

## Understanding Prosperity and Poverty: Geography, Institutions, and the Reversal of Fortune

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# Understanding Poverty

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### GEOGRAPHY, INSTITUTIONS, AND THE POVERTY OF NATIONS

There are tremendous differences in incomes and standards of living between the rich and the poor countries of the world. For example, average per capita income in sub-Saharan Africa today is less than one twentieth of per capita income in the United States—and this is after adjusting for differences in purchasing power, which helps African incomes. For those of us lucky enough to be living in North America or Western Europe, it is difficult even to imagine how people can survive at such income levels.

Explanations abound for these huge differences in the economic fortunes of countries. Poor countries, such as those in sub-Saharan Africa, Central America, and South Asia, usually lack functioning markets, have poorly educated populations, and possess outdated or nonexistent machinery and technology. These are, however, only *proximate* causes of poverty, in turn begging the question of why these places don't have better markets, human capital, machinery, and technology. There must be some *fundamental* causes of poverty leading to these outcomes and, through these channels, to poverty.

The two main contenders to explain the fundamental causes of cross-country differences in prosperity are geography and institutions. The *geography hypothesis*, which has a large following both in the popular imagination and in academia, maintains that the geography, climate, and ecology of a society's location shape both its technology and the incentives of its inhabitants. There are at least three main versions of the geography hypothesis, each emphasizing a different mechanism for how geography affects prosperity. First, climate may be an important determinant of work effort, incentives, and even productivity. Second, geography may determine the technology that

a society develops, especially in agriculture. The third variant of the geography hypothesis, popular especially since the 1990s, links poverty to “disease burden”: “The burden of infectious disease is similarly higher in the tropics than in the temperate zones” (Sachs 2000, p. 32).<sup>1</sup>

In this chapter, we argue that differences in institutions are more important than geography for understanding the divergent economic and social conditions of nations. While the geography hypothesis emphasizes forces of nature as a primary factor in the poverty of nations, the *institutions hypothesis* is about man-made influences. According to this view, some societies are organized in a way that upholds the rule of law, encourages investment of all kinds, facilitates broad-based participation by citizens, and supports market transactions. Loosely speaking, we can refer to these societies as having developed good institutions.

Three crucial elements of these good institutions are (1) enforcement of property rights for a broad cross section of society, so that a variety of individuals have incentives to invest and take part in economic life; (2) constraints on the actions of elites, politicians, and other powerful groups so these people cannot expropriate the incomes and investments of others or create a highly uneven playing field; and (3) some degree of equal opportunity for broad segments of the society, so that they can make investments, especially in human capital, and participate in productive economic activities. These good institutions—or *institutions of private property*, a term emphasizing the importance of the enforcement of rule of law and property rights—do not exist in many societies. In these countries, the rule of law is selectively applied and property rights are nonexistent for the vast majority of the population. Furthermore, the political and economic power of elites is unlimited, and only a small fraction of citizens has access to education, investment, and productive opportunities.

The institutions hypothesis goes back at least to John Locke, Adam Smith, and John Stuart Mill, and it features prominently in many current academic contributions and popular debates (e.g., Jones 1981). John Locke, for example, stressed the importance of property rights: “there must of necessity be a means to appropriate them some way or other, before they can be of any use, or at all beneficial to any particular man” ([1690] 1980, p. 10). He further argued that the main purpose of government was “the preservation of the property of . . . members of the society” (p. 47). More recently, Douglass North was awarded a Nobel Prize in part for articulating the role of institutions in understanding economic development.

It is perhaps surprising that some societies have dysfunctional institutions, despite the large economic and social costs that these bring. Our perspective in this essay is that there are no compelling reasons to think that societies will naturally gravitate toward good institutions. In fact, appreciating why this is so will be key to understanding why institutions vary across countries. Institutions not only affect the economic prospects of nations but also are

central to the *distribution* of income among various individuals and groups in society—in other words, institutions affect both the size of the social pie and how it is distributed. This perspective implies that a potential change from dysfunctional and bad institutions toward better ones, which will increase the size of the social pie, may nonetheless be *blocked* when such a change significantly reduces the size of the slice that powerful groups receive and when they cannot be *credibly* compensated for this loss after the change in institutions.<sup>2</sup> By the same token, powerful groups will often opt for institutions that do not provide any rights to the majority of the population so that they can extract resources or labor from them, or monopolize the most lucrative businesses. Motivated by this reasoning, we will refer to bad and dysfunctional institutions as *extractive institutions*, emphasizing the fact that they are there, or were introduced in the first place, as a means of supporting the extraction of resources by one group at the expense of the rest of the society.

In the rest of this essay, we develop the case for the importance of institutions. To build this case, we will go back to the history of European colonization, which provides us with a natural laboratory where, while geography remained constant, European colonists radically transformed institutions in many of these societies. That institutions matter, naturally does not imply that geography is not important. The two explanations could be complementary rather than competing. Geographic and ecological factors, for example, have undoubtedly played a major role in determining where early civilizations located and where humans migrated during their early history. Nevertheless, the evidence we discuss in this essay also suggests that the role of geography is relatively limited in understanding the sources of prosperity and poverty today.

## GEOGRAPHY VERSUS INSTITUTIONS: WHAT WE SEE TODAY

If you want to believe that geography matters, look at a world map. Locate the poorest places in the world, with per capita income levels less than one twentieth of that of the United States. You will find almost all of them close to the equator, in very hot regions with periodic torrential rains. If, following Montesquieu (1748), you believe that climate matters for economic activity, then this is supportive of that view.

Next, look at some recent writings on agricultural productivity. You will see many ecologists and economists claim that the tropical areas do not have enough frost to clean the soil and are suffering from soil depletion because of heavy rains. Here seems to be evidence that tropical agriculture is less productive than its temperate counterpart—as argued, for example, by Myrdal (1968).

Next turn to sources on tropical diseases, for example, the recent report by the World Health Organization (2001). Not surprisingly, given the term

tropical disease, areas infested with these diseases are at the tropics and much poorer than the United States and Europe, where such diseases are entirely absent. Here seems to be evidence that the burden of disease condemns these places to poverty.

Does this evidence establish that geography is a first-order influence on prosperity? *No*. It is true there is a *correlation* between geography and prosperity, that is, a simple statistical association. But statistical association does not prove causation. Most important, there are often *omitted factors* driving the associations we observe in the data.

Consider an example from the history of malaria, the quintessential tropical disease, to illustrate this point. In the nineteenth century doctors did not understand what caused malaria. To make progress toward protecting European troops stationed in the tropics, they developed an “empirical theory” of malaria by observing that people who lived or traveled close to swamps caught malaria. In other words, they turned the association between the incidence of malaria and the presence of swamps into a causal relationship that the incidence of malaria was *caused* by swamps—and elaborated on this theory by arguing that malaria was transmitted by mists, bad airs, and miasmas emitted by swamps and bogs. Of course they were wrong, and in the late nineteenth century other scientists proved that this statistical association was caused by an omitted factor, mosquitoes. Malaria is caused by parasites transmitted by mosquito bites, primarily by the mosquitoes of the genus *Anopheles*, which breed well in swamps, explaining the statistical association between swamps and malaria infection.

In the same way, it is quite possible that an omitted factor, some institutional feature, is the root cause of the poverty of many tropical countries, and the statistical association between geography and poverty is a mere correlation and no more.

In fact, if you want to find a similar statistical association between institutions and prosperity, there is plenty of evidence for that as well. For example, we can measure institutions in terms of the protection for entrepreneurs’ property rights—protection against expropriation risk. This is the result of assessments between 1985 and 1995 by Political Risk Services, an organization that collects and compiles this information and sells it to businesspeople contemplating investment in these places. A high score means a high degree of protection against expropriation. Figure 2.1 shows the correlation between this measure of institutions and income per capita today (more accurately, the logarithm of income per capita in 1995, adjusted for purchasing power parity differences across countries).

But, as was the case with geography, this statistical association does not prove causation. It could once again be omitted factors, or even reverse causality: the fact that richer countries can afford better institutions, better protection against arbitrary behavior, and better constitutions, which account for the association depicted in Figure 2.1.

How can we make progress in distinguishing between the roles of geog-

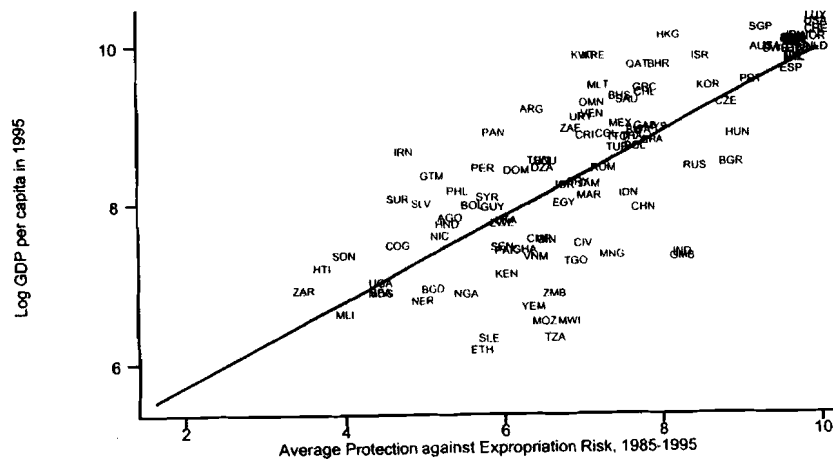


Figure 2.1 Log Income per Capita in 1995 versus Perceived Protection against Expropriation Risk, 1985–1995

raphy and of institutions as fundamental causes of prosperity and poverty? There is relatively little we can learn by looking at correlations, but a lot we can gather by going back in history and making use of the “experiments” that it offers us.

In the natural sciences, causal theories are tested by conducting controlled *experiments*. For example, to investigate whether Tylenol helps with headaches, we would randomly allocate a large number of otherwise similar subjects with headaches into one of two groups, either the treatment group, which will receive Tylenol, or the control group, which will receive a placebo, an apparently identical but actually inactive pill. We will then see whether there is an improvement in the headaches of the treatment group relative to the control group. If the answer is yes, subject to caveats related to statistical power, we can conclude that it is Tylenol that has the causal effect on headaches. This has to be so, since in our experiment all other conditions were kept the same between the two groups.

Controlled experiments are much harder to conduct in the social sciences. We cannot change a country’s institutions and watch what happens to the incomes and welfare of its citizens (and that’s fortunate!). However, even if we cannot use controlled experiments to test what determines prosperity, history may offer a *natural experiment*, in which we can convincingly argue that one factor changes while other potential determinants for the outcomes of interest remain constant. The remainder of this chapter looks in detail at this experiment.

## THE REVERSAL OF FORTUNE

The global colonization by Europeans starting in the fifteenth century was a natural experiment. The colonization experience transformed the institutions in many lands conquered or controlled by Europeans but, by and large, had no effect on their geographies. Therefore, if geography is the key factor determining the economic potential of an area or a country, the places that were rich before the arrival of the Europeans should continue to be rich after colonization and, in fact, today as well. In other words, since the key determinant of prosperity remains the same, we should see a high degree of *persistence* in economic outcomes. If, on the other hand, it is institutions that are central, then those places where good institutions were introduced or developed should get richer compared with those where Europeans introduced or maintained extractive institutions.

Historical evidence suggests that Europeans indeed pursued very different colonization strategies with very different associated institutions in various colonies. At one extreme, Europeans set up extractive institutions, exemplified by the Belgian colonization of the Congo, slave plantations in the Caribbean, and forced labor systems in the mines of Latin America. These institutions introduced neither protection for the property rights of regular citizens nor constraints on the power of elites. This is not surprising, since these institutions were designed to facilitate Europeans' extraction of resources from the colonies.

At the other extreme, many Europeans settled in a number of colonies, creating societies replicating and often improving European forms of institutions protecting private property. Primary examples of this mode of colonization include Australia, New Zealand, Canada, and the United States. The settlers in these societies also managed to place significant constraints on elites and politicians, even if they had to fight to achieve this objective. In both North America and Australia, the plans of the British crown to develop a more hierarchical structure were thwarted by the protests, demonstrations, and migrations of the lower strata of European settlers (indentured servants in North America and descendants of convicts in Australia).

So what happened to economic development after colonization? Did places that were rich before colonization remain rich, as suggested by the geography hypothesis? Or was there a systematic change in economic fortunes associated with the changes in institutions?

The historical evidence shows no evidence of the persistence suggested by the geography hypothesis. On the contrary, there is a remarkable *reversal of fortune* in economic prosperity. Societies—such as the Mughals in India and the Aztecs and the Incas in the Americas—that were among the richest civilizations in 1500 are among the poorer societies of today. In contrast, countries occupying the territories of the less-developed civilizations in North America, New Zealand, and Australia are now much richer than those in the lands of the Mughals, Aztecs, and Incas.

The reversal of fortune is not confined to this comparison. Using proxies for prosperity before modern times, we can show that it is a much more widespread phenomenon. Two useful proxies for income per capita, especially in preindustrial societies, are urbanization rates and population density. Only societies with a certain level of productivity in agriculture and a relatively developed system of transport and commerce could sustain large urban centers and a dense population. Figure 2.2 shows the relationship between income per capita and urbanization (fraction of the population living in urban centers with more than 5,000 inhabitants) today and demonstrates that even in the current period there is a significant relationship between urbanization and prosperity. Naturally, high rates of urbanization do not mean that the majority of the population lived in prosperity. In fact, before the twentieth century urban centers were often highly unhealthy and unequal. Nevertheless, urbanization is a good proxy for average income per capita in society, which closely corresponds to the measure we are using to look at prosperity today.

Figures 2.3 and 2.4 depict the relationship between income per capita today and urbanization rates and (log) population density in 1500. We picked 1500 since it is before European colonization had an effect on any of these societies. A strong negative relationship, indicating a reversal in the rankings in terms of economic prosperity between 1500 and today, is clear in both figures. In fact, the figures show that in 1500 the temperate areas were generally less prosperous than the tropical areas.

This reversal is *prima facie* evidence against the most standard (simple) versions of the geography hypothesis discussed above: it cannot be that the climate, ecology, or disease environments of the tropical areas condemn them

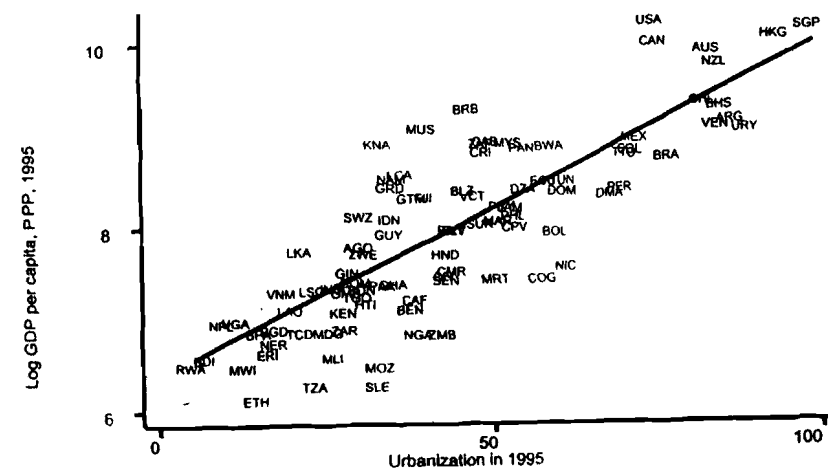


Figure 2.2 Log Income per Capita in 1995 versus Urbanization in 1995

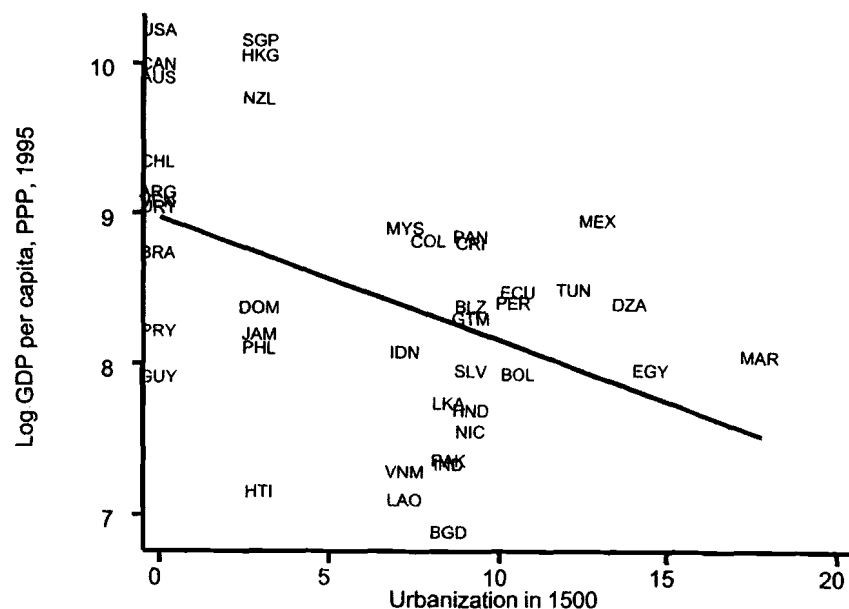


Figure 2.3 Log Income per Capita in 1995 versus Urbanization in 1500

to poverty today, since these areas, with the same climate, ecology, and disease environments, were *richer* than the temperate areas 500 years ago.

Nevertheless, it is possible to develop more sophisticated geography hypotheses predicting time-varying effects of climate, ecology, or disease environments. Perhaps certain geographic characteristics that were not useful, or were even harmful, for successful economic performance in 1500 turned out to be beneficial later on.

A possible example, which can be called “the latitude specific technology hypothesis,” argues that areas in the tropics had an early advantage, but later agricultural technologies, such as the heavy plow, crop rotation systems, domesticated animals, and high-yield crops, have favored countries in the temperate areas.<sup>3</sup> However, the evidence is not consistent with this hypothesis. First, the reversal in relative incomes seems to have been related to population density and prosperity before Europeans arrived, not to any inherent geographic characteristics of the area. Furthermore, according to the latitude specific technology hypothesis, the reversal should have occurred when European agricultural technology spread to the colonies. Yet while the introduction of European agricultural techniques, at least in North America, took place earlier, as documented above, the reversal occurred mostly during the nineteenth century and was closely related to industrialization.

The timing and the nature of the reversal do not support other versions of the sophisticated geography hypothesis.<sup>4</sup> Overall, the evidence strongly

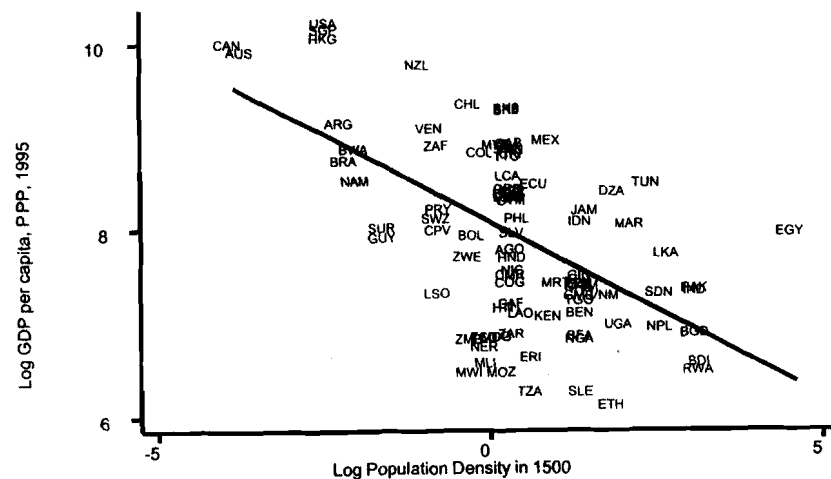


Figure 2.4 Log Income per Capita in 1995 versus Log Population Density in 1500

suggests that the reversal of fortune among the former European colonies is not consistent with theories in which geographic factors are the central determinants of cross-country income differences today.

## INSTITUTIONS AND THE REVERSAL

Is the reversal of fortune consistent with the institutions hypothesis? The answer is yes. In fact, once we look at the variation in colonization strategies, we see that the reversal of fortune is exactly what the institutions hypothesis predicts.

European colonialism made Europeans the politically powerful group with the capability to influence institutions more than any indigenous group was able to at the time. As suggested by our discussion above, we expect Europeans to have done so not according to the interest of the society as a whole, but in order to maximize their benefits. And this is exactly what the historical evidence suggests happened.

In places where Europeans did not settle, and thus did not care much about aggregate output or welfare; in places where there was a large population to be coerced and employed cheaply in mines or in agriculture, or simply taxed; in places where there was a lot to be extracted, Europeans pursued the strategy of setting up extractive institutions. In those colonies, there were no constraints on the power of the elites (i.e., the Europeans and their allies), and no civil or property rights for the majority of the population; in fact, many of them were forced laborers or slaves. Contrasting with this pattern, in other colonies Europeans settled in large numbers and developed the laws and institutions of the society to ensure that they themselves were

protected in both their political and their economic lives. In these settler colonies, the institutions were therefore much more conducive to investment and economic growth.

This discussion also suggests that Europeans were more likely to invest in the development of institutions of private property in areas that were sparsely settled and previously relatively poor. And this is what the data show. The relatively densely settled and highly urbanized colonies ended up with extractive institutions, while sparsely settled and nonurbanized areas received an influx of European migrants and developed institutions protecting property rights and constraining elites. European colonialism therefore led to an *institutional reversal*, in the sense that the richer places ended up with worse institutions.

To be fair, it is possible the Europeans did not actively introduce extractive institutions in many of these places. The structures of the Mughal, Aztec, and Inca empires were already very hierarchical and nondemocratic, with power concentrated in the hands of rulers. Perhaps the Europeans simply took over these institutions. Whether this is so is secondary for our focus. What matters is that in densely settled and relatively developed places, it was in the interests of Europeans to have extractive institutions, while in the sparsely settled areas it was in their interests to develop institutions of private property, thus leading to the institutional reversal.

The institutional reversal combined with the institutions hypothesis predicts the reversal of fortune: relatively rich places got worse institutions, and if these institutions were really important, we should see these places become relatively poor over time. This is exactly what we find with the reversal of fortune.<sup>5</sup>

We find further support for the view that the reversal of fortune is related to the institutional reversal, and the effect of this institutional reversal on long-run growth, in the fact that there appears to be no comparable reversal among countries not colonized by Europeans between 1500 and today, and nothing of the sort in the colonized or noncolonized samples between 1000 and 1500. Something special, most probably related to changes in institutions, took place in these lands after colonization.

The timing and the nature of the reversal are also consistent with the institutions hypothesis. The initially highly urbanized countries had higher levels of urbanization and prosperity until around 1800. At that time the initially low-urbanization countries started to grow much more rapidly, and a prolonged period of divergence began. There was more industry (per capita and total) in India in 1750 than in the United States. By 1860, the United States and colonies, such as Australia and New Zealand, with relatively good institutions began to move ahead rapidly, and by 1953 a huge gap had opened up.

Recall that the institutions hypothesis links incentives to invest in physical and human capital and in technology to institutions and argues that eco-

nomically prosperity results from these investments. Therefore, institutions should become more important when there are major new investment opportunities. The opportunity to industrialize is the major investment opportunity of the era. In fact, it would not be an exaggeration to say that countries that are rich today, both among the former European colonies and other countries, are those that industrialized successfully during the nineteenth century.

Moreover, industrialization is precisely the type of process that requires investment from various segments of the society in new technology and commerce, market transactions supported by law and order, and a workforce investing in skills and human capital; in other words, a process that requires the protections offered by institutions of private property. In contrast, before industrialization, a country could be rich from agriculture, such as the relatively prosperous sugar colonies of Barbados, Cuba, Jamaica, and Saint-Domingue, which had highly extractive institutions that concentrated power in the hands of plantation owners. These institutions were probably costly for economic performance even in these largely agricultural societies, but less costly than they would have been if economic activity relied on more investment from a larger segment of society. The fact that former colonies with better institutions should industrialize and pull ahead of the rest during the nineteenth century is thus what the institutions hypothesis predicts.

Therefore, the institutions hypothesis is also consistent with the timing and nature of the reversal, which took place mainly in the nineteenth century and because societies with good institutions took advantage of the opportunity to industrialize, while those with extractive institutions failed to do so.

It is also useful to note that this evidence is not consistent with another hypothesis related to colonialism: that the reversal reflects the heavy plunder of the colonies by Europeans. This hypothesis would be an extension of the Marxist analyses of colonialism and of the development of the modern world economy.<sup>6</sup> But if plunder were the cause of the reversal, we would expect the reversal to happen shortly after colonization, the period of the most intense plunder. Instead, it took place mostly in the nineteenth century, at least for the Americas. This indicates that the reversal was not the direct consequence of colonization per se, but resulted from the institutions that were put in place by the colonial powers with the aim of extracting resources.

#### MORTALITY OF EUROPEAN SETTLERS: ANOTHER SOURCE OF DIVERGENCE IN INSTITUTIONS

So far we have seen that Europeans pursued different colonization strategies in different places, with very different associated institutions and that a key determinant of whether they set up good institutions or not is whether they settled in large numbers. One factor explains much of the variation in set-

tlement rates of Europeans: the disease environment they faced in the colonies. Europeans, it turns out, had no immunity to the diseases of the tropics, particularly malaria and yellow fever.

Yellow fever is largely eradicated today, but malaria is still endemic in many parts of sub-Saharan Africa and, as discussed above, causes the deaths of millions of children every year. Nevertheless, the majority of the adult inhabitants of areas in which malaria is endemic have either genetic or (more often) acquired immunity, ensuring that they do not die or are not completely incapacitated by even the most deadly strain of malaria, falciparum malaria. In contrast, malaria infection meant almost certain death for Europeans, especially in the nineteenth century, before the causes and prevention of malaria were understood.<sup>7</sup>

As a result of the prevalence of yellow fever and malaria, potential European settlers and European troops faced very different mortality rates in the colonies. For example, before 1850, the annual mortality rates for a settlement size maintained at 1,000 (through replacement) ranged from 8.55 in New Zealand, which was lower than in Europe at that time, to 49 in India, 130 in Jamaica, and around 500 in West Africa. The widely differing mortality rates of settlers led to different settlement rates and to divergent institutional paths for various colonies.

Figure 2.5 shows a very strong association between (the log of) these mortality rates for European settlers and the measure of current institutions used in Figure 2.1, protection against expropriation risk between 1985 and 1995. Institutions today are much worse in places with higher settler mortality. Figure 2.6, in turn, shows a very strong association between these mortality rates and economic prosperity today, again as measured by income

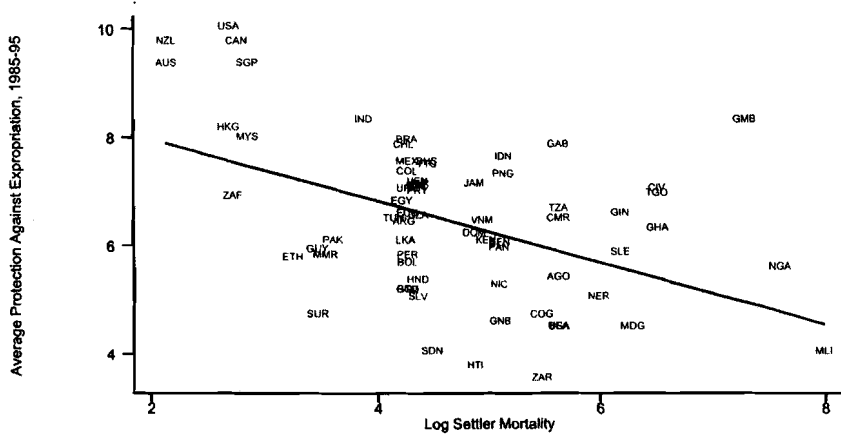


Figure 2.5 Perceived Protection against Expropriation Risk, 1985–1995 versus Log Settler Mortality

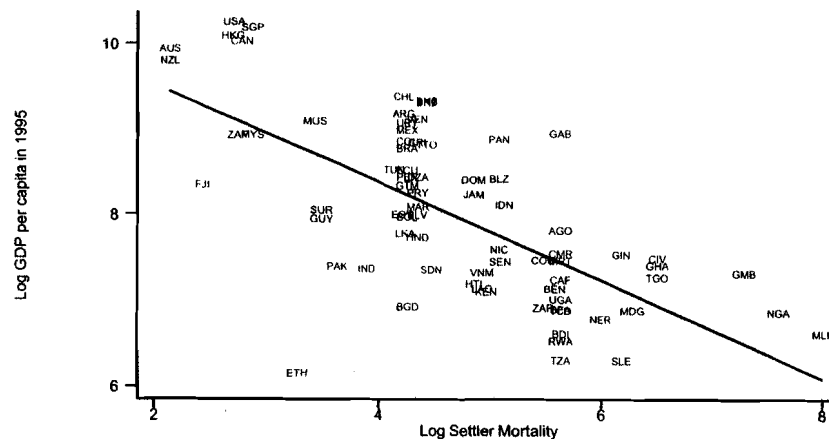


Figure 2.6 Log Income per Capita in 1995 versus Log Settler Mortality

per capita: countries that had lower mortality rates for European settlers are now richer. What explains this pattern?

In Acemoglu, Johnson, and Robinson (2001), we document that this pattern reflects neither the current prevalence of malaria, nor current general health conditions, nor various geographic factors ranging from temperature to humidity, from natural resources to soil quality.<sup>8</sup> Instead, we argue that the association shown in Figure 2.6 works through the effect of these mortality rates on European settlement and institutional development. In places where they faced high mortality rates, Europeans did not settle and typically introduced extractive institutions. Extractive institutions have a lot of staying power; for example, groups who benefit from using the power of the state to expropriate others will resist and attempt to block any move toward better institutions. As a result, in many cases extractive institutions have persisted from colonial times to today and still adversely affect economic growth.

The idea that Figure 2.6 captures the effect of European settler mortality rates working via institutional development, not the direct effect of these diseases, is also supported by the mortality rates of indigenous peoples in these areas. While Europeans faced very high death rates, the indigenous population had mortality rates similar to those of Europeans in their home countries. For example, the annual mortality rates of native troops serving in Bengal and Madras were respectively 11 and 13 in 1,000, similar to—in fact, lower than—the annual mortality rate of British troops serving in Britain, which was approximately 15 in 1,000. In contrast, the death rates of British troops serving in these colonies were much higher because of their lack of immunity to local disease. For example, death rates in Bengal and Madras for British troops were between 70 and 170 in 1,000.

That the relationship in Figure 2.6 does not reflect the direct effect of the

disease environment is also consistent with the fact that using only information about the prevalence of yellow fever leads to similar results.<sup>9</sup> Since yellow fever is largely eradicated today, this is unlikely to reflect the direct effect of yellow fever.

The advantage of exploiting this source of variation in institutions is that we can both get a rough sense of how important institutions are in explaining current differences in economic performance, and also test for possible direct effects of various geographic characteristics. The results indicate that differences in institutions across countries today account for the bulk of the differences in economic outcomes. Moreover, once we take the influence of institutions into account, none of these geographic characteristics appear to have a significant effect on income per capita today.<sup>10</sup>

Overall, the evidence both from the reversal of fortune and from the divergent patterns of institutional development driven by differences in European settler mortality rates points to the same conclusion: institutions have a large and quantitatively important effect on economic prosperity today. What's more, once we recognize the importance of institutions for economic performance, geography seems to play a relatively small role in the large cross-country differences in prosperity today.

## CONCLUSION: GEOGRAPHY VERSUS INSTITUTIONS

The evidence presented so far makes a fairly convincing case that institutional differences, not geographic factors, are at the root of the very large differences in economic prosperity we observe today. It is true that countries in or near the tropics are poorer than those in temperate areas. However, this does not reflect the effect of climate or ecology on economic outcomes, but simply the fact that a key determinant of prosperity—institutions—differs between these areas. Institutions differ, in turn, because institutions in many parts of the world today are shaped by the colonial history of these areas; Europeans were more likely to settle in the temperate areas and develop institutions encouraging investment and economic progress, and they were more likely to set up extractive institutions in tropical areas and in areas that at the time were more prosperous and densely settled, which were also typically the ones in or near the tropics.

Does all this mean that geography is unimportant? Yes and no. There is no evidence that geography plays a major (quantitatively large) *direct* role in the very large differences in income per capita and growth potential of countries today. But this does not mean that geography is unimportant. It is important in at least four major ways.

First, geography and diseases almost surely matter for economic outcomes. There can be no agriculture at the poles, and it is a truism that healthy individuals will be more productive and motivated in their work, in school, and in their lives. The statement here is that the effects of geography and

diseases are not a major factor in explaining the tremendous cross-country differences in prosperity—not that geography and diseases have no economic effects at all.<sup>11</sup>

Second, because geography is not at the root of the tremendous differences in economic prosperity today does not mean that it was unimportant in history. It is quite possible that geographic differences shaped the reasons why some areas were richer than others more than 500 years ago. This must be the primary candidate for explaining why tropical areas among the colonies were more prosperous than temperate ones in 1500. Going even farther back, geographic characteristics must have been important in determining where settled agriculture developed and where humans migrated.

Third, geography could have an effect via institutions, especially during a particular historical juncture. After all, the disease environment is a geographic characteristic of many tropical areas. However, the major effect of disease environments was not direct, but indirect:<sup>12</sup> during the period of European colonization, they determined whether Europeans could settle and, therefore, which types of institutions developed.<sup>13</sup>

Finally, and most importantly, even if geography has no effect on income per capita, it does have significant effects on “social welfare,” properly measured. Many parts of the world, especially many parts in the tropics, suffer from poorer health and higher mortality and morbidity than North America and Western Europe, partly because of their geographic characteristics (and partly because the corresponding diseases in North America and Europe have been eradicated as a result of the economic development of these societies!). It is important to understand the social and human costs of disease and act upon them. Many scholars, journalists, and commentators argue that the Western world should invest in the health of less-developed populations and try to reduce mortality and morbidity in these areas because of the economic benefits that these investments will create. Our perspective is that we should undertake such investments on humanitarian and social grounds. After all, we have as much reason to care about the lives of people as about their incomes.

## NOTES

1. Due to space constraints, in this essay we cannot do full justice to the range of geography hypotheses. See Acemoglu, Johnson, and Robinson (2002) for more on these views.

2. See North (1981), Bates (1981), and Olson (1982) for a general discussion; Acemoglu and Robinson (2000, 2002) for why elites may block beneficial institutional change because they fear losing their politically privileged position; and Acemoglu (2003) for problems associated with the credibility of striking deals between powerful groups and the rest of the society so as to compensate the latter after institutional changes take place.

3. See, for example, Bloch (1967) or White (1962).

4. Again, see Acemoglu, Johnson, and Robinson (2002) for more discussion.

5. Acemoglu, Johnson, and Robinson (2002) show that the reversal of fortune can be statistically accounted for by the differences in institutions during or after colonial times, further supporting the conclusion in this paragraph.

6. See, for example, Frank (1978) or Wallerstein (1974–1980).

7. See Curtin (1989).

8. Controlling for these geographic characteristics has little effect on the relationship of interest, partly because prevalence of malaria and yellow fever is not related to any simple geographic characteristics.

9. See Acemoglu, Johnson, and Robinson (2001).

10. See Acemoglu, Johnson, and Robinson (2001); see also Easterly and Levine (2003).

11. Existing evidence from microdata on the effect of health on individual economic outcomes indicates significant effects, which are quantitatively at least one order of magnitude smaller than cross-country differences in income per capita, consistent with this conclusion. See, for example, the survey in Acemoglu, Johnson, and Robinson (2003).

12. Similarly, Engerman and Sokoloff (1997) have emphasized how the geography of the Caribbean, which made it an ideal place for sugar production, was a key factor in the development of a plantation economy based on slavery, thus having adverse long-term economic consequences, but through institutions rather than directly.

13. Therefore, not only did these characteristics not have a direct effect, but we should not expect them to have a *universal* effect on economic outcomes via their influence on institutions. Instead, they had an effect on institutional development in the context of European colonialism. If it had happened to be West Africans colonizing Europe and the rest of the world, rather than the other way around, the prevalence of malaria would not have been associated with the development of extractive institutions.

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