Big BRICs, Weak Foundations: The Beginning of Public Elementary Education in Brazil, Russia, India, and China*

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Abstract

Our paper provides a comparative perspective on the development of public primary education in four of the largest developing economies circa 1910: Brazil, Russia, India and China (BRIC). These four countries encompassed more than 50 percent of the world's population in 1910, but remarkably few of their citizens attended any school by the early 20th century. We present new, comparable data on school inputs and outputs for BRIC drawn from contemporary surveys and government documents. Recent studies emphasize the importance of political decentralization, and relatively broad political voice for the early spread of public primary education in developed economies. We identify the former and the *lack* of the latter to be important in the context of BRIC, but we also outline how other factors such as factor endowments, colonialism, serfdom, and, especially, the characteristics of the political and economic elite help explain the low achievement levels of these four countries *and* the incredible amount of heterogeneity within each of them.

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1. Introduction

Economists have argued that the "Great Divergence" between the developed and underdeveloped world in the 19th century was reinforced – if not caused – by rapid improvements in schooling that occurred in the advanced economies. For example, the leading positions of the US and German economies in 1900 have been linked to their highly developed education systems (Goldin and Katz, 2008; and Becker et al., 2009). Few nations in the last century have undergone growth convergence without *also* experiencing sustained increases in human capital investment. Therefore, explaining differences in economic development today may hinge on understanding why most societies *failed* to develop adequate primary education in the late 19th and early 20th centuries.

This challenge was laid down by Richard Easterlin in "Why isn't the Whole World Developed?" his famous 1980 presidential address to the Economic History Association (Easterlin, 1981). Thirty years later, our paper takes up this challenge. Unlike most comparative research on the economic history of education, which focuses on differences among developed societies, or between developed and developing countries, our paper investigates the limited provision of public primary schooling in four of the largest *developing* economies at the turn of the 20th century: Brazil, Russia, India and China (BRIC).[1] These countries comprised more than 50 percent of the world's population in 1910, but only 15, 23, 10, and 4 percent of school-age children in Brazil, Russia, India and China, respectively, were enrolled in primary school, compared to more than 80 percent in Germany, UK and the USA.[2] A comparative study of the

[1] Important recent works that do take a broader comparative perspective on the emergence of mass schooling include Frankema (2010) and Lindert (2004 and 2010).
[2] See Table 1. Note that Lindert's figures slightly differ from the the ones we provide. This stems from different geographic units he considers, as well as different assumptions about the size of the school-age population.

slow emergence of public schooling in BRIC offers a valuable contrast to works that focus on more advanced nations.

Collectively, these four countries enjoy recognition today for their common status as fast growing emerging economies. But their relevance for studying the origins of public primary education in the late 19th and early 20th century lies in their level of comparative economic *and* political underdevelopment, the large scale and variability of their politics and geography, and the availability of previously unexplored data on basic schooling. The main contribution of our paper lies in presenting an analytical framework to understand new empirical evidence on the variation of educational development within and between these four different societies. Investigating the heterogeneous experiences of the four countries is not useful because of the BRIC acronym's modern connotations, but because it broadens the discussion of Easterlin's important question. We also view the BRIC experiences as representative of the majority of the world that had limited publically provided schooling by the early 20th century.

Conditions in BRIC were fundamentally different from the more educationally advanced countries by the late 19th century. Clearly, high incomes and structural economic changes increased the demand for schooling in the United States and Germany, but broad political participation also played an important complementary role in these and other successful cases of early publicly financed primary education (Lindert, 2004; and Gallego 2010). In more advanced economies, the spread of primary education typically entailed a shift towards more progressive tax policies and away from the private provision of schooling. Granting larger shares of the population formal voice over education and fiscal policies prevented elites from blocking the expansion of publically funded mass schooling. The impact of democracy was also reinforced by the relative homogeneity of the populations (in terms of income, ethnicity and religion), which

enabled majorities to coalesce around support for public schools (Go and Lindert, 2010; and Goldin and Katz, 2008).

Unlike these successful cases, BRIC was less developed, had more restricted political participation, and, exhibited low levels of public schooling despite decentralized political structures of education financing. As with most of the world in the early 20th century, these developing economies exhibited low per capita incomes, which limited private and public funding for primary schooling. Although these primarily agrarian economies may have had limited demand for high skilled labor, and rural households may have faced substantial opportunity costs to educating their children, the returns to basic education may have been relatively high amidst technological changes in the agricultural sector.[3] But even accounting for low incomes and potentially low demand for education, we argue that a political economy framework involving public sector capture by local elites helps explain not only the limited overall supply of schooling in BRIC but also the variation within and between the four countries.

In the face of weak central authorities**,** decentralization of education led to the capture of local public resources and political institutions by elites in all four societies. Resources were often funneled towards private or secondary education catering to the elites, and poor communities were forced to rely on scarce public funds or voluntary private contributions to finance primary schools. This only worsened the limited supply of public schools. But, we do not assume a unified elite was always trying to block expenditures on education because decentralization and subsequent local elite capture did not always constrain the development of primary schooling. In more commercial developed, higher-growth areas, where there was more

[3] Source limitations prevent us from identifying and comparing the returns to education in BRIC in our time period, but Schultz (1971 and 1983) and others have argued for relatively high returns to literacy and basic numeracy in developing agricultural economies. We acknowledge but do not take up the issue of child labor in our four socieites.

demand for education, many elites supported the expansion of mass schooling because they needed skilled labor and could more easily afford the resulting taxes. In other areas, elites supported public education because they perceived direct political benefits. Finally, in all four cases, changes in the composition of, and mobility into and out of, the elites – whether defined by wealth, status, or political power – influenced the support for publically financed primary education.

The composition and policy preferences of local elite varied across and within BRIC according to economic conditions, barriers to entry into elite circles and the (endogenous) progressiveness of the fiscal structure. In applying a common political economy framework, a key contribution of our study is to characterize the heterogeneity of the elite (or in the economic and political conditions they faced) within and across each country and relate how such variation accounts for the differences in educational outcomes. We also show how the mechanisms of elite control of education were delineated by the structure of central – local government relations. From Brazil's adoption of federalism in the 1891 Constitution, to the deterioration of central authority in China in the late-Qing and the Republican periods, to British colonialism in India, the national governments in our countries generally exhibited little substantive involvement in basic education. Only in the case of Tsarist and Soviet Russia after 1900 were central authorities directly active in subsidizing the local provision of primary schooling.

We develop our argument in three steps. First, we present and discuss data on primary school enrollment rates and expenditure levels for BRIC and a set of comparison countries, circa 1910. Drawing on a variety of unexplored contemporary publications and official sources, we move beyond simple cross-country comparisons to also report and comment upon within-country variation in BRIC. In the second step, we outline a simple theoretical framework explaining how

the provision of public education in developing societies might be subject to capture by local elites. A key insight is that heterogeneity among elites is an important factor behind variation in schooling, especially in the contexts of decentralized policymaking and imperfect local democracy that characterized all of our cases. The third step of the analysis applies this theoretical framework to analyze early development of public primary education in Brazil, Russia, India, and China, roughly over the period 1880-1930. While acknowledging the overall negative effects of low incomes, we show how variation in income, economic and political conditions, and the social status of the elites interacted with decentralized fiscal policies across the four countries to influence the provision of public primary education.

2. Comparative Perspective

In Table 1 we present data on primary education from BRIC and a set of comparison countries around 1910. We include high-income countries such as England, Germany, and the United States; middle-income European countries such as Italy and Spain; Japan – the leading economy in Asia at the time; other middle-income countries such as South Africa, Uruguay, Chile, and Mexico; and several low-income countries like Peru, Jamaica, and Sri Lanka. We derived the education data for BRIC from surveys, government reports, and other contemporary materials, while the data for the other countries come from a contemporary report by the Commissioner of the U.S. Department of Education (United States, 1910).[4] We match these indicators to Maddison's (2006) per capita income figures and to Lindert's (2004) enrollment rates for comparison.

[4] There are a variety of other sources on education attainment and investments that cover our time period (e.g. Frankema, 2009; Lindert, 2004; and Morrison and Martin, 2009), but we focus on the sources and countries documented in Tables 1-3 because we view them to be representative. Extending the sample in Table 1 in different ways does not dramatically affect the points we are making here.

[Insert Table 1 about here]

Table 1 starkly reveals the low education levels and expenditures in BRIC relative to the rest of the world. Estimated primary school enrollment rates averaged 9.9 percent, well below the less developed parts of Europe (Italy – 40.3 percent, Spain – 50.7 percent), middle-income countries in Latin America (Chile – 29.2 percent, Mexico – 27.8 percent), and even poorer countries such as Jamaica (53.5 percent) and Peru (19.5 percent).[5] The poverty of BRICs was clearly an important factor driving the low enrollment rates, as GDP per capita averaged a mere $762 for BRIC in 1913. But income alone cannot fully account for the observed differences in educational performance. A graph of enrollment rates against income in Figure 1 suggests that primary school enrollment rates in BRIC were perhaps below what would be expected given their income levels.[6] Although not definitive evidence, this picture is representative of the late 19th and early 20th centuries.[7]

[5] We measure enrollment rates as the number of enrolled children in public primary schools over the total school-age population, which we proxy with 20 percent of the total population for each country. For India, Brazil, and Russia, where we have some idea of the age structure of the population for nearby years, 20 percent turns out to be a reasonable assumption for 5-14 year olds. However, Lindert's (2004) enrollments – which are based on census population figures – suggest that for some countries, our figures may be over or underestimates. We acknowledge this, but we feel that the within- and cross-country variation in enrollments is not substantially affected by the choice of denominator. "Primary students" refers to students in surveyed institutions of basic or elementary education below secondary schools. The original data gatherers may have missed some schools, but we are confident that our measures for BRIC are improvements on the existing literature. Finally, note that the data for BRIC are meant to cover *public* primary schooling and expenditures only (i.e. schooling financed out of fiscal resources), but some of the other sample countries may include some private schooling. To a limited degree, we take up the issue of private schooling in the case studies.

[6] Additional evidence that income cannot explain all of the gaps in schooling *within* Brazil, Russia, India, and China may be found in Martinez-Fritscher et al., 2010; Nafziger, "Financing," 2011; Chaudhary, 2009 and 2010; and Bai and Kung, 2011. The comparison between Sri Lanka and Guatemala is frequently offered in development textbooks to illustrate this point. Both countries have enjoyed similar GDP per capita for many years, but mean school attainment in Sri Lanka was over 8 years compared to roughly four years in Guatemala as of 2010 (UNDP, 2010).

[7] As the vast majority of primary schools in BRIC possessed a single classroom, small BRIC school sizes as defined by total enrollment per total teachers (Table 1) – compared favorably to the rest of the world, although one must be cautious in drawing strong conclusions from such an indicator. Such a measure says nothing about the quality of instruction. Moreover, because we are measuring school size with students per teacher, we may be missing the emergence of a small number of multi-grade schools in BRIC. Recent work by McKinnon and Minns (2009) shows that the shift to multi-grade schools in British Columbia led to substantial improvements in educational outcomes in the early 20th century. At minimum, the relatively low student-teacher ratios in BRIC indicate that the small number of students who did manage to attend school received somewhat more face time with teachers than in other societies.

[Insert Figure 1 about here]

When it comes to primary school expenditures, we find similar patterns. BRIC averaged $6.20 per school age child (1990 dollars), compared to over $300 in the United States and over $23 in Japan and Mexico.[8] Brazil was the leader among BRICs, spending $24 per child, followed by Russia at almost $23. India and China – two of the three poorest countries in our sample – spent only $2 per child. However, unlike per capita expenditures or enrollment rates, primary school expenditures per student were relatively high in BRIC. On average, BRIC spent over $63 per enrolled student, higher than Spain, Japan, and close to the level in Italy. While BRIC countries enrolled less than 1 in 10 children of primary school age, the enrolled students enjoyed relatively high expenditures. This, in combination with relatively low incomes and enrollment rates, helps explain the variation in Figure 2, which unpacks a version of Lindert's (2010) "public support ratio" for our sample countries. Brazil – and Russia and China to a lesser degree – showed greater public expenditures on enrolled students out of per adult GDP than did other countries in our sample (Table 1).[9] The place of each member of BRIC in Figure 2 is explainable by several factors, but we emphasize the comparable role played by elite control of the public purse strings in the case studies below.

[Insert Figure 2 about here]

In addition to the similarities and differences in outcomes between BRICs and the rest of the world, there was enormous variation in educational outcomes (enrollments) and inputs (expenditures) *within* BRIC. Table 2 reports primary school enrollment rates by region or province highlighting the wide variation in each country. The provinces in Brazil and India with

[8] The BRIC values are population-weighted means.
[9] Lindert (2010) defines this support ratio in a number of ways – the results in Table 1 only differ by a constant factor if per capita income is used. Lindert frames this ratio as a measure of public support for education, although he notes that interpretation is more complicated, especially when enrollment rates are low as in BRIC.

low levels of enrollment had comparable enrollment to the typical province in China. Yet provinces with above average enrollment in Brazil or India look more like Russia, which had a much higher GDP per capita. It is worth noting that these numbers are themselves averages over very large regions – in the Russian case, individual provinces had enrollment rates as low as 15 percent (Ufa) and as high as 58 percent (Petersburg).

[Insert Table 2 about here]

The substantial heterogeneity is also on display in Table 3, which shows the variation in elementary expenditures per children of school age within BRIC. In the richer regions of Russia, such as the Baltic and Capital (Moscow and Petersburg) provinces, spending was almost double the level in the less developed interior regions. In Brazil the variation was such that in rich states like São Paulo the level of expenditures per children was higher than in any province or region in Russia.[10] Yet the poorest provinces in Brazil had expenditures of less than 30 cents per child. Although the mean level of spending is lower, the patterns are similar for China and India. Less developed parts of British India such as United Provinces were spending less than 10 cents of a dollar per child compared to 43 cents in Bombay. The variation is large for China: Henan province spent 7 cents per child compared to $1.36 in Liaoning province.

[Insert Table 3 about here]

Admittedly, such intra-country variation was not uncommon in the early 20th century. In 1907, spending per school-age child varied from less than $5 in Mississippi and South Carolina to more than $40 in Nevada and Washington (U.S., 1910). The coefficient of variation for state-level spending per capita on primary education in Mexico in 1907 was 0.73 (Mariscal and

[10] Note that while these expenditures are in comparable 1910 dollars, they do not take into account differences (across or even within countries) in the relative costs of educational inputs such as school buildings, instructional supplies, and teacher salaries. Incorporating such differences into cross-country comparisons is an important topic for future research.

Sokoloff, 2000). Although we do not explore the variation in schooling expenditures in these countries, scholars of the United States (e.g. Go and Lindert, 2010; Margo, 1990; and Naidu, 2010) and Latin America (e.g. Mariscal and Sokoloff, 2000; and Vaughan, 1982) do note that political factors – policy decentralization, the extent of the franchise, etc. – contributed towards this heterogeneity. We draw on these insights in sketching our framework in the next section.

3. Towards a Theoretical Framework

In this section, we outline how three interrelated political factors – democratic mechanisms of governance (even if imperfect); fiscal and policy decentralization; and the power, preferences related to the exclusiveness of the economic and political elite – influenced the development of publicly funded mass schooling in the 19th and early 20th centuries.[11] Of course, we recognize that other reasons such as the levels of personal and government incomes, the relative demand for skilled workers, the availability of private alternatives and cultural factors were also relevant. In the case studies, we try to take these other factors into account, but here we focus on developing a political framework to understand what transpired in BRIC.

The emergence of public education in more developed economics has often been tied to the broadening of democracy in the 19th century. Before the extension of the franchise in Western Europe and its offshoots, national political and economic elites saw little need to redistribute fiscal resources towards education and resisted state policies to support mass schooling. Even where some form of representative politics existed, it was often limited to a select few in what Lindert (2004) has termed an "elite democracy." But as property

[11] We focus on primary enrollments and educational expenditures rather than compulsory schooling, gender equality, or other public policy initiatives.

qualifications and other voting restrictions were lifted, the political economy shifted in favor of more redistributional policies, including publically provided education.[12]

It was the decentralization of school policy and financing that enabled the early development of mass schooling in the 19th century in countries such as Prussia and the United States. In theory, decentralization allows for a tighter fit between local preferences and policies, and a closer monitoring of politicians by constituents.[13] When decentralization includes the devolution of fiscal authority (i.e. by allowing for local taxes), this may ease the budget constraints of local governments. In both Prussia and the United States (as well as in Canada and, later, Japan, the United Kingdom, and elsewhere), the responsibility of financing public schooling was devolved to local authorities.[14]

While Prussia – and later Imperial Germany – retained central oversight of primary education, public schooling in the United States was entirely left to states and communities.[15] The complete decentralization of schooling to local authorities meant that communities in the North and Midwest, with relatively representative politics, homogenous populations, and high incomes, were increasingly willing to finance public education through property taxes over the

[12] Acemoglu and Robinson (2000) and Lizerri and Persico (2004) study the expansion of the franchise in the 19th century. Aidt et al. (2006), Gallego (2010) and Lindert (2004) provide cross-country evidence of positive relationships between various measures of democratization and school enrollments and public spending on primary education in the long 19th century. Engerman, Mariscal and Sokoloff (2009) document how variation in the provision of schooling in late 19th early 20th century Latin America was related to the extent of voting rights. Stasavage (2005) provides modern empirical evidence for a link between democratization and primary school support across Africa.

[13] On the various forms of decentralization and the costs and benefits that they entail in modern developing countries, see the chapters in Bardhan and Mookherjee, eds. (2006).

[14] On public school provision in Prussia and the United States, see Lindert (2004) and Go and Lindert (2010).

[15] From the 18th century onwards, the highly centralized Prussian state mandated that local governments provide public schools according to a national model, an approach that was strengthened after Napoleon and was eventually adopted in Meiji Japan (Duke, 2009). The decentralization of financial authority that this required – whether conducted through local governments or the church – was effective in generating relatively high enrollment rates by the mid-19th century (Herbst, 2002; and Lindert, 2004). Post-Napoleonic France enacted a strongly centralized school system that required departments and local communities to create and fund public schools. After Falloux's Law was passed in 1850, special education taxes were supposed to be enacted by each community, although central government subsidies were also available (Grew and Harrigan, 1991). Lindert (2004) notes the lagging education performance of the United Kingdom was due, in part, to the inadequacy of decentralized fiscal resources before the Fees Act of 1891.

19th century (Go and Lindert, 2010; and Goldin and Katz, 2008).[16] In contrast, racial biases and unequal political rights in the South resulted in unequal local funding of schooling for African Americans and lower overall expenditures on public education (Margo, 1990; and Naidu, 2010).

This relates to the third element of our framework – the role played by elites in the functioning of local governments. Well-functioning local democracies can overcome elite resistance to decentralized and publically financed schooling via political channels.[17] But decentralization does not always lead to more provision of public goods such as education when local institutions and hence policymaking are controlled by an elite minority with interests that possibly diverge from the majority (Bardhan, 2002).[18] The availability of private schools combined with the necessary taxes to support public education would generally reduce elite support for mass education.[19] Moreover, local elites may constrain educational opportunities to limit upward mobility into elite circles, allowing them to hold on to power, even if a broadening of education would fuel economic development (Acemoglu and Robinson, 2006).[20]

At the same time, exactly who comprises the "local elite," and their preferences regarding publically financed schooling, may be very different in different places and may change within a society over time. For example, commercial interests, civic involvement, fears of unrest, or other

[16] From private tuition and "rate bills" of the early 19th century, the decentralized provision of primary education in the United States increasingly became more "public" with the installation of state and local property taxes under the control of communities and local school boards.

[17] Mariscal and Sokoloff (2000) and Engerman, Mariscal, and Sokoloff (2009) emphasize that the highly unequal societies of late 19th century Latin America led to elite capture of local and national governments and the formation of institutions – including school systems – that perpetuated the inequality. They contrast this with relatively equal societies of northern United States and Canada. The political economy model of Go and Lindert (2010) – which assumes a well-functioning local democracy – generates a positive relationship between inequality and support for public schooling in the 19th century U.S. because the wealthy, taxable elites were in the minority.

[18] Wenegast (2010) argues that the traditional landed elite strongly resisted mass schooling in Imperial and Republican Brazil. As Bandiera and Levy (2010) have also recently pointed out, an elite may be able to take advantage of preference heterogeneity among the poor majority in a party-based democracy to shift policy outcomes in their favor.

[19] For a formal model of how private school alternatives affordable only to the elite may limit public investments in schooling under imperfect democracy, see De la Croix and Doepke (2009).

[20] In this sense, local or national religious "elites" in many European countries may have resisted efforts at creating publically funded secular schooling in the late 19th century (West and Woessman, 2008).

idiosyncratic factors may make some elites willing or especially unwilling to expand educational (and political) opportunities to the local population. Furthermore, significant differences may exist between "national elites" and local ones, and the problem of elite capture may also vary between levels of government. As a result, national policies may aim to undermine local elite resistance to public schooling or other forms of redistribution.[21] Alternatively, weak central governments may create openings for local elites to enact their own education reforms.

Differences in what constituted the "elite" in each country are key to understanding the variation in the development of schooling across BRIC. Most models of the provision of public education assume an undifferentiated elite, defined by wealth or political power (i.e. Gallego, 2010; or Galor and Moav, 2006).[22] Hence, such models tend to generate at most two equilibriums – one without mass schooling (and privately provided education) and one with publically financed education, with "democratization" or other macro factors shifting the equilibrium from one to the other. In contrast, we argue and provide evidence that local and national elites, or rather their preferences, varied across the four cases. Consequently, elite capture – i.e. the shift of policies away from those preferred by the majority – under decentralized policymaking resulted in multiple "equilibriums" in the provision of schooling.

As we describe below, Brazil, Russia, India, and China had very different political structures by the early 20th century. Although each country possessed some form of "elite democracy," none of the countries allowed broad representation in policymaking bodies.[23] The absolutism of Qing China gave way to some elected bodies after the 1911 revolution, but these

[21] Prussia and Meiji Japan possessed strong, centralized governments that enacted and enforced decentralized school provision across widely varying constituencies.

[22] Ansell (2010) offers a formal model of public schooling that assumes an existence of an elite that do not wish to be taxed to finance schooling for the non-elite (due to the cost and to the loss of scarcity rents from skilled labor). He defines the elite in terms of wealth only. Zhuravskaia

[23] The Polity IV database gives a democracy score of 1 / 10 for Brazil, Russia, and China in 1910. As a colony, British India was not given a score. See Marshall et al., 2009.

highly circumscribed bodies gave little voice to the non-elites. Colonial India had no substantive elections before 1919, and British officials chaired provincial and local councils with some feedback from appointed locals. In Russia, while some provinces possessed quasi-representative local governments after 1864, and an elected national assembly existed after 1906, the nobility continued to hold sway in both institutions. After 1889, Brazil possessed national elections with a restricted and easily co-opted electorate dominated by various elite groups.

At the same time, central governments in all four countries largely absolved themselves from the direct provision of public education and substantial autonomy was devolved, formally or by default, to local government institutions. In post-1889 Brazil, a strong form of federalism entailed the devolution of fiscal authority – especially export tax revenues – to provinces, which contributed to extreme inter-regional disparities in education spending and outcomes. The creation of the *zemstvo* in much of European Russia transferred some property taxes and authority over how to spend them into local government hands. While central colonial authority was strong in British India, the provision of education was decentralized to local councils, but without any tax authority. In China, decentralization was more accidental than policy driven. Political instability in the late Qing and the Republic allowed local actors to take military or political power relative to the central authorities.

In such decentralized polities with little or limited democracy, elites were able to capture local governments and influence education policy. With relatively low per capita incomes, the unwillingness of most elites to engage in redistributive policymaking led to low public financing of primary education, as most models of the political economy of education would suggest (e.g. Ansell, 2010). But variation in local economic and social conditions, as well as heterogeneity within the elite, meant that the willingness (or ability) to fund mass schooling differed from place

to place and over time. Furthermore, the possibility of mobility into and out of the elite likely influenced policies towards advancing education. Traditional local elites – often with roots in land ownership – were under political and economic pressure from newer groups of elites with closer ties to more modern sectors of the economy.

4. Case Studies of Public Primary Education in Brazil, Russia, India, and China: 1880-1930

We do not wish to oversell the comparison between developments in these large countries because each possessed a primary school system that arose from a specific historical context. We focus on one set of political mechanisms but acknowledge that a number of other factors – from incomes to religion – may have been equally important. That said, we do see important parallels in the development of publically financed education in each of the four countries. In this section, we draw on our theoretical framework to show how, under limited democracy and decentralized political institutions, local socio-economic and elite characteristics dictated the level of school provision. In the conclusion, we discuss the similarities and differences between the four cases and describe how the development of education in these and other less developed and less democratic countries departed from the model of the United States and other successful nations by the early 20th century.

4.1 Brazil

After independence in 1822, the provision of elementary education in Brazil was decentralized. The Constitution of 1824 put states in charge of providing publically funded elementary education, with some transfers coming from the central government.[24] Yet these

[24] Prior to 1889, state-level legislation often put the actual provision of schools and teachers in the hands of municipalities and other local government bodies. These entitites relied on a a variety of local revenue sources, including commidity, property, and commercial taxes. For a brief discussion of local public finances in São Paulo in the late 19th and early 20th centuries, see de Carvalho Filho and Colistete (2010).

transfers and other sources of funds available to local governments were relatively low. Hence, between 1824 and 1891, the overall level of expenditures and enrollments remained low. The first education data published in the early 1870s shows that expenditures per school-age child were less than 30 cents and enrollment rates were approximately 12 percent of children of school age (de Carvalho, 1878).[25] At that time, there was also wide disparity in funding per student, enrollment, and literacy across states. Literacy rates fluctuated from 12 percent in states like Minas Gerais and Paraíba to 26 percent in Pará and Paraná.

A significant decentralization of public finances occurred after 1891. Before the Constitution of 1891, the federal government collected the majority of taxes (mostly from exports and imports) and spent most of the total budget in the capital or on defense (Villela, 2007). This Constitution gave states the sole right to tax exports, property, industries and professions, land transfers, and other transactions. Just the transfer of the right to tax exports from the central government to the states significantly increased tax revenues at the state level (Martinez-Fritscher, 2009). Furthermore, articles 55 and 56 of the new Constitution also gave autonomy to municipalities to organize public finances, collect taxes, and spend on schools if they wished to do so.

Following fiscal decentralization, the elementary school system in Brazil improved steadily over the four decades of the Republic (1889-1930) as states used their new fiscal authority to increase education funding. Literacy went up from less than 20 percent to 40 percent, and enrollment rates went from 12 percent to 23 percent by 1930.[26] Education levels,

[25] Of course, slavery and the limited demand for skilled labor in the agrarian and commidity-driven Brazilian economy likely reduced demand for even basic education in the mid-19th century. Non-state parochial and other private schools remained relatively unimportant for the majority of the Brazilian population over the Imperial and early Republican periods.

[26] There were some efforts at improving the quality of education prior to these changes in fiscal federalism. The Ministry of the Interior pushed for a shift away from the Lancaster system of education and improvements in the quality of teacher preparation. However, the limited resources invested in these efforts reduced their effectiveness.

however, were still low compared to other countries of the period and expenditures per child of school age were small (Table 1). We interpret the high level of expenditures per enrolled student relative to expenditures per school-age child as evidence of the persistent elite bias in publically provided education.

Indeed, variation in education expenditures and enrollment rates within Brazil (Table 3) was closely related to the incentives of political elites at the state level.[27] Topik (1989), and others have emphasized that in the late 19th century, the traditional Imperial landed elite was growing increasingly splintered into local and regional groups, often with ties to new export sectors. Heterogeneity also existed in the extent to which local or state elites were able or willing to capture state and municipal governments. For example, in São Paulo, the close integration of economic and political elites concentrated policymaking in the hands of landed property owners who supported the new Republic (Love and Barickman, 1986).[28] Moreover, variation in the rate of mass political participation in local and national elections influenced the scope of elite capture and education policies in the Republican period.

Before 1889, state politicians had few incentives to provide mass education because the electoral system minimized political accountability and limited participation to a few. Between the 1820s and the 1880s Brazil was a constitutional monarchy with a handpicked senate, and congressmen and municipal governments elected by a few voters who passed the income and literacy requirements to vote. A law of 1881 eliminated indirect elections through electoral colleges and introduced secret ballots and direct elections for all electoral posts (except senate seats). Then, between 1889 and 1890, the Republican movement overthrew the monarchy and

[27] After 1889, the structures of muncipal politics and revenues echoed those at the state level. As a result, many of the factors driving the state-level variation that we emphasize here are evident at the municipal level as well. For example, see the analysis in de Carvalho Filho and Colistete (2010).

[28] Pernambuco, in the northeast of the country, continued to be dominated by a more traditional and conservative landed elite after 1889 (Love and Barickman, 1989).

introduced direct elections for the president and governors. The income requirement to vote was eliminated and replaced with a stricter literacy requirement.[29] The first elections in 1890 were for a Constitutional Congress, which drafted a federalist constitution that dramatically changed the relationship between central and local governments.

After 1889, political participation increased as the income requirement to vote was lifted. States with a larger number of per capita voters saw higher education expenditures (Martinez-Fritscher et al., 2010), suggesting a positive relationship between political voice and education. But this is not the whole story, as not all of the increase in education was the direct result of demands expressed by a wider electorate.[30]

Rather, in order to increase the number of voters that they could mobilize in national elections, we argue that local (state and municipal) politicians increased education spending to expand the number of white males who were literate and, therefore, eligible to vote. The incentive to do this emerged because the federal executive and the ruling coalition in Congress during the Republic were under the control of the Republican parties of the states of São Paulo and Minas Gerais. Elites and their political allies in these and other states used their capacity to mobilize voters in presidential elections as a bargaining chip with this dominant coalition in the federal government. In exchange, they received transfers, less political or military intervention,

[29] After 1889, voters had to write their names and birthdates to get a voter registry card.

[30] The demand for skilled labor by industrialists or the demand for schools by immigrants may have also increased demand for education in particular locations (i.e. São Paulo). These pressures, however, were not that important in Brazil as a whole because industrialization did not occur with technology that was especially complementary with skilled labor (Goldin and Katz, 1998). Moreover, the bulk of immigrants that went to Brazil between 1889 and 1930 came from Italy, Spain, and Portugal (with Germans only in fourth place). de Carvalho Filho and Colistete (2010) find evidence that the presence of more foreign-born farm workers was associated with greater municipal spending on education in São Paulo at the turn of the century, but the local demand for these workers was closely tied to the presence of coffee production. Finally, the abolition of slavery in 1888, which may have changed incentives for investments in human capital, likely affected sugar-producing areas more than elsewhere. For more on the determinants of changes in state education expenditures, see Martinez-Fritscher et al., 2010.

and support during elections against opposition parties in their respective states.[31] Since Congress scrutinized elections and electoral disputes, it was easy for the ruling coalition to disqualify unwanted opposition in state elections (Porto, 2002).

Thus, state politicians spent on education either as a response to popular demands (e.g., according to how extended the franchise was) or as a mechanism of electoral control. The latter point is clear when we consider two states that had high tax revenues per capita and a similar ratio of voters to total population.

The state of Pará had twice the export tax revenues per capita as Sao Paulo, yet it spent less than half of what Sao Paulo spent on education per children. Differences in political participation cannot explain the differences in education expenditures between Pará and Sao Paulo because the former had 5 percent of the population in the electorate while Sao Paulo had 7 percent. The pressure that São Paulo elites felt to mobilize a larger electorate to maintain their federal political power helps explains this difference in expenditures. Competition with other states led São Paulo politicians to increase education spending as a way to increase the number of voters in the short and long run, either through programs for adult education or with spending on basic elementary education and other public services. In contrast, the small political elite in Pará represented the interests of rubber exporters, who were not politicians with national aspirations. There was no significant threat from local opposition or federal authorities to cause the state's governors to increase education spending to mobilize voters for elections.[32] This is just one example, but it is possible to identify common political pressures, sources of wealth, and

[31] On the evolution of electoral politics and this "politics of governors" system in the late 19th and early 20th centuries, see Love (1970). He goes on to note that this quasi-patronage system extended to lower levels of government.

[32] For a description of elite conflict and dominance across states in Brazil see De Souza (1984). Like Love (1970) and others, we emphasize the central policymaking role of the state governors. We estimated electoral participation rates using the voting data reported in the *Diario do Congresso*.

socio-cultural affiliations within a given state that jointly determined the willingness of a local elite to support public education.[33]

In the case of Brazil it is important to emphasize the variation in expenditures on education across states because the majority of investment in education between 1889 and 1930 came from state governments. While the many decisions over building and staffing schools were delegated to community and municipal education officials, municipality-financed schools only held 25 percent of total enrollment in the country at the turn of the century, and most policymaking remained under the authority of the state government. States were able to provide the bulk of public school finances because the majority of them collected significant revenues from taxes on exports; while municipalities collected more limited property and land transfer taxes.[34] Although many elites avoided public schools, enrollment in private schools was only 20% of total primary enrollment, and, over time, municipal and private schools lost shares in total enrollment to state schools.

In sum, the Brazilian case illustrates three main points. First, it confirms the significant variation in expenditures and education outcomes that we see in the other BRIC countries. Second, this variation can be explained by local economic and political factors, especially the level of export tax revenues and differences in political participation. The latter determined whether and how the dominant elite in a state (or municipality) could capture the local electoral system and influence educational policy. Third, even if there were significant improvements in education after 1889 in Brazil, these improvements were not sufficient to close the human capital

[33] Such characteristics were not fixed (especially as dictated by global markets for particular commodities), which helped generate changes in state-level support for education over the period. See Martinez-Fritscher et al., 2010; and Frank, 2001 (on Matto Grosso's elite).
[35] This divergence was somewhat reversed with the centralization of Brazilian politics under the Vargas regime.

gap between Brazil and countries with comparable GDP per capita. Rather, these changes accentuated regional differences in enrollments and literacy within Brazil.[35]

4.2 Russia

Between serf emancipation in 1861 and the Bolshevik Revolution of 1917, the share of the school-age population enrolled in formally recognized primary institutions in European Russia rose from less than 5 percent to roughly 25 percent (Nafziger, "Financing," 2011).[36] To some extent, this came at the expense of informal and unregulated schools, especially among ethnic and religious minorities. Literacy rates did slowly increase, but by World War I, just slightly more than 40 percent of the population older than 9 years old could read.[37] This record placed Russia near the bottom in Europe, with schooling outcomes that looked much more like those in BRIC than in the West.

As in the other BRIC, the primary explanation for the low provision of basic schooling is that Tsarist Russia was poor, and both private and public funding for education were limited as a result. Per capita income levels in the countryside or among the urban working classes were quite low (Table 1), while the corresponding demand for skilled labor and returns to education were likely small.[38] Until the last decades of the period, the central government, primarily through the Ministry of Education (the MNP) and the state-sponsored Orthodox leadership (the Holy Synod), provided limited funding for primary schooling.

In 1861, neither central nor local state authorities in Russia expended much public attention or money on education. Private schools and tutors catered to the landed and urban

[36] School enrollments actually decreased in the chaotic early 1920s before recovering by the end of the decade (Holmes, 1989). Soviet authorities then passed compulsory schoolng laws, which led to near universal primary enrollment by the mid-1930s .

[37] On pre-1917 literacy, see Mironov (1991). Over 50 percent of the population older then 9 years old was recorded as literate in the 1926 census (Perrie and Davies, 1991).

[38] Tables 2 and 3 show that the richer Baltic, Capital, Central Industrial, and "New" Russian provinces exhibited higher expenditures per school-age child and greater enrollment rates. At the district level, a greater share of agricultural employment was associated with lower investments in schooling (Nafziger, "Financing," 2011).

elites, while only a small number of villages and towns (and even fewer serf owners) supported primary schools out of their own resources. In 1864, the state established an administrative structure for oversight of the Empire's schools under the MNP, but this reform did not entail the release of any new resources from the center, nor did it extend to the thousands of schools under the supervision of the Holy Synod.[39]

Over the ensuing fifty years, conflict emerged between the MNP, the Holy Synod, and local actors over control of primary education. The MNP slowly expanded control over curriculum and teaching personnel until the early 1880s, when reactionary policies led to a shift towards church control of schooling during the last years of Alexander III's reign (1881-1894).[40] But under Nicholas II, the MNP responded to the growing public awareness of Russia's poor educational record by expanding its school inspection system and increasing its involvement in local educational affairs.[41] With the Educational Statute of 1908, the MNP formally took over the management of all primary schools in the Empire. This late shift towards centralization was accompanied by an increase in state funding to subsidize local efforts at building and maintaining schools. This brought total central government spending on primary education from less than 0.6 percent of the state's budget in 1902 to just over 2.2 percent in 1913 (Hans, 1964; and Nafziger, "Financing,' 2011). This was a small increase when compared to the United Kingdom, for example, where central government spending on human capital investments

[39] The 1864 Reform granted the right to open primary schools to state ministries, to the Holy Synod, to private citizens, and to towns and rural communities. Formally, these different entities were supposed to submit school proposals for approval by newly created district school councils. Prior to 1861, the Ministry of State Domains did makes some efforts to encourage basic education among the state peasantry, but these attempts were ill-funded and resulted in relatively few schools.

[40] Throughout the post-reform period, religious instruction remained a core component in the curriculum of almost every primary school. Schools in the Holy Synod's system generally had instruction provided by the local priest and were financed by local (community) contributions. It was during Alexander III's reign that the parochial system took over many of the remaining informal peasant literacy schools (*shkoly gramotnye*).

[41] On the ebb and flow of institutional control over schooling, see Eklof (1986), Nafziger ("Financing," 2011), Sinel (1972), and Sorenson (1992).

accounted for 16.1 percent of total expenditures in 1910-12 (Davis and Huttenback, 1986). But it is large in comparison to the other BRICs at this time.

Hence, up to the 1890s, funding for Russian primary schools was primarily the responsibility of local communities and sub-provincial governments. For many "public" schools, a village or town assessed its own citizens to fund the construction or rental of a building and to pay someone to provide instruction. Such arrangements may have suffered from significant collective action problems, including intra-community conflicts between groups (ethnic, religious, wealth, generational, etc.) that held different preferences over schooling. In towns and cities, local elites continued to send their children to private academies rather then the public school.[42] In the countryside, the largest property owners – the landed gentry, merchants, and rich townsmen – were not liable for local assessments by exclusively peasant institutions.[43] In the absence of more formal local fiscal mechanisms for enforcing contributions from larger property owners, funding for rural primary education would have remained limited.

But for part of European Russia, a newly created, all-class institution of local self-government known as the *zemstvo* functioned as just such a mechanism. A reform of 1864 established district and provincial-level *zemstvo* in 34 of the 50 provinces of European Russia, a region that included most of the Russian heartland. Members of *zemstvo* assemblies were elected by different groups of property owners: private rural property owners (mostly from the landed nobility), owners of urban property, and peasant communes. These new bodies were granted the power to levy property taxes on *all* local land and fixed capital owners. Moreover, the *zemstvo*

[42] This is described by Lieven (1989) and many 19th century Russian novelists.
[43] Township-level units of peasant self-government (*volosti*) also contributed to primary school funding in some areas, although their contributions were less than direct expenditures by village communities.While initiative for the school often came from the village itself, township authorities frequently stepped in to fund the initial outlays out of their own tax collections. According to data on local government expenditures in 1905, rural societies (administrative versions of the traditional peasant commune) in European Russia spent about two times as much as township governments did on education: 4 million vs. 2 million rubles. See Russia. Statisticheskoe, *Mirskie*, 1909.

was explicitly called on to engage in programs encouraging local economic development, a calling that quickly came to include education.

The *zemstvo* was characterized by a system of representation biased in favor of the local non-peasant elite. Peasants were allocated few seats relative to their population shares, and the elections that did occur frequently attracted little interest or simply reinforced the existing structure of political power. Therefore, the policies enacted by a given *zemstvo* were frequently dictated by the composition of the private propertied elite that formed the assembly majority (Nafziger, "Did," 2011). The resulting heterogeneity of this form of local "elite democracy," coupled with the absence of the *zemstvo* in 16 provinces of European Russia, helps explain the variation in expenditures on education evident in Table 3.[44]

In the *zemstvo* region, funds for primary schooling came from property taxes assessed by special commissions of *zemstvo* assemblymen.[45] Over the period, *zemstvo* funds came to supplant financing from rural communities. Between 1880 and 1894, the share of total expenditures on rural primary schools (in European Russia) undertaken by village communities – either directly or through the local Orthodox parish – fell from 36 to 18 percent. In provinces that did not possess *zemstvo*, village (and township) and town governments held almost all responsibility for school funding. In these provinces, not only was spending on primary education per capita less (about 10 percent lower in 1911), but enrollments and the growth in the number of formal schools per 1000 people were also lower. This variation is reflected in Tables

[44] Other factors – religion, economic structure, etc. – contributed to this variation beyond income differences and the *zemstva* (ibid.). The interaction between communal villages, township authorities, and district and provincial administrators varied substantially across European Russia, even within the non-*zemstvo* region. In the Baltics, all education finance came from township governments.

[45] As early as 1879, over 40 percent of funds allocated to rural primary education in European Russia came from *zemstvo* budgets. By 1894, this share had reached 54 percent. These and other numbers on rural primary school expenditures are taken from Nafziger (ibid.). By 1905, provincial and district *zemstvo* were spending approximately 25 million rubles on education, or about 4 times the expenditures of all townships and rural societies together (Russia, Statisticheskoe, *Dokhody*, 1909). Expenditures on primary education occasionally took the form of loans to communities; but, more often, spending involved grants and the direct hiring of teachers as *zemstvo* employees.

2 and 3, where the non-*zemstvo* right-bank Ukraine and Byelorussian provinces exhibited lower spending and lower enrollments.[46]

The decentralized "democracy" of the *zemstvo* seemed to have supported greater investments in public education. Those districts where the *zemstvo* assemblies included relatively more representatives from peasant communities exhibited greater spending on primary schools that catered to the rural majority. But this correlation was most evident in those districts that also possessed a greater number of nobles with small-sized holdings.[47] In contrast to the traditional large landed gentry, these nobles were more likely to be involved in commercial activities and hold civil service positions obtained though merit. They formed the basis for a movement that historians have labeled "*zemstvo* liberalism," which supported broader schooling for the masses. Therefore, the imperfect democracy embedded in the *zemstvo* meant that the composition of the local property-owning elite was critical in determining the level of decentralized school provision (Nafziger, "Did," 2011).

In peripheral areas where the *zemstvo* did not exist, the greater heterogeneity of the population limited the development of public schooling. Peasants in these areas maintained informal or confessional schools that relied exclusively on community contributions were often of poor quality.[48] In contrast, the consolidation of local fiscal authority in the *zemstvo* enabled some catch-up growth in rural schooling by overcoming collective action problems and allowing

[46] In 1911, enrollment rates (out of the school age population) were 3.5 percent higher (32.9 versus 29.4) in *zemstvo* provinces. Between 1860 and 1911, the annualized rate of growth in the number of formal schools was 6.5 percent in non-*zemstvo* and 7.5 percent in *zemstvo* provinces. See Nafziger, "Financing," 2011.

[47] Higher spending on education was also evident in those few districts with very few private landholders where, by default, the peasant communes held the majority of assembly seats (Pape, 1979).

[48] This was especially true among Jewish and Muslim communities, which preferred to maintain informal schools rather than give up any authority over education. By 1894, there were still 16779 informal literacy schools, 5949 Jewish kheders, and 11589 Islamic madrases in the Empire. Comparing the 1894 and 1911 data for peripheral provinces in European Russia suggests that despite aggressive efforts by the MNP, many informal religious schools remained outside the formal administration system in 1911. Inequality or other forms of heterogeneity among the peasantry likely compounded local collective active problems when it came to the local financing of a school.

a broader tax base to be tapped. This was more likely to take place where the composition of the nobility involved in the *zemstvo* was favorable to mass education and willing to help foot the bill.[49] We focus here on the potential conflicts between traditional nobility and a growing group of more liberal 'middling' landed gentry, but ethnicity, religion, profession, and other characteristics also divided the local elite. These divisions varied regionally and over time, especially as economic development reduced the competitive viability of large-scale agriculture in less productive areas, and trade and industrial growth generated newly wealthy elites elsewhere (Becker, 1985; and Hamburg, 1984).

The relative success of Russia among the BRIC countries stemmed from slightly higher per capita income and the increased financial involvement of the central government after the mid-1890s. Intriguingly, the timing of the acceleration of central government spending – especially under the Education Act of 1908 – suggests that the advent of a limited form of national elections (for the Duma) after the revolution of 1905 had positive consequences for schooling. Duma voting rights were limited by property ownership and social estate, but the parliaments that met in the last decade of the Tsarist regime included peasant and non-elites representatives and possessed some central budget oversight. Thus, broader political participation at the national level may have partially overcome or compensated for local elite resistance to schooling in particular regions, a shift that fits the frameworks of Lindert (2004) and Gallego (2010). But this point should not be pushed too far. Despite these gains, primary education in Russia compared unfavorably with other parts of Europe by World War I.

[49] Most *zemstvo* funding for education went towards rural primary schools that catered almost exclusively to the peasantry. For more on the internal debates within the *zemstvo* over schooling, see Nafziger ("Did," 2011; and "Financing," 2011) and Eklof (1986). The actually decisions to build school, hire staff, or change curriculum generally resided with the local school district committees, which often included representatives of the *zemstvo* and relied on *zemstvo* funding for their initiatives. These and other bodies involved in education policies were all subject to intervention by powerful local elites and outside bureaucrats. Of course, even where the peasantry held significant voice in the *zemstvo* or other local institutions, their representatives may not have their (median) interests.

Furthermore, the achievement of near-universal primary schooling only occurred in the 1930s under the decidedly non-democratic Soviet regime that left little autonomy to local governments.[50]

4.3 India

By the early 20th century, India had made limited progress in increasing mass primary education. Crude literacy rates were under 10 percent and just over 1 in 10 children of school age was enrolled in any primary school. Only China had worse educational outcomes across our four countries. A relatively low level of GDP per capita certainly constrained the amount of public and private funds available for education, but low income cannot completely explain the low spending. Public educational spending in areas under direct colonial control (British India, which accounted for almost two thirds of the Indian subcontinent) was among the lowest in the world, lower than countries at similar levels of development and even lower than neighboring Indian 'Princely States' under indirect colonial control (Davis and Huttenback, 1986). The following discussion focuses on the constraints in British India.[51]

British officials were cognizant of the inadequate provision of schooling. Official reports often bemoaned the low levels of spending, but the goal of extending mass education was never seriously promoted (Nurullah and Naik, 1951; Chaudhary, 2009). As a dependent colony, any potential benefit of educating a large share of the population was outweighed by both the monetary costs (additional taxes to fund public education) and the non-monetary costs (the potentially destabilizing effects of a more educated populace). On account of the meager public

[50] The quick progress of mass public schooling in the 1920s and 1930s is discussed in Fitzpatrick (1979).
[51] The Princely States were local kingdoms of varying size ruled by individual kings that maintained their autonomy in local affairs while deferring to colonial authority in matters of defense and foreign policy. Although many of the same forces were likely at work, we focus on British India because it was a single administrative unit with the same institutional organization. In comparison, there is significant heterogeneity among the numerous Princely States in both the set up of educational systems and educational outcomes although recent work suggests educational outcomes on average were higher in the Princely States compared to British India (Iyer, 2010).

funds, the colonial government actively encouraged private schooling and made some limited efforts to increase schooling among groups with traditionally low levels of education such as Muslims, the lower castes and tribal groups.[52]

Beginning in the early 1880s, the provision of primary education was decentralized to rural and urban local boards, although they received important grants from provincial governments.[53] The boards managed some schools in addition to providing grants to private aided schools. In general, there was significant heterogeneity across provinces in school systems, grant rules and subsidy amounts. Even though public revenues funded local boards, upper caste Indian elites were disproportionately represented on the local boards and in principle could influence public allocation decisions.[54] However, the boards had no power of taxation. They received a fixed pot of money partially based on the land taxes collected in their district and, they allocated the money between primary education, local infrastructure and medical services.[55]

Within this institutional framework, colonial policies had a marked influence on regional public spending patterns, exacerbating pre-existing economic differences between provinces. Both enrollment and literacy rates were twice as high in the coastal provinces of Bengal,

[52] For example, larger public grants were made available to schools in "backward districts," scholarships were introduced to encourage schooling among these groups, and training schools for teachers were established

[53] This decentralization began slightly earlier in Northwest Frontier Province and Punjab, and it resulted in "much to disengage the population" (Allender, 2007, p. 46). Consistent with our interpretation below, Allender finds a reduction in spending on mass education by local authorities as a consequence of the decentralization of school policies in Punjab.

[54] The rules on the exact composition of district boards varied from province to province. A British colonial officer, often the district magistrate was the board chairman in most provinces. He was assissted by nominated and elected Indian members. Despite the presence of non-official members, historians have argued that official control over these bodies was strong and the elective principle was not widely implemented (Cross, 1922). Nominated members were almost always important landlords, while traders and lawyers accounted for many of the elected members (Cross, 1922; Gopal, 1953; Tinker, 1968). In subsequent decades especially in the 1920s, minority group leaders for Muslims and lower castes were also among the nominated members. Thus, the acts of local self-government were not enacted with the view of introducing democratic self-government with equal representation of all groups. While we focus on rural districts here, self-government and revenue reforms brought similar debates over education to the fore in municipalities over our period (e.g. Bayly, 1971).

[55] The rules dictating tax rates and revenue sources of the local boards were typically initiated at the provincial or central levels and executed by the appointed colonial officials.

Bombay and Madras (7.1 percent literacy in 1911) compared to the interior provinces of Central Provinces and United Provinces (3.5 percent in 1911). The coastal provinces had big urban centers with larger bureaucracies such as Bombay and Calcutta that offered more opportunities for educated workers. This likely increased the private demand for education and led to subsequent improvement in outcomes. Nonetheless there were regional differences even among the coastal provinces. From 1881 to1931, Bombay led the way in public education expenditures and in developing a large network of public schools. But, public spending in Bengal, Bihar and Orissa lagged behind both Bombay and Madras.

Much of the difference in public expenditures was due to heterogeneity of land tax revenues. Bombay and Madras had higher land revenues on average, and hence, they had more public money available to spend on education (and other local services) when compared to Bengal, where land revenues were lower on account of the Permanent Settlement. The Settlement was a contract between the English East India Company and the landlords of Bengal and Bihar whereby the revenue demand on land (land tax) was fixed in cash for perpetuity in 1793. In comparison, Temporary Settlement areas such as Bombay and Madras were assessed land taxes at higher rates that were periodically adjusted to account for changes in price levels and productivity. Thus, public education spending varied with the land tax regime and, along with private spending on education, jointly influenced the development of mass schooling. [56] Roughly, land revenues explain approximately 32 percent of the district-level variation in total

[56] Private revenue sources accounted for a larger share of total spending (40 percent) in Bengal than in Bombay (20 percent). On the sources of the numbers provided here, see Chaudhary (2009 and 2010).

spending on education (Chaudhary, 2010). Thus, colonial policies influenced national spending per capita, as well as the regional variation in public spending on primary education.[57]

While colonial rule probably constrained the development of primary education and created strong interregional disparities in spending, this does not necessarily imply that India would have enjoyed better outcomes as an independent state. Indian elites, the chief beneficiaries of English education under the colonial system, were often complicit in blocking the extension of primary education to the rural masses. For example, in the province of Bengal, the elites actively opposed Campbell's (Bengal Lieutenant Governor) policy of providing more public support for mass education: "The Bengali Hindu bhadraloks, a newly emerging social group mostly consisting of persons belonging to higher Hindu castes, after imbibing the best fruits of western education were trying desperately in the second half of the nineteenth century to assume the social leadership of the Bengalis. This social group, ambitious and ruthless, wanted to keep the masses ignorant in order to maintain their leadership over them" (Mandal, 1975).[58] Although colonial rule created such new elites, there was considerable overlap between the traditional land owning elites and the new western educated elites. In fact, researchers have argued that the colonial educational system may have increased inter-caste inequality (Srinivas, 1996).[59]

Such resistance frequently occurred at the district level, either through actions of local boards, or through direct lobbying of colonial officials responsible for education policy. For example, Mr. C. T. H. Johnson, a district officer in Madras province, told the committee working

[57] Of course, private school fees and the high opportunity costs of lost child labor were key factors in reducing enrollments in many parts of India (cf. Whitehead, 2005). As in the other case studies, our focus on the political economy of publically provided education at the district level is meant as a complement rather than a substitute for these underlying micro-level factors that likely helped determined school provision and take-up.

[58] See Mukhopadhyay (1984) for more details on how elites in Bengal successfully petitioned colonial officials to restrict the extension of mass primary schooling.

[59] Srinivas argues that the new opportunities from western education "had the twin effect of increasing the cultural and ideological divide between the high and the low castes, as well as making the new opportunities doubly desirable. In the first place, they were well paid and prestigious, and in the second, only the high castes had access to them" (1996, p. 78).

on The Report of the Royal Commission upon Decentralization in India in 1908 that, "The Local Boards represent the monied, educated and land-owning classes; they are not really in favor of increased primary education, because it makes labor more difficult to handle; they are not in favor of a reduction of lower secondary education because they like to have the lower secondary schools to which men of their type send their children." While the initial emphasis on English medium secondary education was due to colonial policies, many upper caste Indians actively embraced English instruction and became the chief promoters of secondary education.[60]

The influence of elites is also visible in the provision of private aided schools receiving public subsidies. Despite public subsidies, the Government had limited control over these schools because private individuals pooled the necessary resources, set up the school, applied for a grant, and managed the school. Chaudhary (2009) finds that characteristics of the local elite strongly influenced the provision of the different types of primary schools. Brahmans and other educated upper castes successfully directed private and, to a smaller extent, public resources toward establishing secondary schools for their children. Districts with a larger share of Brahmans, the traditional elite caste of Hindus, had more public and private secondary schools plus a smaller ratio of primary to secondary schools. However, upper castes were unable to completely co-opt the public policy-making process because districts with larger proportions of lower castes and Muslims also had more public secondary schools.[61]

Colonial and elite-dictated policies occurred amidst hierarchical divisions among Hindu castes that further constrained the provision of mass primary education. Districts with high levels

[60] See Nurullah and Naik, 1951 and Basu, 1974. For example, according to Basu (1974), the number of English secondary schools and arts colleges more than doubled from 1881/82 to 1921/22 from 2,133 to 4,904, while the number of pupils more than quintupled from 149,233 to 823,416 (p. 105). Most of this increase was in private aided (private schools that received some funds from public revenues) and unaided schools.

[61] This was a misguided outcome of colonial policy, which set up these schools (as opposed to primary schools) in educationally backward districts hoping they would increase literacy in these districts.

of caste and religious diversity had fewer private aided and unaided primary schools as well as a smaller ratio of primary to secondary private schools. The presence of many religions with heterogeneous preferences over public and private education compounded the situation. For example, Muslims in heavily Muslim dominant districts had worse literacy outcomes because the Muslim religious schools were less effective at the margin at promoting literacy compared to secular colonial schools (Chaudhary and Rubin, 2011).

While colonial rule did not create the divisions in Indian society, colonial policies did not ameliorate the situation. Overall, public spending was low and susceptible to elite capture at the local level. Lower castes and the aboriginal tribes were rarely represented on the councils. Hence, they had limited political voice to influence local education policy. In contrast, landed and educated elites – defined by caste, wealth, and profession – did hold positions on district councils and utilized these to influence local spending.[62] Colonial attempts to secure greater representation for marginalized groups and improve educational outcomes for the non-elites were generally insubstantial and weakly implemented.[63]

India's experience both parallels and contrasts with the other BRIC countries. Similar to China, there were big differences in spending and enrollments between the coastal and interior provinces linked to commercial developments and new types of economic activity. However, the size of the colonial bureaucracy and potential for educated employment were perhaps more

[62] For example, in Bengal Brahmans and other upper castes comprised over 80 percent of lawyers and almost 75 percent of landowners, the two most common occupations of district council members.

[63] Ghurye (1961) discusses this issue. For example, as early as 1856, a court case was filed in the district of Dharwar of Bombay where a lower caste boy was denied admission to the government school. In 1858 the courts released the following press-note "Although the Governor-in-Council does not contemplate the introduction of low caste pupils into schools, the expenses of which are shared with Government by local contributors and patrons who object to such a measure, he reserves to himself the full right to refusing the support of Government to any partially aided school in which the benefits of education are withheld from any class of persons on account of caste or race, and further resolved that all schools maintained at the sole cost of Government shall be open to all classes of its subjects without distinction." This stated policy was not seriously implemented. Schools that relied on government aid continued to receive grants regardless of their policy towards lower castes (Nurullah & Naik, 1951). It was not until 1923 that a government resolution was passed stipulating that government grants would be unavailable to any schools that denied admission to the lower castes.

important in accounting for these differences than income and economic development—urbanization rates in the coastal and interior provinces were similar, and the pattern of spending on education is not fully explained by differences in income levels (Chaudhary, 2009 and 2010). Like Brazil and Russia, the extent of political participation did influence public spending, but since political representation was generally limited to land and caste based elites public spending was targeted to secondary education and away from mass primary education. Nonetheless, colonial policies and the associated fiscal system were important drivers of inter-regional differences. The decentralization of primary education to local district councils made the distribution of public funds a function of the preferences and ethnic, religious, and socioeconomic composition of the elites who sat on these councils.

4.4 China

With the lowest per capita income among the BRIC countries, it is not surprising that China possessed the lowest enrollment rates and one of the lowest levels of expenditures on education per school-aged child among our sample countries (Table 1). However, certain areas (the lower Yangzi; coastal regions – see Ma, 2008; and Mitchener and Yan, 2010) did experience some hints of industrial development and higher economic growth in the late 19th and early 20th centuries, which contributed to the heterogeneity in educational outcomes in the late-Qing and Republican periods (Tables 2 and 3). But we argue that differences in schooling across China were also a product of policies enacted by heterogeneous local elites, who acquired considerable power in the face of Qing decline and the weak central governments of the Republican era.

China experienced a structural break in education in 1905. Before that, the primary education system was based upon Confucian classics and aimed at success in the Imperial Civil

Service Exam (ICSE).[64] The rewards to high achievement on this exam generated considerable demand for privately provided traditional schooling (*sishu*) throughout the country. Such schools were frequently financed by contributions from wealthy households, lineages, or local voluntary associations such as guilds. As a result, these schools catered to the children of local elites, and county quotas on the number of passing exam grades capped the returns to such human capital investment.[65] In the wake of the Taiping rebellion of the 1850s and 1860s, the Qing dynasty expanded these quotas and encouraged the development of additional classical academies (Woodside and Elman, 1994; and Keenan, 1994). There was some slow growth in the number of "community" or charitable schools catering to the non-elite, but these were generally funded by contributions of local elites through lineage or clan wealth. Overall, not only was there little publically financed mass schooling, but the particular structure of the exam system, although avowedly meritocratic, limited entry into the bureaucratic elite.[66] While as many as 40 percent of males attended *sishu* for at least a few years by the end of the 19th century, many students achieved only limited literacy and gained few applied skills (Borthwick, 1983; and Yuchtman, 2010).

Growing economic openness and industrialization in the late nineteenth century generated rising demand for modern education, particularly in science, technology, and other applied topics (Yan, 2008; and Yuchtman, 2010). Although attempts to build modern schools

[64] The ICSE was the main avenue to wealth and power in late imperial China. In the words of Ping-ti Ho's, the exam was "the ladder to success" (1955), while a Chinese proverb called it "the gate that fishes jump through and become dragons."

[65] In the traditional education system, the initial stages of training and preparing a son for the civil service was the private responsibility of families seeking to attain or maintain elite status as "official" families. Clans and families had, whenever possible, mobilized their financial and cultural resources to provide young boys with the tools of classical literacy. The government, central or local, maintained a hands-off approach towards funding mass primary education.

[66] Under the Qing, provincial civil servants and county magistrates were rotated frequently, which made them somewhat distinct from traditional local elite, often defined as those achieveing the lowest exam rank of *sheng-yuan*. On the exam system and the perpetuation of an elite class across Qing China, see Elman (1991).

started in some coastal cities as early as the 1860s, the abolishment of the ICSE in 1905 marked the beginning of a nationwide remodeling of the education system and the structure of government support of basic schooling.[67] A Ministry of Education was established in 1905, and Offices of Provincial Education were founded in many provinces (along with similar county level institutions known as "Education Exhorting Offices" – see Abe, 1987; and Bailey, 1990). After 1905, the Ministry of Education called on community, county, and provincial officials to enact compulsory primary schooling in modern institutions, but central and provincial authorities allocated very limited funds towards this goal.[68]

Instead, the majority of these modern primary schools were financed by a combination of county tax receipts, the reallocation of endowments from traditional schools, and private contributions by local elites (Thøgersen, 2005; and Vander Ven, 2005).[69] The devolution of fiscal authority that occurred after the Taiping Rebellion (and was formalized in local government reforms of the 1900s) left most tax revenues to provincial and county-level authorities.[70] Some of these funds were invested in new schools in the areas where elites perceived significant benefits from expanding local primary education. Private contributions by

[67] These "New Policies" (*xinzheng*) were enacted locally by the existing elite, often with substantial conflict (Prazniak, 1980).

[68] An influential proposal for education reform – Zhang Zhidong's *Exhortation to Study* (1898) – called for a national three-tiered system of modernized schools located in provincial, prefecture, and county capitals, along with a network of basic primary schools in towns and villages. This system was to incorporate existing traditional academies and other types of schools (Ayers, 1971; and Baily, 1990). The village primary schools were to be funded by local resources, while the other two tiers were to have access to funds from central or provincial treasuries (on Shandong province, see Buck, 1974).

[69] According to data gathered by Thøgersen (2005), less than one percent of public primary school funding in three counties of Shandong province in 1908 came from extra-county government sources. For similar numbers from Zhejiang province in 1907-1909, see Rankin (1986)

[70] Some of this was unwilling as local authorities refused to remit taxes back to the (weakening) center. Measures in 1908-1909 created elected institutions of self-government at the national, provincial, and county levels. Voting rights were determined by property ownership, and, as a result, each body was dominated by landed and commercial elites. These decrees paralleled growing movements for more local self-government in a number of provinces (e.g. Zhang, 2000; on Henan). In the 1900s, the central government also encouraged the establishment of various civil society institutions which were intended to be led by local elites under the oversight of the bureacracy. These included chambers of commerce, professional bodies, agricultural associations, and educational associations, the latter of which was meant to support local and provincial education promotion offices. Efforts to re-centralize fiscal revemues and government authority met strong reesistance in the 1910s and 1920s.

lineages, specific endowments, or associations of local elites continued to be important sources of school finance, especially in less developed, more isolated areas.[71] Whether funded from public, private, or a mix of courses, the initiative to build new schools in the last decades of the Qing era generally resided with local elites who either possessed the necessary wealth or held positions of authority in public or quasi-public institutions.

Despite limited central sources of school funding, the administrative and fiscal reforms of the late Qing did generate some growth in the provision of public primary schooling. By 1909, roughly 51,700 modern primary schools catered to over 1.5 million students, and by 1912, over 86000 schools enrolled roughly 2.8 million students (Abe, 1987; and *First Education Yearbook of China*, 1934).[72] These developments in primary education, however, did not put China in a favorable position when compared to other BRICs. China still had the worst education indicators when the Qing Empire fell in 1911. Moreover, there was considerable provincial variation in the pace of new school formation and in the share of education funding dedicated to primary education.[73] This carried over into the Republican period.

While the structure of local school finance remained relatively constant after China became a republic in 1912, decentralization and local capture by elites continued to influence the provision of mass schooling. All funding for primary education in the Republican period came

[71] Rankin (1986) and Chen (2007) discuss the growing importance of formal and informal elite institutions for the provision of local public services in the late Qing and early Republican periods. In the treaty ports (which were mostly located along the coast), rising entrepreneurs were one of the major patrons financing primary education. According to the First Education Yearbook of China, the total amount of education donations from private parties amounted to 11,414,253 Yuan in the first twenty years of the Republic, and the leading two provinces in private donation were Jiangsu and Zhejiang, where modern industry and commerce were most prevalent.

[72] This movement towards school building and modernization far exceeded the few thousand schools (with no more than 100,000 students) founded by Christian missionaires in the late 19th and early 20th centuries that Bai and Kung (2011) focus on.

[73] Between 1907 and 1909, the number of official lower primary schools in Shandong province increased by nine times, from 3200 to over 31500, while in Guangxi and inland Xinjiang, the number actually declined. While some provinces dedicated a considerable share of total education funding from the provincial treasury to primary schools (e.g. Guangdong or Liaoning) in 1909, others favored more advanced or specialized education (e.g. Gansu or Shanxi). See Baily (1990, pps. 44-45; from official Board of Education statistics).

from provincial and, especially, district or local sources,[74] Much of the administrative system of the late Qing period continued as before, including the new Ministry of Education and various provincial and county-level bodies.[75] But political instability grew as the death of President and self-proclaimed emperor Yuan Shikai in 1916 initiated a period of internal conflict, when local and regional elites fought to expand their holdings and take control the central government. During the "warlord" period (1916-1927), and under the Nationalist regime (1927-1937), the basic administrative and fiscal structure of the Republic persisted but military expenditures frequently siphoned resources away from local public services such as schooling. The geography of military conflict and heterogeneity in local-central government relations perpetuated the already substantial variation in basic education across Republican China.[76]

Throughout the Republican period, traditional and new types of elites controlled local institutions responsible education (Chauncey, 1992). Government and other local institutions rarely offered political voice to the masses. There were few, if any, democratic effects on local public policy.[77] But the "policy" preferences of the local elites, and the particular institutions through which they were exercised, varied considerably from place to place. In some areas, the more traditional landed elite with ties to the old exam-based system of education tended to

[74] In the 1910s and 1920s, education accounted for less than 3 percent of the Republic's central budget, out of which primary education was 64.3 percent, secondary education 21.4 percent and tertiary education 14.3 percent (calculated from *The First Education Yearbook of China*, 1934; also see Bailey, 1990; and Buck, 1974).
[75] The education promotion bureaus, elite education associations, and proncial-level education administrations initially set up in the late Qing continued to operate during much of the Republican period. The division of responsibilities between them and various other local government appointees continued to differ from province to province (Baily, 1990). The new Republican government did initiate a new national school system (lasting from 1912 to 1922), but it was essentially identical to the multi-tiered structure set up in the late Qing. The national, provincial, and country-level elected assemblies had elections and, in many cases, began conducting business in 1912 and 1913. The were abolished by Yuan Shikai in 1914, although some coninued to meet after his death.
[76] For discussions of the heterogeneity of local-center relations under the Qing and the Republic, see Wong (2000) and Zhang (2000).
[77] Chang and Nathan (1978) summarize the electoral processes for the National Assembly of 1913. They also provide provincial data on the share of the population with voting rights in the Assembly election. These data are completely uncorrelated with the variation in school expenditures per school-age child (Table 3), suggesting that, unsurprisingly, this national and quasi-representative structure played almost no role in education decisions.

support private schools, while in others, a newly emerging "modern" elite tended to work within the new local government and non-government institutions to encourage publically financed schools. As a result, funding for primary education continued to come from a varied combination of public sources (based on remitted taxes or specific local land or business tax surcharges) and private funds (endowments, individual contributions, lineage or clan funds, etc.).[78]

Both before and after 1911, a variety of local economic, security, and political conditions influenced the nature of elite capture of decentralized policymaking (Esherick and Rankin, eds., 1990; and Schoppa, 1982). Such heterogeneity helps explain much of the variation that we observe in provincial enrollment rates and expenditures on education in 1912 (Tables 2 and 3).[79] Particularly telling are the high expenditure levels and enrollment rates for Jiangsu, Liaoning, and Zhejiang, all of which were coastal provinces with high levels of commercial development.[80] The "new" elites in these and other areas were especially interested in developing a skilled workforce, and they saw modern public education as a necessary element of a new China. Elites in the commercially developed areas were more frequently exposed to western ideas regarding politics and education. For example, Yan Xishan, governor of Shanxi, and Tang Jiyao, governor of Yunnan, both had some experience with modern education. The concentration of power in the

[78] In some provinces where a new generation of elites were supportive of primary education, education constituted a large part of total government expenditure. A famous example is Liaoning. The leader, Zhang Zuoling, committed to a share of education spending out of government fiscal expenditures of at least 40 percent. This partly explains why Liaoning stood out in terms of the development of primary education in the Republic era. See also the evidence on provincial and county budgets for the 1910s and 1920s provided in Buck (1974 – Shandong), Van de Ven (1996 – Liaoning), and Duara (1987 – Hebei and Shandong), just to give a few examples of the variation in local commitments to education.

[79] The *Education Yearbook of China*, Bailey (1990) , Rankin (1986) report very similar provincial heterogeneity for total nunber of schools, enrollments, and public primary education expenditures, before and after 1912.

[80] On the increasingly commercialized elites of Zhejiang, see Schoppa (1982). According to Culp (1994), who studied elite activities in support of schooling in two counties of Zhejiang province, the level of commercial development and bureaucratic capacity of local state institutions dictated how and whether elites actively supported public education. In the poorer interior county of Lanqi, any support for education came not from local government institutions, but through funds provided by lineages to private (*sili*) schools. In Jiashan county, which was near the coast and much more developed, local economic elite controlled more substantive government budgets and various school committees. This allowed them to fund the expansion of different types of public (*gongli*) schools, which were typically larger and followed a more modern curriculum than did the private schools of Lanqi.

hands of these and other such westernized "warlords" and local elites made the channeling of resources towards modern primary education somewhat more likely, even at a very micro level (e.g. Barkan, 1990; on Jiangsu).

Provinces with relatively high levels of schooling were less subjected to the political and social chaos of the 1910s and 1920s. Some areas of provinces, such as coastal Jiangsu, were under a degree of control by various western powers, which allowed them to avoid civil wars and conflicts. In these and other "quiet" parts of the Republic, a stable political regime allowed local elites to allocate more resources to primary education. Unfortunately, such areas of relative peasant and calm were relatively rare. Banditry and locally controlled militia, along with civil war and foreign conflict, gripped much of China over the period.[81] Therefore, despite local control and efforts by some elites and the (weak) central government to initiate a national public school system, the chaos and poverty of much of Republican China limited the widespread development of publically financed primary education.

In sum, despite the shift towards a more modern system of schooling after 1905, public primary education in China was the least developed of BRIC before and after the 1910s. In the late Qing and Republican periods, the feedback between low income levels and political instability created conditions where resources were not available to finance schooling, and where the state was too weak to prevent local elites from capturing political structures and educational institutions. There were practically no formal representative bodies with real authority over education, and communities were generally left to their own devices (and resources) when it came to decisions over primary schooling. Relatively few elites were supportive of expanding modern educational opportunities through greater public funding – only in the most

[81] On the role such conflict played in siphoning away resources from local public services, see McCord (2009) on Hunan and Buck (1974) on fighting in Shandong.

commercially developed and politically stable areas did this process take place. When compared to other BRICs in and around 1911, China's political situation was the least settled, least "democratic," and most beholden to provincial and local elites who had little interest in supporting mass education.

5. Conclusion

Our study sheds new light on the comparative experiences of BRIC during the formative years of their primary education systems. Brazil, Russia, India, and China were among the largest and poorest states in the world in the early 20th century. Their low level of development limited investments in mass schooling and central authorities in each country absolved themselves of the responsibility of providing primary education. As a result, the provision of education was frequently decentralized to lower levels of government, where the absence of accountable and representative democracy allowed local elites to capture political institutions, limit redistributive tax policies, and dictate how local public resources were allocated. However, variation among elites or in the political and economics conditions they faced (whether across space or over time) generated multiple schooling equilibriums across and within BRIC.

In India and China, the lack of functional democracy and weak central authorities meant that elites were able to fully capture the local government institutions responsible for public funding of education. Colonial restrictions on fiscal resources and caste and religious divisions among local elite limited the spending of public sector revenues on primary schooling in India. In China, the devolution of political and fiscal authority in the late-Qing and Republican eras was associated with the collapse of central authority, growing local political involvement by old and new elites, and rising social and military conflict. There was a shift towards modern forms of

primary education supported by public funds, but elite-control of school policies and limited local fiscal resources constrained this development. Only more commercially developed areas and places where the traditional elite had given way to one interested in modern education saw any substantive investments in mass public schooling.

Brazil and Russia – marginally richer and possessing slightly broader forms of elite democracy – saw greater investments in public primary schooling than India and China. In Brazil, fiscal federalism and literacy restrictions on voting after 1891 increased elite support for education in states and municipalities that had high export tax revenues or where the elite required greater voter turnout to maintain political power. Until the 1900s, variation in the support for mass pubic education in Russia was driven by differences in who controlled political institutions at the local level. The *zemstvo* offered some channels for the expression of broad popular interest in schooling, but elite control of this and other local institutions meant that it was generally those districts with more liberal nobility that invested more in public education. The founding of a national assembly in 1906 with some popular representation coincided with more funding for basic education from the central government, but it took the Soviet Union's centralized policies to push the country towards universal primary education.

New data and detailed analyses of the political economy of schooling in the early 20th century BRIC countries lend support for the basic framework we laid out in Section 3. Decentralization in the face of weak or absent democratic mechanisms led to local elite capture of political institutions, compounding the constraints of low income, high opportunity costs, and limited public funds. This meant that little was spent on mass schooling, as the elites tended to utilize private education and saw little need to engage in redistributive policies that might have brought challenges to their political and economic control (as described for Latin America in

Engerman and Sokoloff, 2002). Democratically driven central government policies and investments may have helped overcome low incomes and local constraints (i.e. Gallego, 2010), as was perhaps evident following the (slightly) representative national elections in Tsarist Russia after 1906. But as the Soviet example, or even the cases of Meiji Japan and 19th century Prussia, would suggest, relatively undemocratic initiatives can force backward countries towards universal primary schooling.

We view the limited and heterogeneous expansion of public primary education in BRIC over our period as a series of local stories. Only where the characteristics or preferences of the local elite coincided with the advancement of basic public schooling were local initiatives put in place to build schools, hire teachers, and reform curricula.[82] In all four cases, local economic conditions and the "liberalism" of the elite were two such characteristics, but what constituted the elite, and what determined variation in their composition differed between each country. We have argued that in the context of poor, relatively undemocratic societies such as BRIC, the heterogeneity of the elites and the policies they proposed help explain both the cross-country differences observed in Table 1 and the within-country variation of Tables 2 and 3.

Given the wideness of our comparative lens, we do not attempt to explain all of the variation in schooling outcomes evident in Tables 1-3. Our theoretical framework is intended as a tool to help understand just one possible mechanism behind the unsuccessful cases of educational development that Easterlin's original question targeted and that we explore in our analytical surveys of the experiences of Brazil, Russia, India, and China. In laying out our argument regarding decentralization, imperfect democracy, and elite capture in BRIC, we have left open a number of important issues for future research.

[82] A similar argument is proposed Persson and Zhuravskaya (2011), who note that elite capture may actually substitute for fully accountable local governments when their preferences are aligned with majority interests.

It is evident from the case studies that there was persistent variation in the extent to which primary education was "public," (i.e., financed with some form of tax revenue and open to the majority of the population) or "private" (supported by endowments, student fees, and religious organizations and exclusive in some respect). An important topic that demands more attention is the extent to which private education for elites crowded out spending on public schooling à la De la Croix and Doepke (2009). Furthermore, we have focused on public primary schooling, mostly as a compromise over data availability and the scope of the paper. But the allocation of resources by governments and elites also took place between different levels of education. In terms of the returns to public spending, each of our countries likely overcommitted funds to secondary and tertiary schooling at the expense of primary education. To fully evaluate the costs of such misallocation, comparable data on upper levels of schooling are necessary.

Finally, we have limited our analysis to the decades around 1910. This covers the consolidation of mass public financed education in much of the developed world, but developments in the BRIC countries took very different trajectories. The Soviet Union quickly moved towards universal schooling, but India, China, and Brazil continued to provide limited basic education well into the 20th century. Only in the last 30 years have these three countries made substantial inroads in primary education. It is worth considering whether the recent advances of education in these countries – which some scholars have linked to decentralized policymaking – have historical roots, and if regional variation today is similar to what we find a century ago.

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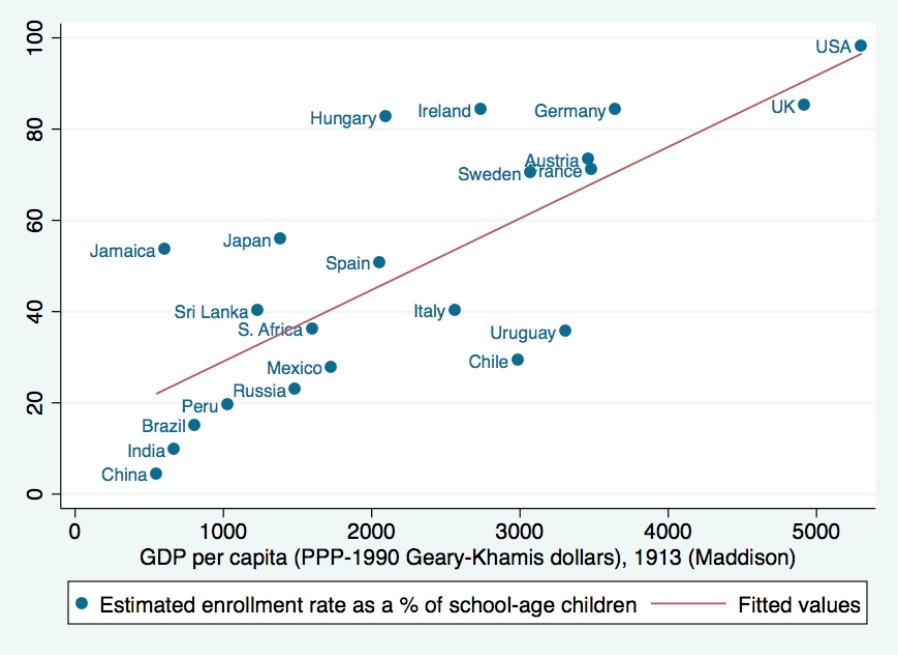
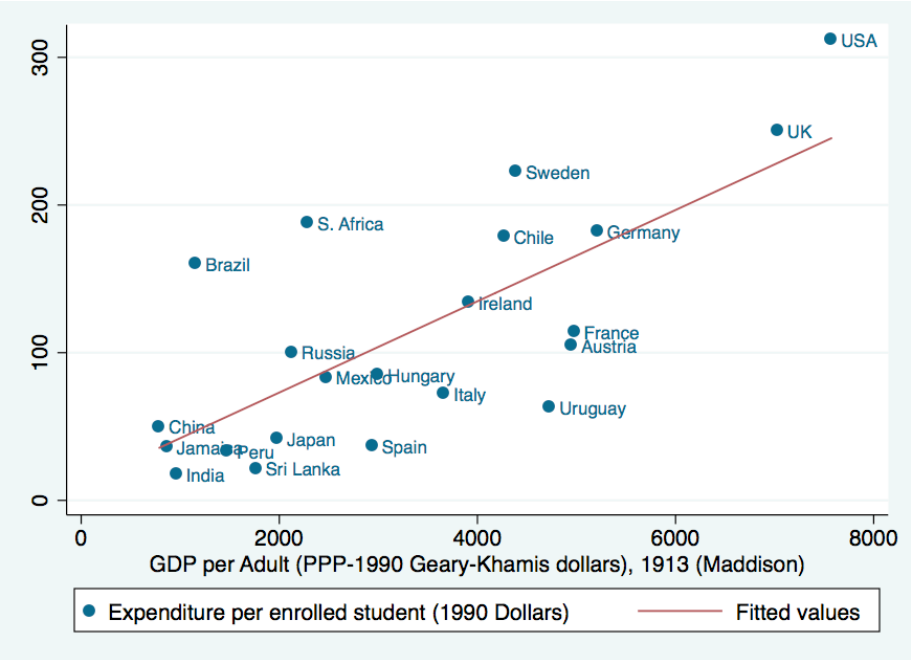
Figure 1: BRIC Primary School Enrollments in Comparative Perspective, c. 1910



Note: The data underlying this Figure are taken from Table 1. The share of the school-age population is assumed to be 20 percent. It is worth noting that all the BRIC country observations lie below the fitted line for assumed shares of school-age children as low as 15 percent.

Figure 2: Unpacking the "Support Ratio" for Primary Education, c. 1910



Note: The sources for these data are the same as in Table 1. Expenditures per enrolled student are denoted in 1990 Geary-Khamis dollars. "Adults" are defined to be 70 percent of the total population for simplicity.

Table 1: Expenditures on elementary education per enrolled student and per school age population, various countries, c. 1910

Country	GDP per capita in 1913 (PPP-1990 Geary-Khamis dollars)	Expenditures per school age population (1990 Dollars)	Primary school expenditures per school age population as a % of GDP per capita	Expenditure per enrolled student (1990 Dollars)	Expenditures per enrolled student as % of GDP per adult (the "support ratio")	Pupil-teacher ratio (total enrollment / total teachers)	Estimated enrollment rate as a % of school age children	Lindert's Public School Enrollment Rate of 5-14 year-olds (1910 or Year)
Brazil	811	24.13	2.98%	160.0	13.8%	42	15.08%	12.3%
Russia (area of U.S.S.R. for GDP)	1488	22.89	1.54%	100.3	4.7%	28	22.84%	13.9% (1900)
India	673	1.74	0.26%	17.8	1.8%	29	9.77%	6.5%
China	552	2.20	0.40%	49.9	6.3%	n/a	4.41%	4.5% (1920)
BRIC (weighted averages)	**762**	**6.20**	**0.81%**	**63.51**	**4.7%**	**31**	**9.77%**	**n/a**
United States	5301	306.63	5.78%	312.3	4.1%	34	98.20%	89.6%
Austria	3465	77.17	2.23%	105.1	2.1%	44	73.41%	68.0%
Hungary	2098	70.08	3.34%	84.8	2.8%	104	82.68%	52.6%
France	3485	81.01	2.32%	113.9	2.3%	37	71.14%	84.8%
German Empire/Prussia	3648	153.80	4.22%	182.5	3.5%	61	84.30%	72.0%
England and Wales (UK for GDP)	4921	213.23	4.33%	250.6	3.6%	34	85.10%	72.9%
Ireland	2736	112.66	4.12%	133.9	3.4%	50	84.16%	57.4%
Italy	2564	29.20	1.14%	72.5	2.0%	41	40.30%	44.6%
Spain	2056	18.60	0.90%	36.7	1.2%	n/a	50.73%	47.3%
Sweden	3073	156.41	5.09%	222.4	5.1%	41	70.33%	69.9%
Japan	1387	23.42	1.69%	41.9	2.1%	48	55.94%	59.9%
South Africa (Cape of Good Hope)	1602	68.00	4.24%	187.9	8.2%	26	36.19%	21.0%
Mexico	1732	23.14	1.34%	83.3	3.4%	n/a	27.79%	18.6%
Chile	2988	52.24	1.75%	178.6	4.2%	44	29.24%	43.1%
Uruguay	3310	22.57	0.68%	63.2	1.3%	40	35.69%	29.2%
Bolivia	n/a	10.23	n/a	82.4	n/a	43	12.43%	13.6% (1900)
Peru	1032	6.47	0.63%	33.2	2.2%	49	19.50%	15.3%
Jamaica	608	19.45	3.20%	36.3	4.2%	n/a	53.51%	44.9%
Sri Lanka	1234	8.61	0.70%	21.5	1.2%	n/a	40.12%	30.2%

Note: The expenditure and enrollment data come from United States (1910) and, for BRIC countries, the sources cited in Tables 2 and 3. They relate to various school years between 1904 and 1911 – we convert all dollar amounts to constant 1990 units. All GDP per capita data comes from Maddison (2006). We assume that the school-age population is 20% of the total population in each country (a rough average) – this number represents an overestimate for some countries (e.g. France) and an underestimate for others (e.g. Brazil). "Adults" are defined to be 70 percent of the total population (taking into account very young children) – similar caveats apply. The enrollment rates from Lindert (2004) are based on census population figures and, occasionally, different geographic units. This explains the sometimes larges differences between our rates and his.

Table 2. Variation in Enrollment Rates within BRICs (Primary Enrollment / Children of School Age), c. 1910

Brazil (states)	1914-15	European Russia (regions)	1910-11	British India (provinces)	1911-12	China (provinces)	1912
Alagoas	7.0	Northern Provinces	24.1	Bengal	11.0	Jiangsu	7.4
Amazonas	8.5	Ural Provinces	19.6	Bombay	14.0	Zhejiang	9.4
Bahia	7.9	Central Industrial Region	27.5	Burma	7.5	Anhui	1.7
Ceará	7.3	Central Agricultural Region	22.2	Central Provinces and Berar	8.2	Jiangxi	3.4
Federal District	32.7	Volga/Don Region	21.6	Coorg	16.4	Hubei	4.6
Espírito Santo	10.8	Left-Bank Ukraine	23.3	Eastern Bengal and Assam	11.8	Hunan	5.0
Góias	7.8	Right-Bank Ukraine	19.2	Madras	12.5	Sichuan	3.0
Maranhão	8.6	"New" Russian Provinces	25.7	North-West Frontier Province	3.7	Fujian	3.1
Minas Gerais	11.5	Belorussian Provinces	20.2	Punjab	5.3	Yunan	10.3
Mato Grosso	15.1	Baltic Provinces	31.3	United Provinces	5.4	Guizhou	1.9
Pará	16.6	Capital Provinces	25.8			Guangdong	3.0
Paraíba	6.3					Guangxi	5.3
Pernambuco	8.1					Shaanxi	3.9
Piauí	7.1					Shanxi	8.2
Paraná	13.3					Henan	2.5
Rio de Janeiro	9.7					Hebei	6.6
Rio Grande do Norte	9.4					Shandong	2.2
Rio Grande do Sul	21.3					Gansu	3.6
Santa Catarina	20.0					Xinjiang	0.5
Sergipe	10.6					Liaoning	13.0
São Paulo	13.8					Jilin	1.9
						Heilongjiang	3.4
Mean (Pop. weighted)	**12.0**	**Mean (Pop. weighted)**	22.8	**Mean (Pop. weighted)**	9.8	**Mean (Pop. weighted)**	4.4
Coeff. of Variation	0.53	**Coeff. of Variation**	0.16	**Coeff. of Variation**	0.4	**Coeff. of Variation**	0.73

Sources by country: Brazil: Education and population data from Brazil (1917, 1923, and 1926). The population of children in school age is estimated using the population pyramids of the 1900 census. Russia: Enrollment rates come from Pokrovskii, V.I., ed. (1916). Population totals come from Russia. Tsentral'nyi (1912). India: Government of India, *Progress* (1907-1912). Enrollment and population data for Bengal, Bihar and Orissa are from the Statistical Abstracts for 1911/12. China: Education data come from Republic of China (1934); and population figures are from the Census of 1910 (as reproduced in Wilcox, 1928). For Russia, India, and China, we assume the school-age population was 20% of the total population. The census-based Brazilian school-age population totals are close to this share. Applying the 1897 Russian census or 1911 Indian census age structures instead of the 20 percent slightly affects the levels but not the amount of variation in Table 3. For more detail on the underlying sources for India, Brazil, and Russia, see Chaudhary (2009), Martinez et al. (2010), and Nafziger ("Financing," 2011), respectively.

Table 3. Variation in Expenditures on Elementary Education within BRICs (US$ per Children of School Age), c. 1910

Brazil	**1914-15**	**Regions (European Russia)**	**1910-11**	**British India**	**1911-12**	**China**	**1912**
Alagoas	0.63	Northern Provinces	1.93	Bengal	0.09	Jiangsu	0.32
Amazonas	2.80	Ural Provinces	1.43	Bombay	0.32	Zhejiang	0.35
Bahia	0.33	Central Industrial Region	1.93	Burma	0.09	Anhui	0.08
Ceará	0.93	Central Agricultural Region	1.30	Central Provinces and Berar	0.11	Jiangxi	0.14
Distrito Federal	2.86	Volga/Don Region	1.42	Coorg	0.27	Hubei	0.09
Espírito Santo	1.79	Left-Bank Ukraine	1.48	Eastern Bengal and Assam	0.09	Hunan	0.15
Góias	0.15	Right-Bank Ukraine	1.02	Madras	0.17	Sichuan	0.06
Maranhão	0.45	"New" Russian Provinces	2.19	North-West Frontier Province	0.05	Fujian	0.15
Minas Gerais	1.64	Belorussian Provinces	1.13	Punjab	0.08	Yunan	0.21
Mato Grosso	4.07	Baltic Provinces	2.40	United Provinces	0.06	Guizhou	0.06
Pará	1.60	Capital Provinces	4.12			Guangdong	0.17
Paraíba	0.81					Guangxi	0.19
Pernambuco	0.88					Shaanxi	0.09
Piauí	0.27					Shanxi	0.17
Paraná	2.73					Henan	0.05
Rio de Janeiro	1.99					Hebei	0.21
Rio Grande do Norte	0.91					Shandong	0.08
Rio Grande do Sul	2.49					Gansu	0.05
Santa Catarina	1.41					Xinjiang	0.08
Sergipe	1.70					Liaoning	1.02
São Paulo	6.88					Jilin	0.19
						Heilongjiang	0.36
Mean (Pop. weighted)	**1.86**	**Mean (Pop. Weighted)**	**1.64**	**Mean (Pop. weighted)**	**0.12**	**Mean (Pop. weighted)**	**0.15**
Coeff. of Variation	**0.84**	**Coeff. of Variation**	0.53	**Coeff. of Variation**	0.77	**Coeff. of Variation**	1.38

Note: Local currencies were first deflated to 1910/11 using local price indices and then converted to US$ using 1910 exchange rates. To roughly convert these values to 1990 U.S. dollars, multiply by 14.

Sources by country: Brazil: Expenditures per children estimated using the average total expenditures on education by state for 1914-1915 (except for the Distrito Federal for which we used the expenditure data for 1906) divided over our estimates of population in school age. Data for expenditures comes from Brazil (1926) and from Wileman (1909). Data for Brazil assumes that half of the federal budget was spent on elementary education in the Federal District. Russia: Information on expenditures from Pokrovskii, V.I., ed. (1916). Population totals come from Russia. Tsentral'nyi (1912). India: Expenditures on primary education and population are from Government of India, *Progress*, (1907-1912, Vol. II-Appendices and Tables, Supplemental Tables, 1 and 22). China: Expenditures on primary education come from Republic of China (1934), and population numbers are taken from Wilcox (1928). For more information on the sources, see the notes on Table 2.