Governance of the Frontier: Society and State Formation in Brazil, Russia, Canada and the United States

<table>
<thead>
<tr>
<th>Journal:</th>
<th>Governance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manuscript ID:</td>
<td>GOVE-OA-03-2015-064.R1</td>
</tr>
<tr>
<td>Wiley - Manuscript type:</td>
<td>Original Article</td>
</tr>
<tr>
<td>Keywords:</td>
<td>state formation, settlement patterns, historical institutionalism, frontier thesis, governance</td>
</tr>
</tbody>
</table>

**Abstract:**
While there is a growing literature on state formation and the rise of state capacity over time, this literature typically deals with differences between countries, neglecting the fact that state formation also occurs differentially within a country over time. This article examines legacies of state formation spatially, by looking at variation within “frontier” states – countries which in recent centuries have extended rule over new territories adjacent to their core regions. Frontier zones are found to have ongoing lower levels of public order and deficient public goods provision. Several theories are examined to explain this discrepancy, including internal resettlement, costs of monitoring and enforcement, and the relationship between settlers and the indigenous population. It is argued that the formation of strong social institutions among settlers leads to resistance to attempts to impose governance over frontier regions, and to 'select for' lower fiscal capacity and lower provision of public goods.
Governance of the Frontier: Society and State Formation in Brazil, Russia, Canada and the United States

Introduction

A growing literature examines the relationship between historical state formation and contemporary state capacity. Longitudinally, Gurr (1981) and Eisner (2001) show how homicide rates fell in European states during their processes of state formation, while at the cross-country level Gennaoli and Rainer (2007) and Chanda and Putterman (2005, 2007) show how differences in historical state centralization can explain variation in public goods provision and economic growth across countries in the twentieth century. Meanwhile, comparative historical studies such as Ertman (1997) and Fukuyama (2011) have shown how different regime trajectories lead to higher or lower levels of state capacity in the present time. However, while studies typically deal with processes across countries or within one single country longitudinally, this neglects the fact that state formation also occurs differentially between regions of a single state.

While a few recent studies such as Boone (2003) or Naseemullah (2014) have begun to consider differences in state capacity at the subnational level, empirical studies have largely emphasized longitudinal and country cross-sectional analysis. This paper corrects this deficit by examining variation in subnational state capacity amongst a particular subset of countries, which we term 'frontier states'. Whereas classical studies of state formation are based on western European cases that either assimilated (e.g. Weber 1978, Tilly 1992) or unified pre-existing (e.g. Ziblatt 2006) national groups, the 'frontier state' represents a pattern of state development in which settlers expanded and displaced territorial minorities, and reflects a patterns more widespread outside of the European context. Such polities are characterised by an internal hinterland over which they have gradually settled and extended their rule, and this comparison between 'core' and 'frontier' zones, enables within-country tests of historical state formation and governance. If it is correct, as Gurr (1981) and Eisner (2001) show, that levels of public order vary chronologically by the length of state formation, and cross-country analyses show this same correlation cross-sectionally, then logically, we argue, areas of a country with a longer legacy of centralised rule ought to exhibit higher levels of public order than those in which central government has had a relatively short existence. This article shows such variation between
regions, as reflected in the provision of public goods, as a legacy of establishing central state authority over frontier areas.

In order to demonstrate subnational differences in state capacity among frontier states, and to explain why such a gap persists, the rest of this paper proceeds as follows. In Section I, we introduce the concept of the 'frontier state' as a distinct category of state formation, and how it is applicable to a wide sample of polities today. Section II operationalizes frontier regions within the four largest frontier states, and examines contemporary indicators of state weakness, including measures of public order and public goods provision. Section III introduces a series of hypotheses for why frontier regions underperform relative to core areas, based on existing political science scholarship that has emphasized ethnic fractionalization, the legacies of direct and indirect rule, and peripheral underdevelopment. These are tested in Section IV. In Section V, we examine alternative explanations for the existence of a persistent and robust “frontier effect”. Finally Section VI concludes.

I. The Concept of the Frontier State

Much of the literature on state formation is based on the experience of western European states, which consolidated their territorial rule either by assimilation of peripheral groups into a single dominant ethnicity (as in Weber, 1976) or the unification of pre-existing ethnolinguistic groups into a shared national state (Ziblatt 2006). However, in much of the world, including the Americas, Australasia, South Africa, China, Israel, and Russia, contemporary polities instead formed, not via the assimilation of marginal communities, or the unification of a primordial linguistic community, but instead as 'frontier states': where a core polity was extended over a geographic periphery through processes of population settlement and displacement (Kimmerling 1983, 2004; Khodarkovsky 2002; Wang 2011). In his study of how the United States extended its territorial presence across the Americas, for example, Meinig (1986, 1992, 1995, 2004) shows how eastern "cores", dominated by Anglo-Europeans, gradually spread to the inland "domains" and "spheres" of other settlers and indigenous peoples, through incremental settlement and displacement. Such a gradual extension of control via settlement is similar to the extension of state presence in other settler states, which similarly used settlement as a means of consolidating the state's power over outlying territories (Khodarkovsky 2002; Wang 2011).
Rather than emphasize the commonalities of the American experience as a broader category of state formation, however, the frontier literature has instead largely characterized it as a sui generis phenomenon. Hofstadter and Lipset (1968), Hartz (1964) and more recently, Engerman and Sokoloff (1997) and Garcia-Jimeno and Robinson (2011), argue that American settlement was unique by virtue of the lack of restrictions on population movement and the relatively egalitarian distribution of land in its frontier areas, in contrast to the controlled latifundia of Latin America, and that this led to more inclusive legal and political institutions, while Lipset (1990) has argued that whereas frontier zones of the U.S. rapidly led to the creation of relatively independent federal states, in Canada, central control over frontier areas allowed the state to establish impartial and non-clientelist institutions ahead of the handover to local elites. Such literatures would imply that, while frontier states are alike in seeing settler communities extend control over peripheral zones, they are distinct in the role of states in guiding such settlement and the consequences of settlement for subsequent political institutions.

Nonetheless, even if there are differences in the precise method of settlement and the timing of state control, we argue that there remain important respects in which all frontier states exhibit important commonalities. First, the delayed consolidation of state presence in frontier areas, the common attributes of settlers as a distinct social group, and other attributes of frontier settlement, such as conflict with indigenous peoples or the availability of land, are common to all frontier regimes. Second, all frontier states featured a combination of controlled and uncontrolled migration and the free settlement of land: Frymer (2014), for example, shows that even in the United States, land policies and population control were central in enabling an otherwise constrained American state to assert authority over the direction of expansion, while even in nineteenth-century Russia - the paradigmatic case of 'autocratic' frontier settlement - settlers were able to claim large tracts of land, land ownership was more equal, and hierarchical institutions, such as serfdom, were far less prevalent (Riasanovsky 2000).

While the American and Canadian frontier processes are relatively well known (Meinig 1986, Lipset 1990), examining the Russian and Brazilian cases can show how the frontier state represents a more general pattern of political development. In the Russian case, the charting of Siberia in the seventeenth century opened the possibility of eastern settlement, and from 1858 newly-emancipated serfs, gold prospectors, and
religious sects flocked eastwards to take advantage of the relative freedom and opportunity offered by open land and natural resources. Hageimester (1854) estimates that in 1796-97 the population of Siberia accounted for 939,000 people, of which 363,000 were natives, or indigenous peoples, and 576,000 were settlers or their descendants. Yet from the middle of the nineteenth century the eastward migration of runaway serfs, the increasing resettlement of followers of persecuted religious sects, and the discovery of natural resources across the Russian east, led to a phase of free settlement. From 1858 to 1896 the population of the frontier zones increased by 85 per cent, and then just in another 18 years, rose again by 68 per cent. In total, 5.5 million newcomers entered the region during this period, a migration comparable to the inflows to the United States during the same era. Thompson (1996) has estimated that between 1890 and 1914 over 10 million persons migrated freely from western Russia to areas east of the Urals. In 1906 the ministry of agriculture created an emigration department which assisted settlers during their first years in the east, who received on average 16.5 hectares of land per man, a small state subsidy, and exemption from some taxes (Riasanovsky 2000). While the Russian frontier is sometimes characterized solely by its use for prison resettlement or military bases, this is a stereotype that obscures the history of the region as a site of free settlement and an escape valve from European feudalism.

Similarly, the Brazilian interior, from the Amazon jungle of the north to the central Pantanal, largely became a settlement frontier in the late nineteenth century. Alden (1963) shows that by 1776 only 9.1 per cent of Brazil’s non-indigenous population lived in the frontier zone, leaving over 90 per cent situated among the coastal provinces1. Yet from 1850 to 1940 a rubber boom brought substantial economic migration from the coasts to the interior, and settlement penetration of the interior provinces. Celso Furtado (1957) has estimated that 260,000 migrants came to Amazonia between 1872 and 1900, and a total of 500,000 by 1910. As a consequence, between 1872 and 1906, the population of the area swelled from 337,000 to 1.1 million (Prado 1956). In the late twentieth century, significant government support brought in new waves of settlers: the capital was moved from the coast to the inland city of Brasilia, and ‘Operation Amazonia’ in 1966 allocated monies for interior highway development. Fiscal subsidies were offered for business relocation, via the

1Estimates from a wider range of sources compiled by Alden (1987) arrive at a yet lower figure, at 7.6 per cent of total population.
Superintendency of the Manaus Free-Trade Zone (SUFRAMA). As in the American and Russian frontiers, the state acted as a major actor in planning and encouraging frontier development; whereas the Brazilian interior was once the domain of its indigenous peoples, by the 1980s the region had transformed into an ‘urbanized and industrialized jungle’ (Lourenço 2009).

1 Comparative Governance of the Frontier: Wild 'Wests', 'Easts', and 'Norths'

What are the legacies of frontier states for governance today? All polities, at the outset, have frontiers: as the works of James Scott (2009) or Victor Liebermann (2009, 2011) serve to illustrate, this is true not only of the frontier states of the Americas or eastern Eurasia, but also, historically, of the padi states of upland southeast Asia, the provinces of imperial China, the Arab settlement of the Maghreb, or the Amhara in Ethiopia². Yet while frontiers can, in time, become ‘tamed,’ the frontier is the actual zone in which state authority has yet to assert itself, that space within which formal institutions remain comparatively weak.

Contemporary observers of the frontier made no secrets of the lawlessness, instability, and uncertainty of its territories, and one legacy of frontier settlement is the persistence of this pattern forward to the present. The American historian Frederick Jackson Turner (1920), from whom the 'frontier thesis' is derived, felt the ‘lawless characteristics of the frontier’ were ‘sufficiently well known' (Turner 1920: 24) to avoid extensive analysis. Nonetheless, he noted that it was ‘a region of personal feuds and frontier ideals of law’ where ‘the idea of the personality of law was often dominant over the organized machinery of justice’ (Turner 1920: 142), and that such zones were subject to ‘a laxity in regard to governmental affairs which has rendered possible the spoils system' whereby ‘rotation in office’ served ‘to allow the successful man to punish his enemies and reward his friends’ (Turner 1920: 142). Before Turner, the former Argentinian president, Domingo Sarmiento (1845), had also written at length about the challenge of governing his country's interior regions: complaining that ‘since there is no collected society, no government is possible; there is neither

² Though France was an assimilationist rather than a settlement state, Eugen Weber's classic study (1976) has shown how even for a western European polity, the state's control over the provinces was consolidated at a relatively late point in time. The comparison with frontier states is highlighted by Weber's opening quote (from Balzac), set in the Burgundy countryside: “You don't need to go to America to see savages... Here are the Redskins of Fenimore Cooper”.

municipal nor executive power, and civil justice has no means of reaching criminals’ (Sarmiento 1845: 21). This ‘constant insecurity of life outside the towns’, he argued, ‘stamps upon the Argentine character a certain stoical resignation to death by violence’, leaving the frontiersman ‘independent of every want, under no control, with no notion of government’ (Sarmiento 1845: 14).

Early observers of frontier society therefore noted that it is 'undergoverned', or what O'Donnell (1993) has referred to as a 'brown zone': an area under nominal state authority, in which the state's monopoly of legitimate use of force had not been fully established. While the administration of the frontier had the potential to be democratic and supported by strong civic ties, frontier administration could also be prone to fiscal crises, clientelism, and ravaged by violence and personal insecurity. These attributes – democratic, and yet, in many regards, dysfunctional – constitute something approximating a frontier ‘syndrome’: only very gradually did these wild 'wests', 'easts' and 'souths' come under the jurisdiction and administrative hierarchy of “the center”. The legacy of weak state capacity should be evident today in indicators from historical frontier areas, and can be seen by examination of comparative descriptive statistics, summarized in the next section.

2 II. Specifying the Frontier

Before we can systematically compare governance in frontier and non-frontier areas, we must be able to operationalize the frontier. Following Garcia-Jimeno and Robinson (2011), we divide administrative entities within these polities into 'frontier' and 'non-frontier' entities, dividing North America and Brazil into areas with population density below 0.7725 people per square kilometre (2 per square mile) in the mid-nineteenth century, and Russia using the 1897 census. (see Appendix for maps; Figure 1 presents frontier zones of four countries). In doing so, we define the frontier as those newly-settled tracts that are populated by historically recent migration, in which the institutions of public order, from the police and judiciary to local government and administration, are relatively recently formed.

Using this classification of frontier and non-frontier areas, we can begin to compare indicators of state capacity between historical 'frontier' and 'core' zones of frontier states, to assess the legacy of state consolidation for governance within such
countries today. This can be seen by examination of comparative descriptive statistics for public order, public goods, and development, summarized in Table 1.

TABLE 1. ABOUT HERE

Frontier zones differ systematically from non-frontier zones in a number of important regards. First, consistent with the historical observations of Turner (1920) or Sarmiento (1845), homicide rates are higher in frontier than non-frontier zones, not only in the United States, but all of the countries under consideration (See Figure 5). In Canada, the homicide rate in frontier areas is three and a half times higher than on the eastern seaboard; in Russia, the homicide rate in Siberia and the Far East is double that of the European portion of the country, and appears to increase the further one penetrates to the East, with rising elevation around the Urals, greater criminality in Krasnoyarsk, and maximal levels of homicide around the region from Lake Baikal to Magadan on the Pacific seaboard. In all of the cases except Brazil, frontier regions have a higher homicide rate than the non-frontier areas; though the exception of Brazil, as of the United States to a lesser extent, is due to the very high homicide rates in those eastern areas of the country (in the northeast of Brazil, and the southeastern United States) that bear the legacy of slavery. ‘Frontier’ regions of Canada have significantly higher homicide rates than the earlier settled regions of the Atlantic littoral: Nunavut, in the north, has a homicide rate of 18.64 per 100,000, compared to just 1.36 in Ontario, 1.12 in Quebec, and precisely no homicides on Prince Edward Island, at least during the year of reference (2009).

FIGURE 5 ABOUT HERE

In Brazil, while pockets of very extreme criminality exist along the coastal states and in particular in the Northeast, in the frontier regions the homicide rate is consistently elevated. With the exception of the border province of Acre, all of the frontier regions have homicide rates superior to 24 per 100,000. By contrast, seven of the non-frontier regions have murder rates below this level, for example such as Sao Paolo (14.9 per 100,000) or Santa Catarina (13 per 100,000). Finally, in the United
States homicide rates are slightly higher in frontier areas (4.86 per 100,000) than non-frontier areas (4.7 per 100,000), though as with Brazil, it is the inclusion of areas with a legacy of slavery that account for much of the homicide in the non-frontier zone; excluding the deep south, the homicide rate in the early-settled areas of the United States is just 3.7 per 100,000. Thus a contrast can be drawn between the early-settled states of the Northeast, in which homicide rates are generally very low, and the ‘wild west’ frontier states of Arizona, New Mexico, and Nevada, in which homicide rates are among the highest in the Union.

A second aspect of governance sometimes considered deficient in frontier zones is the provision of public goods. Frontier areas, noted Turner, may be more democratic; yet this may have accentuated their tendency towards clientelism, or the provision of private benefits to political constituents, rather than universal public goods. Meanwhile, the inability of frontier zones to effectively collect taxes, whether due to the weak development of bureaucratic infrastructure or differential preferences, is another attribute that vitiates effectiveness in public service delivery.

An illustration of the pattern of public goods provision from one of the cases in our study, the Russian Federation, is provided in Figure 6. Taken are four indicators from Russian National Statistics (2010), the percentage of slum housing as a proportion of total, the number of inhabitants per doctor, the ratio of children to educational places, and the number of hospital beds per capita. While there is substantial variation, a consistent pattern emerges of under-provision in frontier zones, relative to the areas west of the Ural mountains.

[FIGURE 6 ABOUT HERE]

Further illustration of the pattern of public goods provision between frontier and non-frontier areas can be seen from the Republic of Brazil, shown in Figure 7. We take two indicators from the OECD Economic Survey on Brazil (2005), the number of doctors per 10,000 population, and the immunisation rate of children under the age of one.
Again, frontier regions perform significantly worse in public goods provision than non-frontier areas. In general, therefore, frontier regions may perform worse at the provision of public goods by the state, reflecting the relatively dysfunctional nature of formal institutions in frontier societies. This does not mean they are worse at private provision of such goods – at this, indeed, they may outperform non-frontier zones – but simply that the formal institutions of frontier areas are indeed relatively more dysfunctional.

III. Hypotheses

Why do frontier regions exhibit persistent shortfalls in rule of law and public goods provision? In this section, we outline several hypotheses from within the political science scholarship, based on covariant attributes of frontier zones, that may explain underprovision of public goods. These are tested in the following section, before outlining alternative explanations for why frontier zones demonstrate persistent weak state capacity.

i) The relationship between settler groups, and between settlers and the indigenous population

First, it may be that frontier/non-frontier differences in public order and public goods can be explained by the historical ethnic diversity of frontier zones, which are characterized by multiple ethnic communities, and by divisions between indigenous peoples and settlers. A substantial scholarship in economics and political science has argued that underinvestment in public goods is covariant with ethnic fractionalization, due to the difficulties faced by ethnically diverse societies in achieving agreement on desired public goals, building intergroup trust, and establishing solidarity for poorer members of society (Alesina et al. 2003, Habyarimana et al. 2007, Putnam 2000, Keefer and Khemani 2004). In most frontier regions, from the Far East of Russia, to New Mexico in the United States, to the Northwest frontier of Canada or the Amazon region of Brazil, a dual society was formed from the coexistence, and often conflict, of settlers with indigenous peoples. As frontier zones frequently include ethnic minorities and settlers, as well as settlers from diverse origins, one explanation for the
undergovernance of the frontier would be that such regions face a legacy of social divisions between constituent peoples.

**ii) Historical patterns of direct or indirect rule**

Second, frontier states differ in the manner in which outlying regions were historically governed, and in particular in the degree of autonomy found among subnational units. A growing literature in political science examines the long-term consequences of direct and indirect governing arrangements (e.g. Iyer 2010, Mamdani 1996, Lange 2009). While some territories experienced direct rule from the capital, others gaining decentralized power either as federal states or ad hoc 'federacy' units under a central regime (Rezvani 2007; 2014). For example, whereas both the United States and Brazil decentralised power to federal states after their birth as republics (excluding their respective federal districts), Canada and Russia adopted more piecemeal sovereignty arrangements for their frontier districts. In the case of Canada, while some of the frontier zones have long been granted self-governing autonomy as federal provinces (in particular British Columbia, Alberta and Saskatchewan), the 'northern frontier' zones of Nunavut, the Northwestern Territories, and the Yukon have been and remain today formal 'territories', lacking inherent jurisdiction, and possessing only those powers delegated by the federal government. In the case of Russia, though in the soviet period most provinces and territories (*oblasts* and *krais*) were directly ruled from Moscow, a number of frontier regions were granted greater autonomy as autonomous krais, autonomous oblasts, and autonomous republics (ASSRs), and these distinctions persist in the post-1994 federal state.

A growing literature suggests that where peripheral regions have been dominated by core states, legacies of direct or indirect governance bear directly on contemporary state capacity. Iyer (2010) for example argues that districts of India experiencing direct rule under the British colonial regime have deficient public goods provision today, due to the undermining of indigenous administrative legitimacy and capacity. Alternatively, Lange (2009), Mahoney (2010) and Mamdani (1996), suggest instead that where colonial regimes reinforced the power of local elites through indirect rule, its consequences were largely negative, by maintaining local clientelistic relations and frustrating the postcolonial extension of the metropolitan core state. Verghese (forthcoming) argues that indirectly ruled areas of India have greater religious conflict today, due to the policies of sectarian elites that excluded religious
minorities, while Mukherjee (2013) finds that indirectly ruled areas of India have higher levels of contemporary ethnic conflict.

Such an analysis may also transpose to frontier states, in particular where regimes faced indigenous groups resistant to the core, and by consequence, granted indirect rule to problematic areas. As Gerring et al. (2011) and Ziblatt (2006) argue, the choice of whether to adopt a federalional, centralized, or ad hoc 'federacy' arrangement is a consequence of the initial power relationship between core and constituent units, with lasting path-dependent consequences for subnational patterns of state capacity. In Russia, for example, Soviet leaders deliberately made concessions to national minorities in resistant frontier zones such as the Caucasus, leading to entrenched local power discrepancies between dominant and minority groups. As a result, ethnically divided republics such as Karbardino-Balkaria have seen one indigenous minority dominate over another (in this case, Karbards over Balkars), while in other cases, notably Chechnya and Buryatia, Russian settlers came to dominate the institutions that were established for the 'titular minority,' leading to a form of settler clientelism (Hale 2006). Thus the decision to adopt federacy arrangements, may have frustrated the development of state capacity across frontier zones of Russia and reinforced local clientelism - just as it may have also done, in a more limited manner, for the historical frontier states of the Brazilian interior, or the Canadian and American west, while minorities formed a significant share of local population.

iii) Historical underdevelopment of peripheral zones

A third explanation for deficiencies in public order and public goods in frontier zones is that these are a consequence of their historical underdevelopment, and peripheral relation to the core (Wallerstein 1974). Frontier regions, by definition, are zones on the periphery of the global economy, characterized by export of primary commodities, prevalence of unregulated labor, physical distance from the metropolitan economy, and high transportation costs. This means that first, because frontier zones were historically underdeveloped, they may have had less resources to invest in public goods, and second, that the inclusion of frontier provinces in a shared political arrangement with a more developed core state may have exacerbated their evolution towards 'extractive institutions' that were designed to serve the former's needs (Acemoglu, Johnson and Robinson 2003). In the Soviet Union, for example,
Siberia and the Far East were consciously developed as sites for the exploitation of natural resources, including the extensive use of forced labor; in Brazil the Amazonian region has served as a basis for the exploitation of rubber and remission of profits to the industrial southeast. The exploitative nature of frontier economies may also have led to other socio-economic outcomes which frustrated the development of impartial institutions, in particular a high degree of economic inequality.

**Regression Analysis**

We can analyze these differences more systematically by estimating basic OLS models to confirm a hypothesized association between frontier status and low levels of public order and public goods provision. As indicators of public order and public goods, we take respectively the homicide rate (per 100,000), and the infant mortality rate (per 1,000). Infant mortality is widely considered a useful proxy for the universality of healthcare provision, welfare benefits, and public sanitation, as it disproportionately affects poorer households unable to provide these privately (Ross 2006; Lipton and Ravallion 1995; Victoria et al. 2003). The homicide rate is a widely used proxy for levels of public order, both in historical studies of state formation (e.g. Gurr 1981), Eisner 2001, Soifer 2015), and in cross-country comparisons of state capacity (Richani 2010).

Data on each of these are taken from national statistics of the respective countries. In order to test for 'frontier effect' we include a dummy variable for whether a region is part of a frontier zone, measured using historical population density in the nineteenth century. We test for the explanation of the frontier effect by seeing whether this coefficient is robust to the inclusion of a series of controls for alternative hypotheses to explain the frontier-public goods association.

First, in order to test the hypothesis that the social diversity of frontier region explains their lower levels of public goods provision, we include a control for ethnolinguistic fractionalization (ELR). Separate ELR indices were calculated manually for each subnational unit, using the latest available census data, and are reported among the descriptive statistics in Table 1. Reflecting the legacy of settler and indigenous communities, as well as the diversity of settler groups, ELR scores are higher in most frontier regions than in non-frontier zones.

Second, in order to test whether discrepancies in public goods and public order are a legacy of historical patterns of direct or indirect administration, we include a
control for whether in the twentieth century a region experienced administrative autonomy, either as a federal state or as a self-governing federacy of a central state, or was centrally administered by the core state.

Third, frontier zones are typically in peripheral economic zones, characterised by weak economic development. By controlling for GDP per capita, we test whether underprovision of public goods can be attributed to economic underdevelopment, rather than covariant attributes of frontier regions, and by including a variable for income inequality, in the form of the gini index, we control for the effects of unequal access to resources. Finally, in order to control for unobserved country-specific heterogeneity in state capacity, country fixed effects are also included.

[TABLES 2 AND 3 ABOUT HERE]

Results are reported in Table 2 and 3. Models (1) and (5) report full-sample results for homicide rates and infant mortality, respectively. In accordance with the frontier thesis, we find that frontier zones have significantly higher rates on both indicators: in frontier zones the homicide rate is higher by 3.44 per 100,000, a difference comparable to the gap between Sweden (1 per 100,000) and the United States (4.8 per 100,000), or in turn between the United States, and Pakistan (7.8 per 100,000). Surprisingly, however, none of the proposed causal mechanisms for explaining the frontier effect prove as effective an explanation as the raw frontier variable. Ethnic fractionalization is not significantly associated with the homicide rate, nor, as the fractionalization literature would suggest, with infant mortality. Legacies of regional autonomy are not associated with homicide, though weakly associated with infant mortality, in that areas enjoying historical autonomy have a significantly higher infant mortality rate today. Both the gini coefficient and regional GDP per capita are associated with infant mortality, though not with the murder rate.

In order to forestall the possibility that a small number of low population frontier regions may have leveraged the results, models (2) and (6) exclude from the sample regions with population under 100,000 inhabitants. Of these there are five in the sample: Nunavut, Saskatchewan, and the Yukon, in Canada; and Chukotka and the Nenets Autonomous Okrug, in the Russian Federation. The estimated coefficients are
not substantially altered. Next, in order to more systematically overcome this problem of non-unit homogeneity among cases, models (3) and (7) replicate the full-sample regressions in (1) and (5), but with the addition of population weights, using log regional population for each region. After population weighting, coefficients remain largely the same as those in the unweighted sample regressions, suggesting that the frontier effect is not leveraged by low-population regions.

Finally, models (4) and (8) test an alternative interpretation of the indirect rule hypothesis, namely that decentralized governance only produces low service provision in ethnically divided subunits, where local ethnic majorities excluded local minorities from governance. As such, it is not direct or indirect rule per se which produces negative consequences for governance, but rather, the combination of indirect rule with a societal structure in which either (a) settlers exert dominance over indigenous peoples and descendants of groups brought as slaves, or (b) an existing indigenous dominant group exists in relation to an indigenous subaltern group. Models (4) and (8) therefore report not only coefficients for ethnic fractionalization and legacies of direct and indirect administration, but also, their interaction effect. However in both models, the coefficient for the interaction of local autonomy and ethnic diversity is small and not significant, either individually, or in conjunction with the individual coefficients for ethnic diversity and historical direct/indirect rule. While individual cases of ethnic clientelism can be identified among Russian autonomous republics (e.g. Buryatia) or Brazilian federal states (e.g. Amazonia), this suggests there is no generalized such relationship.

Why do the coefficients in models (1) to (10) provide weak evidence for the fractionalization, indirect rule, and underdevelopment hypotheses, while continuing to show a large and robust effect for the frontier variable? First, the underdevelopment hypothesis is invalidated by the fact that, as the descriptive statistics in Table 1 have shown, frontier regions are not consistently poorer or richer than non-frontier zones. In Canada and Brazil frontier areas are wealthier on average, but in Russia and the United States they are less so. The descriptive statistics in Table 1 do show however that the frontier/non-frontier gap in public order and public goods is consistent across all cases: in Russia, Canada, and Brazil the homicide rate in frontier areas is higher than non-frontier provinces, while the US case is an exception due to the classification of the South by historical population density as 'non-frontier' – whereas US regional studies of homicide would typically consider the South and Southwest together as
frontier zones, in comparison to the coastal northeast (cf. Roth 2009). Meanwhile, in all cases infant mortality rates are higher on the frontier. Second, frontier regions are generally higher on ethnic fractionalization than non-frontier zones, the only exception here being the United States. And yet the variable for frontier status is robust to the inclusion of the ethnic fractionalization variable, suggesting that the mechanism for the observed difference is not simply reducible to differences in ethnic heterogeneity; ethnically homogenous regions of the frontier are subject to the same pattern of increased violence and reduced public goods as those which are ethnically diverse.

IV. Explaining the Frontier Effect

The coefficients in Tables 2 and 3 suggest that the frontier effect is not simply a result of covariant causes, such as division between ethnic minorities, historical patterns of direct or indirect rule, or the underdevelopment in economically peripheral zones. Even in frontier regions that are ethnically homogenous, have historically been governed together with core regions, and are economically developed, the frontier effect persists. In order to explain why frontier states exhibit persistent gaps in state capacity between frontier and non-frontier regions, it is necessary to develop a distinctive pattern of state-society relations in frontier regions.

i) The strength of social institutions

One alternative explanation for the frontier effect is that, because settlers arrived in advance of the state, social institutions were established in order to deal with problems such as schooling, health, and the administration of justice. This density of local organisational capacity among settler societies was one of the most salient observations of both Tocqueville (1835) and Frederick Jackson Turner (1920). That frontier regions are far richer in voluntary activity than the non-frontier areas of their respective states, despite lower levels of public goods and public order, can be seen in Figure 2, which shows the average membership of a range of voluntary associations from the World Values Survey for each of the four countries of this study.

[FIGURE 2 ABOUT HERE]
While much of the political science literature, following Putnam (1993), has stressed the positive interaction between social institutions and democratic accountability for delivering public goods and services, this is not a necessary relationship. Even where civil society organizations take the role of service providers, if this 'crowds out' state provision then the consequence may be negative in the long run: informal service providers do not have the state's universal provision mandate, nor the same impartial and bureaucratic mechanisms for recruitment and delivery, nor the state's substantial financial resources, nor are they subject to the same accountability mechanisms that exist in a democracy (Rothstein 2011). The strength of local voluntary organisation vitiated the need for public interventions, and may even have created a vested lobby against state encroachment on private institutions; on the other, the strength of pernicious social networks may have weakened the ability of the state to govern effectively and impartially (Migdal 1988). Finally, another important attribute of frontier zones was that the absence of state authority made them a magnet for many forms of so-called 'negative' social capital, such as criminal networks, smugglers, and outlaw groups, with a strong incentive to resist the extension of centralized state control.

**ii) 'Selection' for Reduced Fiscal Capacity and Public Goods**

Second, we suggest that frontier regions may 'select for' lower fiscal capacity and lower provision of public goods, either due to the strength of existing social institutions, a weaker sense of collective identity, or an enduring cultural preference in frontier areas for individual over collective provision, due to individualist self-selection into the frontier. Among the most striking features of frontier zones to emerge from comparative survey analysis is their tendency towards economic libertarianism (also reported by Kitayama et al. 2006 with respect to frontier islands of Japan). Graphs presented at Figure 3 show frontier and non-frontier areas compared on two items from the World Values Survey: one asking the respondent their extent of agreement as to whether the ‘government’ should take more responsibility for people, or whether people should ‘take more responsibility for themselves’; and a second item asking whether competition is good as it ‘stimulates people to work harder’ or whether competition is harmful as it ‘brings out the worst in people’. In both cases frontier zones are clearly more ‘libertarian’, insofar as respondents in frontier zones
indicate a greater preference for having individuals and not government take responsibility, and a greater preference for competition in individual relations.

[FIGURE 3 ABOUT HERE]

Evidence for the enduring legacy of libertarian preferences can be found in voting patterns from frontier areas, which in each country disproportionately provide an electoral base to political parties whose platform emphasizes patriotism, populism, and social conservatism (see Appendix Figure 4). By country, there appears to be a clear cleavage between core and frontier zones in their preference for parties that might be described as representing a 'popular right' platform. In Canada, the electoral base for the new Conservatives is predominantly in the frontier provinces, in particular Alberta and Saskatchewan. In Russia, frontier provinces of the interior are disproportionately inclined to vote for the nationalist party of Zhirinovsky. And in the United States, it is a longstanding observation that both the Republican party, and more recently its 'Tea Party' wing, receive greater support from the interior states that were once part of the American frontier. This relationship is not a necessary one, however, as these regions were also the support base for an earlier generation of 'progressives'. Yet populism, and in particular its rejection of coastal status elites, appears distinctive of the politics of the frontier, even if we cannot always isolate a specific left or right platform.

[FIGURE 4 ABOUT HERE]

3 Though the political cleavage introduced by the frontier is not the specific focus of this paper, it is notable that in each of the four cases in this study, the elites of their capitals and Atlantic littoral consider themselves, in varying degrees and quantities, as 'European', while their interior populations consider themselves as 'true' Canadians, Americans, or Brazilians. This is a distinctive pattern of a frontier society, in which the first wave of settlers establishes itself according to the tastes and hierarchies of the motherland, while subsequent waves, living in sheltered terrains distant from worldly affairs, identify instead with the great landmass which they have, with great difficulty, brought into mastery. It is also why each of these societies, at some point in its history, must wrestle with the tension between core and periphery - which politically is a struggle between the cosmopolitan, liberal, and deferential norms of the coast, and the isolationist, conservative, and economically libertarian values of the frontier.
Because of the historical dominance of populism on the frontier – a pattern that was already discussed by Jackson Turner in the nineteenth century – such areas have tended to experience greater difficulty raising fiscal revenue, committing to the provision of universal public goods over selective distributive benefits, and establishing the universal rule of law. Hale's (2006) analysis of clientelism across regions of Russia shows a distinct frontier bias in the prevalence of clientelist institutions, while studies of clientelism in Brazil have long noted its increased prevalence in the north and west (Ames 1987; Graham, 1990; Hagopian 1996).

V. Conclusion

This paper suggests that the frontier exists as an empirical phenomenon, and that the study of frontier zones can provide useful information in understanding processes of historical state formation. Frontier zones today appear to be characterised by a deficiency of state capacity, as reflected in poor delivery of public goods and lower rule of law. Second, because of the distinctive values of the settler population, notably their greater egalitarianism, individualism, and nationalism, frontier zones tend to be characterised by populist, anti-elitist, and nationalistic political movements, and electoral cleavages between the core and frontier zones are common in frontier nations. This difference in state capacity between frontier and core regions, we suggest, is not an anomaly of interest only among area scholars of North America, Russia, or Brazil. Rather, it reflects a broader phenomenon that exists across a large subset of states – frontier states – that represent a significant subset of countries in the world today. In Latin America, Australasia, southern Africa, China, upland southeast Asia, and northeastern India, there are states that have formed through deliberate settlement and displacement among peripheral zones, and which are likely to exhibit similar core and periphery dynamics.

The consequence gap in capacity between core and peripheral regions, we argue, is unlikely to be a simple consequence of existing explanations for state capacity; including ethnolinguistic diversity, socio-economic modernization, or legacies of direct or indirect rule (Alesina et al. 2004, Mamdani 1996). The large aggregate gaps between core and peripheral regions in surveyed policy preferences, instead, suggests path-dependency of early provision by social institutions, and the
selection effect of settlers towards anti-social and in particular anti-state preferences. Finally, the combination of stronger social institutions, but also weaker formal mechanisms for sustaining public order and the delivery of public goods in frontier zones, calls into question social capital theories that posit a positive-sum relationship between these factors. As emphasized by scholars such as Migdal (1988), there can just as easily be a negative relationship between social institutions for delivery of public goods and state capacity, in circumstances where social preferences favor private over collective provision.
3 Bibliography


Sarmiento, Domingo F. 1845. Facundo: Civilization and Barbarism. Translated by Mary Mann, as Life in the Argentine Republic in the Days of the Tyrants; or, Civilization and Barbarism.


Table 1. Descriptive Statistics: Homicide, Infant Mortality, GDP per capita

<table>
<thead>
<tr>
<th></th>
<th>Homicide rate</th>
<th>Infant Mortality</th>
<th>GDP per capita (nom. $)</th>
<th>Ethnic Fractionalization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>frontier</td>
<td>core</td>
<td>frontier</td>
<td>core</td>
</tr>
<tr>
<td>Russia</td>
<td>17.55</td>
<td>8.54</td>
<td>8.79</td>
<td>7.53</td>
</tr>
<tr>
<td>Canada</td>
<td>2.7</td>
<td>1.3</td>
<td>5.0</td>
<td>4.7</td>
</tr>
<tr>
<td>Brazil</td>
<td>29.25</td>
<td>28.11</td>
<td>19.88</td>
<td>15.79</td>
</tr>
<tr>
<td>United States</td>
<td>4.11</td>
<td>4.94</td>
<td>6.34</td>
<td>5.94</td>
</tr>
</tbody>
</table>

Note: Due to the small population size of some frontier territories, all figures have been population-weighted. This is to prevent outlier regions from leveraging the averages. Averages shown here are therefore for average for the frontier and non-frontier zone, as if each were treated as a single, unified entity.
Table 2. OLS Regression, Homicide per 100,000

<table>
<thead>
<tr>
<th>Dependent variable: homicide rate</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frontier (0/1)</td>
<td>3.438***</td>
<td>3.225**</td>
<td>3.189**</td>
<td>3.397**</td>
</tr>
<tr>
<td></td>
<td>(1.022)</td>
<td>(1.047)</td>
<td>(1.029)</td>
<td>(1.033)</td>
</tr>
<tr>
<td>GDP per capita ($,000)</td>
<td>0.052</td>
<td>0.044</td>
<td>0.048</td>
<td>0.047</td>
</tr>
<tr>
<td></td>
<td>(0.053)</td>
<td>(0.054)</td>
<td>(0.052)</td>
<td>(0.055)</td>
</tr>
<tr>
<td>Gini coefficient</td>
<td>-42.181*</td>
<td>-44.194*</td>
<td>-44.413*</td>
<td>-42.624*</td>
</tr>
<tr>
<td>Ethnic Fractionalization</td>
<td>5.318</td>
<td>5.107</td>
<td>5.889</td>
<td>7.313</td>
</tr>
<tr>
<td></td>
<td>(3.638)</td>
<td>(3.66)</td>
<td>(3.637)</td>
<td>(7.26)</td>
</tr>
<tr>
<td>Historical Indirect Rule (0/1)</td>
<td>0.748</td>
<td>0.39</td>
<td>0.322</td>
<td>1.421</td>
</tr>
<tr>
<td></td>
<td>(1.827)</td>
<td>(1.863)</td>
<td>(1.858)</td>
<td>(2.8)</td>
</tr>
<tr>
<td>Fractionalization*Indirect Rule</td>
<td></td>
<td></td>
<td>-2.567</td>
<td>(8.076)</td>
</tr>
<tr>
<td>Canada</td>
<td>-29.157***</td>
<td>-29.192***</td>
<td>-29.124***</td>
<td>-29.215***</td>
</tr>
<tr>
<td></td>
<td>(3.725)</td>
<td>(3.795)</td>
<td>(3.671)</td>
<td>(3.74)</td>
</tr>
<tr>
<td></td>
<td>(2.596)</td>
<td>(2.702)</td>
<td>(2.593)</td>
<td>(2.604)</td>
</tr>
<tr>
<td></td>
<td>(2.45)</td>
<td>(2.47)</td>
<td>(2.402)</td>
<td>(2.473)</td>
</tr>
<tr>
<td>(Intercept)</td>
<td>43.484***</td>
<td>45.082***</td>
<td>44.941***</td>
<td>43.344***</td>
</tr>
<tr>
<td></td>
<td>(10.299)</td>
<td>(10.593)</td>
<td>(10.238)</td>
<td>(10.337)</td>
</tr>
</tbody>
</table>

n          171     168     171     171
adj. r-square 0.636   0.636   0.645   0.634

Notes: Model (1) contains full-sample regression. Model (2) uses a restricted sample, of only cases with population above 100,000. Model (3) applies regression weights, weighting by log population.
Table 3. OLS Regression, (Log) Infant Mortality

<table>
<thead>
<tr>
<th>Dependent variable: infant mortality rate</th>
<th>Model 5</th>
<th>Model 6</th>
<th>Model 7</th>
<th>Model 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frontier (0/1)</td>
<td>1.069*</td>
<td>0.996*</td>
<td>1.078*</td>
<td>1.065*</td>
</tr>
<tr>
<td></td>
<td>(0.472)</td>
<td>(0.469)</td>
<td>(0.476)</td>
<td>(0.478)</td>
</tr>
<tr>
<td>GDP per capita ($,000)</td>
<td>-0.087***</td>
<td>-0.103***</td>
<td>-0.096***</td>
<td>-0.087***</td>
</tr>
<tr>
<td></td>
<td>(0.031)</td>
<td>(0.03)</td>
<td>(0.031)</td>
<td>(0.031)</td>
</tr>
<tr>
<td>Gini coefficient</td>
<td>18.519†</td>
<td>20.184*</td>
<td>20.989*</td>
<td>18.467†</td>
</tr>
<tr>
<td></td>
<td>(9.685)</td>
<td>(9.602)</td>
<td>(9.627)</td>
<td>(9.751)</td>
</tr>
<tr>
<td></td>
<td>(1.679)</td>
<td>(1.638)</td>
<td>(1.682)</td>
<td>(3.435)</td>
</tr>
<tr>
<td>Historical Indirect Rule (0/1)</td>
<td>2.74**</td>
<td>2.659**</td>
<td>2.684**</td>
<td>2.8*</td>
</tr>
<tr>
<td></td>
<td>(0.851)</td>
<td>(0.842)</td>
<td>(0.869)</td>
<td>(1.294)</td>
</tr>
<tr>
<td>Fractionalization*Indirect Rule</td>
<td></td>
<td></td>
<td></td>
<td>-0.238</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(3.825)</td>
</tr>
<tr>
<td>Canada</td>
<td>-10.64***</td>
<td>-10.18***</td>
<td>-10.023***</td>
<td>-10.653***</td>
</tr>
<tr>
<td></td>
<td>(1.808)</td>
<td>(1.787)</td>
<td>(1.797)</td>
<td>(1.826)</td>
</tr>
<tr>
<td>Russia</td>
<td>-7.503***</td>
<td>-7.53***</td>
<td>-7.217***</td>
<td>-7.504***</td>
</tr>
<tr>
<td></td>
<td>(1.201)</td>
<td>(1.213)</td>
<td>(1.203)</td>
<td>(1.205)</td>
</tr>
<tr>
<td></td>
<td>(1.222)</td>
<td>(1.199)</td>
<td>(1.213)</td>
<td>(1.226)</td>
</tr>
<tr>
<td>(Intercept)</td>
<td>8.652†</td>
<td>8.209†</td>
<td>7.427†</td>
<td>8.643†</td>
</tr>
<tr>
<td></td>
<td>(4.752)</td>
<td>(4.743)</td>
<td>(4.736)</td>
<td>(4.769)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>170</td>
<td>167</td>
<td>170</td>
<td>170</td>
</tr>
<tr>
<td>adj. r-square</td>
<td>0.703</td>
<td>0.72</td>
<td>0.708</td>
<td>0.701</td>
</tr>
</tbody>
</table>

Notes: Model (1) contains full-sample regression. Model (2) uses a restricted sample, of only cases with population above 100,000. Model (3) applies regression weights, weighting by log population.
Figure 1. Frontier Regions of Four Countries

Frontier Regions of the United States
The West South Central region, which includes Texas, has been included in its entirety, despite that this also brings in Louisiana, Arkansas, and Missouri; this was considered acceptable on account of the low population density of the latter states in 1850, and the relatively greater weight of Texas in the analysis, on account of its larger population. California did not qualify as a frontier due to the already high population settlement in the year of calculation (1850).

Frontier Regions of Canada
Frontier regions of Canada. Frontier regions are shown in dark, and include the provinces of Alberta, Saskatchewan, Manitoba, and British Columbia, and the territories of Nunavut, Yukon and the Northwest Territories.

Frontier Regions of Brazil
Frontier regions of Brazil. All the Amazonian regions of the Northwest are included, as well as the interior regions of the Centre-West. The coastal regions of Northeast, Southeast and the South are excluded. The coastal regions of the South are not considered frontier areas for the purpose of this project, as these were among the second wave of settlement in the late nineteenth century.

Frontier Regions of Russia
The frontier regions of Russia include the Eastern regions of Siberia and the Far East, together with the Arctic regions of the North, all of which, in spite of scattered and tentative settlement in the Russian imperial period, only became settled *en masse* in the twentieth century.
Figure 2. Higher Voluntary Association in Frontier Regions

Figure 3. Greater Libertarianism in Frontier Regions

Which of these views is closer to your own: ‘1’ Government should take more responsibility, ‘10’ Individuals should take more responsibility for themselves?

Which of these views is closer to your own: ‘1’ Competition is good, it stimulates people to work harder ‘10’ Competition is harmful, it brings out the worst in people?
Figure 4. Vote Share for “Popular Right” Parties in Frontier Countries

Vote Shares for the New Conservative Party, Canada (2011 Election)
Vote Shares for Republican (McCain-Palin) Ticket, 2008 Presidential Election

Vote Shares for the Liberal Democrat (Nationalist) Party, Russia (2008 Election)

Figure 5. Homicide Rates across Frontier/non-Frontier Regions
Figure 6. Public Goods Provision Across Regions of Russia

Slum Housing as a Percentage of Inhabitants per Doctor Total

Children per Educational Place Hospital Beds per Capita (Ratio)

Dark colours indicate lower public goods provision.
Figure 7. Public Goods Provision Across Regions of Brazil

Doctors per 10,000 population, 2001

Immunisation Rate, Children under 1 year of age

Dark colours indicate fewer doctors per capita. Frontier regions perform notably worse than non-frontier regions on this measure.

Dark colours indicate a lower immunisation rate. Frontier regions perform notably worse than non-frontier regions on this measure.