

Did the Colonial Powers Pick the Economic Winners?

Patricia Jones

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Abstract:

This paper proposes a new instrument for institutional quality—the salary of colonial governors—to investigate whether variations in the quality of British colonial rule continue to have an impact on the economic performance of former colonies. Governors' salaries provide a good source of exogenous variation because the ranking of salaries across the British Empire remained relatively fixed from the late nineteenth century onwards. Perhaps most important, this instrument varies widely across colonies with historically low rates of European settlement—that is, most countries in today's developing world. Using a two-stage least squares estimation procedure, I find that colonies with higher paid governors developed better institutions (and higher per capita income) than colonies with lower paid governors.

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JEL Classification: O11, O43, P16, P51

1. Introduction

Many economists argue that institutional quality plays a key role in explaining differences in per capita income across the world. North (1990) emphasizes the importance of legal institutions which secure property rights and enable people to make contracts and resolve disputes. Legal institutions foster economic growth by encouraging people to invest in themselves and in different forms of physical capital, increasing rates of factor accumulation. Other economists (La Porta et al, 1998, 1999; Rauch and Evans, 2000; Djankov et al, 2002, 2003) highlight the role of political institutions—particularly the quality of government—in fostering economic development. Good government is often linked to greater public good provision, less intrusive regulation, effective government spending, and lower income inequality.

While most economists would agree that good institutions promote economic development, less agreement exists on how some countries end up with effective institutions while others do not. To tackle this issue, economists have examined the role of history in determining the quality of present-day institutions. Acemoglu et al. (2001, 2002), for example, argue that variations in current institutional quality are strongly correlated to historical patterns of European migration. Countries that attracted large numbers of Europeans during the 16th and 17th centuries (i.e., countries with relatively low rates of settler mortality) developed European-style institutions which, *inter alia*, protected property rights. By contrast, countries with less welcoming environments (i.e., countries with relatively high rates of settler mortality) ended up with extractive states and weak property rights.

Engerman and Sokoloff (1997, 2000) also highlight the role of geography in explaining why some countries developed better institutions than others. They argue that current levels of income inequality in Latin America and the Caribbean can be traced back to the colonial institutions which were set up to support small, European elites. These regions attracted Europeans because they had environments conducive to growing profitable crops—like sugar and tobacco. Using slave labor, Europeans produced huge crops for export while maintaining their own elite status through strict restrictions on migration. Consequently, these regions developed hierarchical societies, largely as a result of their initial factor endowments.

Geographic factors, however, are not the only source of variation related to institutional quality (although they are frequently used because they are a good source of exogenous variation). During the *second* wave of colonization (c. 1850 to 1914) the European powers set up a wide range of political structures in the colonies they ruled. To a large extent, these political structures were designed by the early colonial governors—the ‘man on the spot’— and not by any centralized authority within the colonizing country. Colonial governors were given a great deal of de facto independence from the governments they represented and were rarely questioned or recalled unless a major policy failure occurred¹. As a result, these colonies adopted many different forms of political institutions.

It was during this period that most countries in Sub-Saharan Africa and South Asia were brought under colonial rule. Given their tropical (or sub-tropical) climates, these countries did not develop large European settlements. Nevertheless they inherited a

¹ Such autonomy had not existed during the previous two centuries when colonial powers practiced a more centralized form of colonial rule.

wide range of colonial institutions—from highly extractive institutions (e.g., the Belgium Congo) to relatively strong institutions which insured the protection of property rights (e.g., Singapore). Today these regions contain a number of economic ‘winners’—countries like Hong Kong, Malta, Singapore, and the Seychelles—as well as some of development’s biggest ‘losers’—countries like Cambodia, Nigeria, and Zambia which are poorer today than they were thirty years ago.

How can we explain these divergent paths of economic development? In this paper, I argue that much of this divergence can be explained by variations in the quality of early colonial rule. Specifically, colonies that were sent ‘higher quality’ governors developed stronger property rights and rule-of-law than colonies that were sent ‘lower quality’ governors. To measure the impact of institutional quality on per capita income, I propose a new instrument—the salary of colonial governors—which is correlated to a colony’s past institutional quality but not to its initial level of economic development.

This instrument provides a good source of exogenous variation in the British Empire because the ranking of governors’ salaries across colonies remained relatively fixed from the late nineteenth century onwards (after the Berlin Conference of 1884-85 when Britain gained the African colonies). Better governors were sent to better paid posts—as designated by the Colonial Office—and installed better institutions in the colonies they ruled. Essentially, the Colonial Office picked the economic ‘winners’ in the late nineteenth century by setting up a compensation system in which some governorships were better paid than others.

This instrument has one main advantage over settler mortality rates—the instrument proposed by Acemoglu et al (2001) which has become the standard instrument

for institutions used in the development literature. Unlike settler mortality rates, governors' salaries vary widely across former colonies with low levels of European settlement. Most importantly, it varies across countries located in Sub-Saharan Africa and South Asia—the two poorest regions in the world. A central task of development economics is to understand why some countries in these regions have begun to develop while others remain caught at the subsistence level.

Most countries in today's developing world did not attract large numbers of Europeans during the second wave of colonization. In 1900, for example, all fifty countries listed in Table 1 had less than ten percent European settlement. By 1960 these countries had taken many different paths toward institutional development and had already diverged in terms of per capita income.

Later in the paper, I present evidence which demonstrates that better paid governors were better administrators. Governors' salaries are, however, positively correlated to current levels of income per capita and institutional quality in countries that were former British colonies. Figure 1 plots the logarithm of GDP per capita in 2000 against the logarithm of British governors' salaries in 1915. Former colonies that were sent higher paid governors are wealthier today than former colonies that were sent lower paid governors. As demonstrated by Figure 2, this relationship becomes even more pronounced when the sample is expanded to include countries that were colonized by the other major European powers—France, Belgium, Italy, and Portugal².

These simple correlations support the hypothesis that colonies with better paid governors developed better institutions. To demonstrate this relationship, I regress

² Germany is not included because it lost most of its colonies after World War I. Former German colonies are classified by the identity of their new colonizer. For example, Tanganyika (present-day Tanzania) became a colony of Britain and is therefore classified as "British."

current per capita income on current institutions, and instrument the latter by colonial governors' salaries. Two new datasets (collected by the author) are used for analysis: the first includes the salaries of British colonial governors for the period 1880 to 1935; the second expands the dataset to include the salaries of governors posted to other European colonies but it covers only one year: 1913.

The two-stage least squares estimate of the impact of institutions on per capita income is large in magnitude and highly significant. It suggests, for example, that if Nigeria (the former British colony with the weakest institutions) were to strengthen its rule of law to the level of Singapore (the former British colony with the strongest institutions), its per capita income would increase by a factor of 44. This result remains significant, even after controlling for a country's latitude, ethnic diversity, and region. In addition, several methods are used to check the results for robustness, particularly reverse causality and omitted variable bias. These tests provide further evidence that the quality of colonial rule during the early twentieth century is an important determinant of present-day institutions and economic performance.

The outline of the paper is as follows. Section 2 describes the data set used in analysis and provides some historical background on why governors' salaries are an appropriate instrument for institutional quality. Section 3 presents OLS regressions and instrumental variable (IV) regressions of GDP per capita on an index of institutional quality. Section 4 investigates the robustness of the IV results, and finally Section 5 explains how this research contributes to the existing literature on comparative development.

2. Measuring the Quality of Colonial Rule

The primary data used for analysis come from *The Dominions Office and Colonial List* which is an annual publication compiled by the British Colonial Office. This publication provides information, including salary, for nearly all British governors appointed after 1880. There are a few omissions: the salary of the Vice-Roy of India is not included and only a few salaries of administrators in territories classified as British protectorates are listed³. Nevertheless, these data provide a rich source of information on the quality of colonial officers posted to different colonies across the British Empire.

The first pattern to emerge from these data is the large variation in British governors' salaries. In 1912 the lowest paid governor earned about £1,200 per annum, while the highest paid governor (outside India) earned more than £10,000. The average salary of a colonial governor, however, was high relative to that paid to other civil servants. In 1935, for example, the average salary of a British Ambassador posted abroad was £1,960, while the average salary of a British colonial governor was £4,733.⁴

The second important pattern to note is that British governors were paid more than their European counterparts. According to Gann and Duignan (1978, Table 13, p. 158), the British Governor of Nigeria was paid £7,500 in 1913—more than three times the salary of both the French Governor-General of West Africa (£2,469) and the Portuguese Governor-general of Angola (£2,200). The fact that British governors were paid more than their European counterparts coincides with other research which

³ India was not linked to the Colonial Office—it had its own department. According to Gann and Duignan (1978) the Vice-Roy of India was the highest paid government official in Britain. In 1913 the Vice-Roy was paid £17,500 which was substantially more than the British Prime Minister who earned £10,000.

⁴ Average diplomatic salaries are computed from the salaries listed in the *Foreign Office List and Diplomatic Consular Year Book for 1935* published by the British Government. The average salary for colonial governors does not include the salary of the Vice-Roy of India.

demonstrates that British colonies developed better institutions than European colonies. La Porta et al. (1998, 1999), for example, argue that former British colonies have stronger property rights today because they adopted the British legal system of common law rather than the European system of civil-law. In a similar vein, Djankov et al. (2002, 2003) find evidence that former British colonies have less intrusive regulatory systems and more expedient dispute resolution than other former colonies. And finally, Bertocchi and Canova (2002) estimate the growth effects of having Britain rather than another European power as a colonizer. According to their results, former British colonies grew, on average, 1.1% faster than other colonies over the period 1960 to 1988.

Previous studies also highlight the important influence which individual political leaders can have on economic performance. Jones and Olken (2005), for example, analyze data from 57 countries where the national leader died unexpectedly from natural causes or an accident. They find significant changes in the growth rates of countries when there was a change in leadership, particularly in countries where the government was autocratic. These results complement the large literature which stresses the importance of executive constraints that hold back the “predatory” nature of the state. This literature argues that the state should be strong enough to maintain political order and protect citizens’ property but not so strong that it becomes the violator itself.

British colonial governors had few formal constraints on their behavior but did not, as a rule, act in a predatory manner. This raises an important question: why didn’t British governors resort to rent-seeking and other forms of predatory behavior so common today in countries with weak institutions? My answer is that British governors were more interested in career-building than rent-seeking. Support for this answer can be

found from several different sources: economic theory, historical studies, and the colonial data. In terms of theory, Alesina and Tabellini (2006) argue that the main difference between politicians and bureaucrats is how they are held accountable. While politicians are held accountable at the ballot box (i.e., how well their performance ‘pleased’ the voters), bureaucrats are motivated by career concerns (i.e., how well their performance fulfilled the goals of their organization and increased their probability of promotion).

Historical studies provide indirect evidence that British governors were highly motivated by career advancement. In most cases, the men who became governors were career bureaucrats who had worked their way up through the ranks of the Colonial Office by performing well on previous assignments. Typically, candidates for governor were drawn from the existing pool of colonial administrators, although some governors were appointed from the military establishment. According to Kirk-Green (1981, p. 15-16), the nomination process was relatively straight forward:

A short-list of likely candidates would be drawn up by the Personnel Department of the Colonial Office from their list ‘A’ of up-and-coming men. Pros and cons against each name were derived from a synthesis of the confidential reports submitted annually from the Governor of each territory on each of his officials. The final nomination went forward from a small Whitehall committee, chaired by the Permanent Under Secretary of the Colonial Office, to the Secretary of State, and was referred to the Prime Minister and sometimes the Sovereign in case of objection... on average some twenty to thirty years elapsed before elevation to a governorship to the fortunate few who made the top.

Therefore, it was difficult to advance to the top of the Colonial Service without playing by the rules of the game.

In addition, the structure of pension payouts provided a strong incentive to follow the rules and regulations of the Colonial Service. The maximum pension that a governor could receive was granted after ten years of service which meant there was a great deal of

pressure to be appointed to a second governorship. No exceptions were granted, even in cases of poor health or elevated age. But perhaps most important, Cain and Hopkins (2001) present evidence that British colonial officers formed a ‘gentlemanly’ class bound together by a strict social code in which they ardently believed in the virtues of colonial rule.

There is certainly evidence from the colonial data that the men who became governors were successful at creating reputations of high standing in the public sector. Most governors at the time of their appointment had already received one of Britain’s highest civil honors. There was a strict ranking of British orders—the two highest carrying the status of knighthood⁵. As demonstrated in Figure 3, the colonial data show a strong, positive relationship between the level of governors’ salaries and the number of civil honors held at the time of appointment⁶.

The British governors ruled a large proportion of what today has become the developing world. By the end of the nineteenth century, Britain controlled nearly one-fifth of the world’s total land. Next in importance came France which only controlled about 4% of the world’s land, followed by Belgium and Italy (each controlled less than 0.5%). All the European powers (except Germany) expanded their holdings during the early decades of the twentieth century. By 1933 the European powers together ruled more than one-third of the world’s population; Britain alone ruled about one-quarter of the world’s population (all figures from Clark, 1936).

⁵ The top six civil orders are (in descending order of status): (1) Most Noble Order of the Garter; (2) Most Ancient and Most Noble Order of the Thistle; (3) Most Illustrious Order of St. Patrick; (4) Order of Bath; (5) Order of the Star of India; and (6) Order of St. Michael and St. George.

⁶ The civil honors have been weighted by their level of prestige. Each civil honor receives as its weight the order of its ranking. There are twelve ranks in all (some orders have several classes). For example, the highest honor is “KG” (Knight of the Most Noble Order of the Garter) which is given a weight of 12.

To investigate whether the quality of colonial rule outside the British Empire had a lasting impact on institutions, I have compiled a data set on the salaries of colonial governors who ruled in colonies acquired by the other European powers (France, Belgium, Italy, and Portugal). Some of these salaries had to be extrapolated from existing data sources, creating the possibility of measurement error. Several steps were taken to create the larger data set. All several salaries (denominated in British pounds) are based on the data listed by Gann and Duignan (1978).

For those colonies with missing data, I used the Gann and Duignan data to match salaries to administrators with the same ranking. For example, the Portuguese Governor-general of Angola earned a salary of £2,200 in 1913 while the salary for Mozambique was missing. Since these countries were acquired by Portugal at the same time and are physically near to each other, I assign Angola's salary to Portugal's governor. Outside the British Empire, colonies were ruled by different ranking officials (e.g., Governor-general, Governor, Governor 1st class Governor 2nd class, etc). Gann and Duignan include data for different classes of administrators. For all colonies with missing data, I use Henige's (1970) *Colonial Governors: A Comprehensive List* to determine the class of colonial officer in charge of the colony. I then match the salary data to administrators with the same rank.

Table 2 provides a list of the 42 British colonies and the 25 European colonies used for analysis. In this table, I include the identity of the colonizer, political status, date of acquisition, date of independence, type of governor ('high quality' versus 'low quality'), and income per capita in 2000. I define 'high quality' governors as those who earned an annual income of more than £3000 in 1913; 'low quality' governors had annual

incomes below £3000⁷. Please note that these countries do not represent the population of all European colonies. In my analysis, I include only those colonies which: (1) remained under colonial rule for more 30 years or more; and (2) were not ruled by more than one European power at the same time. The first restriction excludes countries, like Egypt, which came under formal British control for only a short period of time. The rationale for this exclusion is that institutions are permanent in nature and therefore take time to build. The second restriction excludes countries, like the Sudan and Equatorial Guinea, which were jointly ruled by two European powers.

The remaining data used for analysis are taken from existing data sources. Definitions of each variable and their source can be found in Appendix I. Table 3 provides descriptive statistics for several variables of key interest. The first column covers the sample of 42 British colonies for which data on governors' salaries and institutional quality are available. This is the preferred sample, given that it contains a longer series of data on governors' salaries, as well as several additional variables on the personal background and administrative effectiveness of British governors. The second column contains the summary statistics of the larger sample which includes data on both British and European colonies.

GDP per capita on a PPP basis for 2000 is the measure used for economic performance. There is considerable variation in GDP per capita across both samples. For the former British colonies, mean GDP in 2000 is \$9,888 and the standard deviation of

⁷ For the British data the following salaries were deflated to 1912 prices: Tanzania (1921), Zambia (1925), and Zimbabwe (1925). These dates correspond to the first year that the governors' salaries were included in the *Colonial List*. To express these salaries in 1912 prices, I use the deflators listed in Mitchell (1988). In addition, several salaries had to be converted to pounds sterling: Canada and Belize were expressed in *gold dollars*; India, Uganda, Kenya, Sri Lanka, Mauritius, and the Seychelles were expressed in *rupees*; and both Malaysia, and Singapore were expressed in *silver dollars*. To convert these salaries, I used the exchange rates listed in Colonial Office (1937).

log GDP is 1.19. The poorest country in the sample is Sierra Leone with a mean GDP of \$684 and the richest country is Bermuda with a mean GDP of \$34,032. For the larger sample, mean income is \$7,115 and the standard deviation of log GDP is 1.24. In this sample, the poorest country is Zaire with a mean GDP of \$359 and the richest country is Bermuda again.

To measure current institutions, I use two variables—“rule-of-law” and “government effectiveness”—defined by Kaufman et al. (2003). Both variables range from -2.5 (weakest institutions) to +2.5 (strongest institutions). “Rule-of-law” varies according to indicators like the extent of tax evasion, police effectiveness, and how well financial assets and wealth are protected, whereas “government effectiveness” varies according to the efficiency of the country’s bureaucracy, particularly its ability to collect tax revenue, implement government policies, and respond effectively to domestic economic problems. I choose the Kaufman et al. measures of institutional quality over those defined by Jagers et al (2002) because the former cover more countries.

In the British sample, the mean value for “rule-of-law” is 0.25, with Nigeria (score of -1.09) having the weakest institutions and Singapore (score of 2.12) having the strongest institutions. The mean value for the larger sample is -0.11, with Zaire (score of -1.79) having the weakest institutions and, once again, Singapore having the strongest institutions. The former colonies vary widely in how they score on “government effectiveness.” In the British sample, the mean value for “government effectiveness” is 0.19, with Sierra Leone (score of -1.57) having the least effective government and Singapore (score of 2.48) having the most effective. The mean value for the larger

sample is -0.09, with Zaire (score of -1.63) and the Congo (score of -1.62) having the lowest scores and, once again, Singapore having the highest score.

Two other controls are added to the equations: (1) the level of ethnic diversity; and (2) the distance of the country from the equator. Previous empirical studies have found that ethnic diversity is negatively correlated to income per capita (see, for example, Easterly and Levine, 1997; and Montalvo and Reynal-Querol, 2005). In this study, I use the measure of ethnic diversity employed by La Porta et al. (1999) which corresponds to the degree of ethno-linguistic fractionalization: that is, the probability that two random selected people from the same country will not belong to the same ethno-linguistic group. This variable varies from 0 to 1 with higher values indicating greater ethnic diversity. The mean value of ethnic diversity for both samples is similar: 0.41 for the former British colonies and 0.44 for the larger sample.

In addition, the equations estimated include the country's distance from the equator (defined in terms of the absolute value of the latitude of the country). This variable is intended to control for adverse geographic factors, like being located in the tropics. Several studies have found that a tropical location has a negative impact on income per capita, apparently resulting from the higher disease burden in tropical climates (see, for example, Easterly and Levine, 2003 and Gallop et al., 1999).

3. OLS and IV Results in the Core Specifications

This paper attempts to estimate of the following equation:

$$\log y_i = \alpha + \beta INS + \rho ETH + \gamma LAT + \varepsilon_i$$

where y_i is the income per capita in country i , INS_i , ETH_i , and LAT_i measure the quality of institutions, level of ethnic diversity, and latitude of country i , respectively, and ε_i is the random error term. My main interest is in the size and significance of β , after controlling for ethnic diversity and ecological conditions (measured by a country's latitude).

Before discussing the results, it is useful to examine the simple bivariate relationships between present-day institutions and governors salaries. As demonstrated by Figures 4 and 5, the rule of law variable is positively correlated with the log of governors' salaries in both samples and, consequently, has the potential to explain levels of per capita income. In the larger sample, governors' salaries alone explain approximately 30% of the variation in present-day institutions, as measured by the rule of law variable. This positive relationship is confirmed by the OLS regression of (log) per capita income on the rule-of-law measure. Panel C of Table 4 reports OLS estimates of β for the different samples. The estimated value of β is precise and large in magnitude: its estimated value is 0.79 for the British colonies and 1.00 for the larger sample which includes countries colonized by other European powers.

Similar results are found for government effectiveness. Governors' salaries are positively correlated with present-day levels of government performance (see Figures 6 and 7), indicating that the quality of early colonial rule had a lasting impact on the type of bureaucracy which evolved in the former colonies. Rauch and Evans (2000) reveal that effective bureaucrats in developing countries run better governments. That is, developing countries with strong bureaucratic structures (e.g., recruitment based on meritocracy) have less corruption and more efficient regulatory environments than countries with weak

bureaucracies. What is not understood is how some countries came to have strong bureaucratic structures while others did not. One possibility is that colonial rule influenced the structure of early state bureaucracies and these structures became the foundation for later state institutions. This hypothesis is consistent with the results from the OLS regression of (log) per capita income on government effectiveness.

As is well known, the OLS results cannot be interpreted as either causative or accurate for a number of reasons, including omitted variables, reverse causality, and measurement error. To tackle these problems, I employ a two-stage least squares (2SLS) estimation method which uses (log) governors' salaries as an instrument for institutional quality.

In the first-stage regressions, INS_i is regressed on all the exogenous variables. That is,

$$INS_i = \eta + \lambda LNSALARY_i + \phi ETH_i + \sigma LAT_i + \varepsilon_{INS_i}$$

where $LNSALARY_i$ is (log) governors' salaries. The exclusion restriction is that $LNSALARY_i$ does not appear in equation (1). Equations (1) and (2) are the core specifications. Panel A of Table 4 reports the 2SLS results for the different samples. Three samples are used for analysis: the first two are based on the British colonies, and the third includes both British and European colonies. In columns (3) through (6) India and Pakistan are dropped from the sample. These countries are dropped for two reasons: (1) because they are outliers in terms of governor pay; and (2) the Indian sub-continent was not entirely under British control—many states remained under control of Indian rulers (i.e., the Princely States).

Panel A of Table 4 reports the β estimates for institutional quality. The results reported in columns (3) to (6) indicate that better institutions have a positive impact on economic performance. When governors' salaries are used as an instrument for rule-of-law, the β estimates range from 1.17 to 1.48. These estimates are similar in magnitude to those found by Rodrik et al (2004) who use the same measure of institutions (rule of law) but a different set of instruments. Rodrik et al. use two instruments: (1) rates of settler mortality (proposed by Acemoglu et al, 2001); and (2) the fraction of the population speaking English and other Western languages (proposed by Hall and Jones, 1999)⁸. Their 2SLS estimates of the impact of institutional quality on economic performance range from 1.19 to 1.78.

My results corroborate these earlier 2SLS estimates and provide further evidence that a country's history can have a lasting impact on its economic performance. The real question, of course, is why does history matter? Did colonialism really affect how institutions evolved in these countries? The remainder of this paper investigates this question by checking the validity of the instrument and the robustness of the results.

4. Checking the Results

The validity of the 2SLS estimates reported in Table 4 depends on the assumption that governors' salaries have no direct impact on current economic performance. To test this assumption, I use a several different approaches. First, I employ Sargan's (1958) test of overidentifying restrictions. This test is carried out by adding instruments to the first-stage regression, and then testing the regressors for exogeneity. Sargan's test asks

⁸ They use the Hall and Jones (1999) instrument because it covers a much larger sample (137 countries) than is possible using the Acemoglu et al.(2001) instrument (67 countries).

whether any of the instruments are invalid but assumes that there are enough valid instruments to exactly identify the equation. By failing to reject the null hypothesis, we know that at least one of the instruments is valid. The overidentifying test is useful because it provides a direct test of the exclusion restriction. The test, of course, is not full-proof: (1) it may *not* lead to a rejection of the null hypothesis if all instruments are invalid but correlated to each other; and (2) it does not verify the validity of *all* the instruments. Nevertheless, it is a useful starting point in determining whether governors's salaries are a valid instrument.

The Sargan test is carried out by adding three additional instruments to the first-stage equation. Two instruments indicate the identity of the colonizer—that is, whether the colony was acquired by the British or the French. Several studies demonstrate that colonial origin is important in determining the quality of a country's laws and their enforcement (La Porta et al, 1998, 1999; Djankov, 2002). The last instrument identifies whether the colony came under colonial rule after 1850. This dummy is added because colonial governors had more discretion in the types of institutions adopted by colonies acquired after the mid-nineteenth century.

The results of the overidentification tests are reported in Table 5. In Panel A of this table, I report the 2SLS estimates of the effect of institutional quality on per capita income using different sets of instruments. Panel B gives the corresponding first stage results and Panel C gives the p -value from χ^2 test statistic. When the number of instruments is expanded, the exogeneity of the over-identifying restrictions cannot be rejected at the 5% level. This holds true when I test the exclusion restriction for both the rule of law instrument and the government effectiveness instrument. The failure to reject

the over-identifying assumption provides additional confidence that governors' salaries are a valid instrument.

In addition, I examine the stability of the instrument over time. Institutions, by definition, are slow to change because they define both how people act (based on the structure of incentives) and how they expect others will act. Although political leaders can change overnight and radically alter public policy, the new leaders must still operate within the existing institutional environment. Therefore, a good instrument for institutions should be stable across different time periods because institutions are relatively durable. This aspect of institutions has been largely ignored by economists, mainly due to data constraints.⁹

One advantage of the British colonial data is that I have data on governors' salaries covering the period 1885 to 1935. I use these data to examine the stability of the 2SLS estimates over different time periods. These results are reported in Table 6. With the exception of 1895, the 2SLS estimates are relatively stable over time—they vary from 0.92 to 1.17 for the rule of law variable, and from 0.82 to 1.02 for the government effectiveness variable. This corresponds to a change of about 25 percent using data which span thirty years.

Assuming the instrument is valid, the 2SLS estimates could still be biased if there is an omitted variable correlated with either the exogenous variables (i.e., the second-stage regressors) or the endogenous variables (i.e., the first stage regressors). Both possibilities are examined. First, I investigate the possibility that some missing variable (correlated to institutional quality) is the true determinant of economic performance. To do this, I add regional dummies which are known to be correlated to economic

⁹ The exception is the paper by Glaeser et al (2004).

performance. These results are reported in Table 7. The addition of regional controls does not significantly affect the size of the coefficients. For both samples, the 2SLS estimates remain significant and relatively stable. However, the F-statistic drops significantly in the first-stage regression in columns (2), (4), (6), and (8), indicating that governors' salaries are a weak instrument for government effectiveness. Given this result, I restrict the remainder of my analysis to the rule of law variable.

Next, I investigate the possibility of omitted variables bias in the first stage equation; that is, the likelihood that some missing variable (correlated to governors' salaries) is the true determinant of institutional quality. This type of omitted variable bias is harder to detect. Once again, I use a couple of different approaches. First, I regress the rule of law variable on the salary of British Diplomats in 1935. Why? Because the selection process to become a British Ambassador was similar to the selection process to become British Colonial Governor. However, there is no *a priori* reason why British Ambassadors would have had any impact on the quality of institutions in the countries where they were posted. In other words, there should be no correlation between diplomatic salaries and present day institutions. The data confirm this hypothesis. When the rule of law variable is estimated on a dummy variable indicating whether the Ambassador received a "high" salary, the estimated coefficient is 0.38 with a standard error of 0.32 which corresponds to a significance level of 24 percent¹⁰. In addition, the overall fit of the equation indicates that "high" ambassador salaries explain only 0.3 percent of the variation in the rule of law variable. These results are reported in Table 8.

¹⁰ In 1935, there were four salaries for British diplomats. These were £1,350, £1,900, £2, 137, or £2,375. I define "high" salaries as those exceeding £2,000 per annum.

Next, I investigate whether better paid governors obtained more colonial funding. If this were the case, governors' salaries may be capturing the effect of larger colonial investment rather than higher quality institutions. As a rule, British colonies were supposed to maintain balanced budgets,¹¹ but could obtain additional funding from the British Government to finance special projects, like railroads or new ports. To test whether higher paid governors obtained more funding, I use data on the allocation of colonial funds and grants by the Colonial Development Advisory Committee during the inter-war period. The Colonial Development Act of 1929:

established a fund of up to £1 million a year to be spent on colonial development and a committee, known as the Colonial Development Advisory Committee (C.D.A.C.) was established to consider schemes submitted by local colonial governments via the Colonial Office, for assistance. It was this committee which was formally responsible in the 1930's for channeling imperial funds for economic development in the colonies (Meredith, 1975, p. 487).

To obtain funds, governors had to submit applications which outlined both the costs and purpose of their proposed plan. There was considerable variation across the colonies as to the number of applications submitted and their eventual success rate in obtaining colonial funds. Using data collected by Meredith (1975), I investigate whether higher paid governors: 1) submitted more applications to the C.D.A.C.; 2) had a higher success rate; and 3) obtained greater funds and grants. These variables are regressed on governors' salaries and the results are reported in Table 8. The results indicate that higher paid governors did not submit more applications nor have a higher success rate. And, higher paid governors did not, on average, receive more external funding for colonial investments. Therefore, it is unlikely that governors' salaries are picking up the effect of larger colonial investment.

¹¹ Tax payers back in the colonizing country didn't want to have to pay for colonial development.

And, finally, I investigate the possibility of reverse causality; that is, higher paid colonial governors were placed in colonies with initially higher per capita income. While no national accounts exist for these countries during the pre-colonial period, it is possible to proxy economic development using population density.¹² Using colonial data, I have measures of population density for the British colonies in 1861 which are derived from various colonial population censuses¹³. To determine whether higher paid governors were sent to colonies with initially higher levels of economic development, I regress population density on governors' salaries for six years of colonial data (1895, 1905, 1913, 1925, 1930, and 1935). The results from these regressions are reported in Table 9. From these results, it is clear that higher quality governors were not placed in colonies that were initially more developed (at least, not during the first forty years of colonial rule).

5. Conclusion

Several recent studies have examined how colonial institutions are related to current institutions and economic performance. The earliest of these studies focused on differences in institutional quality based on the identity of the colonizer. These studies demonstrate that, on average, former British colonies developed better institutions than other European colonies. A major shortcoming of this work, however, is that it neglects differences in colonial institutions across colonies ruled by the same colonial power. The innovative paper by Acemoglu et al (2001) resolved this problem (as well as the econometric issue that institutions are endogenous) by proposing a new instrument for institutional quality—settler mortality rates. The main weakness of this instrument,

¹² Population density is often used by economic historians as a proxy for economic development—higher levels of population density correspond to higher levels of economic development.

¹³ Population estimates are divided by the land area of the colony.

however, is that it does not vary significantly across former colonies with low levels of European settlement. These former colonies include many of today's economic 'winners' (e.g., Hong Kong, Malaysia) as well as some of the developing world's worst performers (e.g., Nigeria, Zambia).

To overcome this problem, I propose a new instrument—the salary of colonial governors—for measuring the quality of colonial institutions. This instrument provides a good source of exogenous variation because the ranking of governors' salaries in the British Empire remained relatively fixed from the late nineteenth century onwards. Using a two-stage least squares estimation procedure, I find that colonies which had higher paid governors developed better institutions (and higher per capita income) than those with lesser paid governors. To confirm these results, I conduct several checks which include tests for omitted variable bias and reverse causality, as well as tests to validate the stability of the instrument over time. These tests provide strong evidence that colonies with better paid governors—as designated by the Colonial Office—ended up with better institutions and higher per capita incomes.

Essentially, the Colonial Office picked the economic 'winners' in the late nineteenth century by setting up a compensation system in which some governorships were better paid than others. This relationship holds outside the British Empire as well. When the sample is expanded to include former colonies from other European powers (i.e., France, Belgium, Portugal, and Italy), the data indicate that colonies with higher paid governors developed better institutions, particularly rule-of-law, than colonies with lesser paid governors.

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Figure 1: Income and Quality of Colonial Rule

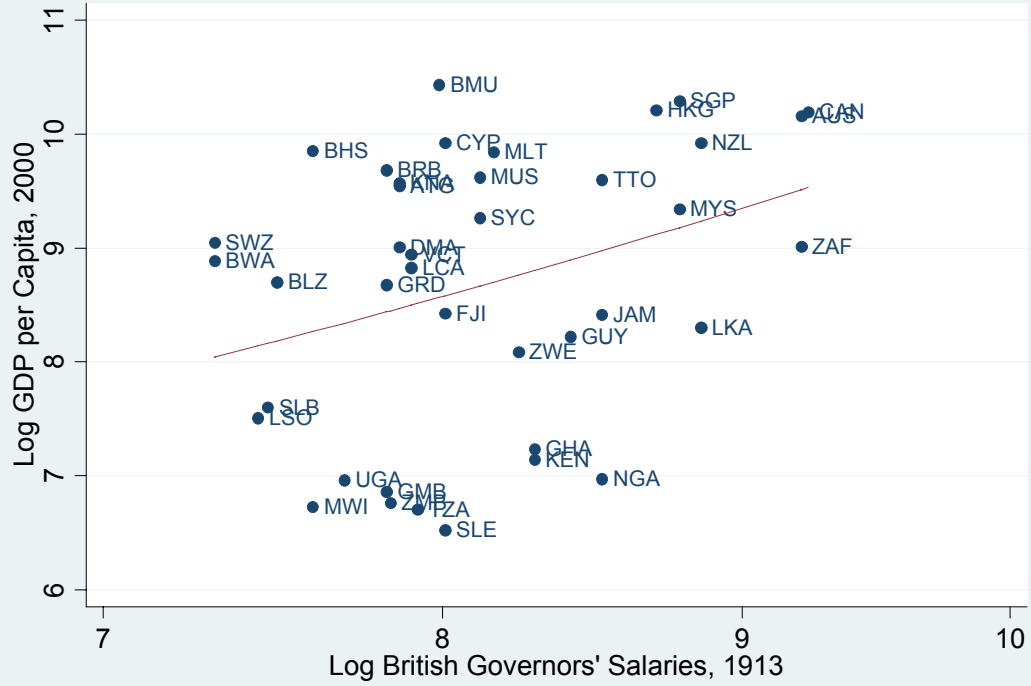


Figure 2: Income and Quality of Colonial Rule

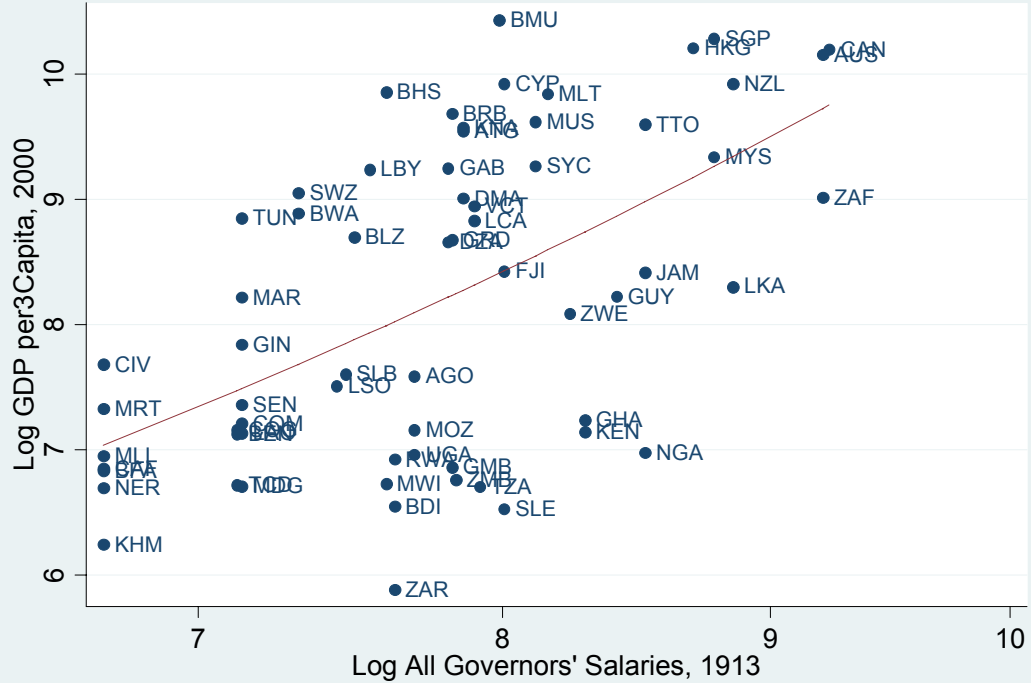


Figure 3: British Civil Honors and Log Governors' Salaries

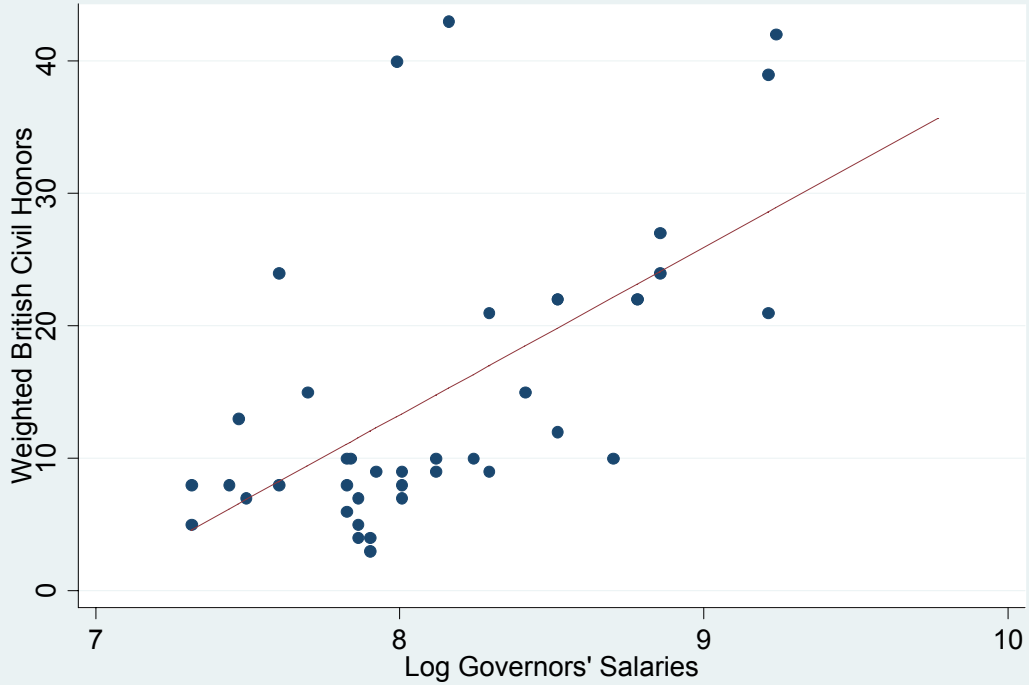


Figure 4: Rule of Law and Log Governors' Salaries

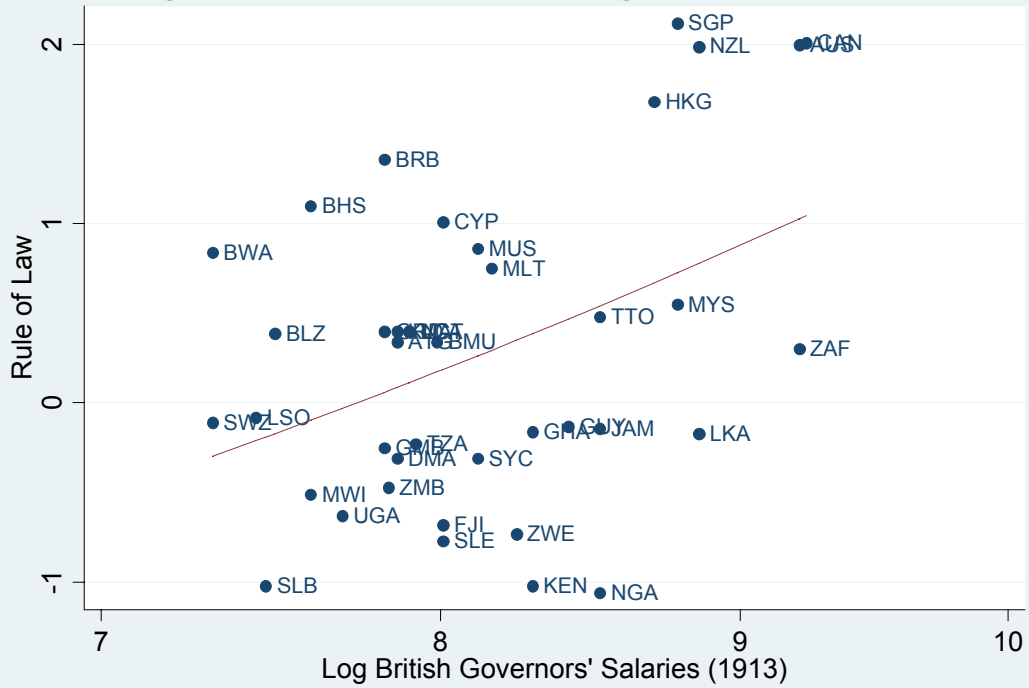


Figure 5: Rule of Law and Log Governors' Salaries

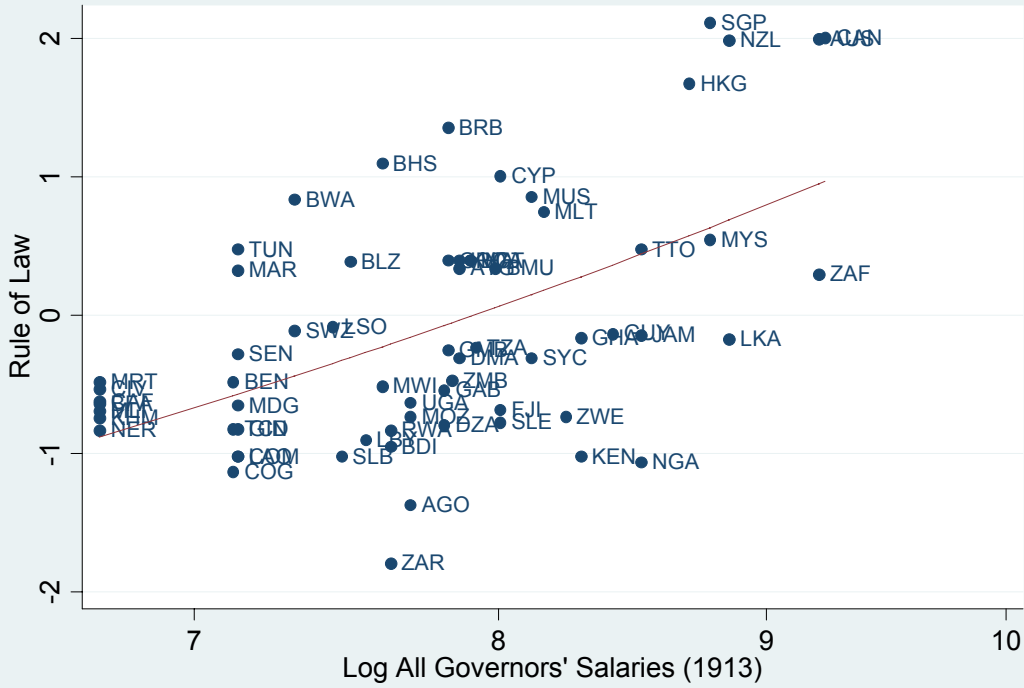


Figure 6: Government Effectiveness and Log Governors' Salaries

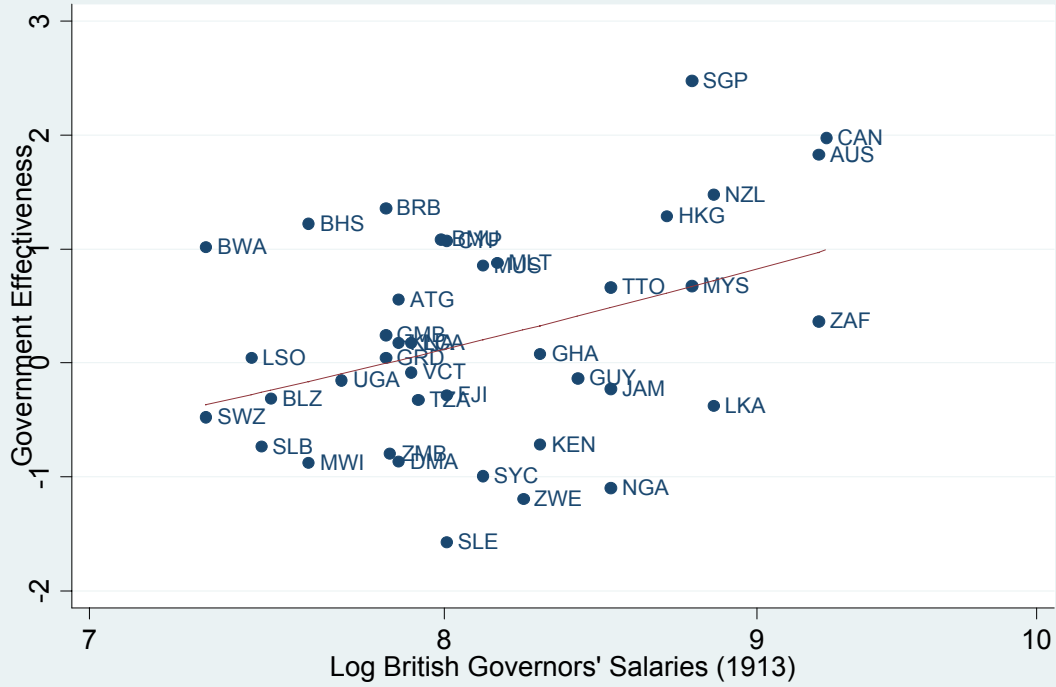


Figure 7: Government Effectiveness and Log Governors' Salaries

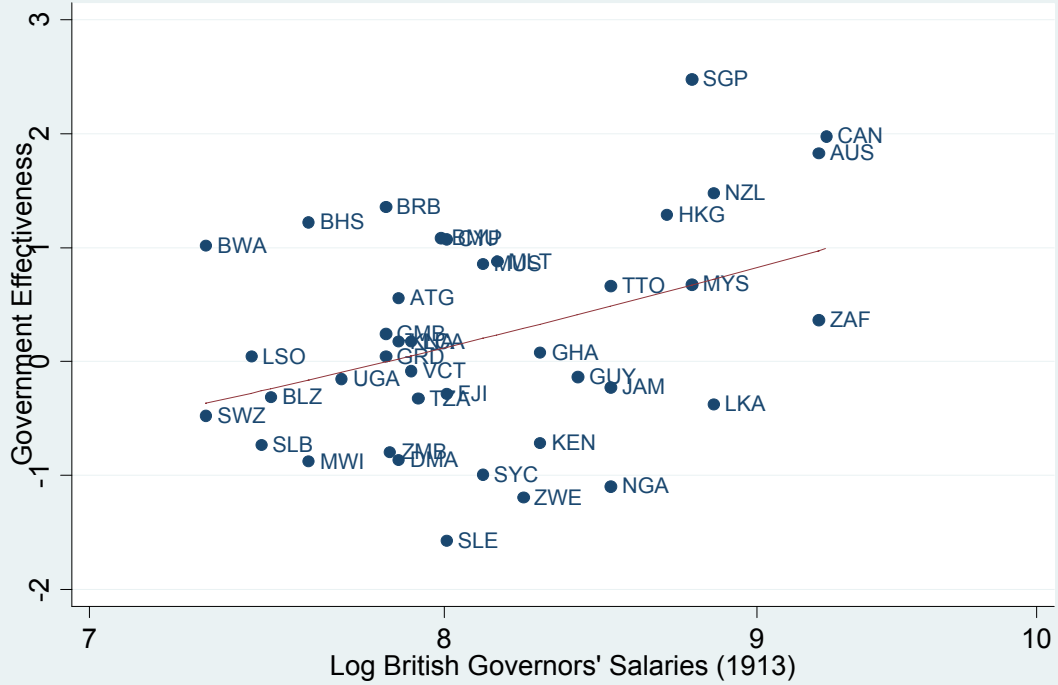


TABLE 1: GDP PER CAPITA IN 1960
(Countries with < 10% European Settlement in 1900)

Poor (< \$1,650)	Poor (< \$1,650)	Intermediate (between \$1,650 and \$3,400)
Bangladesh	Mali	Angola
Benin	Morocco	Central African Republic
Burkina Faso	Mozambique	Guinea
Burundi	Nepal	Hong Kong
Cameroon	Niger	Iran
Chad	Nigeria	Jamaica
China	Pakistan	Japan
Congo, Dem. Rep.	Rwanda	Malaysia
Cote d'Ivoire	Sierra Leone	Papua New Guinea
Egypt	Sri Lanka	Philippines
Ethiopia	Syria	Senegal
Ghana	Taiwan	Singapore
India	Tanzania	Tunisia
Indonesia	Thailand	Turkey
Kenya	Togo	
Korea, Rep.	Uganda	
Madagascar	Zambia	
Malawi	Zimbabwe	

Source: Krieckhaus, Table 3.1 (p.36)

TABLE 2:
POLITICAL & ECONOMIC CHARACTERISTICS OF COLONIES IN THE SAMPLE

Colony	Country Code	Colonizer	Date Acquired	Date of Independence	Governor's Salary, 1913	Income per Capita, 2000
Algeria	DZA	France	1830	1962	Low	5,753
Angola	AGO	Portugal	1880	1975	Low	1,975
Antigua	ATG	Britain	1663	1981	Low	14,065
Australia	AUS	Britain	1788	1901	High	25,835
Bahamas	BHS	Britain	1717	1973	Low	19,088
Barbados	BRB	Britain	1663	1966	Low	16,086
Belize	BLZ	Britain	1862	1981	Low	6,014
Benin	BEN	France	1894	1960	Low	1,251
Bermuda	BMU	Britain	1885	----	High	34,032
Botswana	BWA	Britain	1885	1966	Low	7,256
Burkina Faso	BFA	France	1919	1960	Low	933
Burundi	BDI	Belgium	1919	1962	Low	699
Cambodia	KHM	France	1863	1949	Low	514
Canada	CAN	Britain	1791	1867	High	26,821
Cen. Afr. Rep.	CAF	France	1910	1960	Low	945
Chad	TCD	France	1920	1960	Low	830
Comoros	COM	France	1912	1973	Low	1,359
Congo	COG	France	1910	1960	Low	1,286
Cyprus	CYP	Britain	1878	1960	High	20,457
Dominica	DMA	Britain	1783	1978	Low	8,197
Fiji	FJI	Britain	1874	1970	High	4,572
Gabon	GAB	France	1910	1960	Low	10,439
Gambia	GMB	Britain	1821	1965	Low	954
Ghana	GHA	Britain	1821	1957	High	1,392
Grenada	GRD	Britain	1783	1974	Low	5,896
Guinea	GIN	France	1783	1975	Low	2,546
Guyana	GUY	Britain	1814	1966	High	3,733
Hong Kong	HKG	Britain	1842	1960	High	27,236
Ivory Coast	CIV	France	1882	1960	Low	2,177
India	IND	Britain	1858	1947	High	2,644
Jamaica	JAM	Britain	1655	1962	High	4,521
Kenya	KEN	Britain	1920	1963	High	1,268
Laos	LAO	France	1893	1949	Low	1,257
Lesotho	LSO	Britain	1868	1966	Low	1,834
Libya	LBY	Italy	1912	1951	Low	10,335
Madagascar	MDG	France	1896	1958	Low	823
Malawi	MWI	Britain	1891	1964	Low	839
Malaysia	MYS	Britain	1874	1963	High	11,406
Mali	MLI	France	1920	1960	Low	1,047
Malta	MLT	Britain	1814	1962	High	18,863
Mauritania	MRT	France	1903	1960	Low	1,521
Mauritius	MUS	Britain	1814	1968	High	15,121
Morocco	MAR	France	1912	1956	Low	3,720
Mozambique	MOZ	Portugal	1891	1975	Low	1,286
New Zealand	NZL	Britain	1840	1910	High	20,423
Niger	NER	France	1922	1960	Low	807
Nigeria	NGA	Britain	1900	1960	High	1,074
Pakistan	PAL	Britain	1858	1947	High	2,477
Rwanda	RWA	Belgium	1919	1962	Low	1,018

TABLE 2 CONTINUED:
POLITICAL & ECONOMIC CHARACTERISTICS OF COLONIES IN THE SAMPLE

Colony	Country Code	Colonizer	Date Acquired	Date of Independence	Governor's Salary, 1913	Income per Capita, 2000
Senegal	SEN	France	1854	1959	Low	1,571
Seychelles	SYC	Britain	1810	1976	High	10,593
Sierra Leone	SLE	Britain	1896	1961	Low	684
Singapore	SGP	Britain	1826	1965	High	29,434
Solomon Is.	SLB	Britain	1893	1978	Low	2,013
South Africa	ZAF	Britain	1848	1964	High	8,226
Sri Lanka	LKA	Britain	1815	1972	High	4,047
St Kitts & Nevis	NNA	Britain	1663	1983	Low	14,393
St Lucia	LCA	Britain	1814	1979	Low	6,689
St Vincent	VCT	Britain	1784	1979	Low	7,672
Swaziland	SWZ	Britain	1868	1968	Low	8,517
Tanzania	TZA	Britain	1919	1961	Low	817
Trinidad	TTO	Britain	1888	1962	High	14,770
Tunisia	TUN	France	1881	1956	Low	6,993
Uganda	UGA	Britain	1893	1962	Low	1,058
Zaire	ZAR	Belgium	1885	1967	Low	359
Zambia	ZMB	Britain	1893	1964	Low	866
Zimbabwe	ZWE	Britain	1893	1980	High	3,256

Notes: Governors' Salaries in 1913 British pounds. Income per capita in PPP dollars.

TABLE 3: DESCRIPTIVE STATISTICS

Characteristics of Colonies	All British (1)	British, No India or Pakistan (2)	Full Sample (3)
Log GDP per Capita (PPP) in 2000	8.64 (1.19)	8.68 (1.21)	8.17 (1.26)
Rule of Law	0.25 (0.87)	0.27 (0.88)	-0.11 (0.89)
Government Effectiveness	0.19 (0.93)	0.21 (0.95)	-0.09 (0.93)
Ethnic Diversity	0.41 (0.32)	0.40 (0.32)	0.43 (0.32)
Latitude	0.20 (0.13)	0.19 (0.14)	0.18 (0.13)
British	—	—	0.62 (0.49)
French	—	—	0.29 (0.46)
Africa	0.38 (0.49)	0.40 (0.50)	0.60 (0.49)
Asia	0.17 (0.38)	0.13 (0.33)	0.11 (0.31)
Late	0.45 (0.50)	0.43 (0.50)	0.63 (0.49)
Population Density, 1891	1.78 (2.98)	1.79 (3.05)	178.8 (305.8)
Characteristics of Governors			
Log (Governor's Salary), 1895 ^a	8.00 (0.51)	8.00 (0.51)	
Log (Governor's Salary), 1905 ^b	8.16 (0.57)	8.15 (0.57)	
Log (Governor's Salary), 1913	8.22 (0.62)	7.78 (0.66)	8.21 (0.62)
Log (Governor's Salary), 1925 ^c	8.32 (0.47)	8.32 (0.47)	
Log (Governor's Salary), 1930 ^c	8.32 (0.47)	8.32 (0.54)	
Log (Governor's Salary), 1935 ^c	8.33 (0.55)	8.33 (0.55)	
Log(Civil Honors)	14.95 (10.95)	2.47 (0.69)	
Applications to C.D.A.C	20.12 (16.13)	20.12 (16.13)	
Successful Applications (%)	78.33 (15.12)	78.33 (15.12)	
Grants per capita	0.60 (1.12)	0.60 (1.12)	
Observations:	42	40	65

Notes: ^aVariable has 33 observations; ^bVariable has 34 observations; ^cVariable has 40 observations; ^dVariable has 39 observations. See Appendix Table I for variable definitions and sources.

TABLE 4:
OLS & IV REGRESSIONS OF INSTITUTIONS AND ECONOMIC PERFORMANCE

	All British (1)	All British (2)	British, excluding India & Pakistan (3)	British, excluding India & Pakistan (4)	Full Sample (5)	Full Sample (6)
Panel A: Two-Stage Least Squares						
Ethnic Diversity	-1.01*** (0.58)	-1.14** (0.61)	-1.02** (0.40)	-1.21* (0.48)	-0.31 (0.36)	-0.19 (0.54)
Latitude	-0.23 (1.34)	-0.47 (1.61)	-0.28 (1.17)	-0.40 (0.77)	-0.73 (1.15)	-1.78 (1.86)
Rule-of-Law	1.18* (0.45)		1.17* (0.33)		1.48* (0.25)	
Government Effectiveness		1.23** (0.54)		1.17* (0.36)		1.79* (0.44)
R-squared	0.71	0.63	0.72	0.65	0.61	0.17
Panel B: First Stage for Current Institutions and Governors' Salaries						
	Rule of Law	Gov. Effect.	Rule Of Law	Gov. Effect.	Rule of Law	Gov. Effect.
Ethnic Diversity	-1.24* (0.34)	-1.08 (0.42)*	-1.12* (0.34)	0.96** (0.40)	-0.57** (0.26)	-0.54* (0.30)
Latitude	1.89** (0.89)	2.01** (1.00)	2.08* (0.81)	2.16** (0.97)	2.65* (0.70)	2.78* (0.78)
Log (Gov. Salary, 1913)	0.37** (0.18)	0.35*** (0.21)	0.62* (0.20)	0.62** (0.24)	0.60* (0.12)	0.50* (0.14)
Partial R-squared	0.10	0.07	0.21	0.15	0.29	0.17
F-statistic	4.20	2.85	9.58	6.59	24.53	12.29
Panel C: OLS Regressions						
Rule-of-Law	0.79* (0.12)		0.80* (0.13)		1.00* (0.12)	
Government Effectiveness		0.69* (0.11)		0.68* (0.12)		0.77* (0.13)
R-squared	0.76	0.76	0.76	0.75	0.68	0.57
Observations	42	42	40	40	65	65

Notes: Panel A reports the two-stage least squares estimates with log GDP per capita in 2000 (PPP basis) as the dependent variable. Panel B reports the corresponding first-stage regression estimates. Panel C reports the OLS estimates, with robust standard errors. The OLS regressions also control for ethnic diversity and latitude. In all specifications, *, **, and *** indicate significance at the 1%, 5%, and 10% levels, respectively. See Appendix Table I for variable definitions and sources.

TABLE 5:
OVERIDENTIFICATION TESTS

	British (1)	British (2)	Full Sample (3)	Full Sample (4)	Full Sample (5)	Full Sample (6)
Panel A: Two-Stage Least Squares						
Ethnic Diversity	-1.06** (0.45)	-1.28* (0.44)	-0.33 (0.35)	-0.21 (0.52)	-0.42 (0.33)	-0.36 (0.45)
Latitude	-0.18 (1.11)	-0.18 (1.20)	-0.64 (1.08)	-1.64 (1.71)	-0.24 (0.98)	-0.91 (1.43)
Rule-of-Law	1.13* (0.30)		1.45* (0.22)		1.32* (0.19)	
Government Effectiveness		1.09 (0.32)		1.74* (0.39)		1.52* (0.30)
R-squared	0.72	0.68	0.62	0.20	0.65	0.49
Panel B: First Stage for Current Institutions and Governors' Salaries						
	Rule of Law	Gov. Effect.	Rule Of Law	Gov. Effect.	Rule of Law	Gov. Effect.
Ethnic Diversity	-0.88** (0.40)	-0.66 (0.48)	-0.32 (0.26)	-0.33 (0.32)	-0.54** (0.27)	-0.59*** (0.33)
Latitude	2.12* (0.80)	2.12** (0.96)	2.52* (0.64)*	2.66* (0.77)	2.20* (0.62)	2.28* (0.77)
Log (Gov. Salary, 1913)	0.50** (0.22)	0.47*** (0.27)	0.39* (0.14)	0.31* (0.17)	0.38* (0.18)	0.44*** (0.22)
“Late” Colony	-0.30 (0.26)	-0.36 (0.31)	-0.54* (0.21)	-0.46*** (0.25)	-0.32 (0.21)	-0.26 (0.26)
British Colony					0.87* (0.28)	0.73** (0.35)
French Colony					0.72** (0.31)	0.85** (0.38)
Panel C: Results from Overidentification Tests						
<i>p</i> -value	0.73	0.57	0.80	0.82	0.61	0.58

Notes: Panel A reports the two-stage least squares estimates with log GDP per capita in 2000 (PPP basis) as the dependent variable. Panel B reports the corresponding first-stage regression estimates. Panel C reports the *p*-value for the null hypothesis that the coefficient on rule of law (or government effectiveness) in Panel A is the same as when instrumented by a larger number of instruments. All regressions using the British sample have 40 observations; the regressions using the Full Sample have 65 observations. See Appendix Table I for variable definitions and sources.

TABLE 6: 2SLS ESTIMATES ACROSS TIME

Instrument (1)	Rule of Law (2)	R-squared (3)	Gov. Effect. (4)	R-squared (5)
Log (Gov. Salary, 1895)	0.72 (0.45)	0.71	0.67 (0.43)	0.69
Log(Gov. Salary, 1905)	1.13* (0.33)	0.68	1.02* (0.30)	0.67
Log (Gov. Salary, 1913)	1.17* (0.33)	0.72	1.18* (0.36)	0.65
Log(Gov. Salary, 1925)	0.99* (0.31)	0.75	0.98* (0.32)	0.72
Log(Gov. Salary, 1930)	0.92* (0.32)	0.75	0.82* (0.29)	0.75
Log(Gov. Salary, 1935)	0.92* (0.31)	0.75	0.83* (0.29)	0.74

Notes: Columns (2) and (4) refer to the 2SLS estimates instrumented by the variable in column (1). All second-stage regressions control for ethnic diversity and latitude. All regressions have 40 observations, except governors' salary in 1895 and 1905. The 1895 data have 33 observations and the 1905 data have 34 observations. See Appendix Table I for variable definitions and sources.

TABLE 7:
OLS & IV REGRESSIONS WITH REGIONAL CONTROLS

	British (1)	British (2)	British (3)	British (4)	Full Sample (5)	Full Sample (6)	Full Sample (7)	Full Sample (8)
Panel A: Two-Stage Least Squares								
Ethnic Diversity	-0.85** (0.41)	-1.10 (0.44)	-0.84*** (0.50)	-1.06** (0.52)	-0.33 (0.36)	-0.31 (0.57)	-0.31 (0.36)	-0.25 (0.57)
Latitude	0.10 (1.21)	-0.18 (1.48)	0.06 (1.72)	-0.47 (2.37)	-0.79 (1.41)	-2.31 (2.74)	-0.98 (1.42)	-2.71 (2.83)
Rule-of-Law	1.01* (0.37)		1.02* (0.54)		1.50* (0.39)		1.51* (0.40)	1.51* (0.40)
Government Effectiveness		1.09** (0.46)		1.17 (0.73)		1.98** (0.82)		2.01* (0.81)
Africa	-0.38 (0.31)	-0.20 (0.41)	-0.38 (0.31)	-0.20 (0.44)	0.05 (0.41)	0.34 (0.75)	-0.08 (0.40)	0.07 (0.68)
Asia			-0.03 (0.54)	-0.18 (0.73)			-0.45 (0.36)	-0.92 (0.63)
R-squared	0.76	0.69	0.76	0.66	0.60	0.01	0.61	0.03
Panel B: First Stage for Current Institutions and Governors' Salaries								
	Rule Of Law	Gov. Effect.	Rule Of Law	Gov. Effect.	Rule Of Law	Gov. Effect.	Rule Of Law	Gov. Effect.
Ethnic Diversity	-0.79 (0.41)	-0.49 (0.49)	-0.81* (0.40)	-0.52 (0.48)	-0.20 (0.27)	-0.17 (0.32)	-0.21 (0.27)	-0.19 (0.32)
Latitude	2.12* (0.80)	2.24** (0.95)	2.49* (0.79)	2.63* (0.95)	2.61* (0.63)	2.74* (0.75)	2.68* (0.64)	2.88* (0.75)
Governor's Salary	0.52** (0.21)	0.49*** (0.25)	0.43* (0.13)	0.34 (0.26)	0.43* (0.13)	0.33** (0.15)	0.43* (0.13)	0.33* (0.15)
Africa	-0.36 (0.26)	-0.50 (0.31)	-0.23 (0.26)	-0.36 (0.32)	-0.57* (0.19)	-0.58 (0.23)	-0.52** (0.21)	-0.47*** (0.25)
Asia			0.63*** (0.33)	0.69 (0.40)			0.18 (0.27)	0.37 (0.32)
Partial R-squared	0.15	0.10	0.09	0.05	0.16	0.07	0.16	0.07
F-statistic	6.32	3.84	3.32	1.75	11.68	4.71	11.51	4.67

Notes: Panel A reports the two-stage least squares estimates with log GDP per capita in 2000 (PPP basis) as the dependent variable. Panel B reports the corresponding first-stage regression estimates. Both samples exclude India and Pakistan. The regressions using the British sample have 40 observations; the regressions using the Full Sample have 65 observations. In all specifications, *, **, and *** indicate significance at the 1%, 5%, and 10% levels, respectively.

TABLE 8: TESTING ROBUSTNESS USING ADDITIONAL COLONIAL DATA

	Rule of Law (1)	Number of Applications (2)	Success Rate (%) (2)	Grants per Capita (3)
High Diplomatic Salary, 1936	0.38 (0.32)			
Log (Governor's Salary, 1913)		-10.16*** (6.05)	-8.91*** (4.83)	-0.80 (0.58)
R-squared	0.03	0.07	0.09	0.08
Observations	53	34	34	32

Notes: All regressions are OLS with robust standard errors. In column (1) the rule of law variable is regressed on Diplomatic Salary. In columns (2) through (4) the C.D.A.C. data are regressed on log (governor's salary) in 1913. In all specifications, *, **, and *** indicate significance at the 1%, 5%, and 10% levels, respectively. The Diplomatic data come from the *Foreign Office List and Diplomatic Consular Year Book for 1935* published by the British Government. The C.D.A.C. data come from Meredith (1975).

TABLE 9: TESTING FOR REVERSE CAUSALITY

	Population Density, 1891	R-squared	Observations
Log (Governor's Salary, 1895)	0.02 (0.02)	0.02	33
Log (Governor's Salary, 1905)	0.01 (0.02)	0.01	34
Log (Governor's Salary, 1913)	-0.00 (0.02)	0.00	39
Log (Governor's Salary, 1925)	-0.00 (0.02)	0.00	39
Log (Governor's Salary, 1930)	0.01 (0.02)	0.00	39
Log (Governor's Salary, 1935)	0.01 (0.02)	0.00	39

Notes: All regressions are OLS with robust standard errors. The log (governor's salary) in 1913 is regressed on population density in 1891.

APPENDIX I: DATA DESCRIPTION AND SOURCES

Log GDP per Capita, 2000	Purchasing Power Parity Basis. From Heston et al. (2006).
Ethnic Diversity	Average value of five different indices of ethnolinguistic fractionalization. Values range from 0 to 1 with higher values indicating a higher probability that two randomly selected individuals will not speak the same language. From La Porta et al. (1999).
Latitude	Absolute value of the country's latitude. From La Porta et al. (1999).
Rule-of-Law	Varies from -2.5 (weakest institutions) to +2.5 (strongest institutions). From Kaufman et al. (2003).
Government Effectiveness	Varies from -2.5 (weakest institutions) to +2.5 (strongest institutions). From Kaufman et al. (2003).
Governor's Salary	Salaries represent base salary plus allowances, denominated in the current value of British pounds sterling. British salaries from Colonial Office (1885; 1890; 1895; 1900; 1905; 1913; 1921; 1925; 1930; and 1935). European salaries based on data from Gann and Duignan (1978).
British Civil Honors	The number of civil honors awarded to a governor, weighted by their level of prestige. There are twelve classes of honors—the highest class is given a weight of 12. From Great Britain. Colonial Office (1915; 1921; 1925; 1930; 1935).
Colonial Dummies	Dummy indicating whether the colony was acquired by the French or English. From Henige (1970).
'Late' Colony	Dummy variable indicating if colony was acquired after 1850. British data from P.J. Marshall (2001); European data from Henige (1970).
'High' Diplomatic Salary	Dummy variable indicating whether diplomatic salary was greater than £2000. From Great Britain (1935).
Number of Applications	Number of applications submitted by British governors for external colonial funds during 1929-39. From Meredith (1975).

APPENDIX I: DATA DESCRIPTION AND SOURCES CONTINUED

Success Rate	Percentage of applications to C.D.A.C. during 1929-39 that resulted in external funding. From Meredith (1975).
Grants per Capita	The value of grants awarded to colonies between 1929 and 1939, expressed in per capita terms. From Meredith (1975).
Population Density, 1891	Population divided by area in square miles. From Great Britain. Colonial Office (1937).

