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1. Introduction

What explains the enormous differences in prosperity between countries that were all once part of European empires? For example, the United States of America and Malawi are both located in what were relatively poor places when the British took possession, but today the U.S. has an income per capita more than 40 times that of Malawi. Why?

In "The Colonial Origins of Comparative Development: An Empirical Investigation" (hereafter, AJR 2001), we offered historical and econometric evidence that the way in which countries were colonized by Europe affects GDP per capita today. This chapter reviews that original evidence, which used outcomes through the mid-1990s, and shows that our findings remain robust – and for some measures become stronger – with the latest available data (through the early 2020s) and with an alternative series for the mortality of Europeans (more on this below). The path dependence created by colonization remains evident, primarily because early colonial institutions have had long-lasting influence, including on institutions today, such as the extent to which ordinary people are protected against expropriation, the effectiveness of constraints on arbitrary action by the political executive (aka the rule of law), and how equally economic opportunities are shared.

Our main finding in AJR (2001) was that a significant part of the variation in colonization strategy across places – implying variation in the formative phase for how colonies were governed – can be explained by the risk of death from disease facing potential European settlers during the four centuries of imperial expansion by Britain, France, Spain, Portugal, Germany, the Netherlands, and a few other European countries between roughly 1500 and the late 1800s. The risk of death from disease facing Europeans varied greatly in different parts of the world, from relatively low (perhaps even lower than in Europe) to extraordinarily high – in some places close to half of all new European arrivals would be dead within a year.

Informative data on the risk of death were available to contemporaries – even for the most dangerous places – because European powers sent soldiers, sailors, and explorers almost everywhere, tracking the extent to which these young men died from disease compared with other similar young men who stayed at home. The actual mortality rates of such pioneers provided a credible predictor for the

mortality rates that would face potential civilian European settlers. This information was publicly available and discussed freely, including whether there were special circumstances from a particular episode (such as a prolonged siege) that might not necessarily apply to civilians. Not surprisingly, higher mortality from disease for soldiers, sailors, explorers, and other small groups discouraged long-term settlement by large numbers of civilian Europeans.

The colonial world can be divided into three parts.

(1) A few places, including Australia and New Zealand, had mortality rates from disease that may have been lower than in Europe. Mortality rates were also low in northern North America (including what became the United States and Canada), Malta, South Africa, Singapore, some parts of Malaysia, and Hong Kong. These places all had a natural environment that did not generally support yellow fever and falciparum malaria (the deadliest version of that disease). Deaths from disease were comparable to what settlers would have faced if they remained in Western Europe.
(2) Across the Indian subcontinent and in parts of South America, the Caribbean, and North Africa, potential mortality rates were significantly higher than in Europe. This level of risk discouraged the largest-scale European settlements but did not prevent some Europeans from attempting to live in these places for prolonged periods, for example, as colonial administrators, plantation owners, or merchants.
(3) In contrast, much of sub-Saharan Africa – as well as parts of the Caribbean and Asia most heavily impacted by yellow fever and malaria – had potential mortality rates for European settlers between four and seven times the rates in Europe (measured in deaths per 1,000 per year). In West Africa, where European powers repeatedly sought (and failed) to establish an on-the-ground presence before 1850, it was not unusual for 50 percent of newly arrived Europeans to die of disease within the first year.

In AJR (2001) we showed that where the risk of death from disease *for Europeans* was higher, Europeans were less likely to form large permanent settlements. However, European empires still impacted these societies, either by taking over existing systems of power or by supporting local rulers who were willing to align with their colonial objectives. In places with the highest potential settler mortality,

Europeans kept boots on the ground to a minimum and focused on extracting valuable resources, either literally in the form of gold, silver, and other minerals, through the development of plantation agriculture using enslaved people (including through establishing and running the trans-Atlantic slave trade), or through collecting tax and tribute from the local population.

In contrast, when their risk of death from disease was lower, Europeans were more likely to move to colonies in large numbers. The colonial authorities encouraged European migration, aiming to boost agriculture and trade and thereby increase the wealth and control of their empires. This strategy did not always translate immediately into "better" institutions for all European arrivals. In some instances – for example, in Australia and some parts of what became the United States – colonial authorities first tried to set up the kind of extractive institutions that they built in lower-settlement places, like parts of South America. Over time, however, the presence of a large number of ordinary Europeans (in Australia, the U.S., and elsewhere) created pressure for better protection against expropriation by elites, at least for citizens of European descent.

Consequently, in places where Europeans created larger permanent settlements during the colonial period, broadly "inclusive institutions" were more likely to develop, placing constraints on elite behavior and creating opportunities for a broad cross-section of ordinary people. In contrast, where Europeans pursued a strategy of ruling from afar and extracting resources, the development of "extractive institutions" was much more likely. In places with a more intermediate level of European settler mortality, we see a more mixed set of institutions, with extractive elements but also more potential for inclusion.

Drawing on this view of imperialism, one could try to distinguish colonies quantitatively on the basis of early settlement sizes, but in AJR (2001) we emphasized that settlements could also be endogenous to other factors that made a colony attractive for Europeans. For example, there were early riches available to Europeans in parts of the Caribbean, despite the relatively difficult disease conditions (for Europeans) there.[2]

[2] More generally, we did not suggest that potential settler mortality rates were the only (or even necessarily the most important) determinant of European colonization strategies. Many other factors may have played some role. For example, in AJR (2002), we found that the initial density

In AJR (2001) we used variation in the risk of mortality for Europeans – "potential settler mortality" – as an instrument for variation in institutions among former European colonies in a two-stage least squares strategy. This approach assumes that institutions today vary for a variety of reasons, but one of those is the persistence of colonial institutions, which were themselves influenced by the feasibility of European settlements. Under the exclusion restriction that potential settler mortality during the colonial era should not have a direct effect on current prosperity, we can use the component predicted by potential settler mortality to identify the causal effect of institutions today on GDP per capita today.[3]

The extent of economic divergence across European colonies today is evident from the "reduced form" of this instrumental-variables approach. In AJR (2001), we regressed log GDP per capita in 1995 on the logarithm of "potential settler mortality" during the early colonial period. Figure 1 updates this analysis by adding the relationship between the latest available data on the logarithm of GDP per capita (2023) and the logarithm of "potential settler mortality" during the early colonial period (i.e., our original series). In the intervening three decades, measured GDP per capita has increased around the world, but the slope of our reduced form relationship remains remarkably similar (-0.61 compared with -0.57) and the standard error for the estimated slope coefficient is almost unchanged.

The solid black line in Figure 1 shows the fit line using 2023 GDP data, and the dotted blue line uses our original 1995 GDP data; both series are purchasing power adjusted and from the World Bank. Blue dots are modern countries in places that had relatively low settler mortality rates during the colonial period, green dots are countries with high settler mortality rates, and red dots are countries with extremely high settler mortality rates (hereafter, these countries will be labeled in figures as "extreme" mortality). Appendix Figure A1 shows the same data but now showing the standard 3-letter abbreviations for country names.

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of the indigenous population also influenced colonization strategies and where Europeans were inclined to establish large settlements.

[3] For this exercise, it was essential that potential settler mortality was calculated from as homogeneous a population as possible and that variation in the risk of death from disease was broadly understood by Europeans – affecting their colonial strategy and settlement decisions. In AJR (2001), we then documented that potential settler mortality influenced European settlements and early institutions.

In Section 2, we discuss the significant variation in disease environments around the world during the formative colonial period, in terms of expected death rates for Europeans. The arrival of modern medicine reduced this variation, but the most important tropical killers of Europeans (yellow fever and malaria) were not fully understood until the end of the nineteenth century, by which time the pattern of European colonization was firmly established. This discussion establishes that Europeans faced very different expected mortality rates during the colonial period, depending on where exactly in the world they considered moving.

In Section 3, we review the construction of the settler mortality dataset in AJR (2001), starting from the work of Philip Curtin (1964, 1989, 1998) who compiled and assessed official records about the death from disease of soldiers and sailors during the early colonial period. The colonial world can be divided into places that were low, high, and extremely high mortality for Europeans – measured relative to the health conditions the same people faced if they did not leave Europe. This three-way division provides a simple way to think about the varied disease conditions faced by Europeans.

Section 4 extends robustness checks originally reported in AJR (2000, 2001). In particular, we show our original results are robust to alternative plausible ways to construct a settler mortality series. Building on these findings, we report updated results along the lines of AJR (2001) with the latest available data on GDP per capita (2023) and institutions (2010-2020), using as instruments both the original and our preferred alternative series for settler mortality. As first discussed in AJR (2000), some early reported mortality rates might have exaggerated the dangers to Europeans, so we show the implications for our core regressions of capping the death rates for Europeans at 250 per 1,000 per year. Comparing these results with AJR (2001), which used data through the mid-1990s, the estimated relationship between GDP and institutions has not changed in sign or the scale, and if anything, now appears more robust. Remarkably, this is in large part because the first stage (i.e., the relationship between institutions today and potential settler mortality in the European colonial period) has become stronger over the past quarter century.

Section 5 shows the long time series for institutions and income, which displays remarkable path dependence – and relatively little convergence across low, high, and extreme settler mortality regions.

We follow this up in Section 6 with a discussion of why the relationship between income per capita and institutions has remained so robust, despite increasing academic and policy emphasis on improving institutions. We start with a discussion of various explanations, which examine dimensions of what Europeans brought with them, including: themselves, their culture, and their education levels.

Our interpretation of the evidence is that the most important impact of the European colonial project was through early institutional choices. This triggered a path-dependent process of institutional change over the last several hundred years, so that while the nature and method of extraction have changed massively since the days of land grants, tributes, forced labor, and slavery, colonial societies with early extractive institutions have remained quite different institutionally and economically compared with colonial societies that featured more inclusive elements – and this statement holds within particular empires, e.g., there is as much variation within former British colonies as across different European empires. The influence of European colonialism has remained powerful.

This influence ed to an enormous divergence among countries colonized by Europe. Most of this divergence occurred in the nineteenth and early twentieth centuries, during the early period of industrialization. Over the last eight decades, GDP per capita rose almost everywhere in line with global trends, but there is no evidence of convergence between former European colonies where extractive institutions were imposed and those that initially had more inclusive institutions.

Section 7 concludes, while the Appendix reviews some details of our data construction and reports additional robustness checks on our core results.

2. Disease Environments Facing Europeans in the Colonial Period[4]

From about 1500, Europeans expanded their trading presence and then their formal (and informal) control to large parts of the globe. As they explored and attempted to move to other places, they quickly realized that different "climates" had radically different implications for their own health (Curtin 1989, xiii).

[4] Disease environments and their implications for European colonization strategies are discussed at greater length in Johnson (2025).

For example, in West Africa, malaria killed large numbers of newly arrived Europeans with horrible consistency. And for any European thinking about moving to West Africa, the potential impact of periodic yellow fever epidemics was also a major consideration (Curtin 1989, Chapter 1).

Significant breakthroughs in understanding the transmission of malaria and yellow fever came only at the very end of the nineteenth century. In fact, a great deal of European medical "knowledge" was worse than useless when it came to malaria and yellow fever. Patients were often bled excessively or given massive doses of mercury or both. This form of treatment likely increased the chance of death.

As early as the eighteenth century, some medical practitioners intuited that quinine could help against malaria. But even the leading advocates did not recommend large enough doses and did not understand that it had greatest value when taken as a prophylactic. Partly because it was not used effectively, the use of quinine went in and out of fashion among doctors until late in the nineteenth century.[5]

As medical practice was so ineffective, the colonial powers looked for other ways to lower the mortality of their various outposts. The most obvious solution was to send fewer Europeans to places that were more unhealthy. But that raised the question: where exactly was more or less healthy, and at what time of year? [6] Careful consideration of these questions led to the production of data which can be used to construct an informative picture of the mortality risks facing Europeans during the early colonial period (Curtin 1989).

The British kicked off this trend with a series of insightful reports covering the period 1817-1836, and other colonial powers soon followed suit (Curtin 1989, 3). At the same time, European authorities also looked more carefully at deaths from disease for soldiers in Europe, i.e., men who were not sent to the colonies. In 1863, for example, British Royal Commissioners determined that "the 'natural' rate of death for men of military age in Britain was around 10 per thousand" over the

[5] See Bruce-Chwatt and Bruce-Chwatt (1980) on the high death rates for European expeditions to West Africa. The Europeans learned little of medical value from these disasters, at least until the 1842 Niger expedition.

[6] To be clear, the motivation for this approach was a false premise: that tropical disease was related to "bad air" (origin of the word, malaria), based on local geography.

preceding decades (Curtin 1989, 5). Such studies established for them (and for us) the right baseline for what was, in effect, a control group.

Based on these data, the part of the world under European control after 1500 can be divided into three.[7] (See Table C1 for the two settler mortality data series used in this paper, along with the classification of countries into mortality groups.)

First, there were places with disease conditions for Europeans similar to (or perhaps better than) Europe during the early colonial period – in the range of 8-20 deaths per 1,000 per year. In the second region, deaths from disease for Europeans were significantly higher than in Europe – ranging from 37 per 1,000 per year in Bombay to 130 per 1,000 per year in Jamacia.

However, in the third region, the rate of European death from disease was incredibly high. Deaths from disease per 1,000 per year for Europeans in West Africa started at 165 in Senegal, rising to over 480 in Sierra Leone. There were early expeditions, including venturing quite far inland, where almost all the Europeans died.

Deaths from disease of explorers and military personnel were seen as highly informative by civilians, including those inclined to promote the movement of Europeans to the colonies. In the eighteenth century, for example, some leading British figures thought West Africa could be an appealing place for European settlement – and that sending civilian Europeans could be a good way to promote imperial interests. Various expeditions were sent out to learn more. The death rates were extraordinarily high – typically, at least half the group died in the first year (Curtin 1964, 483-487).[8] In the face of massive and repeated losses from disease (primarily malaria and yellow fever) these settlements either collapsed or were abandoned (Curtin 1964).

[7] The essential data are almost all in Curtin (1989), Table 1.1, "Mortality of European Troops Overseas, 1817-38." The original data were calculated per 1,000 "mean strength" per year, a measure of how many would die per annum if all those who died were replaced with newly arrived people from Europe. This is how the military statisticians constructed their variables, as they were thinking about the costs of sending European troops to garrison different places.
[8] See footnote 11 in Curtin (1964, 485) on Major Alexander Tulloch. Tulloch was at the forefront of measuring military mortality from disease around the world.

In contrast, it quickly became apparent that the northern part of North America was a relatively healthy place for West Europeans to live. In complete contrast to West Africa, the disease differential in the Americas between the indigenous population and European arrivals was heavily weighted against the locals, many of whom died from smallpox.

In the Americas, deaths from disease helped the Europeans take command of a continent. In West Africa, deaths from disease repelled any attempt to build European settlements.

In the age before modern medicine, Europeans were consistently dying at much higher rates when they visited West Africa (and many other places) and at somewhat higher rates when they spent time in India than when they stayed put or moved to North America or Australia or New Zealand.[9] This is a robust pattern that was learned repeatedly the hard way over several centuries. In AJR (2001) we sought to turn this information on death from disease for Europeans into a historical dataset that could be used for econometric analysis.

3. The Potential Mortality of European Settlers

The settler mortality dataset in AJR (2001) was built drawing as much as possible from Curtin (1964, 1989, and 1998), monographs that focused on the mortality records for European soldiers around the world in the time period when European powers were building colonial empires and before medical practice came to grips

[9] Again, following Curtin, we take "pre-modern medicine" to cover the time period before the 1840s (see Curtin 1989 and 1998). To be clear, death rates had fallen in Europe over the preceding centuries, but very little of this was due to improvements in medical knowledge – in retrospect, in fact, bloodletting, failure to wash hands, and other standard European medical practices were inimical to good health. From the 1840s, there were gradual improvements in practice and from the 1890s, there were improvements in what could be regarded as hard knowledge. But this was not consistently converted into lowering the mortality of Europeans in tropical regions until after 1900. (There is a potential caveat on the use of quinine, the advantages of which were apparent to some medical professionals in the early 1800s; but as Curtin and others stressed and we already noted, it was not used effectively as a prophylactic and in sufficient concentration until the second half of the century.) For more on the history of public health, including what the Europeans knew and when they knew it (and when they decided to use this knowledge to help non-Europeans) see Acemoglu and Johnson (2007). For a standard history of public health, see Rosen 1993 (originally published in 1958).

with tropical diseases. Curtin spent decades assessing these data and putting them in historical context, and whenever possible we attempt to follow and defer to his judgment, with the goal of being as consistent as possible across countries, regions, and time periods.

The main gap in the Curtin (1964, 1989, and 1998) data is for some parts of South America, since the Spanish and Portuguese militaries did not keep as comprehensive records of mortality. However, Gutierrez (1986) uses Vatican records to construct estimates for the mortality rates of bishops in Latin America from 1604 to 1876. Because these data overlap with the Curtin estimates for several countries, AJR (2001) used these to construct a data series for South America.[10] As an alternative and completely different source, we used estimates of mortality in Latin America from the British life insurance industry to build an alternative series for mortality in South America, referred to as "Naval Stations 2" in AJR (2012).[11] One advantage of this alternative series is that it only relies on data that was produced or verified by Curtin or was used by life insurance companies as the basis for commercial decisions (Institute of Actuaries 1852).

Curtin (1998) explored what he called "this decline in the cost of empire".[12] Data on the mortality of soldiers in the second half of the nineteenth century have to be

[10] Since the mortality rates for bishops and soldiers were unlikely to be the same (bishops likely resided in more comfortable and sanitary conditions than soldiers in barracks and generally enjoyed much higher standards of living) the estimates from Gutierrez (1986) were adjusted for comparability with Curtin's data. Specifically, where Curtin's and Gutierrez's data overlapped, Gutierrez's estimates were benchmarked against Curtin's. AJR (2001) uses the estimate for Mexico as a benchmark. The choice of benchmark country, and robustness of results to this choice is discussed in AJR (2012).

[11] Specifically, the Naval Stations 2 series is constructed based on the relative rates insurance companies charged for sailors stationed in South America compared to the rate charged for Mauritius and the West Indies (which appears in the Curtin data). The healthiest parts of Latin America were charged a rate similar to Mauritius, while the least healthy parts had rates similar to the West Indies. Based on this comparison, the Mauritius rate (30.5) was applied to Argentina, Brazil, Chile, Peru, and Panama. The West Indies average rate of 93.2 was applied to Bolivia, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Paraguay, Uruguay, and Venezuela.

[12] Curtin (1998) makes the point that this decline did not change European colonial strategies; these had already been determined before the 1840s. In part, again as Curtin (1998) points out, the decline in European mortality in the most dangerous places (for Europeans) was quite limited and inconsistent until at least 1900. For example, the French expedition to Madagascar in 1896

used with more care, because there was growing awareness of how to avoid epidemics of the worst tropical diseases, at least during short military campaigns. For example, the campaign in Ethiopia at the end of the nineteenth century had very low mortality rates because it was short and well-managed. Although the mortality rates from this successful campaign certainly underestimate the mortality rates faced by the settlers in Ethiopia, we did not exclude this country in an effort to use the most conservative estimates possible to test our hypothesis. In all cases, we use the earliest available number for each country, reasoning that this is the best estimate of the mortality that settlers would have faced, at least until the 20th century.

Further investigation of these and alternative series confirm the wisdom of Curtin's original emphasis on the period before the 1840s. However, as Curtin himself recognized, there is useful information in other sources, including those after Europeans became more astute about tropical disease, if used carefully.[13]

Figure 2 shows the construction of four estimates for settler mortality, as discussed in AJR (2000 and 2001). The first (blue dots) is from Curtin (1989), while the second (red) adds data from Curtin (1998). The third (green) series is constructed by using the disease environments of neighboring countries, as explained in AJR (2000). The fourth estimate merges data from Gutierrez (1986). In AJR (2000 and 2001) we used the fourth estimate in our baseline regressions while also showing extensive robustness checks with alternative samples. (In the next section we show

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incurred massive losses, despite all the practical and theoretical knowledge that had already been accumulated.

[13] Curtin published extensively on mortality data over nearly four decades (Curtin 1961, 1964, 1968, 1989, 1990, 1994, 1998, and 2003). His interpretation of the numbers remained remarkably consistent over the decades even as he uncovered more facts, a testament to the high quality of his early work. However, not surprisingly, his later in-depth work on military campaigns in Africa did generate some data in tension with earlier findings. For example, in *Death by Migration*, he stated categorically, "troops in barracks are much healthier than troops on campaign, even disregarding losses from combat" (Curtin 1989, 4). However, Curtin (1998) showed that this was not necessarily the case – the campaign against the Asante being the case in point. The military could send a lot of medical personnel (a quarter of all personnel on the ground were medical), supervise the sterilization of water (with boiling being the key point), and – most importantly – limit their incursion to the healthiest season. Supporting this view, Curtin himself emphasizes the seasonality of malaria infections in the West African savanna region (Figure 1.1 in Curtin 1998, 7). When there is any tension within Curtin, we lean toward his later publications – reasoning that we all seek to update our views when we encounter new data.

that constructing this series without data from Gutierrez produces very similar results; this is a point we already made in AJR 2011 and 2012).

Figure 3 shows three series: the yellow dots are the original potential settler mortality numbers used in AJR (2001); the green dots use information from the life insurance industry in the mid-nineteenth century (as discussed above and used in AJR 2012); and the white dots in black circles show what happens if we cap the combined Curtin plus life insurance industry data at 250 deaths per 1,000 per year, which reduces the influence of very high mortality rates (which are all from sub-Saharan Africa and are typically due to epidemics). The series indicated with black circles is our preferred alternative settler mortality estimate for this paper, as it combines Curtin's data with life insurance industry data and caps the series to reduce the effects of extreme observations. As we show below in some detail, the results are remarkably similar whether we use this alternative data set or the original series.

4. How Institutions Matter Today

We wrote AJR (2001) more than 25 years ago, and it is reasonable to ask whether the relationship between income per capita and institutions has changed – using the same instrumental-variables (IV) strategy.

Table 1 shows the core, two-stage least squares (2SLS) estimates from AJR (2001) across a range of specifications. In the upper panel, the dependent variable is log GDP per capita in 1995, and the endogenous regressor is institutions, proxied by the average "protection against expropriation", 1985-95, which was obtained from Political Risk Services, and instrumented here by our original measure of potential settler mortality. The lower panel shows the first stage.

In eight columns we show four pairs of results, in each case first without and then with latitude included as a control.[14] Latitude is used as an omnibus measure of geographic factors potentially influencing long-run economic development. In columns 1 and 2, we have 64 countries, while in columns 3 and 4 we drop the four

[14] The table structure here follows AJR (2001) closely, aiming to make for easier comparisons and more transparency of results.

countries known sometimes as “neo-Europes” (US, Canada, Australia, and New Zealand). These four countries are emblematic of the theory we developed and the 2SLS relationship we want to estimate. We drop them to verify that it is not just these four countries that derive the relationship. In columns 5 and 6 we drop Africa to ensure that the relationship of interest is not driven by within-Africa variation or a comparison of African countries to others. This reduces our sample to 37 countries. Finally, in columns 7 and 8 we add continent dummies.[15]

Protection against the risk of expropriation is significant in all specifications, and the Anderson-Rubin confidence interval is consistently bounded away from zero. The effective F-statistic (from Montiel Olea and Pflueger 2013) varies, with a value of 16.33 in column 1 (base sample, no covariates) to a low of 3.17 in column 8 (when latitude and continent dummies included).[16] In almost all specifications, the hypothesis that institutions have no effect on prosperity can be comfortably rejected.

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[15] These basic results are also reproduced in Johnson (2025); that lecture expands on our core results in related but different directions.

[16] Following best practices outlined by Andrews, Stock, and Sun (2019) for testing for, and performing inference with, weak instruments, we report Montiel Olea and Pflueger's (2013) “effective” F-statistics and Anderson-Rubin confidence intervals in all tables. In AJR (2012) we reported Cragg-Donald F-statistics, which are typically compared with Stock and Yogo (2005) thresholds for weak instruments but are only applicable under the assumption of homoscedastic standard errors. The effective F-statistic in contrast makes no such assumption, and in our setting (just-identified with one endogenous variable) can be compared to the ‘rule-of-thumb’ threshold of 10 (Andrews, Stock, and Sun 2019). To be conservative, we also report Anderson-Rubin confidence intervals for all estimates of our main coefficient (our various measures of institutions), which are robust regardless of the strength of the instrument. Throughout, these confidence intervals are consistently bounded and do not contain zero. In Table 3, where we use mortality group dummies, we instead report confidence intervals based on Moreira (2003)’s conditional likelihood-ratio (CLR) test, which is preferred to Anderson-Rubin when the model is over-identified. The CLR test can be inverted to obtain confidence intervals which are robust to weak instrumentation, similar to the Anderson-Rubin test, but this test only has a closed form solution under the assumption of homoscedastic standard errors. There is no settled, best procedure for computing weak-instrument robust confidence intervals in over-identified models in non-homoscedastic settings (Andrews, Stock, and Sun 2019). One solution from Finlay and Magnusson (2009) is to compute heteroscedasticity robust CLR confidence intervals using a grid search. The reported intervals in Table 3 are computed using this methodology. These results are consistently bounded away from zero and are similar to CLR confidence intervals calculated under the assumption of homoscedasticity, which for brevity we do not report.

One obvious question, which we addressed fully in our original work, is whether these results are driven by a particular data series. AJR (2000) and (2001) included a wide range of robustness checks. We supplement these here with our alternative series for settler mortality.

Table 2 reports our regression results using the same specifications as in Table 1 but now using data from the nineteenth century life insurance industry to fill gaps in the Curtin data (previously used in the Naval Station 2 series in AJR, 2012, as mentioned above). We also cap the mortality series at 250 per 1,000 per annum, as explained above.[17] The results using this "preferred settler mortality series", are very similar to those in Table 1, including with Anderson-Rubin confidence intervals bounded away from zero. The effective F-statistics that are now higher than in Table 1, for most specifications.

We argued earlier that the tri-part distinction between low mortality, high mortality and extreme mortality former colonies is central to the story. Table 3 confirms that this is indeed the case, by using two dummy variables for high and extreme mortality disease environments as instruments (with low mortality being the omitted category). The results are broadly similar to Table 1 in terms of both parameter values and significance levels; the appropriately computed confidence intervals (penultimate line in the top panel) are all bounded away from zero. The effective F-statistics are similar to those in Table 2.

Our original work used GDP and institutions data available in the late 1990s. In the intervening 30 years there has been a great deal of academic study of institutions, as well as serious policy efforts to improve political and economic institutions. There have also been institutional changes in various corners of the world. How do the same regression results look if we use the latest available data?

Political Risk Services (PRS) no longer publishes exactly the measure of "protection against expropriation" used in our original work, but this organization does publish indices that capture the same general concept we originally emphasized – the extent to which property rights of ordinary people are protected

[17] We reported the Curtin plus life insurance series capped at 250 in column 8 of Table 1B in AJR (2011, NBER Working Paper), where it was referred to as "Using Naval Stations Method 2, capped at 250"; with data construction and sources discussed on p.13 of that working paper.

against being expropriated by elites (either powerful private people or the government).

As emphasized in AJR (2001), the relevant measure of institutions should be a broad one, capturing several different institutional aspects. From the latest version of PRS data, we therefore construct a "composite institutions" measure, spanning the time window from the early 1980s to the present, meant to achieve the same objective.

Our baseline composite index here (available from 1984 to the present) is the average of three PRS measures that, taken together, seem closest to the protection against expropriation measure that we used originally. These three components are: corruption, the rule of law, and bureaucratic quality. When corruption is higher, the rule of law is weaker, and bureaucratic quality is lower, we would expect the protection of property rights for the broad cross-section of society to be less effective.

Panel A of Table 4 still uses log GDP per capita in 1995 as the dependent variable but replaces our original protection against expropriation measure with this PRS composite institutions measure, calculated for the same period as the original protection against risk of expropriation measure, 1985-95.[18] The results are similar to those in Table 1, though the first-stage F-statistics are a bit lower in columns 1-6 and a bit higher in columns 7 and 8. The Anderson-Rubin confidence intervals remain bounded away from zero in all cases. Overall, we conclude that the composite PRS measure of institutions gives very similar results to those in AJR (2001), using the same dependent variable.

Panel B of Table 4 uses our preferred alternative settler mortality series as the instrument, as in Table 2. The results are similar but somewhat stronger than in Panel A, especially in terms of the effective F-statistics. Again, the Anderson-Rubin confidence intervals are bounded away from zero.

[18] For the remaining tables, we shift to using the latest estimates of PPP-adjusted GDP per capita from the World Bank, updating from the series used in AJR (2012). This results in one observation, Venezuela, being excluded from the remaining tables. The World Bank does not currently publish PPP-adjusted GDP data for Venezuela, due to recent hyperinflation. Our results are quantitatively unchanged when using our original series for GDP per capita.

There is no reason to think that PRS has unique insight into the state of institutions, and over the last quarter century various researchers and organizations have constructed alternative measures for broad economic and political rights. One modern, transparent, and credible effort is produced by the Varieties of Democracy project (V-Dem). V-Dem maintains more than 600 individual measures of political institutions, covering all countries, with data beginning as early as 1789. These measures include indices for corruption, rule of law, and government accountability, which we average to produce a composite index similar to the one available from PRS.[19]

Table 5 uses the latest measure of log GDP per capita for 1995, regressed on this V-Dem composite measure, instrumented using the original settler mortality series of AJR (2001) in Panel A and our preferred alternative mortality series in Panel B. Once again, the measure of institutions is robustly significant, and the Anderson-Rubin confidence intervals are positive and bounded away from zero in almost all specifications. The effective F-statistics are roughly the same as in Table 4.

In Table 6 we look at the relationship between GDP per capita today (in 2023) and more recent institution measures (the composite PRS measure for the period 2010-2020). This is analogous to our original work, which regressed income per capita in a particular year (1995) on average institutions over the previous 10 years (1985-95). Panel A of Table 6 uses our original log settler mortality measure and can therefore be compared directly with Table 4 (Panel A), while Panel B of Table 6 uses our preferred alternative mortality series and can be directly compared to Table 4 (Panel B). Remarkably, the parameter estimates are quite similar – in Panel A of Table 6, without the neo-Europes the estimate is now lower but more significant, while for Africa the estimate is now slightly higher, and in Panel B of Table 6 the parameter estimates are again similar, but the first stages are stronger.

In sum, over the past quarter century, the relationship between log GDP per capita and institutions – estimated using log settler mortality as an instrument for institutions – has become, if anything, more robust, and quantitatively has not changed much.

[19] All tables using V-Dem data exclude the Bahamas, as V-Dem does not produce data for that nation.

Table 7 completes this comparison by showing results with log GDP per capita in 2023 on the left-hand side and the V-Dem composite measure for 2010-2020. These tables can therefore be compared with Table 5. Again, the broad pattern has remained the same in the 25 years since AJR (2001).

Figure 4 shows the graphical relationship between two different measures of institutions today and our two measures of log settler mortality (original and preferred alternative series), i.e., the relevant first stages for the 2SLS regressions. Panels A and B show data from the two different measures of institutions used in our main regressions (the PRS and V-Dem composite measures, respectively), plotted against the original log settler mortality series in AJR (2001). Panels C and D show the same two measures of institutions plotted against the "preferred" settler mortality series, as reported in AJR (2012).[20] The strength and robustness of our first stage relationships is apparent from these figures.

In the Appendix we also report results using the World Bank's rule of law index (Table B1) and Transparency International's Corruption Perception Index (Table B2) as additional robustness checks. These measures are not available for the time period that we focus on in AJR (2001), so we do not have the "before" and "after" estimates we have for PRS and V-Dem. Unlike the indices from PRS and V-Dem, which are produced independently by their respective organizations, the World Bank rule of law index and the Corruption Perception Index are compiled by aggregating and harmonizing dozens of independent measures (including those produced by PRS and V-Dem). These indices are therefore informative in the sense that they aggregate additional expert judgements on particular aspects of institutional quality for the countries in our sample. Our results are just as strong with these measures.

Focusing on our results in column 1 of Table 4 (Panel B) and Table 5 (Panel B), we can calculate the change in 1995 GDP per capita predicted by moving from the 25th to the 75th percentile for the respective measures of institutions. Moving from the 25th to the 75th percentile of the PRS composite index implies a $8,575 increase in PPP-adjusted GDP per capita, while the V-Dem index predicts a $12,535 change. The quantitative implications are similar when using the estimates from Table 4

[20] This figure was previously used in Johnson (2025), which contains parallel analysis and further robustness checks.

(Panel A) and Table 5 (Panel A), with the original AJR (2001) mortality series as an instrument. Column 1 of Table 6 (Panel B) and Table 7 (Panel B) allows us to perform a similar exercise. Here, moving from the 25th to the 75th percentile implies a change of $7,840 for PRS, and $26,326 for V-Dem. Again, our results are similar when using corresponding estimates from Table 6 (Panel A) and Table 7 (Panel A).

Why has this relationship between GDP per capita, institutions, and European settler mortality proved so durable?

5. The Path Dependence of Institutions and Income

Figure 1 shows what has happened to the relationship between log GDP per capita and log settler mortality over the past 35 years. The answer is clear: not much has changed. The intercept of the regression line obviously has shifted upwards – this reflects the upward drift in income per capita that tends to occur in all modern countries. But the slope of the line is essentially as estimated by AJR (2001), meaning that the reduced form relationship between settler mortality and income per capita remains the same.

Panel A of Figure 5 makes this point in another way, by showing the path of log GDP per capita since 1990 for our three groups of countries: low, high, and extreme settler mortality. Between 1990 and 2023, growth across these groups of countries was fairly similar, with little signs of the high and extreme settler mortality groups catching up to the low mortality group. In fact, average annual growth in GDP per capita for the extreme mortality group was 1.14%, lagging behind the low mortality group's 2.05%. While countries in the high mortality group grew a little faster, at 2.25% a year on average, they are still far behind low mortality places in terms of income levels. Overall, average GDP among countries in the extreme mortality group grew 44.6%, from $3,228 per capita to $4,667. Countries in the high mortality group fared better, with average GDP per capita more than doubling from $6,810 to $14,098. But the low mortality countries remain far ahead, also nearly doubling – from $26,740 to $51,807. Measured in this way, there has been no convergence in prosperity across these three groups over the past 35 years.

Panel B and Panel C of Figure 5 shows the longer-term historical pattern. GDP per capita has increased in most countries over the past 125 years, but there has not been convergence across our three groups of former colonies (Figure 5, Panel B). We do not have reliable GDP per capita data for earlier periods, but AJR (2002) argued that urbanization can provide a reasonable proxy over many centuries – and that there was a "Reversal of Fortune" across the colonial world, with initially (pre-European takeover) rich places doing less well and initially poor places becoming more prosperous.[21] Panel C of Figure 5 illustrates this point with data from the USA (a low European mortality location), India (high mortality for Europeans), and Ghana (extremely high mortality for Europeans). Until 1600, Ghana and India were more urbanized than what would become the US, but this changed dramatically after 1800. The modern distribution of income around the world emerged during the nineteenth century, primarily based on which countries industrialized relatively early (AJR 2002).

The remaining figures drill down into how various measures of institutions have changed or persisted since the 1980s (i.e., relative to the data that were available when we finalized AJR 2000 and 2001).

Figures 6 and 7 both show annual data, again with lines for low, high, and extreme mortality countries. Figure 6 Panel A displays the PRS composite index over time, while Panels B, C, and D present the sub-elements of this index. The precise path over time varies by measure – for example, protection against corruption declines for low mortality countries (Panel B), but law and order and bureaucratic quality (Panel C and D) remain roughly constant.

Figure 7 Panel A shows a similar pattern in our V-Dem index, and Figure 7 Panels B, C, and D show what happened in terms of its components: political corruption, rule of law, and accountability. The V-Dem data allow us to start the comparison in 1900 and to follow the same set of countries over more than a century. Panels B and C show no signs of convergence, although Panel D suggests that high and extreme mortality countries may have become more accountable, as measured by V-Dem. The overall index in Panel A shows an essentially unchanging pattern over time: the ranking, the gaps, and the level of our overall V-Dem index move up and

[21] As emphasized in AJR (2002), this statement refers to places, not people. The Indigenous people who occupied initially low-income places did not typically do well.

down in particular years, but over more than a century the broad pattern is remarkably unchanged.

While there are some divergent dynamics between these figures, especially in the 1990s, one takeaway is abundantly clear: the gaps between the three groups of former colonies (grouped according to potential settler mortality) have remained broadly similar. The quality of institutions is measured to be much higher among the low mortality former colonies than the other two groups and the gap between the high and the extreme mortality groups, though smaller, has also persisted.

The averages across countries in Figure 6 (using PRS data) and Figure 7 (using V-Dem data) are informative, at a high level, regarding how institutions have changed across former colonies. These averages can be supplemented by the behavior of institutions in specific former colonies. In Figure 8, as an interesting example, we present the long historical data from India. Institutions have changed in various, often complex ways since 1900, especially around the time of Indian independence from Britain. According to these measures, while accountability improved significantly with independence, political corruption and the rule of law worsened.

In addition, the Indian data (and the data from other countries) show changes in institutional measures in most years. How is this consistent with institutional persistence? The answer, implicit in AJR (2001) and further developed in Acemoglu and Robinson (2012), is that the prevalent pattern is *path dependence* in institutions. It is not the case that a set of institutions established in the 16th and 17th centuries were somehow set in stone and remained unchanged over centuries. Rather, it appears to be the case that initial colonial institutions shaped the direction of further institutional changes. Industrialization and associated changes in legal frameworks, product market structures, and property rights took place across much of the colonial world, but in quite different forms in initially more extractive colonies (such as Mexico) than in those that had more inclusive elements (such as the northeastern United States). Likewise, independence from colonial powers brought widespread changes in every former colony, but how much overall institutional improvement took place was heavily conditioned on early colonial experience.

What determines the extent and form of path dependence is an active area of research and critically depends on the specific legacies of colonial institutions – and on what Europeans brought that has had a lasting effect.

6. What Exactly Did the Europeans Bring?

Colonialism typically imposed and implied a large amount of social change. Europeans shaped the institutions of the places they colonized, but they also did other things. They brought themselves (in varying numbers), their human capital, and to some extent, their culture. What are the influences of these legacies, and can they explain path dependence? Does the presence of these other effects potentially affect how we should assess the importance of colonial era institutions?

We start by discussing the institutional legacy of colonialism in some more detail and then turn to other potential sources of European influence.

Institutions

How did Europeans' mortality experiences impact their colonial strategies, including the kind of institutions they sought to impose? In the centuries after 1492, Europeans found their way to almost everywhere in the world, and they almost always treated indigenous populations brutally. The number of Europeans willing to move to different places varied greatly, depending on the disease conditions that they faced, but the European powers attempted to impose their imperial wishes almost everywhere they had influence. Again, the work of Curtin on West Africa is informative:

> "It was known in any case that West Africa was much more dangerous than the West Indies. The best medical opinion was, indeed, opposed to the kind of establishments that already existed there. Lind [in Diseases in Hot Countries in 1768] argued that European garrisons for the West African posts should be reduced to the smallest possible numbers and moved to hulks anchored off shore. (Curtin 1964, 86).

Despite not being present on the ground in significant numbers or for prolonged periods, the British (and others) were highly engaged in West Africa over the

centuries – first establishing and running the slave trade, and later reigning indirectly by setting up or supporting local rulers, sometimes further backed by the threat of military intervention.

As Nunn (2008) argues, the slave trade had a major negative effect on the long-term development of Africa, presumably because it involved capturing humans and selling them to others – the most extractive type of institution imaginable.

In constructing what became the trans-Atlantic "plantation complex," the Europeans used different strategies in different places. Europeans moved in large numbers to North America to establish trading hubs and, in what became the South of the U.S., plantation agriculture (e.g., tobacco). As was demonstrated vividly in the fight for independence and the U.S. Constitution, there were strong rights for many white people – although not for slaves (or for most indigenous people).

In the West Indies, large-scale sugar plantations predominated, with all the work done by enslaved people brought by force from Africa. Relatively few European men spent time there and, when they did stay, it was not for long; seven years was at one point considered the maximum for British planters. The usual goal for Europeans was to make a fortune as quickly as possible and get out.

The institutions in these places were typically designed to maintain the privileges of white people. When a place attracted European settlers, there was pressure to provide better legal protection to protect the rights of those settlers. If such rights were withheld, the European settlers would object, leading in some cases to protest (e.g., Australia) and even independence (e.g., the U.S.).

Since the publication of AJR (2001), other scholars have examined three important follow-up questions about the history of institutions under colonialism. First, did the specific form of institutions matter, and have these structures persisted meaningfully? Second, is there evidence of variation within particular former colonies, based on exactly which institutions were established? And third, is there evidence for other mechanisms of path dependence, for example, in the form of culture?

On the first question, there is considerable support for the idea that the specific form of colonial institutions had lasting impact, but there is some unresolved tension between the cross-country and within-country evidence on whether it was

better or worse to have the colonial authorities rule directly, rather than indirectly via local rulers. For example, using cross-country evidence, Lange (2004) argues that when the British chose to rule indirectly, this tended to produce more authoritarian post-colonial political arrangements. In contrast, where the British ruled directly, institutions today tend to be somewhat more inclusive. However, Iyer (2010) finds that the form of colonial rule has the opposite effect – places under direct British rule now experience "significantly lower levels of access to schools, health centers, and roads" after independence.

On the second question, regarding potential variation within colonies, India has proven to be a fertile place for further study. Banerjee and Iyer (2005) found persistent differences in agricultural investments and productivity depending on whether the "colonial land revenue institutions" favored landlords or cultivators. Places where the British favored landlords also have less investment in public goods, such as health and education. In their assessment, historical institutions affect more recent (or even current) policy choices.

In a more recent contribution, Iyer and Weir (2025) revisit the findings from Iyer (2010) and Banerjee and Iyer (2005). They find that only some of the differences identified by those studies have disappeared over time. Their conclusion that "the impact of colonial institutions can eventually fade away under the influence of targeted policies" seems reasonable, although there is no evidence that it has happened yet across a broader set of countries, and in fact, as we have shown in the previous section, the impact of colonial legacies is as strong today as it was 25 years ago.

In a very different part of the world, Dell (2010) found compelling evidence on the *mita* system, which compelled locals to work in dangerous mining conditions for more than 200 years in Peru and Bolivia. Where this forced labor system was in place (during 1573-1812), household consumption today is significantly lower. An important part of the mechanism for this effect appears to be the weaker provision of public goods, although less secure land tenure also plays a role.

In a related study, Acemoglu, Garcia-Jimeno, and Robinson (2012) look at the legacy of Colombian slavery, used mostly in goldmining. They find persistent negative effects working through greater inequalities and lower public good provision, most likely driven by the absence of local institutions that could provide public goods. Rivadenier (2024), on the other hand, looks at the effects of

concertaje, which was a forced labor system from the Spanish colonial era in Ecuador. A higher rate of forced labor historically is associated with a higher poverty rate today. In this case the mechanism seems to run through some combination of less education, fewer public goods, and persistently higher inequality.

Spruk and Kovac (2020) "exploit the discontinuity in the integration into the colonial court district of Real Audiencia in Upper Peru to estimate how colonial institutions have impacted local development across 527 departments in Argentina." In this case, the colonial imposition may have had positive effects.

> "Departments outside the colonial court district have lower literacy rates, a less computer-literate population, better physical and digital infrastructure, and more widespread computer ownership. The established effects of real audiencia do not seem driven by the climatic conditions and environment of disease, and are robust to a battery of specification checks, placebo tests, and falsification tests."

The Audiencia's effect persisted because it influenced how public goods were provided, which areas developed what kind of economic specialization, and the ways in which elites influence politics.

Not all parts of the U.S. enjoyed inclusive institutions. Rose and Shepard (2022), for example, find major lasting negative consequences from slavery – which depressed per capita manufacturing output "by as much as 30 percent in the decades following the Civil War". The negative effects of slavery on Black Americans have naturally proved even deeper. Slavery was replaced by institutions that were just as oppressive, including lynchings, segregation, and state-backed violence (including "race riots" of the kind that wiped out a prosperous Black community in Oklahoma City in the 1920s).

Recent work has shown that both slavery and the ensuing institutions which perpetuated the oppression of Black Americans, are an important explanation for current racial prosperity gaps. Derenoncourt, Kim, Kuhn, and Schularick (2023, 2024) document the persistence of the White-Black wealth gap from emancipation to today. More than 150 years after slavery ended, white Americans are still six times wealthier than Black Americans, on average. Significantly, more than half of this gap can be explained simply by the magnitude of the initial gap following emancipation. In line with this finding, Althoff and Reichardt (2024) find that the descendants of the formerly enslaved people are on average 22% poorer than

descendants of free Black Americans. The authors identify that differences in current Black prosperity vary geographically with the intensity of state-level Jim Crow regimes, explaining nearly all of the gap between descendants of the enslaved and the free.

As suggested in AJR (2002), institutions may matter more when economic opportunities expand. Swee and Panza (2016) look at the effect of opening the Suez Canal. They find that Hong Kong and the Straits Settlements – "entrepôt colonies" with relatively good institutions (put in place in large part because of their locational advantages for colonial-era trade) – subsequently received larger public investments than did colonies that primarily provided resources for the empire (British India, Ceylon, and West Africa).

This perspective also provides one potential explanation for path dependence: as economic conditions change, and internal political and social dynamics play out, institutions surely change in every society. But the early (pre-industrial) balance of power between the state, elites, and regular citizens, has typically influenced the path along which institutions develop.

The Europeans Themselves

Could it be that institutional persistence and even path dependence is rooted in the fact that Europeans brought themselves, influencing the racial, genetic or other characteristics of societies? In AJR (2001), we provided a negative answer to this question, by showing that once the impact of institutions is controlled for, the fraction of the population that has European descent has no influence. Singapore and Hong Kong, for example, bear the legacies of early colonial institutions, even though they have a much lower fraction of people of European descent than Australia and New Zealand.

Overall, it is unlikely that the fraction of the population with European descent has a major effect today, nor is it likely to be a key channel for path dependence.

Education

Could it be that Europeans brought education (skills or schooling) and social capital with them to colonized regions, as Glaeser et al (2004) have argued?

As discussed in detail in Acemoglu, Gallego and Robinson (2014), the answer is most likely no. While Europeans who ran extractive institutions in West Africa, West Indies, or India and early European colonizers in South America were highly educated by the standards of their time, the same was not uniformly true for settlers who went to North America or Australia. On the whole, the more prosperous former colonies are those where the lower strata of Europeans went as workers and indentured servants, not the places where elite, highly educated Europeans spent more time.[22]

Acemoglu, Gallego, and Robinson (2014) also show that empirical horse races between institutions and human capital favor the former. Human capital could of course be one of the main drivers of institutional trajectories. Yet, there is not much evidence that human capital matters greatly for the evolution of institutions, as shown in Acemoglu, Johnson, Robinson and Yared (2005) and Acemoglu, Gallego and Robinson (2014). This is not to deny that education and institutions are likely jointly determined, but it is difficult to see a dominant or driving causal effect from early human capital. On the contrary, there is evidence suggesting that colonial institutions have had long-lasting effects on education. For example, in Tunisia, Ben Salah, Chambru, and Fourati (2022) find that "the exposure of local population to colonial public primary education" has a long-lasting effect – including on literacy today.

Overall, differences in early colonialists' education levels are unlikely to be undermine the instrumental-variables strategy in AJR (2001). Interactions between institutions and human capital could contribute to path dependence in various ways, but this requires further investigation.

Culture

Cultural factors have been proposed as mechanisms for institutional persistence (e.g., Tabellini 2010, Nunn and Watchenkon 2011).[23] Culture also likely plays an

[22] However, Montalvo and Reynal-Querol (2021) find that the "skills of initial colonizers" within the Spanish empire had persistent positive effect, at least in terms of "market orientation and entrepreneurial spirit."

[23] See, among others, Bisin and Verdier (2001), Guiso, Sapienza and Zingales (2006), Tabellini, (2010), Fernandez and Fogli (2009), Mokyr (2016). Dell, Lane, and Querubin (2018) find long-lasting cultural effects from pre-colonial arrangements in Vietnam.

important role in making institutions function more generally – for example, in shaping whether people obey laws and norms, and how they interpret legislation and policy. Our own work on these issues has also evolved, emphasizing how norms form and evolve (Acemoglu and Jackson 2015), the two-way interactions between culture and institutions (Acemoglu and Robinson 2024) and the role of ideology, vision, and persuasion power in technology and institutional choices (Acemoglu and Johnson 2023).

Could culture be a confounding factor in the regressions reported above? Could culture be a major contributor to path dependence?

In AJR (2001), we focused on the role of institutions, driven by colonial expansion strategies, and contrasted this to cultural explanations of economic development. By cultural explanations, we had in mind those that emphasized national cultures (e.g., the contrast between North American and Latin American cultures, as in North, Summerhill, and Weingast 1998) or those that focused on religious factors (e.g., Protestantism versus Catholicism, as in Weber 1951). This stance was motivated by several factors. First, these sorts of explanations based on national culture or coherent religious beliefs were the ones popular at the time (see, e.g., Harrison and Huntington 2000). Second, we did not see any evidence that the different cultures colonizers brought made a big difference – for example, after controlling for settler mortality, whether the colonizer was British, French or Spanish did not matter. Third, it also seemed from the historical record that different colonizers used similar strategies when confronted with similar conditions, such as potential settler mortality, thus limiting the role of culture on the ground (see AJR 2001 and Chapter 1 of Acemoglu and Robinson 2012).

Changes in institutions and in the balance of power likely influence cultural change – and cultural tools can also have constraining effects on the path of institutional change (see Acemoglu and Robinson 2024). This perspective is consistent with the interpretation of our results in AJR (2001): the major impacts of early colonial strategies created a particular institutional path, and this path then led to a process of cultural change. [24] Although early cultural factors could have their own autonomous effects, we did not find evidence that markers for these different cultures – such as the national identity of the colonizer or its religion – had any effects in our empirical investigations (see AJR 2001). Therefore, we still do not

[24] For example, Chaudhary et al. 2020 find enduring effects of colonial rule on "social norms of co-operation."

view omitted culture as an alternative interpretation of the main results in AJR (2001).

That being said, we believe that culture-institutions interactions could be a major contributor to path dependence, as discussed in Acemoglu and Robinson (2024). Once cultural factors are in play, they influence how a society responds to new economic opportunities, political shocks and outside forces, as well as its internal dynamics. Investigating the exact pathways through which culture interplays with institutions in the post-colonial world (and more broadly) is another interesting and important area for future work.

7. Conclusion

AJR (2001) suggested that institutions can account for a large fraction (perhaps more than 50%) of the income per capita differences across former colonies. Using updated data and additional robustness checks, this effect in the cross-country data appears to remain strong.

The econometric approach in AJR (2001) used historical data on death rates facing potential European settlers to instrument for institutions today. The evidence reviewed in this chapter suggests that this "first stage" relationship remains strong, as does the "reduced form" relationship between GDP per capita today and colonial-era mortality rates (for Europeans). These relationships may one day weaken, but over the past 25 years they have, if anything, become stronger and more robust.

The literature on this topic remains active, particularly regarding the mechanisms through which institutions persist. There is plenty of room for further investigation of institutional paths within particular countries – which may shed light on what policy levers, if any, can "improve" institutions.

One interim assessment is that of Jared Diamond, writing in 2012,[25]

> "My overall assessment of the authors' argument is that inclusive institutions, while not the overwhelming determinant of prosperity that they claim, are an important factor. Perhaps they provide 50 percent of the

[25] Diamond was reviewing *Why Nations Fail* (Acemoglu and Robinson 2012).

> explanation for national differences in prosperity. That's enough to establish such institutions as one of the major forces in the modern world."

Further investigation is needed to understand how best to manage economic development and inclusive prosperity in a world where colonial institutions cast such a long shadow.

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Appendix

This appendix describes all of the data used in this article, with a particular focus on the indices used to measure institutional quality. We use a variety of indices of institutional quality to assess how the original results from AJR (2001) may have changed in the past 25 years. Broadly, our preferred indices are from Political Risk Services' (PRS) International Country Risk Guide, and from Varieties of Democracy (V-Dem). The former measure is preferred for symmetry with AJR 2001 and 2012, which used an index from PRS as the key institutional variable, while the latter is favored as a newer, more detailed, and more transparent academic source. Both indices are relatively independent and produce their measures drawing on original research and expert opinions. As a robustness check, in Appendix B we also include results from Transparency International's Corruption Perceptions Index and the World Bank's Rule of Law Index, which aggregate dozens of independent indices including PRS and V-Dem into standardized, composite measures. Our results are robust to use of all of these measures of institutional quality.

AJR (2001) used Political Risk Services' (PRS) "protection against expropriation" index as a proxy-measure of overall institutional quality. Unfortunately, PRS no longer publishes exactly the same index; thus, in order to extend our analysis to the present day, while relying on data from the same original source, we must choose a new measure of institutional quality. PRS does continue to publish various measures of institutions, designed to assist private firms in assessing geopolitical risk. These measures are produced by PRS' International Country Risk Guide, which covers 141 countries, and the data we have access to is available from 1984-2021.[26] To construct a measure similar to the original index, while integrating additional measures of institutional quality captured by the broader range of indices available in recent PRS data, we draw on their indices measuring 'Corruption,' 'Law and Order,' and 'Bureaucracy Quality'. The Corruption and Law and Order indices are scored from 0 to 6, while the Bureaucracy Quality index is out of 4. To construct our measure of institutional quality used in this article, we rescale the Bureaucracy Quality index to also be out of 6 and take the simple average of each measure for each country in our sample. Due to data use

[26] This data is available via Harvard Dataverse (see International Country Risk Guide 2014)

restrictions, we do not include the original PRS data in our replication package, but it is available for download for non-commercial purposes via Harvard Dataverse.

PRS' 'corruption' index assesses "corruption within the political system," including "financial corruption in the form of demands for special payments and bribes," as well as "excessive patronage, nepotism, job reservations, 'favors-for-favors', secret party funding, and suspiciously close ties between politics and business". The 'law and order' index evaluates the "strength and impartiality of the legal system" and the "popular observance of the law". A high score on this index requires an impartial and functional judicial system, and the routine enforcement of the law. Finally, the 'bureaucratic quality' index measures the strength and expertise of a country's bureaucracy. High points are given to countries where the bureaucracy is able to govern without drastic changes in policy or interruptions in government service, especially in the context of political transitions. High-scoring nations tend to have bureaucracies relatively "autonomous from political pressure" and have "established mechanisms for recruitment and training".

As an additional measure of institutional quality, we use data from 'Varieties of Democracy,' or V-Dem. V-Dem seeks to take a comprehensive approach to quantifying and understanding democratization across nations, and over time. To measure abstract principles underlying democracy (such as egalitarianism and liberalism), and the extent to which individual nations conform with those principles, V-Dem breaks these principles into more than 600 individual sub-components (measuring more concrete or specific concepts like judicial independence, universal suffrage, and media freedom), which are then aggregated into overall measures of democratization. To produce these individual measures of components of democratic institutions, V-Dem gathers data from more than 4,200 country experts, typically five per country-year, and pools their judgements using a Bayesian item response theory measurement model. V-Dem data is available annually from 1789 to present for most countries of the world, with near-complete coverage beginning in 1900 (or, for many former colonies, upon their independence). V-Dem has several advantages which make it ideal for our uses. First, since V-Dem maintains hundreds of individual indices, we can select with great specificity the aspects of institutional quality we hope to measure. Second, V-Dem's coverage across history and nations allows us to track the longer history of institutions in former colonies than indices like PRS. Finally, V-Dem stands apart

from its peers in terms of transparency in methodology, clarity of index definitions, data collection practices, and aggregation procedures, making it the preferred dataset for measuring democratization in most cases (Boese 2019). All V-Dem indices are measured on a scale from 0 to 1, with 1 typically indicating perfect conformance to a given democratic principle.

For the purposes of this article, we focus on three indices from V-Dem. These indices were chosen for symmetry with our measures from PRS. We prefer using these individual component indices, rather than higher aggregations, as it allows for greater specificity in the aspects of institutional quality we hope to capture. For our main regressions we take the simple average of V-Dem's indices for 'political corruption,' 'accountability,' and 'rule of law'.[27] The political corruption index asks "how pervasive is political corruption," and aggregates measures of public sector, executive, legislative, and judicial corruption. Unlike other V-Dem indices, 1 on this measure is 'worse' and indicates high degrees of corruption. For consistency, we invert this measure, by taking the difference between 1 and a given score. The 'accountability' index asks, "to what extent is the ideal of government accountability achieved". Accountability is defined as "constraints on the government's use of political power through requirements for justification for its actions and potential sanctions". It includes measures of vertical accountability, or "the ability of a state's population to hold its government accountable through elections," horizontal accountability, "checks and balances between institutions," and diagonal accountability, or "oversight by civil society organizations and media activity". Finally, the 'rule of law' index asks the extent to which "laws are transparently, independently, predictably, impartially, and equally enforced, and to what extent do the actions of government officials comply with the law?" This index includes sub-components measuring the extent of judicial independence, executive adherence to the constitution and the law, impartiality and rigor of the public administration, and transparency of laws and predictability of enforcement.

We use PRS and V-Dem for the main results in this chapter, but as a robustness check we also include results relying on two alternative measures of institutional quality in Appendix B. Specifically, we use Transparency International's Corruption Perceptions Index, and the World Bank's Rule of Law Index. Although

[27] The specific indices are v2x_corr, v2x_accountability, and v2x_rule.

the results from using these indices in our main regressions are consistent with our main results, we include them only as a robustness check due to data availability. Both of these measures are not available in the timeframe of our original article (1985-1995), so we can only show our findings for the latter period we study (2010-2020). Additionally, both of these measures are less independent than PRS and V-Dem, and are constructed by aggregating measures from various other sources, including PRS and V-Dem. Transparency International aggregates 13 disparate sources to measure the extent of corruption in all countries of the world. The data is available from 1995 through present, and runs from 0 to 100, with 100 indicating the lowest possible levels of corruption. Both PRS' and V-Dem's measures of political corruption are included as one of the 13 inputs in the construction of the Corruption Perceptions Index. Each individual component is standardized, and then averaged to reach a final CPI score.[28] Finally, we use the World Bank's World Governance Indicator for Rule of Law. This index captures "perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence." It is composed of over 30 underlying data sources, including indices from PRS and V-Dem. These sources are combined and standardized using an Unobserved Components Model, and individual country scores run from -2.5 to 2.5, with larger scores indicating greater rule of law.[29] This score is in units of a standard normal distribution, with mean zero and standard deviation of 1. The data is available annually from 1996 to present, again allowing us only to compute results for our latter period.

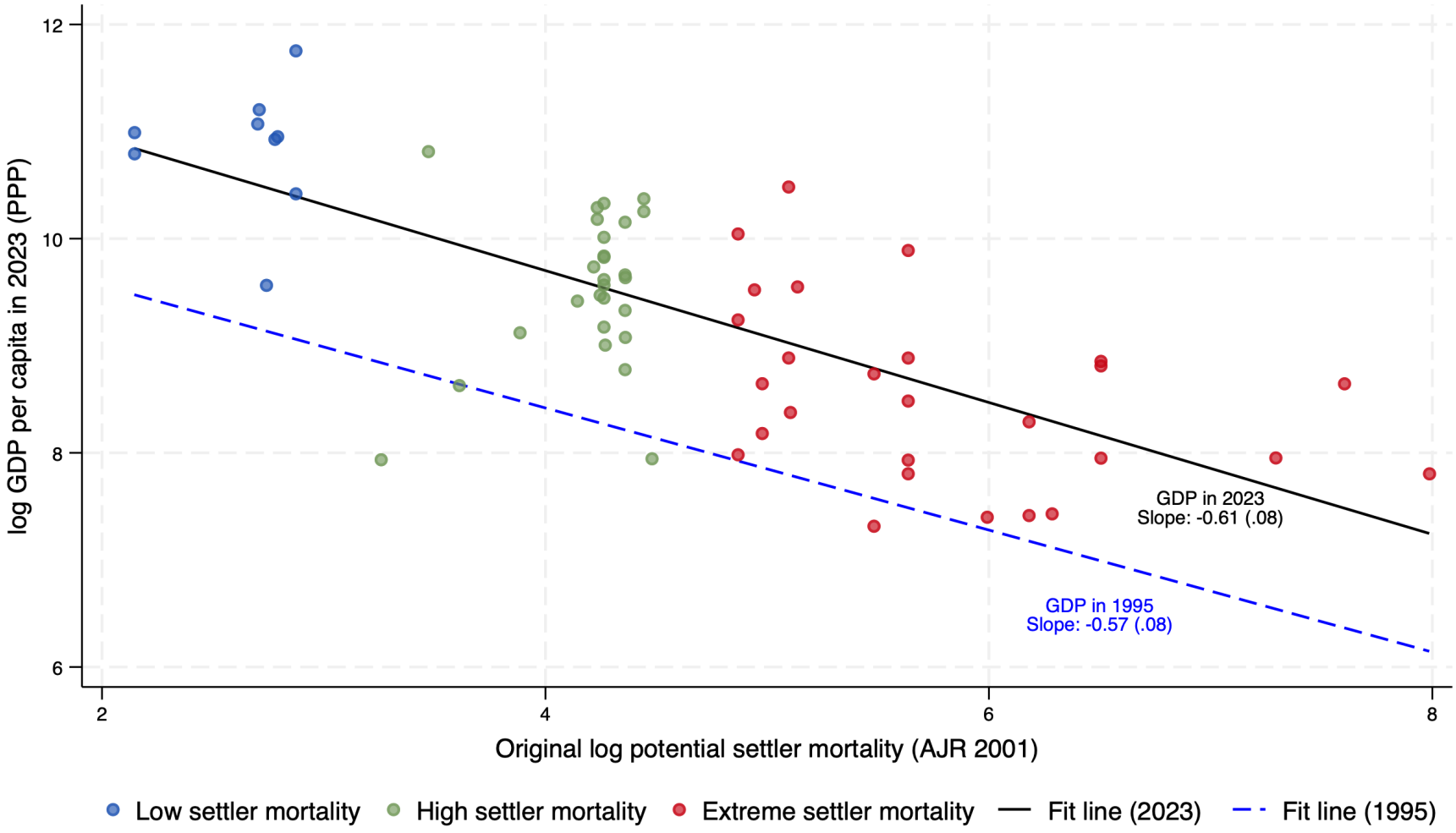
Aside from our measures of institutions, we use data from the World Bank for PPP-adjusted GDP per capita for Tables 4-11 and Tables B1-B4. GDP per capita in Tables 1-3 are the same series used for 1995 PPP-adjusted GDP per capita as in AJR 2001 and 2012. Our results are robust to substitution between these two series, but we use the more modern data in our updated results. Using the latest

[28] Full methodology is available on Transparency International's website

[29] The Unobserved Components Model constructs a weighted average of individual indicators from each source, with weights reflecting the pattern of correlation among data sources. In essence, measures which are more highly correlated with one another are weighted more heavily in the resultant average.

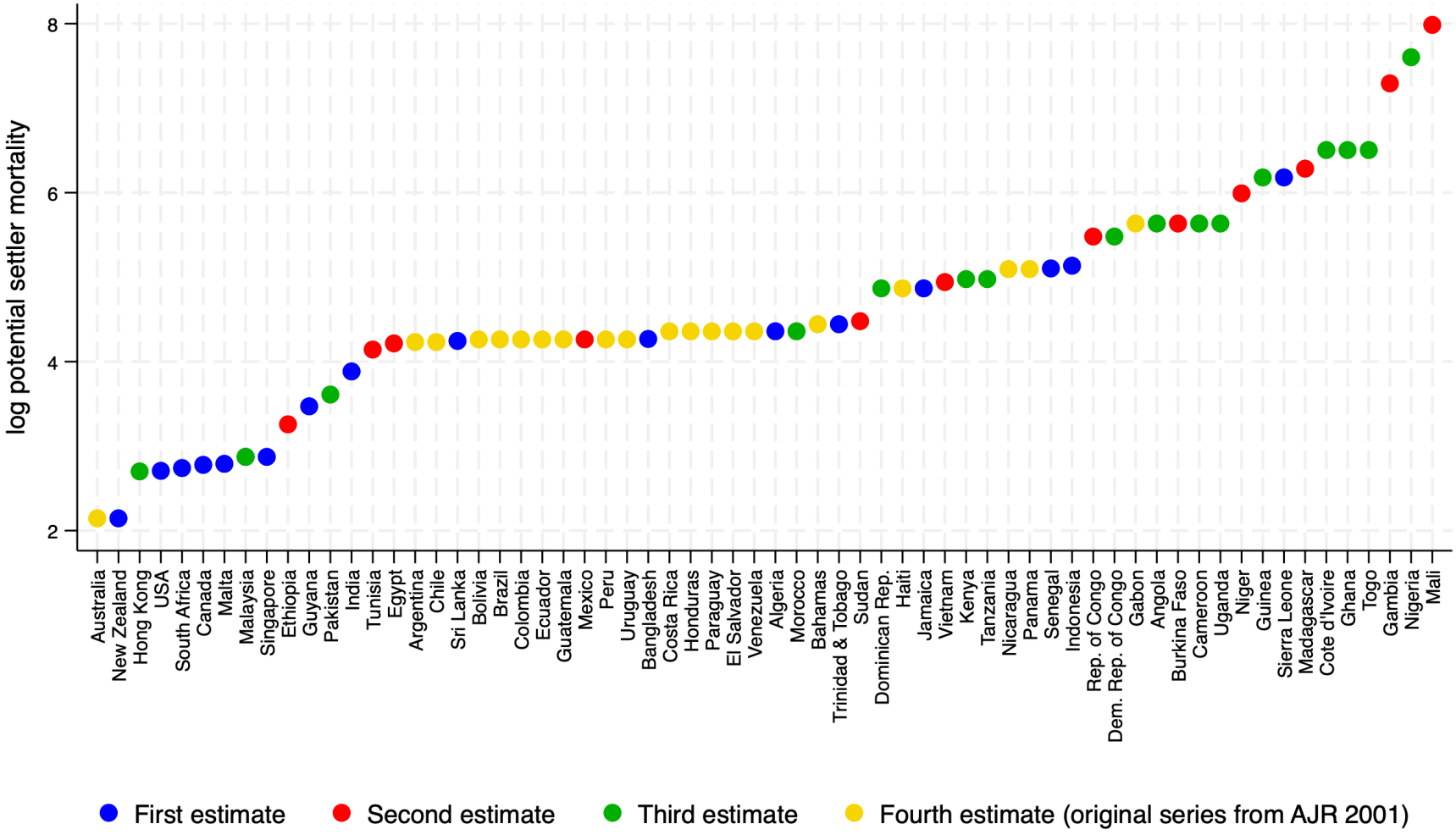
PPP-adjusted GDP per capita data does result in dropping Venezuela from our sample. Due to hyper-inflation, the World Bank does not currently report Venezuela's inflation-adjusted GDP per capita. Finally, all mortality series are from the replication package for AJR 2012. The construction of our various mortality series is explained in detail in AJR 2000, 2001, 2011, and 2012.

Figure 1: GDP per capita and Settler Mortality



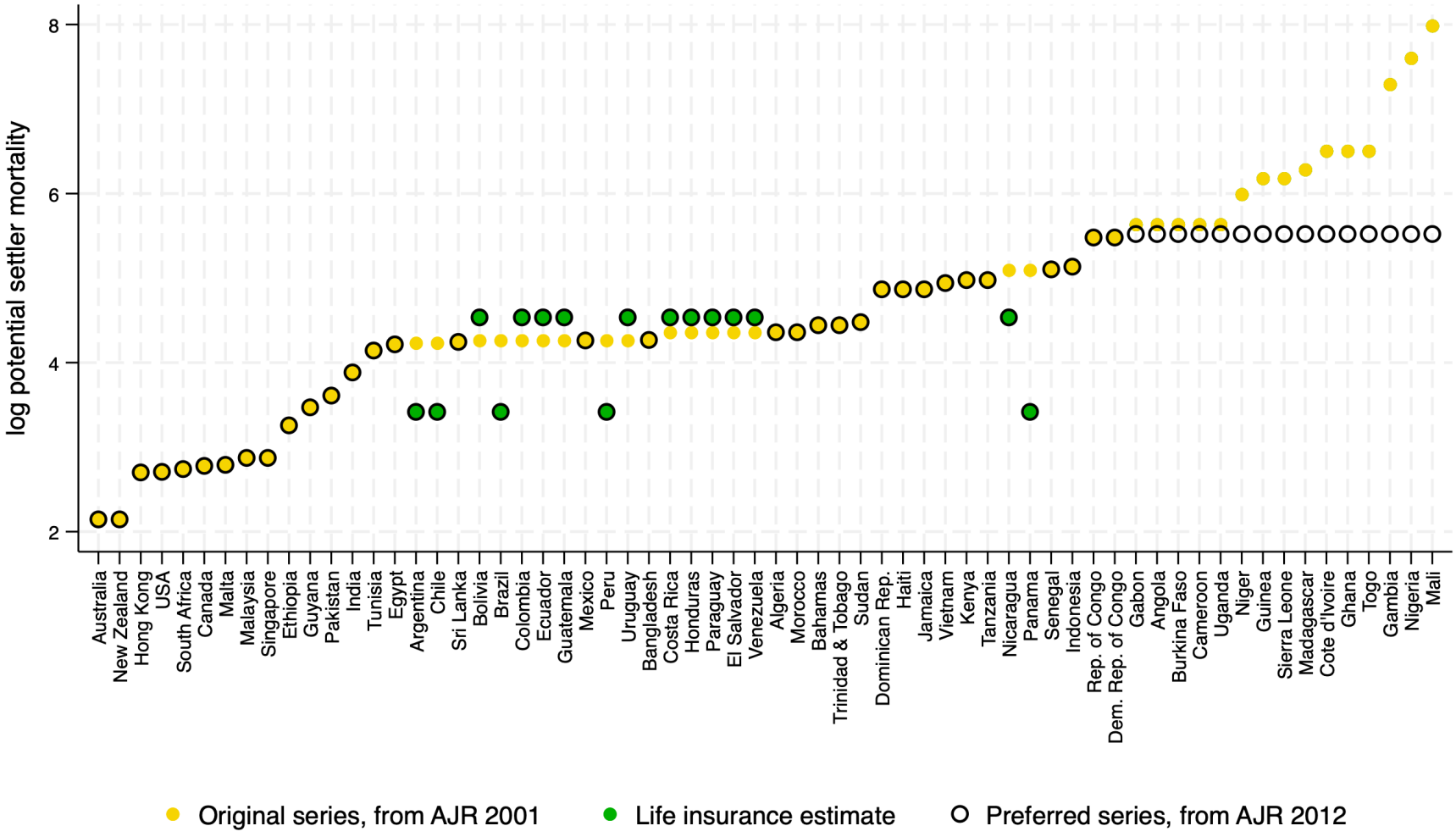
Note: The relationship between GDP per capita and settler mortality, measured using PPP-adjusted log GDP per capita in 2023 (World Bank 2024a) and log potential settler mortality (AJR 2001), respectively. Blue dots denote "low settler mortality" former colonies, green dots denotes "high settler mortality", and red dots denote "extremely high settler mortality"; with exact rates described in the text. The estimated regression line for the displayed observations is in black; this has a slope of −0.61, with a standard error of 0.08. The blue line shows the same specification with GDP per capita in 1995 as the dependent variable; the slope of this line is −0.57 with a standard error of 0.08.

Figure 2: Potential settler mortality, AJR (2001) series



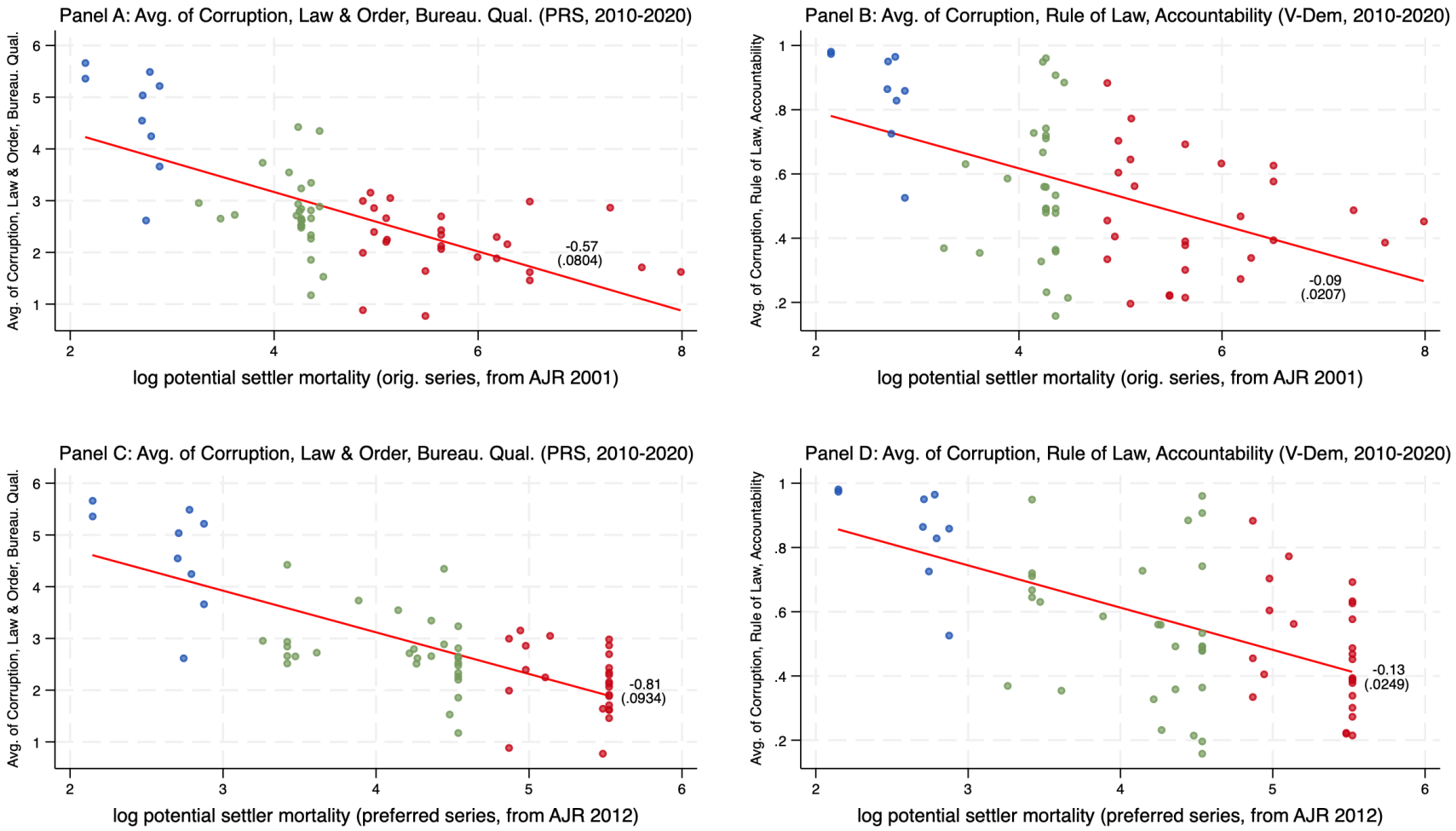
Note: Sources and estimates for potential settler mortality, used to construct the original settler mortality series, from AJR 2001. "First estimate" is directly from Curtin (1989). "Second estimate" adds data from Curtin (1998). "Third estimate" includes neighbors with similar disease environments, as well as African mortality for Kenya and the Democratic Republic of Congo from Curtin (1995). "Fourth estimate" adds Gutierrez (1986). Complete details on sources are available in AJR (2000), Appendix B. Countries are listed here by mortality estimate. Former colonies from Australia to Singapore are "low settler mortality". Countries from Ethiopia to Sudan are "high settler mortality". Countries to the right of the Dominican Republic, inclusive, are "extremely high mortality".

Figure 3: Comparison of Alternative Settler Mortality Series



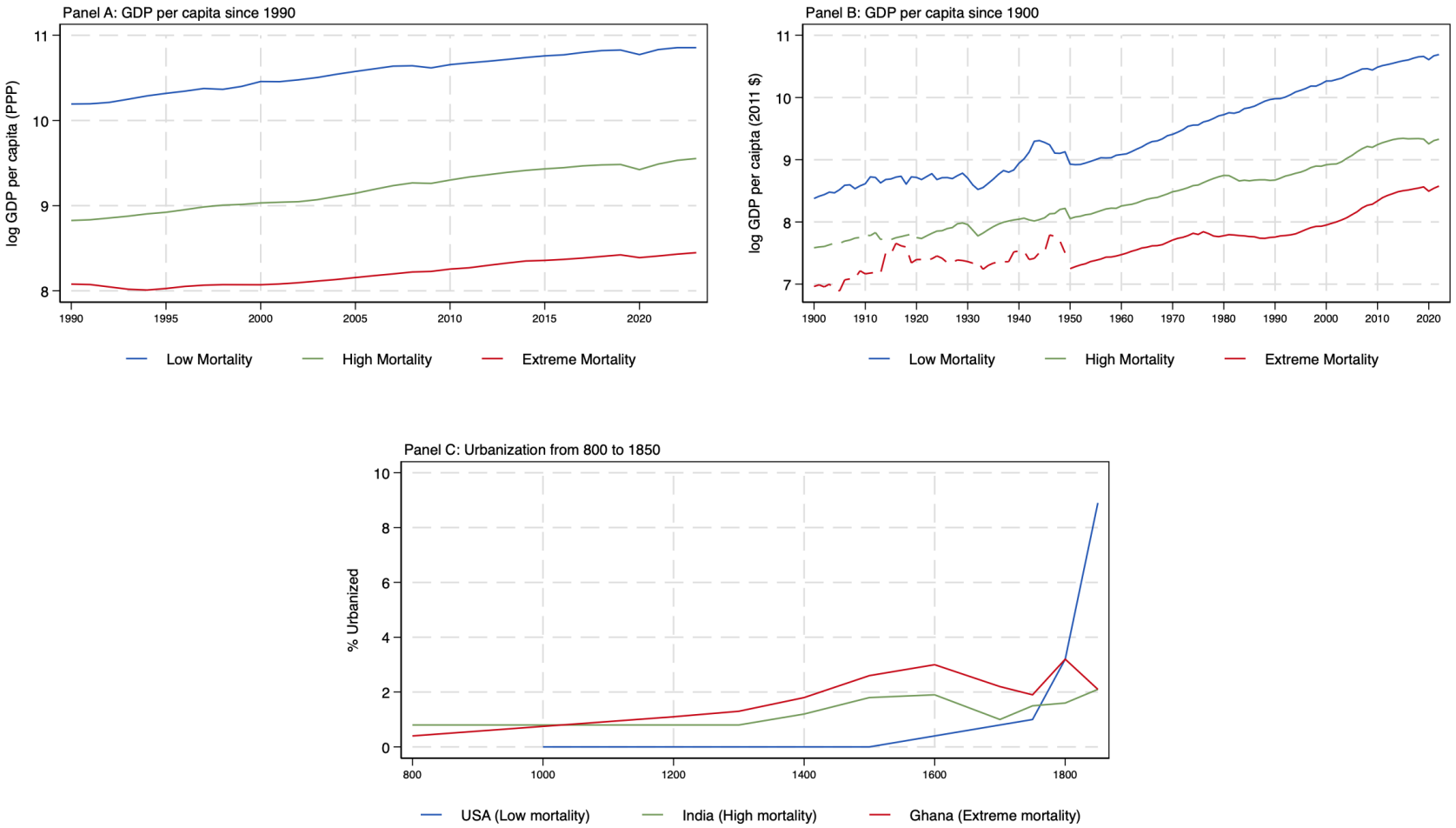
Note: Sources and estimates for alternative potential settler mortality series, showing the construction of the "preferred estimate" used in this article. Our preferred estimate builds upon the data underlying the original settler mortality series from AJR (2001), but uses estimates from life insurance data for Latin America (from the Institute of Actuaries, 1852). These new estimates are shown in green dots where they differ from the original settler mortality series from AJR (2001). Our preferred settler mortality estimate, from AJR 2012, caps the series supplemented with life insurance data for Latin America at 250 deaths per 1,000 settlers per annum. This series is shown with black circles.

Figure 4: Institutions and Settler Mortality



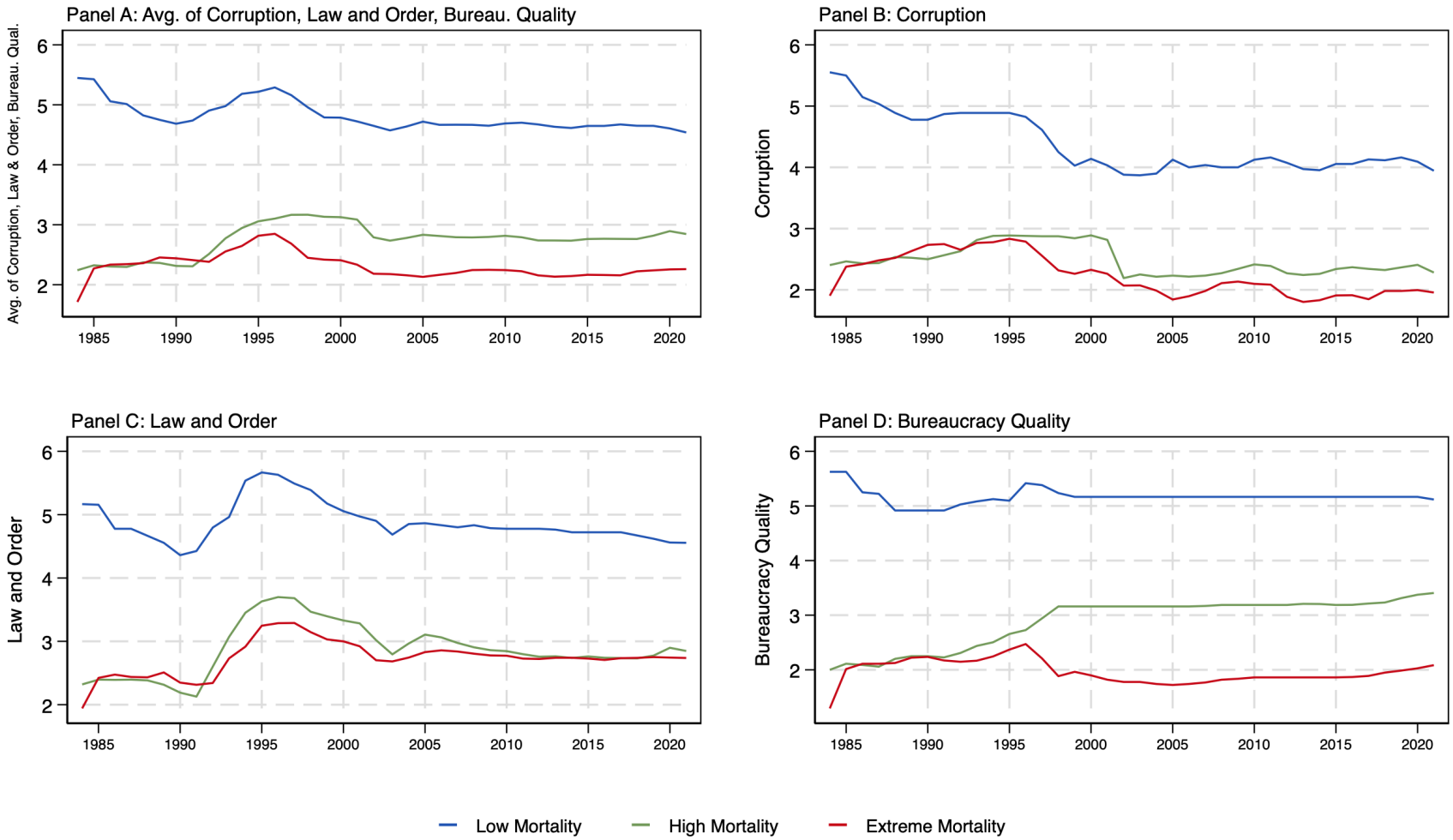
Note: Panel A is the average of PRS indices for Protection against Corruption, Rule of Law, and Bureaucracy Quality, 2010-2020, against our original log settler mortality series, from AJR 2001. Panel B is the average of V-Dem indices for Corruption, Rule of Law, and Accountability, 2010-2020, against our original log settler mortality series, from AJR 2001. Panel C is the average of the PRS indices for Protection against Corruption, Rule of Law, and Bureaucracy Quality, 2010-2020, against our preferred log settler mortality series, from AJR 2012. Panel D is the average of the V-Dem indices for Corruption, Rule of Law, and Accountability, 2010-2020, our preferred log settler mortality series, from AJR 2012. Blue dots denote "low settler mortality" former colonies, green dots denote "high settler mortality", and red dots denote "extremely high settler mortality'. See the Appendix for a detailed description of each institutions series. In each figure, the slope and standard errors (in parentheses) from an OLS regression are shown to the right of the fitted line.

Figure 5: Measures of Income Per Capita Over Time



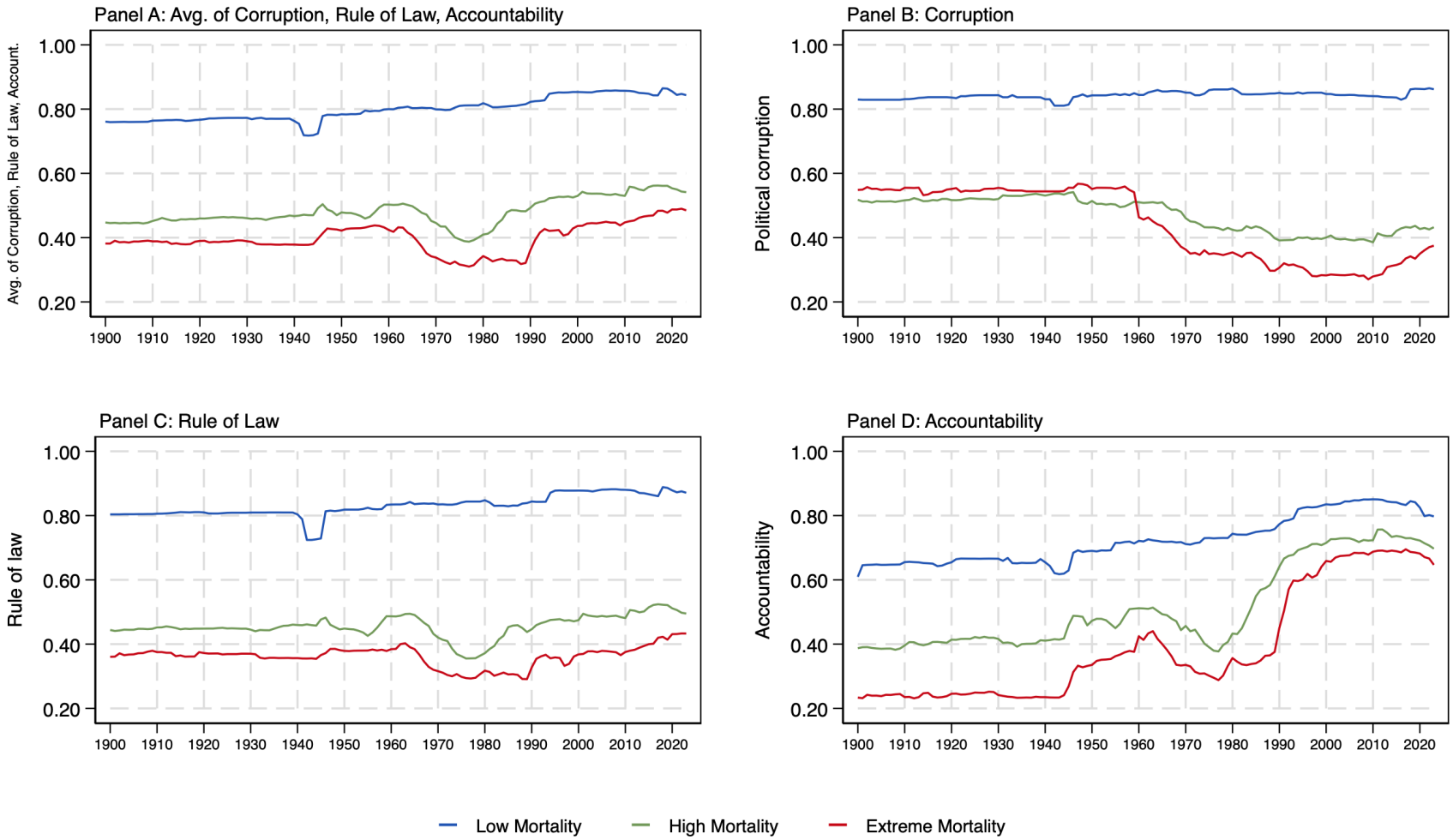
Note: Panel A, GDP per capita for three sets of countries (grouped by level of potential settler mortality, as described in the text) since 1900; data are from the World Bank (2024a), available for all former colonies in our sample, other than Venezuela. Panel B, GDP per capita for three sets of countries (grouped by level of potential settler mortality, as described in the text) since 1900; data are from the Maddison Project (2024). The dashed lines indicate that less than half the countries within a given mortality category are included due to data availability. The full sample for all mortality groups is available from 1950, with the exception of Guyana and the Bahamas, for which the Maddison project does not report data. Panel C, share of population living in urban areas from 800 through 1800 for USA, India, and Ghana; data are from AJR (2002).

Figure 6: Institutions, 1984-2021



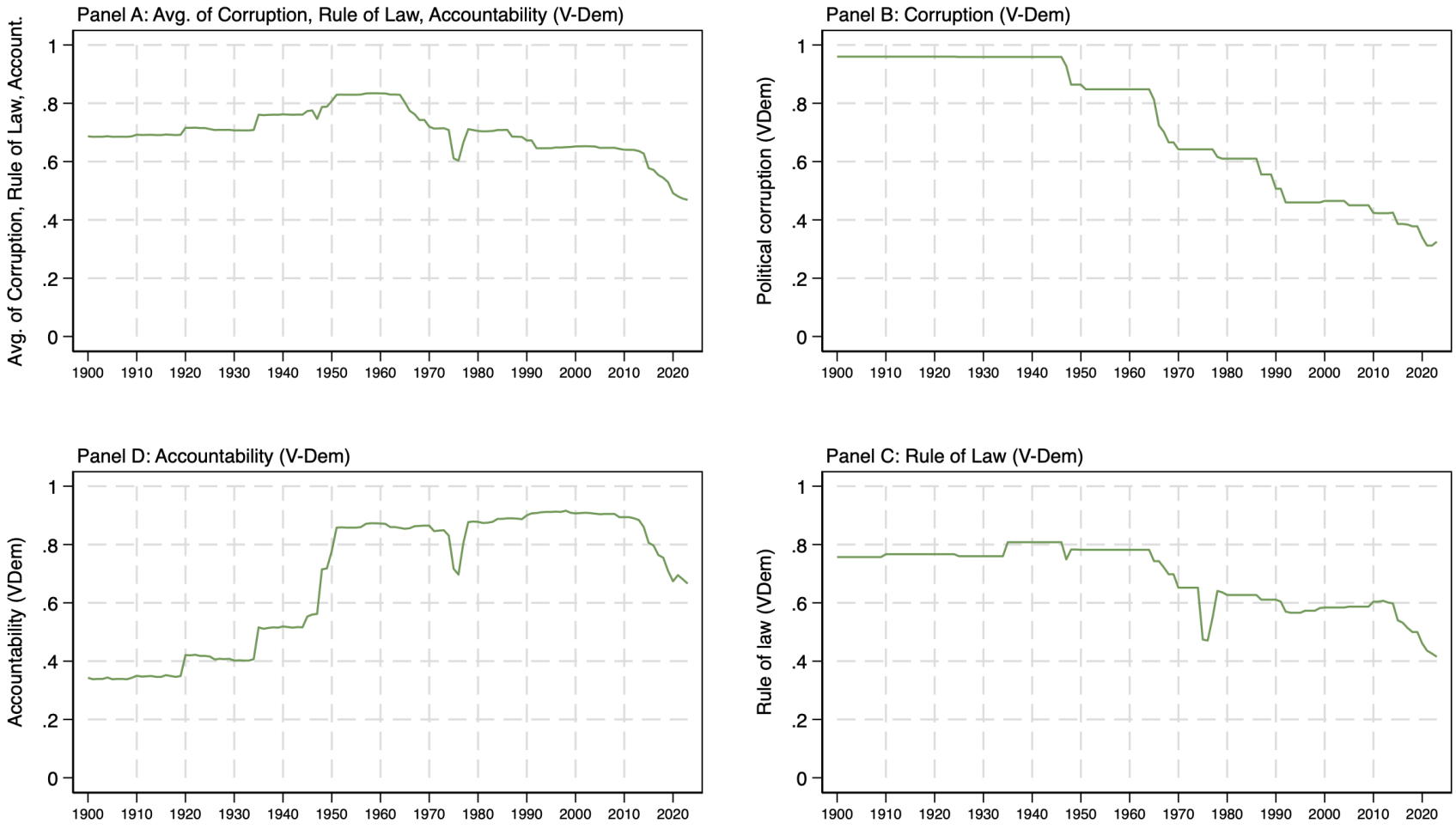
Note: The evolution of institutions, as measured by Political Risk Services, for low, high, and extremely high settler mortality groups, 1984-2021. Panel A shows the average of measures in Panels B, C, and D. Panel B shows Protection against Corruption, Panel C shows Law and Order, and Panel D shows Bureaucracy Quality. Appendix B provides further details on each of these variables.

Figure 7: Institutions, 1900-2023



Note: The evolution of institutions, as measured by Varieties of Democracy (V-Dem), for low, high, and extremely high settler mortality groups, 1900-2023. Panel A shows the average of measures in Panels B, C, and D. Panel B shows Protection against Corruption, Panel C shows Rule of Law, and Panel D shows Accountability. Appendix B provides further details on each of these variables.

Figure 8: Evolution of Institutions in India



Note: The evolution of institutions in India, as measured by Varieties of Democracy (V-Dem), 1900-2023. Panel A shows the average of the measures in Panels B, C, and D. Panel B shows Protection against Corruption, Panel C shows Rule of Law, and Panel D shows Accountability. Appendix B provides further details on each of these variables.

Table 1: 2SLS Relationship Between log GDP per capita in 1995 and Institutions, 1985-1995, Instrumented Using Settler Mortality from AJR (2001)

	Dependent variable is log GDP per capita in 1995							
Panel A: Two-stage least squares	(1) Base	(2) Base	(3) No Neo-Euro	(4) No Neo-Euro	(5) No Africa	(6) No Africa	(7) Continent	(8) Continent
Expropriation Risk (PRS)	0.93	0.96	1.24	1.16	0.61	0.60	0.97	1.07
	(0.17)	(0.23)	(0.38)	(0.37)	(0.10)	(0.10)	(0.33)	(0.48)
Latitude		-0.42		1.11		0.11		-0.99
		(1.19)		(1.16)		(0.53)		(1.73)
Africa							-0.47	-0.45
							(0.32)	(0.37)
Asia							-1.00	-1.10
							(0.39)	(0.51)
Others							-0.92	-0.95
							(0.91)	(1.02)
Anderson-Rubin Confidence Interval	[0.69,1.40]	[0.65,1.78]	[0.78,3.09]	[0.71,3.13]	[0.41,0.87]	[0.37,0.94]	[0.59,3.20]	$(-\infty, -27.22] \bigcup [0.57, \infty)$
Effective F-stat	16.33	9.70	6.94	5.77	36.29	27.58	5.25	3.17
Panel B: First Stage	(1) Base	(2) Base	(3) No Neo-Euro	(4) No Neo-Euro	(5) No Africa	(6) No Africa	(7) Continent	(8) Continent
Original log settler mortality series, from AJR 2001	-0.61	-0.52	-0.40	-0.40	-1.21	-1.14	-0.44	-0.35
	(0.15)	(0.17)	(0.15)	(0.17)	(0.20)	(0.22)	(0.19)	(0.20)
Latitude		2.01		-0.09		0.99		2.00
		(1.36)		(1.41)		(1.27)		(1.48)
Africa							-0.27	-0.26
							(0.35)	(0.34)
Asia							0.33	0.47
							(0.49)	(0.52)
Others							1.23	1.05
							(0.77)	(0.77)
N	64	64	60	60	37	37	64	64

Note: Panel A: two-stage least squares (2SLS) estimates from regressing log GDP per capita in 1995 on institutions (average of 1985-95), instrumented using original settler mortality series, from AJR (2001). Institutions are measured as Protection Against Expropriation Risk, 1985-95, from PRS. GDP per capita is from the World Bank. Panel B shows the corresponding first stages. The penultimate line of Panel A reports weak-instrumentation robust Anderson-Rubin confidence intervals corresponding to the coefficient on this measure of institutions. Montiel Olea and Pflueger (2013) effective F-statistics are reported in the last row of Panel A. In regressions with continent dummies, the dummy for the Americas is omitted. Standard errors are in parentheses.

Table 2: 2SLS Relationship Between log GDP per capita in 1995 and Institutions, 1985-1995, Instrumented Using Preferred Settler Mortality Series from AJR (2012)

	Dependent variable is log GDP per capita in 1995							
Panel A: Two-stage least squares	(1) Base	(2) Base	(3) No Neo-Euro	(4) No Neo-Euro	(5) No Africa	(6) No Africa	(7) Continent	(8) Continent
Expropriation Risk (PRS)	0.87 (0.13)	0.87 (0.15)	1.13 (0.26)	1.04 (0.23)	0.68 (0.11)	0.69 (0.13)	0.84 (0.21)	0.89 (0.25)
Latitude		-0.04 (0.90)		1.25 (0.97)		-0.25 (0.66)		-0.45 (1.03)
Africa							-0.58 (0.25)	-0.57 (0.27)
Asia							-0.93 (0.33)	-0.98 (0.37)
Others							-0.65 (0.65)	-0.66 (0.69)
Anderson-Rubin Confidence Interval	[0.66,1.23]	[0.61,1.41]	[0.74,2.25]	[0.67,2.11]	[0.47,1.01]	[0.45,1.16]	[0.56,1.65]	[0.53,2.54]
Effective F-stat	28.68	18.55	12.11	10.68	25.62	17.95	10.01	7.25
Panel B: First Stage	(1) Base	(2) Base	(3) No Neo-Euro	(4) No Neo-Euro	(5) No Africa	(6) No Africa	(7) Continent	(8) Continent
Preferred settler mortality series, from AJR (2012)	-0.88 (0.16)	-0.79 (0.18)	-0.61 (0.18)	-0.64 (0.20)	-1.11 (0.22)	-1.02 (0.24)	-0.73 (0.23)	-0.63 (0.24)
Latitude		1.20 (1.33)		-0.63 (1.38)		1.33 (1.44)		1.36 (1.44)
Africa							-0.15 (0.36)	-0.15 (0.36)
Asia							0.30 (0.47)	0.39 (0.50)
Others							0.77 (0.75)	0.70 (0.75)
N	64	64	60	60	37	37	64	64

Note: Panel A: two-stage least squares (2SLS) estimates from regressing log GDP per capita in 1995 on institutions (average of 1985-95), instrumented using our preferred settler mortality series, from AJR (2012). Institutions are measured as Protection Against Expropriation Risk, 1985-95, from PRS. GDP per capita is from the World Bank. Panel B shows the corresponding first stages. Sample of former colonies is from AJR (2001). The penultimate line of Panel A reports weak-instrumentation robust Anderson-Rubin confidence intervals corresponding to the coefficient on this measure of institutions. Montiel Olea and Pflueger (2013) effective F-statistics are reported in the last row of Panel A. In regressions with continent dummies, the dummy for the Americas is omitted. Standard errors are in parentheses.

Table 3: 2SLS Relationship Between log GDP per capita in 1995 and Institutions, 1985-1995, Instrumented Using Mortality Group Dummies

	Dependent variable is log GDP per capita in 1995							
Panel A: Two-stage least squares	(1) Base	(2) Base	(3) No Neo-Euro	(4) No Neo-Euro	(5) No Africa	(6) No Africa	(7) Continent	(8) Continent
Expropriation Risk (PRS)	0.82	0.80	1.10	1.03	0.65	0.65	0.86	0.89
	(0.10)	(0.09)	(0.20)	(0.17)	(0.09)	(0.09)	(0.18)	(0.18)
Latitude		0.28		1.27		-0.09		-0.45
		(0.70)		(0.96)		(0.63)		(0.80)
Africa							-0.56	-0.57
							(0.24)	(0.24)
Asia							-0.94	-0.98
							(0.34)	(0.36)
Others							-0.69	-0.66
							(0.61)	(0.62)
CLR Confidence Interval	[0.65,1.08]	[0.63,1.08]	[0.74,1.94]	[0.74,1.53]	[0.49,0.85]	[0.48,0.87]	[0.60,1.52]	[0.63,1.61]
Effective F-stat	21.25	15.54	9.20	9.32	16.73	12.91	10.17	7.95
Panel B: First Stage	(1) Base	(2) Base	(3) No Neo-Euro	(4) No Neo-Euro	(5) No Africa	(6) No Africa	(7) Continent	(8) Continent
High mortality dummy	-2.22	-2.11	-1.42	-1.42	-2.34	-2.21	-2.17	-2.06
	(0.42)	(0.41)	(0.44)	(0.41)	(0.41)	(0.41)	(0.52)	(0.51)
Extreme mortality dummy	-2.87	-2.67	-2.07	-2.12	-2.91	-2.75	-2.55	-2.34
	(0.45)	(0.47)	(0.46)	(0.46)	(0.58)	(0.60)	(0.57)	(0.61)
Latitude		0.96		-0.55		1.00		1.07
		(1.02)		(1.28)		(0.98)		(1.08)
Africa							-0.51	-0.50
							(0.39)	(0.38)
Asia							-0.02	0.06
							(0.46)	(0.48)
Others							-0.00	-0.07
							(0.85)	(0.83)
N	64	64	60	60	37	37	64	64

Note: Panel A: two-stage least squares (2SLS) estimates from regressing log GDP per capita in 1995 on institutions (average of 1985-95), instrumented using dummies for the high and extreme mortality groups (the dummy for the low mortality group is omitted). Institutions are measured as Protection Against Expropriation Risk, from PRS. GDP per capita is from the World Bank. Panel B shows the corresponding first stages. The penultimate line of Panel A reports confidence intervals based on Moreira (2003)'s conditional likelihood-ratio (CLR) test, which is preferred to Anderson-Rubin when the model is over-identified. These confidence intervals are computed using a grid search procedure (from Finlay and Magnusson, 2009). Panel B reports the corresponding first stages. In regressions with continent dummies, the dummy for America is omitted. Standard errors are in parentheses.

Table 4: 2SLS Relationship Between log GDP per capita in 1995 and PRS Institutions, 1985-1995, Instrumented Using Original and Preferred Settler Mortality Series from AJR (2012)

Dependent variable is log GDP per capita in 1995 (latest available World Bank data)								
Panel A: Instrument is original series, from AJR 2001	(1) Base	(2) Base	(3) No Neo-Euro	(4) No Neo-Euro	(5) No Africa	(6) No Africa	(7) Continent	(8) Continent
Avg. of PRS Corruption, Law & Order, Bureau. Qual (1985-1995)	1.176	1.404	2.122	2.105	0.531	0.543	0.775	0.868
	(0.252)	(0.403)	(0.913)	(1.016)	(0.0818)	(0.0981)	(0.181)	(0.237)
Latitude		-2.188		0.132		-0.202		-0.992
		(1.937)		(2.126)		(0.609)		(1.115)
Africa							-1.186	-1.241
							(0.205)	(0.224)
Asia							-0.555	-0.628
							(0.251)	(0.286)
Others							-0.752	-0.792
							(0.622)	(0.694)
Anderson-Rubin Confidence Interval	[0.79,2.03]	[0.82,3.88]	[1.09,35.98]	$(-\infty, -46.44] \bigcup [1.02, \infty)$	[0.35,0.75]	[0.32,0.83]	[0.42,1.57]	[0.39,2.90]
Effective F-stat	13.90	7.33	3.98	2.86	46.41	31.36	8.38	5.78
N	63	63	59	59	36	36	63	63
Panel B: Instrument is preferred series, from AJR (2012)	(1) Base	(2) Base	(3) No Neo-Euro	(4) No Neo-Euro	(5) No Africa	(6) No Africa	(7) Continent	(8) Continent
Avg. of PRS Corruption, Law & Order, Bureau. Qual (1985-1995)	1.073	1.227	1.836	1.781	0.560	0.582	0.717	0.787
	(0.219)	(0.338)	(0.702)	(0.769)	(0.0779)	(0.100)	(0.154)	(0.195)
Latitude		-1.498		0.432		-0.368		-0.739
		(1.693)		(1.758)		(0.702)		(1.010)
Africa							-1.194	-1.235
							(0.191)	(0.213)
Asia							-0.542	-0.597
							(0.243)	(0.268)
Others							-0.622	-0.652
							(0.556)	(0.601)
Anderson-Rubin Confidence Interval	[0.75,1.68]	[0.75,2.54]	[1.01,7.30]	[0.93,9.12]	[0.38,0.80]	[0.36,0.90]	[0.42,1.22]	[0.40,1.69]
Effective F-stat	19.42	9.50	5.18	3.67	38.32	24.94	10.75	6.72
N	63	63	59	59	36	36	63	63

Note: Panel A: two-stage least squares (2SLS) estimates from regressing log GDP per capita in 1995 on institutions (average of 1985-95), instrumented using the original settler mortality series from AJR (2001). Institutions are measured as average of PRS Corruption, Law and Order, and Bureaucracy Quality, 1985-95, from PRS. GDP per capita is from the World Bank. Corresponding first stages are not shown. Panel B: two-stage least squares (2SLS) estimates from regressing log GDP per capita in 1995 on institutions (average of 1985-95), instrumented using our preferred settler mortality series from AJR (2012). Institutions are measured as average of PRS Corruption, Law and Order, and Bureaucracy Quality, 1985-95, from PRS. GDP per capita is from the World Bank. Corresponding first stages are not shown. In both panels, the penultimate line reports weak-instrumentation robust Anderson-Rubin confidence intervals corresponding to the coefficient on this measure of institutions; and the final line shows Montiel Olea and Pflueger (2013) effective F-statistics. In regressions with continent dummies, the dummy for the Americas is omitted. Standard errors are in parentheses.

Table 5: 2SLS Relationship Between log GDP per capita in 1995 and V-Dem Institutions, 1985-1995, Instrumented Using Original and Preferred Settler Mortality Series

Dependent variable is log GDP per capita in 1995 (latest available World Bank data)								
Panel A: Instrument is original series, from AJR 2001	(1) Base	(2) Base	(3) No Neo-Euro	(4) No Neo-Euro	(5) No Africa	(6) No Africa	(7) Continent	(8) Continent
Avg. of V-Dem Corruption, Rule of Law, Account. (1985-1995)	5.141 (0.813)	5.722 (1.129)	6.185 (1.449)	6.481 (1.579)	3.687 (0.629)	4.081 (0.870)	6.212 (2.274)	7.360 (3.508)
Latitude		-1.271 (1.276)		-0.785 (1.583)		-0.979 (0.949)		-1.530 (1.899)
Africa							0.161 (0.645)	0.321 (0.868)
Asia							0.0601 (0.469)	0.0563 (0.540)
Others							-1.139 (0.826)	-1.274 (1.020)
Anderson-Rubin Confidence Interval	[3.53,8.07]	[3.49,11.33]	[3.56,14.21]	[3.52,18.19]	[2.39,6.06]	[2.39,8.21]	[2.68,49.23]	$(-\infty, -24.93] \bigcup [2.49, \infty)$
Effective F-stat	23.86	14.95	12.29	9.97	30.73	15.84	5.08	3.15
N	62	62	58	58	35	35	62	62
Panel B: Instrument is preferred series, from AJR (2012)	(1) Base	(2) Base	(3) No Neo-Euro	(4) No Neo-Euro	(5) No Africa	(6) No Africa	(7) Continent	(8) Continent
Avg. of V-Dem Corruption, Rule of Law, Account. (1985-1995)	4.834 (0.743)	5.254 (1.010)	5.660 (1.261)	5.870 (1.352)	3.938 (0.711)	4.430 (1.026)	5.290 (1.594)	5.913 (2.191)
Latitude		-0.906 (1.159)		-0.536 (1.447)		-1.241 (1.050)		-0.903 (1.357)
Africa							-0.0481 (0.487)	0.0339 (0.597)
Asia							0.000521 (0.410)	-0.00531 (0.438)
Others							-0.816 (0.552)	-0.876 (0.611)
Anderson-Rubin Confidence Interval	[3.40,7.16]	[3.33,9.16]	[3.40,11.00]	[3.36,12.81]	[2.59,6.67]	[2.66,9.46]	[2.61,14.60]	[2.46,35.95]
Effective F-stat	45.23	22.33	20.14	14.41	22.00	11.42	8.96	5.36
N	62	62	58	58	35	35	62	62

Note: Panel A: two-stage least squares (2SLS) estimates from regressing log GDP per capita in 1995 on institutions (average of 1985-95), instrumented using original settler mortality series, from AJR (2001). Institutions are measured as average of Corruption, Rule of Law, and Accountability, 1985-95, from V-Dem. GDP per capita is from the World Bank. Corresponding first stages are not shown. Panel B: two-stage least squares (2SLS) estimates from regressing log GDP per capita in 1995 on institutions (average of 1985-95), instrumented using our preferred settler mortality series, from AJR (2012). Institutions are measured as average of Corruption, Rule of Law, and Accountability, 1985-95, from V-Dem. GDP per capita is from the World Bank. Corresponding first stages are not shown. In both panels, the penultimate line reports weak-instrumentation robust Anderson-Rubin confidence intervals corresponding to the coefficient on this measure of institutions; and the final line shows Montiel Olea and Pflueger (2013) effective F-statistics. In regressions with continent dummies, the dummy for the Americas is omitted. Standard errors are in parentheses.

Table 6: 2SLS Relationship Between log GDP per capita in 2023 and PRS Institutions, 2010-2020, Instrumented Using Original and Preferred Settler Mortality Series

	Dependent variable is log GDP per capita in 2023							
Panel A: Instrument is original series, from AJR 2001	(1) Base	(2) Base	(3) No Neo-Euro	(4) No Neo-Euro	(5) No Africa	(6) No Africa	(7) Continent	(8) Continent
Avg. of PRS Corruption, Law & Order, Bureau. Qual. (2010-2020)	1.064 (0.149)	1.249 (0.214)	1.373 (0.234)	1.461 (0.291)	0.613 (0.0936)	0.711 (0.110)	0.901 (0.230)	1.114 (0.356)
Latitude		-2.222 (1.180)		-1.280 (1.292)		-1.444 (0.654)		-2.087 (1.265)
Africa							-0.856 (0.224)	-0.868 (0.264)
Asia							-0.569 (0.243)	-0.813 (0.321)
Others							-0.926 (0.649)	-1.037 (0.772)
Anderson-Rubin Confidence Interval	[0.82,1.40]	[0.90,1.80]	[0.98,2.02]	[1.01,2.27]	[0.41,0.84]	[0.47,1.00]	[0.54,1.47]	[0.61,2.23]
Effective F-stat	36.74	22.82	24.05	16.44	65.05	32.49	14.00	10.21
N	63	63	59	59	36	36	63	63
Panel B: Instrument is preferred series, from AJR (2012)	(1) Base	(2) Base	(3) No Neo-Euro	(4) No Neo-Euro	(5) No Africa	(6) No Africa	(7) Continent	(8) Continent
Avg. of PRS Corruption, Law & Order, Bureau. Qual. (2010-2020)	1.026 (0.136)	1.201 (0.197)	1.331 (0.210)	1.418 (0.266)	0.665 (0.0949)	0.779 (0.120)	0.881 (0.193)	1.091 (0.287)
Latitude		-2.019 (1.124)		-1.183 (1.252)		-1.707 (0.711)		-2.016 (1.076)
Africa							-0.868 (0.206)	-0.877 (0.246)
Asia							-0.557 (0.231)	-0.795 (0.277)
Others							-0.883 (0.589)	-0.999 (0.684)
Anderson-Rubin Confidence Interval	[0.80,1.32]	[0.89,1.66]	[0.97,1.88]	[1.01,2.09]	[0.46,0.92]	[0.53,1.11]	[0.57,1.32]	[0.67,1.85]
Effective F-stat	58.46	32.42	29.64	20.29	49.49	26.24	17.06	12.48
N	63	63	59	59	36	36	63	63

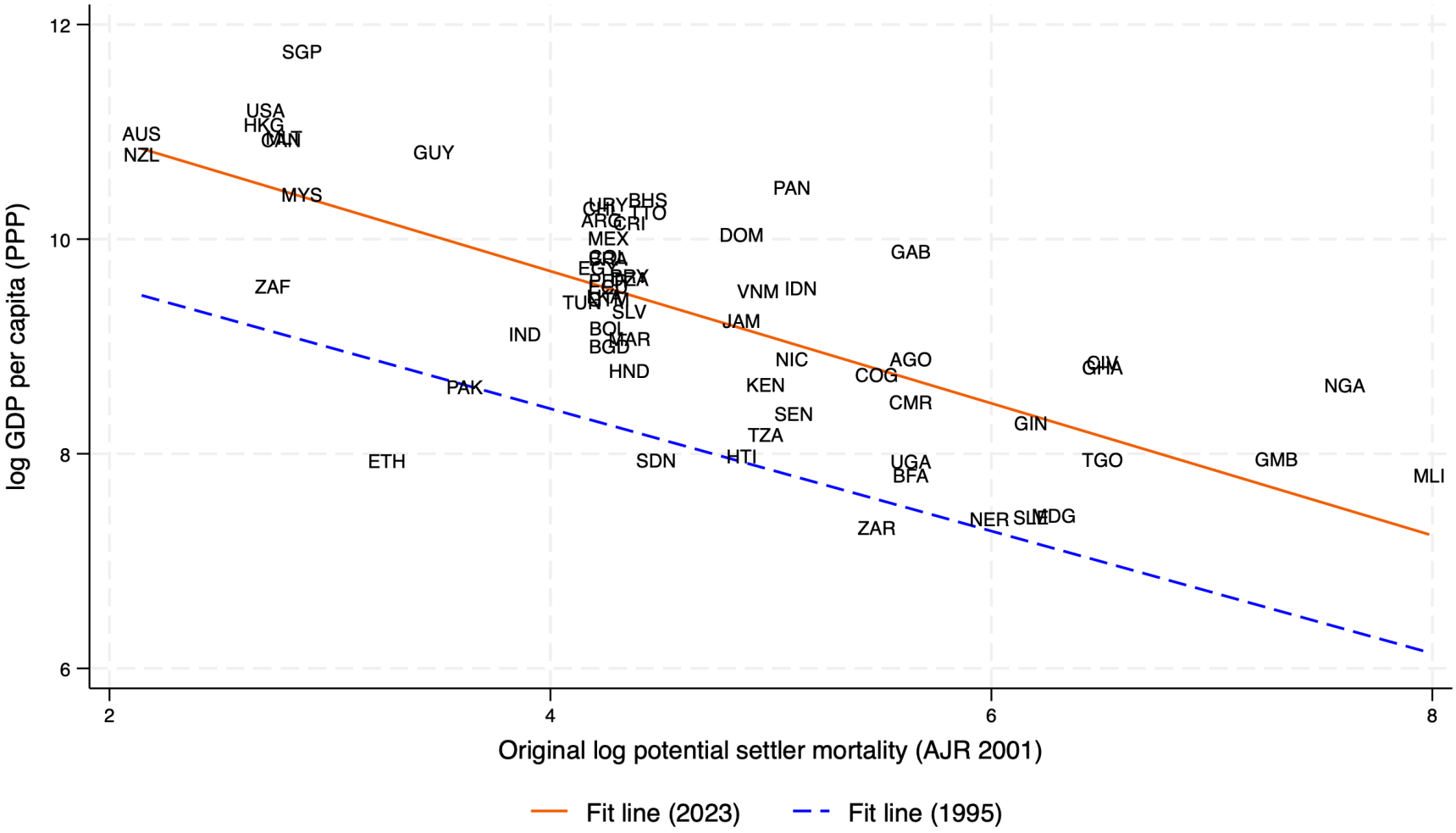
Note: Panel A: two-stage least squares (2SLS) estimates from regressing log GDP per capita in 2023 on institutions (average of 2010-2020), using original settler mortality series, from AJR (2001). Institutions are measured as average of PRS Corruption, Law and Order, and Bureaucracy Quality, 1985-95, from PRS. GDP per capita is from the World Bank. Corresponding first stages are not shown. Panel B: two-stage least squares (2SLS) estimates from regressing log GDP per capita in 2023 on institutions (average of 2010-2020), instrumented using our preferred settler mortality series, from AJR (2012). Institutions are measured as average of PRS Corruption, Law and Order, and Bureaucracy Quality, from PRS. GDP per capita is from the World Bank. Corresponding first stages are not shown. In both panels, the penultimate line reports weak-instrumentation robust Anderson-Rubin confidence intervals corresponding to the coefficient on this measure of institutions; and the final line shows Montiel Olea and Pflueger (2013) effective F-statistics. In regressions with continent dummies, the dummy for the Americas is omitted. Standard errors are in parentheses. Venezuela is excluded from both panels, as its PPP-adjusted GDP per capita is not available from the World Bank.

Table 7: 2SLS Relationship Between log GDP per capita in 2023 and V-Dem Institutions, 2010-2020, Instrumented Using Original and Preferred Settler Mortality Series

	Dependent variable is log GDP per capita in 2023							
Panel A: Instrument is original series, from AJR 2001	(1) Base	(2) Base	(3) No Neo-Euro	(4) No Neo-Euro	(5) No Africa	(6) No Africa	(7) Continent	(8) Continent
Avg. of V-Dem Corruption, Rule of Law, Account. (2010-2020)	6.863	8.252	8.890	9.692	4.534	5.433	6.652	7.970
	(1.083)	(1.468)	(1.889)	(2.069)	(0.918)	(1.315)	(2.030)	(2.948)
Latitude		-2.585		-1.827		-1.780		-1.749
		(1.411)		(1.992)		(1.055)		(1.550)
Africa							-0.0838	0.0583
							(0.583)	(0.749)
Asia							0.691	0.736
							(0.408)	(0.514)
Others							-0.749	-0.806
							(0.645)	(0.748)
Anderson-Rubin Confidence Interval	[4.84,11.40]	[5.26,19.03]	[5.43,24.81]	[5.61,39.29]	[3.08,8.08]	[3.52,13.25]	[3.37,44.35]	$(-\infty, -37.28] \bigcup [3.50, \infty)$
Effective F-stat	26.57	16.94	13.92	11.51	22.07	11.34	6.12	3.93
N	62	62	58	58	35	35	62	62
Panel B: Instrument is preferred series, from AJR (2012)	(1) Base	(2) Base	(3) No Neo-Euro	(4) No Neo-Euro	(5) No Africa	(6) No Africa	(7) Continent	(8) Continent
Avg. of V-Dem Corruption, Rule of Law, Account. (2010-2020)	6.306	7.354	7.875	8.463	4.622	5.457	5.709	6.502
	(0.989)	(1.350)	(1.681)	(1.832)	(0.897)	(1.273)	(1.336)	(1.717)
Latitude		-1.975		-1.358		-1.794		-1.177
		(1.271)		(1.732)		(1.025)		(1.111)
Africa							-0.267	-0.190
							(0.403)	(0.472)
Asia							0.594	0.615
							(0.325)	(0.371)
Others							-0.489	-0.502
							(0.459)	(0.496)
Anderson-Rubin Confidence Interval	[4.58,9.55]	[4.94,13.51]	[5.10,16.13]	[5.27,20.24]	[3.21,7.99]	[3.63,12.00]	[3.29,13.83]	[3.45,25.26]
Effective F-stat	44.57	23.00	19.51	14.89	21.43	11.94	11.07	7.00
N	62	62	58	58	35	35	62	62

Note: Panel A: two-stage least squares (2SLS) estimates from regressing log GDP per capita in 2023 on institutions (average of 2010-20), instrumented using our original settler mortality seriesm, from AJR (2001). Institutions are measured as average of Corruption, Rule of Law, and Accountability, 1985-95, from V-Dem. GDP per capita is from the World Bank. Corresponding first stages are not shown. Panel B: two-stage least squares (2SLS) estimates from regressing log GDP per capita in 2023 on institutions (average of 2010-20), instrumented using our preferred settler mortality series, from AJR (2012). Institutions are measured as average of Corruption, Rule of Law, and Accountability, from V-Dem. GDP per capita is from the World Bank. Corresponding first stages are not shown. In both panels, the penultimate line reports weak-instrumentation robust Anderson-Rubin confidence intervals corresponding to the coefficient on this measure of institutions; and the final line shows Montiel Olea and Pflueger (2013) effective F-statistics. In regressions with continent dummies, the dummy for the Americas is omitted. Standard errors are in parentheses. Venezuela is excluded from both panels, as its PPP-adjusted GDP per capita is not available from the World Bank.

Figure A1: Reduced form with countries labeled



Note: This figure is identical to Figure 1, but with three letter abbreviations for country names.

Table B1: 2SLS Relationship Between log GDP per capita in 2023 and World Bank Institutions, 2010-2020, Instrumented Using Original and Preferred Settler Mortality Series

	Dependent variable is log GDP per capita in 2023							
Panel A: Instrument is original series, from AJR 2001	(1) Base	(2) Base	(3) No Neo-Euro	(4) No Neo-Euro	(5) No Africa	(6) No Africa	(7) Continent	(8) Continent
WB Rule of Law (2010-2020)	1.434	1.684	1.927	2.032	0.749	0.857	1.301	1.609
	(0.213)	(0.308)	(0.388)	(0.467)	(0.0972)	(0.119)	(0.305)	(0.431)
Latitude		-2.230		-1.088		-1.290		-2.086
		(1.284)		(1.472)		(0.637)		(1.262)
Africa							-0.783	-0.778
							(0.215)	(0.261)
Asia							-0.507	-0.736
							(0.238)	(0.319)
Others							-1.283	-1.479
							(0.672)	(0.770)
Anderson-Rubin Confidence Interval	[1.10,1.93]	[1.21,2.55]	[1.37,3.06]	[1.40,3.49]	[0.53,0.98]	[0.60,1.14]	[0.79,2.39]	[0.90,4.53]
Effective F-stat	27.60	15.89	14.02	10.12	81.35	36.98	10.80	8.03
N	63	63	59	59	36	36	63	63
Panel B: Instrument is preferred series, from AJR (2012)	(1) Base	(2) Base	(3) No Neo-Euro	(4) No Neo-Euro	(5) No Africa	(6) No Africa	(7) Continent	(8) Continent
WB Rule of Law (2010-2020)	1.317	1.500	1.711	1.777	0.794	0.910	1.134	1.334
	(0.177)	(0.240)	(0.307)	(0.351)	(0.0961)	(0.113)	(0.213)	(0.259)
Latitude		-1.648		-0.697		-1.455		-1.492
		(1.023)		(1.176)		(0.586)		(0.871)
Africa							-0.863	-0.869
							(0.181)	(0.206)
Asia							-0.443	-0.599
							(0.191)	(0.221)
Others							-0.982	-1.085
							(0.505)	(0.540)
Anderson-Rubin Confidence Interval	[1.03,1.70]	[1.11,2.08]	[1.25,2.44]	[1.27,2.65]	[0.58,1.04]	[0.66,1.22]	[0.75,1.70]	[0.84,2.26]
Effective F-stat	54.87	29.18	22.21	16.51	62.91	32.77	17.96	13.39
N	63	63	59	59	36	36	63	63

Note: Panel A: two-stage least squares (2SLS) estimates from regressing log GDP per capita in 2023 on institutions (average of 2010-20), instrumented using original settler mortality series, from AJR (2001). Institutions are measured as Rule of Law, 2010-20, from the World Bank. GDP per capita is from the World Bank. Corresponding first stages are not shown. Panel B: two-stage least squares (2SLS) estimates from regressing log GDP per capita in 2023 on institutions (average of 2010-20), instrumented using our preferred settler mortality series, from AJR (2012). Institutions are measured as Rule of Law, from the World Bank. GDP per capita is from the World Bank. Corresponding first stages are not shown. In both panels, the penultimate line reports weak-instrumentation robust Anderson-Rubin confidence intervals corresponding to the coefficient on this measure of institutions; and the final line shows Montiel Olea and Pflueger (2013) effective F-statistics. In regressions with continent dummies, the dummy for the Americas is omitted. Standard errors are in parentheses. Venezuela is excluded from both panels, as its PPP-adjusted GDP per capita is not available from the World Bank.

Table B2: 2SLS Relationship Between log GDP per capita in 2023 and Transparency International Institutions, 2010-2020, Instrumented Using Original and Preferred Settler Mortality Series

	Dependent variable is log GDP per capita in 2023							
Panel A: Instrument is original series, from AJR 2001	(1) Base	(2) Base	(3) No Neo-Euro	(4) No Neo-Euro	(5) No Africa	(6) No Africa	(7) Continent	(8) Continent
Corruption Perceptions Index (2010-2020)	0.0721 (0.0118)	0.0881 (0.0187)	0.102 (0.0219)	0.110 (0.0301)	0.0366 (0.00588)	0.0429 (0.00723)	0.0643 (0.0152)	0.0825 (0.0255)
Latitude		-2.850 (1.634)		-1.656 (2.012)		-1.540 (0.737)		-2.491 (1.634)
Africa							-0.691 (0.249)	-0.660 (0.325)
Asia							-0.255 (0.241)	-0.456 (0.333)
Others							-1.114 (0.829)	-1.299 (1.029)
Anderson-Rubin Confidence Interval	[0.05,0.10]	[0.06,0.14]	[0.07,0.18]	[0.07,0.22]	[0.03,0.05]	[0.03,0.06]	[0.04,0.13]	[0.04,0.37]
Effective F-stat	23.81	11.96	12.23	7.38	58.99	21.97	10.04	5.80
N	63	63	59	59	36	36	63	63
Panel B: Instrument is preferred series, from AJR (2012)	(1) Base	(2) Base	(3) No Neo-Euro	(4) No Neo-Euro	(5) No Africa	(6) No Africa	(7) Continent	(8) Continent
Corruption Perceptions Index (2010-2020)	0.0671 (0.0104)	0.0801 (0.0161)	0.0929 (0.0189)	0.0995 (0.0257)	0.0405 (0.00630)	0.0482 (0.00817)	0.0580 (0.0117)	0.0715 (0.0184)
Latitude		-2.306 (1.408)		-1.289 (1.750)		-1.896 (0.818)		-1.974 (1.282)
Africa							-0.762 (0.211)	-0.747 (0.260)
Asia							-0.231 (0.206)	-0.387 (0.263)
Others							-0.899 (0.709)	-1.016 (0.842)
Anderson-Rubin Confidence Interval	[0.05,0.09]	[0.06,0.12]	[0.07,0.14]	[0.07,0.17]	[0.03,0.06]	[0.03,0.07]	[0.04,0.10]	[0.04,0.15]
Effective F-stat	42.33	17.55	17.23	9.73	40.09	16.68	15.16	7.86
N	63	63	59	59	36	36	63	63

Note: Panel A: two-stage least squares (2SLS) estimates from regressing log GDP per capita in 2023 on institutions (average of 2010-20), instrumented using original settler mortality series, from AJR (2001). Institutions are measured as Corruption Perceptions Index, 2010-20, from Transparency International. GDP per capita is from the World Bank. Corresponding first stages are not shown. Panel B: two-stage least squares (2SLS) estimates from regressing log GDP per capita in 2023 on institutions (average of 2010-20), instrumented using our preferred settler mortality series, from AJR (2012). Institutions are measured as Corruption Perceptions Index, 2010-20, from Transparency International. GDP per capita is from the World Bank. Corresponding first stages are not shown. In both panels, the penultimate line reports weak-instrumentation robust Anderson-Rubin confidence intervals corresponding to the coefficient on this measure of institutions; and the final line shows Montiel Olea and Pflueger (2013) effective F-statistics. In regressions with continent dummies, the dummy for the Americas is omitted. Standard errors are in parentheses. Venezuela is excluded from both panels, as its PPP-adjusted GDP per capita is not available from the World Bank.

Table C1: Settler mortality series

Former Colony	Original series (AJR 2001)	Preferred series (AJR 2012)	Mortality group
New Zealand	8.55	8.55	Low mortality
Australia	8.55	8.55	Low mortality
Hong Kong	14.90	14.90	Low mortality
USA	15.00	15.00	Low mortality
South Africa	15.50	15.50	Low mortality
Canada	16.10	16.10	Low mortality
Malta	16.30	16.30	Low mortality
Malaysia	17.70	17.70	Low mortality
Singapore	17.70	17.70	Low mortality
Ethiopia	26.00	26.00	High mortality
Guyana	32.18	32.18	High mortality
Pakistan	36.99	36.99	High mortality
India	48.63	48.63	High mortality
Tunisia	63.00	63.00	High mortality
Egypt	67.80	67.80	High mortality
Argentina	68.90	30.50	High mortality
Chile	68.90	30.50	High mortality
Sri Lanka	69.80	69.80	High mortality
Bolivia	71.00	93.25	High mortality
Guatemala	71.00	93.25	High mortality
Colombia	71.00	93.25	High mortality
Ecuador	71.00	93.25	High mortality
Brazil	71.00	30.50	High mortality
Peru	71.00	30.50	High mortality
Uruguay	71.00	93.25	High mortality
Mexico	71.00	71.00	High mortality
Bangladesh	71.41	71.41	High mortality
Venezuela	78.10	93.25	High mortality
Honduras	78.10	93.25	High mortality
El Salvador	78.10	93.25	High mortality
Paraguay	78.10	93.25	High mortality
Costa Rica	78.10	93.25	High mortality
Algeria	78.20	78.20	High mortality
Morocco	78.20	78.20	High mortality
Trinidad and Tobago	85.00	85.00	High mortality
Bahamas	85.00	85.00	High mortality
Sudan	88.20	88.20	High mortality
Dominican Republic	130.00	130.00	Extreme mortality
Jamaica	130.00	130.00	Extreme mortality
Haiti	130.00	130.00	Extreme mortality
Vietnam	140.00	140.00	Extreme mortality
Tanzania	145.00	145.00	Extreme mortality
Kenya	145.00	145.00	Extreme mortality
Nicaragua	163.30	93.25	Extreme mortality
Panama	163.30	30.50	Extreme mortality
Senegal	164.66	164.66	Extreme mortality
Indonesia	170.00	170.00	Extreme mortality
Rep. of the Congo	240.00	240.00	Extreme mortality
Dem. Rep. of the Congo	240.00	240.00	Extreme mortality
Gabon	280.00	250.00	Extreme mortality
Angola	280.00	250.00	Extreme mortality
Burkina Faso	280.00	250.00	Extreme mortality
Uganda	280.00	250.00	Extreme mortality
Cameroon	280.00	250.00	Extreme mortality
Niger	400.00	250.00	Extreme mortality
Guinea	483.00	250.00	Extreme mortality
Sierra Leone	483.00	250.00	Extreme mortality
Madagascar	536.04	250.00	Extreme mortality
Ghana	668.00	250.00	Extreme mortality
Togo	668.00	250.00	Extreme mortality
Cote d'Ivoire	668.00	250.00	Extreme mortality
Gambia	1470.00	250.00	Extreme mortality
Nigeria	2004.00	250.00	Extreme mortality
Mali	2940.00	250.00	Extreme mortality

Note: Table shows all mortality series used in this article. Throughout the article we use the log of these values. For reference, deaths per thousand for soldiers stationed in Britain and France were approximately 15 and 20 pre annum respectively. Column 2 shows the baseline potential settler mortality series as used in AJR 2001. Column 3 shows our preferred settler mortality series based on Curtin data (excluding data from Gutierrez (1986)), supplemented with life insurance data, with death rates capped at 250 per thousand. This series is referred to as 'Naval Stations Method 2, capped' in AJR 2012. Column 4 groups former colonies into broad mortality groups. Countries with low mortality have similar death rates as Britain and France. Countries with high mortality have death rates between approximately 2 and 4 times higher than Europe. Finally, countries with extreme mortality have death rates in excess of 7 times those in Europe.