14. Geography versus institutions

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Geography vs institutions

Galor (2005, p.): “Variations in the economic performance across countries and regions (e.g., earlier industrialization in England than in China) reflect initial differences in geographical factors and historical accidents and their manifestation in variations in institutional, demographic, and cultural factors, trade patterns, colonial status, and public policy”.

Learning Goals:

- Understand the fundamental role of geography for economic development.

14.1. Introduction

In the previous chapters, we saw many theories of circular causation and poverty traps. In light of these theories, history plays a key role in economic performance. Countries that start out rich are likely to remain rich, while countries that start out poor are likely to remain poor. Thus, if by historical accident, a country is blessed with a small “initial advantage”, this may trigger a process of cumulative causation, through which the initial advantage is magnified over time. A less lucky country, on the contrary, may become poorer and poorer, with its resources being attracted to the richer country.

A theory of inequality purely based on cumulative causation looks however rather incomplete. To say that a country is poor because it started out poor and that a country is rich because it started out rich is an unsatisfactory explanation. At a deeper level, one may want to understand why some countries started out rich while others started out poor. So, a critical question is to understand where initial conditions came from.
Advocates of the Geography hypothesis contend that natural factors played a fundamental role in shaping the initial conditions. According to this view, physical factors, such as climate, availability of natural resources, access to navigable waters and endemic diseases played a critical historical role in the very beginning. The geography hypothesis contends that the different incidence of geographical factors materialized into different incentives to produce and invest, triggering a process of cumulative causation and increasing economic disparities.

This chapter briefly reviews the Geography hypothesis as an explanation for cross-country economic disparities. Section 14.2 presents some illustrative data. Section 14.3 reviews the main arguments of the Geography hypothesis. In Section 14.4, the Geography hypothesis is confronted with the view that institutions, not geography is the main determinant of economic performance, and some arguments along this avenue.

14.2. The stylized fact

The Geography hypothesis is backed by an empirical regularity. If one looks at the World map, it is easy to verify that the most developed nations are geographically concentrated and tend to be located in tempered areas, while the poorest countries are located in the tropics.

Figure 12.3 illustrates this. The figure crosses data on per capita GDP for 151 countries as of 1988 with the respective distances to the equator. If initial conditions were a matter of “pure chance”, then per capita GDP should be randomly distributed across the space. In that case, there would be no systematic relationship between per capita GDP and distance to the equator.

The figure reveals, however, that countries that are located close to the equator tend to be poorer than countries that are located in high latitudes. This suggests a role for Geography is explaining economic development today.
In the growth literature, there is extensive empirical evidence pointing to the significant role of geographical variables in explaining the cross-country variation of per capita incomes. Variables that typically correlate well with per capita income include the share of the country located in the tropics, the incidence of malaria, the location of a country relative to the sea or to navigable rivers\(^1\).

**Figure 12.1: Per capita GDP and distance to equator**


### 14.3. Geography and economic development

#### 14.1.1 Shaping the initial conditions

There are different mechanisms through which geography can influence productivity and the human choices.

The most basic one is related to the agro-climatic conditions: a country with low rain, lack of conditions for irrigations and with nutrient-poor soil will obviously face more difficulties in feeding a large population than a country blessed with extensive arable areas and fertile land. Along this idea, it has been argued that the fundamental reason why by the 15th century the region of Eurasia was technological more advanced than the other regions in the World was because this region enjoyed a favourable selection of native plants and animal species that could easily be domesticated to produce high yields. This advantage translated into storable food surpluses, which in turn allowed the expansion of trade and the division of labour, triggering the development of different skills, technology and the emergence of organized, hierarchic and politically structured societies2.

Second, Geography may influence economic performance through high transport costs. Landlocked economies, small islands, economies surrounded by mountains or at long distances from major world markets face higher transport costs than economies in the centre3. High transport costs are like tariffs on international trade, reducing the extent of the market: a region facing high transport costs will benefit less from division of labour and technological diffusion than a region highly engaged in trade with abroad.

A third factor is disease. Diseases reduce the availability and the quality of the main asset of the poor, which is working time. On the other hand, by reducing individuals’ life expectancy, a high incidence of disease implies a smaller payback period for investments in human capital, so people will optimally respond investing less in


3 “The great rivers in Africa are too great a distance from one another to give occasion to any considerable inland navigation” [Adam Smith].

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http://sweet.ua.pt/afreitas/growthbook/capa.htm
education. Moreover, in cases of extreme poverty, high mortality rates caused by disease may induce higher fertility rates, delaying the demographic transition.

Although one may argue that economics drives the pattern of disease, many diseases are determined by geographical factors, such as temperature, rainfall and soil quality. In particular, malaria, which is endemic in the tropics and cannot survive elsewhere, has been referred to as a major factor explaining why the world poorest countries are located in tropical areas.

Thus, according to the Geography hypothesis, exogenous factors related to a country specific location play a central role in determining its growth potential. Since geographical factors are invariant over time, this theory embodies a large scope for determinism.

14.1.2 Long lasting effects

Geographical factors are invariant over time, but their importance is not. In fact, the sources of geographical advantage before are not necessarily the same as those of today.

For instance, at the time agriculture was invented, availability of arable land was the critical ingredient. Since at that time transport costs and communications were too costly to support interregional trade, geographical advantage came mainly from location close to highly fertile areas, such as those around the Tigris and Euphrates. With the progress in transportation, however, the nature of geographical advantage changed dramatically: location advantage became related to proximity to coastal areas, such as the Mediterranean and the North Atlantic. Centuries later, the industrial revolution marked a move from geographical-sensitive farming to geographical-insensitive manufacturing. Still, at the outset of the industrial revolution, proximity to key inputs such as coal, or to transport hubs, such as harbours, made a key difference.

In our days, railroads, automobiles, air transport and progresses in medicine are turning location much less important than before. However, to the extent that past
geographical advantages materialized into different initial conditions and, by then, they triggered processes of cumulative causation, it is natural to observe today a heavy role of geography in explaining the cross-country differences in per capita incomes. Today most advanced nations have a wide agricultural basis, even though today one can set up a modern society without the need to step through an agriculture stage. By the same token, today’s most great cities are ports, even though the importance of ports is now mitigated by the existence of highways, railroads and airports.

The long lasting effects of geographical factors help explain the data in Figure 12.3: Geography still plays an important role in explaining the current location of economic activities, even though the underlying initial advantages of geography are no longer that important\(^4\).

**Box 12.1. The tragedy of Moriori**

A nice essay on the role of geography on economic development is from Jared Diamond, in his famous book *Guns, Germs and Steel*\(^5\). The author contends that availability of suitable conditions for agriculture was the sole main determinant of the asymmetric development of the different regions in the world until the 15th century.

To motivate this idea, the author started with an historical example: the spread of the ancestral Polynesians through the Pacific, 3.200 years ago. In that odyssey, the ancestral Polynesians encountered thousands of islands differing greatly in respect to their area, isolation, elevation, climate, productivity and geological and biological sources. Within a few millennia, that single ancestral Polynesian society had spawned on those islands a range of diverse societies, from hunter-gatherer tribes to proto-empires.

\(^4\) Gallup et al. (1998, p. 132) “a city might emerge because of cost advantages arising from differentiated geography but continue to thrive because of agglomeration economies even when the cost advantage has disappeared”.

One of these groups colonized New Zealand around A.D. 1000, to become the Maori people. A dissident group of Maoris colonized the Chatam Islands, 500 miles east of New Zealand, to become the Moriori.

Although the ancestors of the two groups shared essentially the same culture, language, technology and set of domesticated plants and animals, in the centuries after they evolved in opposite directions. Those that occupied the northern island of New Zealand, found suitable conditions for agriculture. There, they developed new agriculture techniques and invented new tools to grow their crops. The food surpluses allowed population to expand and the society to explore the benefits of specialization, with the emergence of craft specialists, chiefs and soldiers, and political leaders.

Those that occupied the Chatam Islands found a climate that was too cold for the Maori tropical crops to grow. Hence, the Moriori had no alternative but to revert to being hunter-gatherers. As hunter-gathered, they did not produce crop surpluses for redistribution and storage. Hence, they could not support and feed armies, bureaucrats and political organization. Hunter-gatherer societies typically organize themselves in small groups with a primitive political structure and do not need to develop sophisticated technologies. Moreover, because the Chatam Islands are relatively small, they could support at most a population of 2000 hunter-gatherers. The result was a small population with simple technologies lacking leadership and organization.

In conclusion, the Moriori and Maori societies developed from the same ancestral society but along very different lines. The Moriori reverted to being hunter-gathers. The North-Island Maori turned to more intensive farming and develop a complex political organization. These two societies lost awareness of each other existence and did not come into contact again for roughly 500 years. Finally, on November 1835, a group of 900 Maori sailed to the Chatham Islands, attacked and exterminated the Moriori people in only one month.
14.4. The geography vs institutions debate

In the theory of economic growth, two main driving forces have been proposed as fundamental determinants of economic performance in the long run: Institutions and Geography.

Institutions refer to the (formal and informal) norms that constraint human behaviour (the “rules of the game” in a society). The fundamental role of institutions has been stressed, among others, by the Nobel Laureate Douglass North and Daron Acemoglu. Geography, in contrast, refers to “forces of nature”, such as climate, natural resources and location, which impact on agricultural productivity, disease burden, transport costs and technological diffusion. According to this view, countries located in favourable regions were blessed with initial conditions that triggered economic development. The role of geography has been emphasized, among others, by Jeffrey Sachs and Jared Diamond.

Of course, at this stage the reader should be aware that economic development is a very complex phenomenon, so no single factor should be capable of explaining all the observed economic disparities in the World. Still, understanding the real weight of these two factors has important policy implications: while Geography refers to conditions that societies cannot change, institutions are human devised and have at least the potential to be changed by collective actions. With no surprise, an empirical literature has emerged trying to disentangle whether the most important factor influencing economic development is geography or institutions.

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14.1.3 Historical experiments: reversals of fortune

Since Geography is an exogenous and unchanged variable, an obvious way of assessing its importance is looking at history: if geography played a prominent role, then some regions should be doomed to be rich while others should be doomed to remain poor.

Fortunately, this is not always the case: in real life, there are examples of countries that managed to change their fortune. A popular example is Botswana. This country is tropical and landlocked and it remained poor until very recently. However, thanks to a well functioning democracy that has been successful in preserving the legacy of the laws and contract enforcement inherited from the British colonial period, this country has enjoyed a fast convergence towards the developed world.

This avenue was explored by Daron Acemoglu and different co-authors in a series of papers. The authors focused on particular historical episodes, which they labelled as “natural experiments”: these are episodes where, while other fundamental causes of economic growth were held constant, the variable of interest – in this case the quality of institutions - changes because of exogenous reasons”.

14.1.4 The two Koreas

One of these “natural experiments” is the history of the two Koreas. The split of Korea into South Korea and the People’s Republic of Korea occurred after World War II. The two countries were born out of the same people, share the same culture and climate and had the same per capita income just before separation.

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The two countries adopted however, different economic systems: while South Korea engaged in a market economy, the Republic of Korea abolished the private property and implemented a centralized command system. Geography, by definition, remained immutable.

Three decades after, South Korea was a growth miracle, while the People’s Republic of Korea was amongst the poorest nations in the world. This suggests that institutions can overwhelm geography as a driver of economic development.

14.1.5 The colonization experiment

Another “natural experiment” was the colonization of much of the world by Europeans, starting in the fifteen century. This episode triggered many episodes of “reversals of fortune”: regions that were initially rich became poor, while some regions that were poor became rich.

If climate, ecology, or disease environments have condemned some of these regions to poverty and other regions to richness, those regions that were poor should have remained poor and those that were rich should have remained rich. However, after the European colonization, many regions experienced “reversals of fortune”: regions that were very rich and influential in the past, such as the Incas in America and the Mughals in India, became poor, while some other regions that were poor, like Australia and North America, became rich.

Daron Accemoglu and the co-authors contended that the main explanation for the “reversals of fortune” after colonization was the change in the quality of institutions. Indeed, European colonization transformed exogenously and abruptly the institutions in the colonized regions.

Moreover, Europeans followed different colonization models and implemented different institutional setups around the globe. In some regions, Europeans implemented “extractive institutions”, such as the slave plantations of the Caribbean, Congo and Central America. In these cases, institutions were not designed to protect the property
rights of the majority of citizens or to constrain the power of elites. In other regions, Europeans founded settler societies, replicating European institutions in areas like in North America. According to the authors, the fact that countries that implemented settler institutions achieved higher economic performance than those that implemented extractive institutions provides, supports to the institutional hypothesis.

A different question is why did the Europeans implement different institutional models in different colonies. Here, geographical conditions and factor endowments played a critical role. Indeed, European colonialists did not setup institutions for the sake of the society as a whole: they created settler societies wherever it was their interest to do so and “extractive” institutions wherever it was their interest too.

Thus, in places where the climate and the soil quality made it more effective to produce crops using large plantations and where the disease environment was not favourable to European settlement, the colonialists established plantation systems based on slavery and erected political and legal institutions to protect the few landholders from the majority of the population.

In places where the climate and the soil quality made it more effective to produce using small scale farming, where most of the land was empty and with hospitable climate and germs, Europeans settled in large numbers and developed laws and institutions protecting property rights of the regular citizen and imposing constraints on the elites. In these colonies, institutions were much more favourable to growth, broad public education and innovation.

The conclusion is that, although the reversal of fortunes were triggered by major changes in the institutional setup, geography played a critical influence in shaping the quality of institutions

14.1.6 The indirect influence of geography

In sum, the historical evidence suggests that geography neither condemns a country to success nor to poverty. The fact that many historical “reversals of fortune were preceded by abrupt changes in the institutional setup points to a prominent role of institutions as determinant of economic performance.

To the extent that many institutional setups around the globe are an inheritance of the European colonization and have emerged in response to the existing geographical conditions, there has been an “indirect” effect of geography on economic performance, through the quality of institutions. That is, although geography is not the determinant factor, it played a critical influence in the determinant factor, the quality of institutions.

This reasoning suggests that the correlation between latitude and per capita income observed in Figure 12.1 may not be due to a direct influence of geography on economic performance, but rather to an indirect one: to the extent that the historical creation of institutions was correlated with latitude, a statistical relationship between geography and economic performance emerges in the data, irrespectively of any direct causality from geography to economic performance10.

This is not to say that geography is the only determinant of the quality of institutions. Institutions and policies do change over time, and sometimes drastically in response to major political, social or economic disruptions. In any case, it is in the hands of people to change their own future.

Key ideas of Chapter 14

- In models with history dependence and circular causation, initial differences lead to persistently differences in per capita income and divergence.

- A question that arises is why some countries were blessed with an initial advantage while others did not.

- A branch in the literature contends that in the real life, the initial conditions were determined by geographical circumstances. This is the so-called “Geography Hypothesis”.

- There are many reasons to believe that geography played indeed a key role in shaping the initial conditions. Regions with abundant arable land and access to navigable waters emerged as more attractive places to produce and invest, feeding large populations and achieving productivity gains through the division of labour and technological progress, in a virtuous cycle.

- Advocates of the geography hypothesis argue that temperate-zone coastal countries have higher income levels today because their geographical attributes once conferred advantages, even though the geographical characteristics that delivered the initial advantage are no longer important.

- History is, however, plenty of examples of “reversals of fortune”, that is, countries that were initially poor and became rich or countries that was initially rich and became poor. Many of these episodes were preceded by dramatic changes in the quality of institutions.

- Although geography plays a key role in explaining why some countries today are rich and other countries are poor, this does not mean that living standards cannot be changed by human actions. In the real World, there
are many examples of countries and regions that were initially rich and became poor, and regions that were initially poor and managed to become rich.

- Some natural experiments, consisting in cases where institutions changed because of some exogenous factor, revealed that the subsequent economic performance was related to the quality of the new institutions.

- The conclusion of the debate “Geography vs Institutions” suggest that institutions are the most important determinant of economic development. Still, historically, geography has played an important role in influencing the quality of institutions.
Problems and Exercises

Key concepts

- Reversals of fortune
- The geography hypothesis

Essay questions:

a) Discuss: “The factor which ultimately better explains economic growth is geography”.

b) The colonization of much of the world by Europeans, starting in the fifteen century delivered different economic performances around the globe. Does this “natural experiment” favour the “geography hypothesis” or the “institutions hypothesis?”