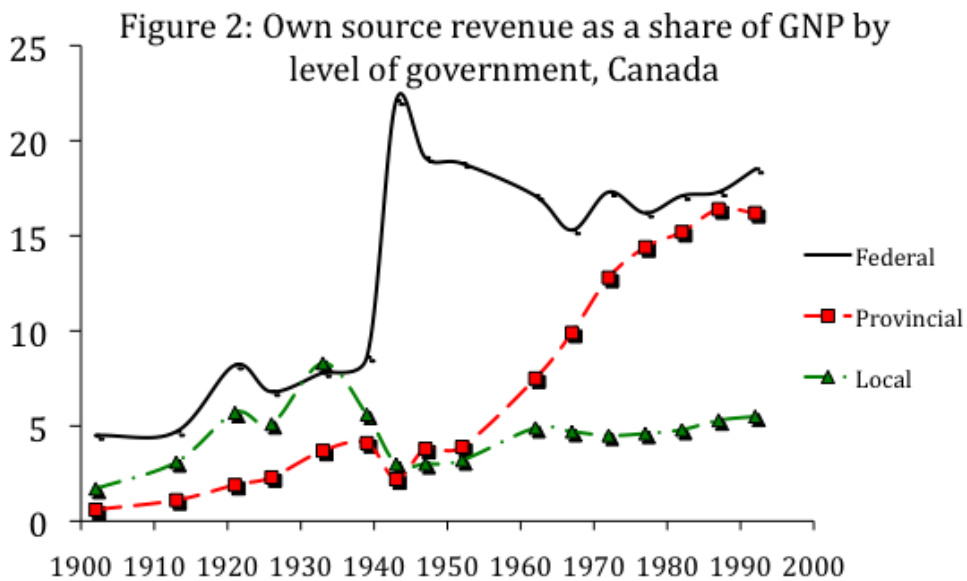
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Sources: Data taken from Wallis (2000).



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.

Table 1: Sources of revenue for the province of Ontario, 1901-1950

Panel A: In thousands of current dollars

Year	Succession duties	Corporate taxes	Personal income taxes	Motor Vehicles	Amusements taxes	Property taxes	Natural resources	Liquor Control Board
1901	336	238	0	0	0	0	1,480	0
1910	758	752	0	24	0	0	1,836	0
1920	4014	2131	0	1,991	2,190	0	3,028	820
1930	11,229	3070	0	16,206	3,224	579	2,730	10,279
1940	11,500	10,500	6,510	33,719	1,069	359	4,207	11,276
1950	14,978	64,366	54	76,088	9,912	1603	8,868	41,391

Panel B: As a share of total provincial revenues

Year	Succession duties	Corporate taxes	Personal income taxes	Motor Vehicles	Amusements taxes	Property taxes	Natural resources	Liquor Control Board
1901	0.16	0.12	0.00	0.00	0.00	0.00	0.72	0.00
1910	0.22	0.22	0.00	0.01	0.00	0.00	0.54	0.00
1920	0.28	0.15	0.00	0.14	0.15	0.00	0.21	0.06
1930	0.24	0.06	0.00	0.34	0.07	0.01	0.06	0.22
1940	0.15	0.13	0.08	0.43	0.01	0.00	0.05	0.14
1950	0.07	0.30	0.00	0.35	0.05	0.01	0.04	0.19

Notes: Motor vehicles include gasoline tax and motor vehicles licenses and fees. Amusements taxes include the Amusements Tax, Stock Transfer Tax, and Race Track Meetings Tax. Property taxes include the Provincial Land Tax and the Land Transfer Tax. Natural Resources include the Mining Profits Tax (introduced in 1907) and timber dues and bonuses. Liquor Control Board includes profits and license fees.

Source: Perry (1955), Appendix C, Table 16 as well as calculations by authors.

Table 2: Share of own-source provincial government revenues generated from natural resource rents (NRR) and liquor control boards (LCB), 1901-50.

Province	Revenue Source	1901	1910	1920	1930	1940	1950
Ontario	NRR	0.72	0.54	0.21	0.06	0.05	0.04
	LCB	0.00	0.00	0.06	0.22	0.14	0.19
	NRR + LCB	0.72	0.54	0.27	0.27	0.20	0.23
Quebec	NRR	0.77	0.41	0.39	0.15	0.10	0.06
	LCB	0.00	0.00	0.00	0.26	0.16	0.15
	NRR + LCB	0.77	0.41	0.39	0.42	0.26	0.21
PEI	NRR	0.00	0.00	0.00	0.00	0.00	0.00
	LCB	0.00	0.00	0.14	0.04	0.07	0.39
	NRR + LCB	0.00	0.00	0.14	0.04	0.07	0.39
Nova Scotia	NRR	0.90	0.92	0.34	0.14	0.08	0.04
	LCB	0.00	0.00	0.00	0.07	0.22	0.41
	NRR + LCB	0.90	0.92	0.34	0.21	0.31	0.44
New Brunswick	NRR	0.73	0.83	0.63	0.16	0.12	0.09
	LCB	0.00	0.00	0.00	0.33	0.21	0.33
	NRR + LCB	0.73	0.83	0.63	0.49	0.33	0.42
Manitoba	NRR	0.00	0.00	0.00	0.00	0.02	0.05
	LCB	0.00	0.00	0.00	0.24	0.16	0.43
	NRR + LCB	0.00	0.00	0.00	0.24	0.18	0.48
Saskatchewan	NRR		0.00	0.00	0.00	0.02	0.07
	LCB		0.00	0.00	0.26	0.12	0.27
	NRR + LCB		0.00	0.00	0.26	0.14	0.34
Alberta	NRR		0.00	0.06	0.00	0.09	0.27

	LCB		0.00	0.11	0.25	0.19	0.29
	NRR + LCB		0.00	0.18	0.25	0.28	0.56
British Columbia	NRR	0.53	0.77	0.31	0.22	0.17	0.15
	LCB	0.00	0.00	0.06	0.22	0.16	0.22
	NRR + LCB	0.53	0.77	0.38	0.44	0.32	0.36

Notes: Natural resource rents include timber royalties, stumpage, mining royalties, mining taxes, waterpower and storage rentals, and royalties and fees from petroleum. Liquor control board revenues include liquor control board profits, licenses, and fees. Saskatchewan and Alberta did not become provinces until 1905.

Source: Perry (1955), Appendix C, Tables 12-20 as well as calculations by authors.

Table 3: 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 4: 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 5: 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

Notes: Each column represents a separate regression. Robust standard errors are displayed in parentheses.

* $p < .10$. ** $p < .05$. *** $p < .01$

Table 6: 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*** (0.11)	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

Notes: Each column represents a separate regression. Robust standard errors are displayed in parentheses.

* $p < .10$. ** $p < .05$. *** $p < .01$

Table 7: 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

Notes: Each column represents a separate regression. Robust standard errors are displayed in parentheses. Other controls included (but not reported) are latitude, longitude, precipitation, temperature, major river and major port indicators.

* $p < .10$. ** $p < .05$. *** $p < .01$

Table 8: 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)
R-squared	0.47	0.57	0.75	0.66	0.57	0.46
N	52	77	95	139	250	224

Notes: Each column represents a separate regression. Robust standard errors are displayed in parentheses. Other controls included (but not reported) are latitude, longitude, precipitation, temperature, major river and major port indicators. US border states are WA, ID, MT, ND, MN, MI, and NY. Canada border provinces are BC, AB, MB, SK and ON.

* $p < .10$. ** $p < .05$. *** $p < .01$

Table 9: 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)
R-squared	0.77	0.73	0.48	0.71	0.55	0.52
N	131	205	236	307	426	448

Notes: Each column represents a separate regression. Robust standard errors are displayed in parentheses. Other controls included (but not reported) are latitude, longitude, precipitation, temperature, major river and major port indicators. 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.

* $p < .10$. ** $p < .05$. *** $p < .01$.

Table 10: 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)
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

Notes: Each column represents a separate regression. Robust standard errors are displayed in parentheses. Other controls included (but not reported) are latitude, longitude, precipitation, temperature, major river and major port indicators.

* $p < .10$. ** $p < .05$. *** $p < .01$.

Table 11: 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

Notes: Each column represents a separate regression. Robust standard errors are displayed in parentheses. Other controls included (but not reported) are latitude, longitude, precipitation, temperature, major river and major port indicators.
 $*p < .10$. $**p < .05$. $***p < .01$.

Table 12: 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)
R-squared	0.60	0.60	0.61	0.60	0.55	0.61
N	60	87	95	121	161	164

Notes: Each column represents a separate regression. Robust standard errors are displayed in parentheses. Other controls included (but not reported) are latitude, longitude, precipitation, temperature, major river and major port indicators. For the thin border sample, US states are WA, ID, MT, ND, MN, MI, and NY while the Canadian provinces are BC, AB, MB, SK and ON. For the thick border sample, US states are WA, OR, ID, MT, WY, NE, ND, SD, MN, IA, IL, IN, MI, WI, OH, PA, NY while the Canadian border provinces are BC, AB, SK, MN and ON.

* $p < .10$. ** $p < .05$. *** $p < .01$.