

Foreign Policy

Jan, 2001

Prisoners of Geography.(landlocked countries, economies)

Author/s: Ricardo Hausmann

Economic-development experts promise that with the correct mix of pro-market policies, poor countries will eventually prosper. But policy isn't the problem--geography is. Tropical, landlocked nations may never enjoy access to the markets and new technologies they need to flourish in the global economy.

So you are a Scorpio. Then you must be passionate. So the barometer says that the atmospheric pressure is declining. Then it is going to rain. So your latitude is less than 20 degrees. Then your country must be poor.

There may be some debate about which of these statements is true, but only one is truly offensive--the last one. Indeed, the notion that a country's geography determines its level of economic development is fraught with controversy. People take offense at such a connection because it smacks of racism and undermines the notion of equal opportunity among nations and individuals. It is also paralyzing and defeatist: What can policymakers and politicians do or promise if nothing can overcome geography? From World War II through the mid-1980s, these sentiments prompted a backlash against the study of economic geography in much of the academic world. Today, however, new theories of economic growth coupled with empirical research have brought economic geography back to the forefront of the development debate. Speaking at the United Nations Conference on Women and Development in June 2000, U.S. Treasury Secretary Lawrence Summers decried "the tyranny of geography," particularly in African countries, and warned against concluding that "the economic failures of isolated, tropical nations with poor soil, an erratic climate and vulnerability to infectious disease can be traced simply to the failure of governments to put in place the right enabling environment." The prevailing development paradigm--according to which market-oriented economic policies and the rule of law alone suffice to make all countries rich--appears to be losing credibility. What if geography gets in the way of the Promised Land?

LOCATION, LOCATION, LOCATION

Closing the income gap between rich and poor countries has been a stated objective of the international community for the last 50 years. This commitment spawned the creation or redesign of institutions such as the World Bank, specialized

United Nations agencies such as the United Nations Development Programme and the United Nations Conference on Trade and Development, regional development banks such as the Inter-American Development Bank (IDB), bilateral aid agencies in the governments of the most advanced economies, and innumerable foundations, research centers, and other non-governmental organizations.

But the global gap between rich and poor countries has not closed. Instead, it has widened. Economist Angus Maddison estimates that, in 1820, Western Europe was 2.9 times richer than Africa. By 1992, this gap had risen to 13.2 times. The trend continues--albeit less dramatically--in South Asia, the Middle East, Eastern Europe, and Latin America. In 1997, the richest 20 percent of the world's population enjoyed 74 times the income of the lowest 20 percent, compared to 30 times in 1960.

The countries left behind have distinguishing geographical characteristics: They tend to be located in tropical regions or, because of their location, face large transportation costs in accessing world markets--or both.

In 1995, tropical countries had an average income equivalent to roughly one third of the income of temperate-zone countries. Of the 24 countries classified as "industrial," not one lies between the Tropics of Cancer and Capricorn, except for the northern part of Australia and most of the Hawaiian Islands. Among the richest 30 economies in the world, only Brunei, Hong Kong, and Singapore are in tropical zones, and their geographical locations leave them ideally suited for growth through trade. Tropical nations tend to have annual rates of economic growth that are between one half and a full percentage point lower than temperate countries. A recent IDB study found that after considering the quality of institutions and economic policies, geography explained about a quarter of the income difference between industrialized and Latin American countries in 1995. Tropical countries also have poorer health conditions than their nontropical counterparts. After considering income levels and female education, life expectancy in tropical regions is seven years lower than in temperate zones. Nations in tropical areas often display especially skewed income distributions. In Africa and Latin America, the richest 5 percent of the population earn nearly 25 percent of the national income, while in industrial countries they earn only 13 percent. Latitude alone can explain half of this difference. Even within regions of the same country, living standards are strongly linked to geography. For example, in Mexico, the southern states of Chiapas, Oaxaca, and Guerrero have twice the infant mortality rate and half the educational attainment of the country's northern states.

Nations with populations far from a coastline also tend to be poorer and show lower rates of economic growth than coastal countries. A country whose population is farther than 100 kilometers from the sea grows 0.6 percent slower per year than nations in which the entire population is within 100 kilometers of the coast. That means, for example, that the post-Soviet republics will experience as much difficulty battling their geographical disadvantages as they will overcoming the aftereffects of communism. Countries that are tropical, far from the coast, and landlocked have three geographical strikes against them. Many countries in Africa are handicapped by one or all of these factors.

There is still much we do not understand about the links between geography and economic growth. But what we do know suggests that the challenges of economic development must be examined from a very new perspective. Denying the impact of geography will only lead to misguided policies and wasted effort. Geography may pose severe constraints on economic growth, but it need not be destiny.

LATITUDE PROBLEMS

To understand why geography can matter so much for economic development, consider what economists regard as the main engines of growth: Access to markets (based on the work of Scottish economist Adam Smith) and technological progress (drawn from the writings of U.S. economist Joseph Schumpeter).

For Adam Smith, productivity gains achieved through specialization are the secret to the wealth of nations. But for these gains to materialize, producers must have access to markets where they can sell their specialized output and buy other goods. The larger the market, the greater the scope for specialization. In today's global marketplace, most industrial products require inputs from various locations around the world. Therefore, if transportation costs are high, local companies will be at a disadvantage in accessing the imported inputs they need and in getting their own goods to foreign markets.

Unfortunately, transportation costs are often determined by a country's geography. A recent study found that shipping goods over 1 additional kilometer of land costs as much as shipping them over 7 extra kilometers-of sea. Maritime shipping is particularly suited to the bulky, low-value-added goods that developing nations tend to produce; therefore, countries lacking cheap access to the sea will be shut out of many potential markets. Moreover, if countries far from the sea do not enjoy the physical infrastructure (the system of roads, railways, and ports) needed for access to navigable rivers or the

sea, they will not develop the very industries that could help maintain such an infrastructure.

Land transportation is especially costly for landlocked countries whose products need to cross borders, which are a much more costly hurdle than previously thought. Studies on trade between U.S. states and Canadian provinces find that simply crossing the U.S.-Canadian border is equivalent to adding from 4,000 to 16,000 kilometers worth of transportation costs. Little wonder, then, that the median landlocked country pays up to 50 percent more in transportation costs than the median coastal nation. In practical terms, these differences can be enormous: Shipping a standard container from Baltimore to the Ivory Coast costs about \$3,000, while sending that same container to the landlocked Central African Republic costs \$13,000.

Governments in landlocked countries face the additional challenge of coordinating infrastructure expenditures with neighboring countries. Sometimes, political or commercial problems inhibit passage to the sea. For example, the agricultural potential of the upper Parana River basin in landlocked Paraguay remained dormant until a Mercosur agreement in the mid-1990s facilitated barge transportation through Brazil and Argentina. Jordan's access to the Mediterranean requires crossing the Israeli border or those of Syria and Lebanon. These instances illustrate why landlocked nations suffer from sluggish economic growth. Countries and territories like Hong Kong, Taiwan, and Singapore have an advantageous geographical position, but much of inland Africa, China, and India remains far from markets and maritime trade. Geography harms developing countries in other ways. Joseph Schumpeter showed that technological innovations, through research and development (R&D), are powerful engines of economic growth. (This notion is what Schumpeter had in mind when he coined his famous term, "creative destruction.") R&D displays increasing returns: The more people who use and pay for a new idea, the greater its market value. (For example, a new computer program or novel may cost a lot to produce, but subsequent copies are extremely cheap.) In order to recoup their initial costs, R&D investors will tend to focus on innovations for which potential customers abound. Unsurprisingly, rich countries with large, middleclass populations are more lucrative markets than poor nations with little purchasing power.

Even though innovations such as computers or cellular phones work in many geographical conditions and are therefore easily adopted by developing countries, technologies in other sectors often require research that is very location-specific. Many technologies are not universally applicable; their effectiveness

depends on the geographical or climatic conditions in which they are used.

Consider agriculture. The divergence in agricultural productivity between the developed and developing world is grounded in dramatically different R&D capabilities. Governments in advanced economies spend up to five times more (as a percentage of total agricultural production) on agriculture-related R&D than their counterparts in developing countries. Rich nations also benefit from the expenditures of private agricultural producers--a source of funding that is virtually nonexistent in developing nations. Geography aggravates this disparity. Plant varieties need to be adapted to the local climate, meaning that R&D geared toward rich, temperate-zone agriculture is of little use in tropical areas. Countries like Argentina, Chile, Australia, New Zealand, and South Africa can enjoy thriving export sectors in fruit, wine, cereals, oilseeds, and salmon thanks to the technologies developed for these products in temperate zones in the Northern Hemisphere. But the tropical countries--with their production of coffee, cocoa, sugar cane, and cassava--are left out of the modern-technology club. The result is that the agricultural sector is much less dynamic in tropical areas than in temperate zones. Since unproductive agricultural workers can produce little more than what they require for personal subsistence (and therefore cannot support large urban populations), rural areas remain sparsely populated, have small, poor markets, and suffer from high transportation costs--all of which hamper economic growth.

Climate differences and economies of scale have long played a powerful role in the development of agriculture in different geographical zones. In his Pulitzer Prize-winning book *Guns, Germs, and Steel*, physiologist Jared Diamond explains how Eurasia's east-west geographical layout and the north-south layout in Africa and the Americas determined these regions' historical patterns of economic growth. Since climate changes little with longitude but quite rapidly with latitude, the Eurasian landmass enjoyed fairly uniform climatic conditions. Hence, agricultural innovations developed in one region could travel long distances and be shared by many people, resulting in a large set of plant and animal varieties available throughout the region. By contrast, new varieties developed in the Americas or in Africa could not migrate very far since climates change swiftly, limiting the technological opportunities available to these regions and stunting economic growth.

Of course, agricultural productivity and transportation cost advantages do not necessarily go together. As historian David S. Landes points out in *The Wealth and Poverty of Nations*, the ancient civilizations of Mesopotamia and Egypt had their most fertile lands along rivers. This location--far removed from the

seashore-limited their ability to expand their economies through trade. Their power eventually waned and they were supplanted by the seafaring Phoenicians, Greeks, and Romans. More recently, in India and China, agricultural conditions encouraged large populations to cluster along riverbeds far away from the sea, hurting the countries' long-term prospects for economic growth and development through trade.

Investments in health research and technology are also very sensitive to geography. Diseases such as malaria, hookworm, schistosomiasis, river blindness, and yellow fever are hard to control in tropical regions because the lack of seasons makes the reproduction of mosquitoes and other disease transmitters rather constant throughout the year. Since the afflicted countries tend to be poor, tropical diseases do not "merit" the sort of R&D investments that a cure for baldness or erectile dysfunction can attract in Western markets. (Of the aforementioned tropical diseases, only yellow fever has been controlled through an effective vaccine.) Technological development is skewed away from the needs of geographically disadvantaged countries. Thus, children in tropical regions often die of gastrointestinal and other infectious diseases, while many nations still suffer from endemic tropical ailments. Economists John Luke Gallup and Jeffrey Sachs estimate that per capita economic growth in countries with severe malaria is more than a full percentage point lower than in nations where this illness is not prevalent, and that a 10 percent reduction in the incidence of malaria is associated with 0.3 percent higher growth.

The costs of not dealing with disease in tropical countries go far beyond higher healthcare expenses and reduced worker productivity. Disease can no longer be considered a mere public health problem, but a socioeconomic development issue that affects everything from trade flows to migration patterns. The 1991 cholera outbreak in Peru cost the country's fishing sector nearly \$800 million in lost revenues because of a temporary ban on seafood exports. The 1994 plague outbreak in Surat, India, prompted 500,000 people to move from the region and led to work stoppages across several industries, as well as new restrictions on international trade. Estimates of the cost India bore for this plague reach \$2 billion.

BORDERING ON POVERTY

The dominant development paradigm these days holds that market-oriented economic policies and the rule of law are all that matter for economic progress. In other words, Mozambique could become Singapore if it would only get its institutions and policies in order; in the meantime, we could alleviate poverty through targeted social spending for the poor,

such as the financing of education for girls. But this mantra vastly oversimplifies the challenges of development. If a region is poor because its geography undermines agricultural productivity, impedes market access, and facilitates endemic disease, then good domestic policies will hardly suffice to foster growth. Poverty will not disappear because of expanded nutrition programs or improvements in the teaching materials available in schools. (At best, better trained students simply will migrate to more prosperous regions.)

From this perspective, it may be more important to devote time and resources to transportation infrastructure, which lowers the costs of trading, new technologies for agriculture and public health, and economic integration projects than to focus solely on areas like health, education, and the rule of law.

Infrastructure Development

If small, rural communities in developing countries are to experience economic growth, it is crucial to connect them with the rest of their country and the world through investments in roads and other transportation infrastructure. Many of these investments must be made outside of the particular countries in question. For example, for Rwandan and Ugandan goods to reach new markets, the Kenyan rail system must be improved. This complication poses severe coordination and political challenges; it is not clear, for instance, that such an improvement should be a priority for Kenyan authorities. Unfortunately, the major regional development banks operate with this same narrow focus, granting loans to national governments on the basis of perceived national priorities. Important region-oriented projects remain chronically underfunded. To overcome this problem, bilateral or multilateral organizations should provide financial incentives to national governments to encourage them to cofinance investment projects that benefit themselves as well as neighboring countries.

Technological Development

Although it is fashionable (and accurate) to decry the "digital divide" between advanced and developing economies, this information-technology gap need not be a major concern for poor countries since they benefit from global innovations in these arenas. For instance, Latin American countries soon will have more cellular phones than regular telephone lines, allowing for a major expansion in the region's telecommunications system by skipping the need to install underground cables. By contrast, the dramatic difference between rich and poor countries in agricultural and pharmaceutical R&D ensures that standards of living in tropical areas are likely to remain low and stagnant.

Governments in developing nations lack sufficient resources to address this problem by themselves, and the world's private sector allocates very little financing to agricultural R&D for developing nations. Although the well-known difficulties in enforcing intellectual property rights create a significant disincentive for this sort of investment, there may be ways to enlist the knowledge and research capabilities of corporations such as Pfizer and Arthur Daniels Midland. Economists Michael Kremer and Jeffrey Sachs have proposed contests so companies can compete to develop effective vaccines. The Clinton administration included in its 2001 budget proposal a tax credit to U.S. pharmaceutical companies that developed vaccines for diseases prevalent in the developing world. However, the vast needs in this area suggest that multilateral financing will be needed to compensate private firms for such initiatives.

Integration

National borders, as they are currently conceived, make nations artificially more distant and only accentuate the costs already imposed by geographical conditions. Borders limit the movement of goods, capital, and labor and thus limit access to markets. Some regions--most notably Western Europe--have already begun eliminating internal borders. But for the last 50 years we have witnessed the creation of more and more nations in the developing world, with their own new borders, making these countries effectively more distant than their physical geography implies. Can poor nations afford this additional source of remoteness?

If shipping goods across the U.S.-Canadian border adds the equivalent of thousands of miles in transportation costs, then the commercial logistics of trading between countries with weak political institutions and a history of cross-border animosity will prove to be infinitely more expensive problems for importers and exporters. And borders do not merely complicate the movement of goods and the coordination of cross-country infrastructure; capital also has trouble crossing borders. Since investment contracts are often enforced at the national level, sovereignty can shelter borrowers who are able but unwilling to repay. This situation introduces "sovereign risk" into financial markets, limiting capital movements and rendering them increasingly fickle.

Borders also prevent people in poorer areas from moving to more prosperous regions. For example, the decline in agricultural employment in the United States prompted significant regional migration, and when Europe went through a similar process at the end of the 19th and beginning of the 20th century, it had an escape valve in the form of a wide-open immigration policy in the United States. Today's

geographically trapped peoples seldom enjoy such opportunities. Not that they don't search for them: About one third of the landlocked Burkinabes and one fifth of Bolivians work in neighboring nations. Not only does immigration offer poor people a chance to have a better life but it also allows them to send money to their families at home. For nations such as El Salvador, the Dominican Republic, and Egypt, worker remittances from abroad often exceed the value of those countries' annual manufacturing exports.

Finally, borders limit the possibilities for risk-sharing in the face of natural disasters. In the United States, the Federal Emergency Management Agency is funded by federal taxes; therefore, when disaster strikes a particular state or region, the rest of the nation can help mitigate the damage. Small countries have a smaller geographical space than large countries in which to share risks. When earthquakes destroyed Managua, Nicaragua, in 1972, and when a hurricane devastated Honduras in 1998, the national tax base was destroyed, making it impossible to marshal national resources to deal with the lost infrastructure. Countries that are small and vulnerable to hurricanes, floods, and earthquakes may become nonviable after a major disaster wipes out their productive capacity. Poor nations usually bear the brunt of such emergencies: Ninety-six percent of all deaths from natural disasters occur in developing countries.

The current conceptions of borders compound the problems attributable to geography. The world has been quite willing to create new nation-states under the banner of self-determination. But unless borders can be made less problematic for economic integration, they may condemn geographically distant countries to an independent oblivion.

GEO-GLOBALIZATION

If distance and geography did not matter for economic development, then we would witness much greater convergence of income levels and standards of living across regions and countries. Instead, we are witnessing divergence, because geography prevents poor nations from fully participating in the global division of labor. If current trends persist, countries that face high transportation costs and a high dependence on tropical agriculture will be left far behind, mired in poverty and income inequality. Will the rest of the world find this outcome morally acceptable? Will it find it efficient? Or will the fallout from these destitute regions be seen as endangering the quality of life for the rest of us? In a sense, we have already asked and answered these questions; the existence of myriad development institutions around the globe attests to the world's desire to meet the challenges of economic development. But all our answers have fallen short. The gap

between rich and poor has only widened.

Many people blame economic globalization for poverty and injustice in the developing world. Yet it is the absence of globalization--or an insufficient dose of it--that is truly to blame for these inequities. The solution to geography's poverty trap is for developing countries to become more globalized. We need transnational arrangements to make borders less of an impediment to moving people, goods, and capital. We need agreements that can facilitate the development of international transportation infrastructure. And we need global mechanisms to harness the R&D capabilities of the world in health and agricultural technology. In short, we need more globalized governance.

Ricardo Hausmann is professor of the practice of economic development at the John F. Kennedy School of Government at Harvard University and former chief economist of the Inter-American Development Bank.

Recent major works have emphasized the crucial role of geography in human history. In particular, see David S. Landes's *The Wealth and Poverty of Nations: Why Some Are So Rich and Some So Poor* (New York: W.W. Norton & Company, 1999); William H. McNeill's *Plagues and Peoples* (New York: Anchor Books, 1998); Jared Diamond's *Guns, Germs, and Steel: The Fates of Human Societies* (New York: W.W. Norton & Company, 1997); and Lawrence E. Harrison and Samuel Huntington, eds. *Culture Matters: How Values Shape Human Progress* (New York: Basic Books, 2000), particularly Jeffrey Sachs's chapter titled "Notes on a New Sociology of Economic Development."

Want to know More?

John Luke Gallup, Jeffrey D. Sachs, and Andrew D. Mellinger explore the link between geographical factors and socioeconomic progress in "Geography and Economic Development" (Cambridge: National Bureau of Economic Research Working Paper W6849, December 1998). The Inter-American Development Bank's *Development Beyond Economics: Economic and Social Progress in Latin America 2000 Report* (Washington: Inter-American Development Bank, 2000) also examines this relationship, particularly in Chapter 3, titled "Geography and Development." Raymond Arsenault describes the impact of the air conditioner on socioeconomic conditions in the southern United States in "The Cooling of the South" (Wilson Quarterly, Summer 1984). For an assessment of the connection between geography and income distribution, see "Nature, Development, and Distribution in Latin America: Evidence on the Role of

Geography, Climate, and Natural Resources" (Washington: Inter-American Development Bank Working Paper No. 378, August 1998) by Michael Gavin and Ricardo Hausmann. Stanley Engerman and Kenneth Sokoloff assess the impact of natural resources on institutional development in "Factor Endowments, Institutions, and Differential Paths of Growth Among New World Economies: A View from Economic Historians of the United States" in Stephen Haber, ed. *How Latin America Fell Behind: Essays on the Economic Histories of Brazil and Mexico, 1800-1914* (Stanford: Stanford University Press, 1997). Paul Krugman surveys the interplay between geography and contemporary economic thought in *Development, Geography, and Economic Theory* (Cambridge: MIT Press, 1995).

* For links to relevant Web sites, as well as a comprehensive index of related FOREIGN POLICY articles, access www.foreignpolicy.com.

Locational Correctness

Ricardo Hausmann

Economic geography offends people because it seems to imply an immutable destiny--if you live in one area, you are poor; if you live in another, you are rich. When the Inter-American Development Bank dared highlight economic geography in its *Economic and Social Progress in Latin America* report in 2000, the Brazilian media attacked the institution for reviving racist and determinist theses. "Ideas from Another Century" screamed the headline in *Gazeta Mercantil*, Brazil's leading business newspaper.

This virulent reaction was not lacking in irony, particularly since income differences in Brazil are closely related to latitude, with the tropical northeast being very poor while the more temperate south is much richer. But these attacks should not be surprising. Since the Enlightenment, economic geography has been a matter of great debate and controversy among scholars and political leaders throughout the world. Their interpretations of the issue have ranged from sensible to silly to outright dangerous: Adam Smith regarded ports, navigable rivers, and canals as essential for industrialization--assets that Great Britain possesses but that places like Africa and Siberia lack. Montesquieu saw a close relationship between geography and politics, concluding that democracy was fine for Switzerland because of its low agricultural productivity, but that wealthier nations such as France needed a monarchy. During the European imperialist expansion of the 19th century, and under the impact of social Darwinism, geography became a way to justify notions of white racial supremacy. The "fittest"

race had become so because, among other reasons, the temperate climate where it developed helped forge populations more prone to thoughtfulness and responsibility than to ebullient pleasure seeking.

Such racially charged views became increasingly unacceptable after the rise of the Nazi regime and the horror of the Holocaust. The reputations of 20th-century geographers such as the famed Ellsworth Huntington of Yale University, author of the landmark 1915 work *Civilization and Climate*, suffered greatly (and unfairly) by association. Historian David S. Landes attributes this reaction not so much to weaknesses in geographers' analyses, of which there were plenty, but to their pessimistic message that nature, like life, is unfair. Victimized by this backlash, the geography departments at Harvard, Michigan, Northwestern, Chicago, and Columbia universities were shut down in short order following World War II. As a result, several generations of academics disregarded geography as a key factor in socioeconomic development.

In recent years, however, geography has slowly made its way back into mainstream economic thinking; new theories and techniques for studying trade, growth, and the environment have contributed to this resurgence. And interest in geography as a discipline is also rising: In the United States alone, the number of bachelor's degrees awarded in geography rose from about 3,000 in 1985-86 to nearly 4,300 in 1994-95. In the academic arena, economic geography is no longer taboo. It is only a matter of time before the discipline becomes acceptable in broader circles--maybe even among Brazilian editorialists.

COPYRIGHT 2001 Carnegie Endowment for International
Peace
in association with The Gale Group and LookSmart.
COPYRIGHT 2001 Gale Group