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Note: *This project was written for the Core Seminar class that I took while attending Bard College's Globalization and International Affairs Program in New York (BGIA) in Spring 2010. This was my final project for the class. In it I compared the two earthquakes that happened at the beginning of 2010 in Haiti and Chile and tried to identify possible socio-political causes that would explain why the stronger earthquake (in Chile) was less deadly.*

What Makes Some Earthquakes Deadlier Than Others?
A Socio-Political Analysis

Introduction

Dozens of large earthquakes occur annually, but we only find out about those that affect large populated areas, because there they cause casualties and economic losses. The year 2010 is not an exceptional year in terms of number of earthquakes, but only a year when large earthquakes have occurred in heavily populated places.

Thus, on January 12, a large earthquake of a 7 degrees magnitude devastated Haiti and killed over 230,000 people, injured 300,000 and made 1 million homeless. It was also estimated that 250,000 residences and 30,000 commercial buildings had collapsed or were severely damaged. On February 27, a very powerful earthquake, releasing 500 times more energy than the one in Haiti, struck Chile, killing about 500 persons and causing important damage. The tremor was recorded as having a magnitude of 8.8 degrees, and lasting for an average of three minutes. It was felt in all neighboring countries, including Argentina and Peru.

The question we are planning to answer in this paper is *why did the smaller earthquake kill so many more people? What are the factors that make the difference?*

Assumptions

In order to answer this question we chose as the subject of analysis the two countries mentioned: Chile and Haiti. The main reason for this is that the two earthquakes occurred in close periods in time (and therefore it cannot be said that temporal factors have intervened to distort the analysis), the intensity of the earthquakes was very high in both countries, and the cities affected were both densely populated. The study will focus on analyzing the political, economic and social situations of the two countries in order to identify possible causes that made the smaller earthquake deadlier.

Analysis

HAITI:

The devastating earthquake from the 12th of January 2010 in Haiti has, once again, drawn worldwide attention to this small state in the Western Hemisphere. The earthquake brought upon the country, the poorest in the area, severe damage, deepening the already existent economic and social problems. Vital infrastructure (roads, water supply, power grids, telecommunications) was destroyed and the health system collapsed. The industry, especially the textile sector, reported structural damage at manufacturing facilities. Haitian officials estimated up to two millions of its citizens homeless after the earthquake, mainly due to the low construction standards in Haiti and the lack of building codes.

1. Social Analysis

The population of Haiti today is about 8,300,000 people. 75% of them live in rural areas, concentrated on small family plots in the few areas suitable for agriculture. According to statistical

data, 80% of the population lives under the poverty line and 54% in abject poverty (less than $1.5 per day).

The Human Development Report (HDR) released in 2009 by the United Nations Development Program (UNDP) gives Haiti a rank of 149 out of 182 countries. The Human Development Index (HDI) measures the average progress of a country in human development. According to the UNDP report, the HDI provides a composite measure of three dimensions of human development: the expectancy of living a long and healthy life—measured by the life expectancy (of 61 years in Haiti), being educated—measured by adult literacy and gross enrolment in education (only 61% in Haiti), and having a decent standard of living—measured by purchasing power parity income ($1155/year in Haiti).

The same report also measures the so-called Human Poverty Index (HPI-1) that expands some dimensions of the human development index—living a long and healthy life, having access to education, and a decent standard of living. The HPI-1 measures severe deprivation in health by the proportion of people who are not expected to survive to age 40 (18.5% in Haiti), the scarcity of education by the adult illiteracy rate (37.9% in Haiti), the decent standard of living by the average of people not using an improved water source (42% in Haiti), and the proportion of children under age 5 who are underweight for their age (22% in Haiti). The total value of the HPI-1 for Haiti is 31.5% ranking it 97th among 135 countries for which the index has been calculated, and statistically proving the poverty of the Haitian people.

The unemployment rate is estimated to be around 60 percent, while the average per capita income is about $500 a year. As a result, thousands of Haitians—especially the skilled and educated—have decided to emigrate (7.7%), mostly to the US (64.3% of all emigrants).

2. Education

Education levels in Haiti are extremely low. Haiti's literacy rate of about 50 percent falls well below the 90 percent average literacy rate for Latin American and Caribbean countries. The country faces severe shortages in educational supplies and qualified teachers and the rural population remains vastly underrepresented in the country's classrooms. Currently, most Haitian schools are private rather than state-funded. International private schools (run by Canada, France, or the United States) and church-run schools educate 90 percent of students.

Haiti counts about 15,000 primary schools, of which 90% are non-public and managed by the community, religious organizations or NGOs. This determines the high illiteracy rate. The enrollment rate for primary school is 67%, of which less than 30% reach 6th grade. Secondary schools enroll 20% of eligible-age children. The educational system of Haiti is based on the French system. Higher education is provided by universities and other public and private institutions.

The document "*Social Resilience and State Fragility in Haiti*" elaborated by the World Bank states that:

> *"The Haitian state's role in primary education is uniquely low from a global perspective. Of the world's 20 poorest countries, Haiti is the only one in which more than 50 percent of children are enrolled in non-state schools.*[except Zimbabwe] *The country has a total of 14,424 private schools and 1,240 public schools. Non-state schools therefore comprise 92 percent of all schools, the vast majority of which do not receive public subsidies. Some 82 percent of all primary and secondary school students attend private, fee-based schools (MENJS 2003). Public schools are mainly in urban areas."* (3.24)

3. Economic Situation

Gross Domestic Product (GDP) per capita at purchasing power parity (PPP) in 2009 was estimated to $1,300, placing Haiti on the 203rd place in the world in this respect.

The structure of the GDP by main economic sectors shows a clear orientation to services (especially tourism, 52%) and agriculture (28%); the industry share is of only 20%. On the other

hand, the primary occupation of the labor force is in agriculture (66%), services (25%) and industry (9%), which demonstrates that the shortage of skilled labor and unskilled labor is abundant.

Approximately two-thirds of all Haitians depend on the agricultural sector, mainly small-scale subsistence farming, a quarter of them are hired in the service sector (especially in tourism), and circa 9% in low value-added industrial sectors (sugar refining, flour milling, textiles, cement, light assembly based on imported parts). The country's deforestation and frequent natural disasters, especially storms and floods, severely damaged the transportation infrastructure and agricultural sector.

4. Political Stability and Corruption

In terms of political stability, the country is very fragile and corruption is one of the biggest problems. Every year much of the humanitarian aid is pocketed by officials. The country has consistently ranked as one of the most corrupt nations according to the *Corruption Perception Index*, a measure of perceived political corruption. In 2006, Haiti was ranked as the most corrupt nation out of the 163 that were surveyed for the index. The *International Red Cross* reported that Haiti was 155th out of 159 countries in a similar survey of corrupt countries; in 2009, Haiti was ranked 168 out of 180 countries.

5. Business Environment

The situation is not better in terms of the business environment. According to a World Bank report from 2006*"in Haiti, the process of business regulations is complex and customs procedures are lengthy."* On average, opening a business takes 204 days. For comparison, the average is 73.3 days in Latin America and 16.3 days in OECD (*Organization for Economic Cooperation and Development*) countries. In Haiti, it takes approximately 5 years and 65 bureaucratic procedures for a private person to buy land from the state and 683 days to register a property. All Latin American and Caribbean countries except Cuba and Venezuela enjoy much more economic freedom than Haiti on the *Index of Economic Freedom* of 2006.

The main causes for Haiti's poor economic situation are the weaknesses of the economic policies, environmental deterioration, lack of new and innovative technologies, under-capitalization, the scarcity of foreign investments, the low level of education and the unskilled population. Political instability and corruption are other important elements that lead to the poverty and high levels of unemployment in the country.

CHILE:

In Chile, the 8.8 magnitude quake caused widespread damage, destroying buildings, bridges and roads in many areas. Electricity, water and phone lines were cut. Two million people were affected. The preliminary measurements, produced from data gathered by researchers from four universities and several agencies, including geophysicists on the ground in Chile, show that Chile's capital, Santiago, moved about 11 inches to the west-southwest. The cities of Valparaiso and Mendoza, Argentina, northeast of Concepcion, also moved significantly. After an analysis of the situation, a month after the earthquake, President Bachelet said that Chile would need international loans and three to four years to rebuild.

1. Social Analysis

In terms of Human Poverty Index (3.2%) Chile is ranked 10 of 135 countries for which the index has been calculated, which proves the low percentage of population living below the poverty line (according to the CIA about 7.8% in 2008).

The HPI-1 measures severe deprivation in health by the proportion of people who are not expected to survive to age 40 (3.1%, 23rd out of 153 countries), education is measured by the adult illiteracy rate (3.5%, 40th out of 151 countries), and a decent standard of living is measured by the unweighted average of people not using an improved water source (5%, 47th out of 150 countries) and the proportion of children under age 5 who are underweight for their age (1%, 2nd out of 138 countries).

2. Education

The coverage of the Chilean Educational System is practically universal, like in most highly developed countries, showing enrollment rates that represent that reality. Enrollment in Basic Education reaches 99.7% of children between 6 and 14 years, while the coverage of secondary education enrollment is 87.7% of adolescents between 15 and 18 years. The Secondary School is divided between Scientific-Humanist (regular), Technical-Professional (vocational) and Artistic, always with a duration of 2 years.

Public schools and subsidized private schools with voluntary tuition may charge a fee for the admittance process, which is fixed by law. Subsidized private schools with mandatory tuition have the same admittance and annual enrollment costs as in public schools, but they are allowed to charge a mandatory monthly tuition

Students can choose between 25 state universities and over 50 private ones, which are increasingly growing in number. However many of the newer private universities are considered of inferior quality when comparing to the older traditional universities. The difference in quality is accompanied by large differences in prestige rankings and PSU (University Selection Test) scores for admittance.

3. Economic situation

Chile has a dynamic market-oriented economy characterized by a high level of foreign trade. In 2009 the GDP at PPP was $14,700, placing the country on the 78th place in the world.

The structure of the GDP by main branches of the economy shows a clear orientation towards industry which comprises 50.5% of the country's GDP and in which 13.2% of the labor force is engaged, suggesting a competitive industry with good productivity. Services have a contribution of 44.7% to the GDP, employing 63.9% of the labor force. Agriculture has a contribution of only 4.8% to the GDP, employing only 13.2% of the labor force.

Chile is the world's leading producer of copper, and exports of minerals, wood, fruit, seafood, and wine drive GDP growth.

4. Political Stability and Corruption

Since 1990, successive governments, though left-of-center, have largely maintained the market-based institutions and policies established under the 17-year rule of General Augusto Pinochet. Socialist President Michele Bachelet's coalition government has done so as well, although her rhetoric emphasizes income equality over freedom.

According to the *2010 Index of Economic Freedom* Chile's economic freedom score is of 77.2, making its economy the 10th freest according to the Index. Chile enjoys the highest degree of economic freedom in the South and Central America/Caribbean region. Openness to global trade and investment and a dynamic private sector have facilitated steady economic growth. Chile has pursued free trade agreements with countries around the world. The financial sector is diversified and stable compared to other regional economies and prudent lending and regulations have allowed the banking sector to withstand the global financial crisis with little disruption.

Other institutional strengths include transparent and stable public finance management and strong protection of property rights, although protection of intellectual property rights still needs to be strengthened. Chile is a stable country with a reasonable and manageable level of corruption. Chile ranks 23rd out of 179 countries in *Transparency International's Corruption Perceptions Index*

for 2008. Contractual agreements are the most secure in Latin America, and local public administration is generally considered honest.

5. Business Environment

According to the World Bank report **"***Doing Business 2010,"* Chile has a good business environment (49th of 183 economies). To start a business there are 7 steps entrepreneurs can expect to go through, and the time it takes to go through the process, on average, is 27 days. The ease with which businesses can secure rights to property is an important issue for setting up a new business. In Chile it takes 31 days for registering property (almost the same as in other OECD countries).

GENERAL CAUSES OF DISASTERS PROVOKED BY EARTHQUAKES:

To examine this issue we start from an axiomatic statement: *Earthquakes alone don't kill people; collapsed buildings do*.

Earthquake shaking is a complex process and the chain of causation from earthquake source magnitude through infrastructural damage to human harm involves factors like the type of earthquake at fault, its orientation, the hardness of bedrock or presence of wet soil, and so on. A lot also depends on the time of day the earthquake strikes in terms of how many people are inside buildings that could collapse. Population density, distance from the epicenter, and the depth of the rupture are the most important factors of all.

Chile's quake was centered offshore about 21 miles underground in a relatively unpopulated area, 200 miles away from Chile's capital and largest city, Santiago, while Haiti's struck closer to the surface – about 8 miles – and right on the edge of Port-au-Prince, factors that increased its destructiveness. The time of day the quakes hit (local time) were close to each other: 04:53 pm for Haiti and 03:34 pm for Chile.

1. Awareness of Danger

First off, Chile had already experienced a devastating earthquake in 1960, the most energetic ever measured in the world (of magnitude 9.5). Experts now say that even the famed naturalist Charles Darwin may have predicted the new tremors, several centuries ago. This experience raised awareness of the public and of the leadership of the country about the risk of major earthquakes in the region. Investments were made in research, infrastructure and buildings that would be earthquake resistant. As a result, economic activity returned to normal within a week after the earthquake in Santiago.

In Haiti the last major earthquakes were in 1761, 1770 and 1860, which is why many people were surprised to learn that Haiti was vulnerable to earthquakes, although experts should have taken that quiet period as an ominous sign. In Haiti, people weren't schooled even in the proper way to react in case of an earthquake—by sheltering under tables and door frames, and away from glass windows— and thus exposed themselves to even greater danger that that posed by imploding buildings. As a result of the lack of disaster preparation, Haiti was affected long-term by the earthquake.

2. How Houses are Built and the Infrastructure

The general reasons for the widespread damage to buildings, bridges and other infrastructure in Haiti are:

- Construction appears to be reinforced concrete frame but with little seismic reinforcement
- Very slender columns supporting heavy concrete slabs
- The amount of steel reinforcement in many cases was minimal, if it was present at all.

It is likely that even a weaker earthquake would have caused severe damage to the buildings in Haiti.

In Santiago Chile, where only about 10 people died in houses, the tall buildings are built in the shape of a pyramid, since authorities understood and applied some basic concepts of physics: a lowered center of gravity makes buildings safer, and developers can obtain higher and stronger towers this way. Moreover, all modern structures in the capital Santiago have been designed to "swing" along with the movements of the Earth, having flexible foundations. Bridges were designed so that the structure remained intact and the reason some have collapsed is just because the ground was literally swept away from underneath them.

POSSIBLE REMEDIES AND PRECAUTION METHODS:

Increased awareness of danger made it such that in Chile, 50 years after the largest earthquake ever measured on Earth (9.5 on the Richter scale), the situation was relatively calm after the 2010 earthquake. After having counted their dead from the Valdivia region in 1960, on 300 square kilometers, Chileans initiated serious research. Their specialists have understood that they cannot tame the fury of earthquakes, so they learned their rules. They gather data from both underground and from buildings, they annually monitor the behavior of the structures, and their meticulous calculations are doubled by laboratory studies. Chile also has a Seismology Institute of Geophysics at the University of Santiago, with ultra modern laboratories. Throughout the territory, areas of risk are carefully mapped, and the state knows where it can still allow construction and under what conditions. Stringent construction rules apply and the developers are held accountable through severe sanctions and exclusive liability in damages.

Chileans have also learned that the quality of the building materials used is essential, so they send their experts to test them all over the world. In addition, they permanently adjust safety rules for bridges and infrastructure, in order to suit conditions in the country. An example of the state's fast acting policy is that when they learned that in some cases for the construction of bridges European codes which had different charging coefficients were used, they amended the rule only a month later in order to limit such deviations: distances longer than 50 meters between bridge pillars were no longer being allowed. In Chile, how to build is a national priority!

While Chile, a richer and more industrialized nation, adheres to stringent building codes, in Haiti, buildings have been constructed quickly and cheaply. As a result, an earthquake of lesser magnitude was enough to leave people without homes.

No human being, of course, can control an earthquake, but people can build safer buildings. To prevent earthquake disasters, countries have to:

- Develop their own seismic hazard maps to identify the severity of ground shaking and areas where conditions make damage and landslides potentially most severe, and avoid constructing in those areas if possible
- Develop a seismic building code from other earthquake-prone regions—adopting the seismic components of the International Building Code would be a good place to start
    - Local engineers and planners need to be trained in proper design and construction practices because adopting a seismic code by itself does not solve the problem
    - There has to be a regulatory body that oversees the implementation of such codes

The existence or absence of these elements has made the difference in terms of how many countries were affected by the earthquakes that occurred in them.

ISSUES:

Key issues that stand in the way of implementing these directions:

- Material resources
- Stability Policy
- Corruption
- Education

And thus we return to the initial analysis.

Chile's economy is one of the fastest-growing in Latin America. This earthquake did little to slow that down. In the capital Santiago, a city dominated by industries, corporate offices and financial institutions, most people had returned to work within a week after the earthquake. Economists said Chile is perhaps the best-prepared country in Latin America to handle a major disaster. Standard & Poor's has rated the country A+, the region's highest rating, which means it has access to financing from abroad at low interest rates. This has allowed the country to take all the necessary precaution measures in order to prepare for crisis situations.

At the same time, as we have seen, the economy in Haiti is very little developed, so basically it isn't possible to take the necessary steps to prepare the country for such calamities. So, in this light one has to remark that the countries most at risk of seismic tragedy are not necessarily those on tectonic plate boundaries, but also those with the least money to spend on protecting themselves. Moreover, we need not forget that before the reconstruction of civilian infrastructure can begin, a stable and functioning government that will provide the support and oversight necessary for such an effort has to be put in place. Also, a regulatory body that would oversee the implementation of such measures (building codes for example) is necessary.

Corruption is another factor that may greatly influence the realization of measures for protection against earthquakes. Even if building codes and strict rules for choosing building materials are set, in a corrupt country any license can be bought and any law can be avoided, which renders all the effort and thinking put into the elaboration of such rules completely useless. It is therefore essential to reduce corruption so that rules are respected.

Adopting a seismic code by itself, however, does not solve the problem and all the money in the world can't make reconstruction happen immediately. Local engineers and planners need to be trained in proper design and construction practices, and in order to use engineers one needs to have a good educational demand-oriented system in place and the possibility to offer them competitive salaries. That is virtually impossible in Haiti. As long as there are no more than two technical universities and no free (state-subsidized) education although the citizens' financial possibilities are minimal, it is very difficult not only to have engineers but even specialized workers who can understand a technical plan and have sufficient skills to implement it.

In addition, beyond the physical structures, the cultural mindset of construction and design techniques needs renovating. Education building seminars would be very useful in a country like Haiti, because the poor should be building lighter, flexible buildings, with traditional materials such as wood, which has increased flexibility similar to steel, which behaves very well in the acquisition of earthquake shock waves.

POSSIBLE SOLUTIONS OR LESSONS LEARNED:

A. Democratically elected governments:
   - Reduce the risk of corruption
   - Can come up with action plans in case of disasters, make the public aware of them, as well as implement them and require their application by local authorities

B. Financial and infrastructural support for economic development and solutions to social problems:
   - Help fund adequate constructions which can withstand high magnitude earthquakes in areas with increased seismic risk
   - Help develop a communications system which can function even in case of natural disasters

C. The reduction of corruption:
   - If the level of corruption is low, there is no risk that a number of firms and people protected by the government will be involved in constructions and infrastructure planning in areas of high seismic risk

- Therefore there is a better chance that the best company will get to do the job and will do the job well

D. A higher level of education/training:
   - An educated population better understands the need to build better and the actions needed to be taken in case of an earthquake
   - Training the civilian population can be done through systematic exercises
   - A higher number of volunteers should be recruited and trained for such situations

E. Other solutions that go beyond the two cases analyzed—general solutions in which developed countries should particularly get involved:
   i. Identifying the areas of increased risk, stepping up research in the field in order to warn the population of the impending earthquake and in order to make the necessary preparations by setting up non-profit organizations with the roles of:
      a. Raising funds to support research
      b. Raising the awareness of governments in order to:
         - take the necessary steps to prepare the population for disaster
         - have a clear action plan
         - have alternatives to ensure communications
         - ensure order in case of a crisis
   ii. Supporting research for finding technical solutions that would make buildings earthquake-resistant as well as coming up with better reasons for the widespread damage to buildings, bridges and other infrastructure.

CONCLUSIONS:

It is likely that even a weaker earthquake would have caused many of the buildings in Haiti to suffer severe damage. What it would take to rebuild the country is probably a question that has not been addressed yet by either local Haitian officials or by international bodies, but it will need to be confronted soon. Because Haiti is a very poor country, funding will be essential.

Nevertheless, before reconstruction of the civil infrastructure can even begin, a stable and functioning government that will provide the support and oversight of such an effort needs to be put in place. To prevent future disasters, the country needs to develop, or at the very least adopt, a seismic building code from other earthquake-prone regions. Adopting the seismic components of the International Building Code would be a good place to start. If Haiti and helpful nations around the world respond correctly to this tragedy, perhaps it will never be repeated.

ANNEXES

A. Indicators and Measurements Used

The Human Development Report (HDR) released in 2009 by the United Nations Development Program (UNDP) defines the next indicators, as follows:

1. ***The Human Development Index (HDI)***

The HDI provides a more complete picture of a country's development than other indicators, such as GDP per capita, because it analyzes some of the most fundamental aspects of people's lives and gives an opportunity to broadly define well-being. The HDI measures the average progress of a country in human development.

2. ***The Human Poverty Index (HPI-1).***

The HPI-1 focuses on the proportion of people below certain threshold levels in each of the dimensions of the human development index - living a long and healthy life, having access to education, and a decent standard of living. By looking beyond income deprivation, the HPI-1 represents a multi-dimensional alternative to the $1.25 a day (PPP US$) poverty measure.

Rather than measure poverty by income, the HPI uses indicators of the most basic dimensions of deprivation: a short life, lack of basic education and lack of access to public and private resources. The HPI concentrates on the deprivation in the three essential elements of human life already reflected in the HDI: longevity, knowledge and a decent standard of living. The HPI is derived separately for developing countries (HPI-1) and a group of select high-income OECD countries (HPI-2). In the cases of Haiti and Chile we are only concerned with HPI-1.

- The first deprivation relates to **survival**: the likeliness of death at a relatively early age and is represented by the probability of not surviving to age 40.
- The second dimension relates to **knowledge**: being excluded from the world of reading and communication and is measured by the percentage of adults who are illiterate.
- The third aspect relates to a **decent standard of living**, in particular, overall economic provisioning. For the HPI-1, it is measured by the unweighted average of the percentage of the population without access to safe water and the percentage of underweight children for their age.

3. ***Corruption Perception Index***

The Corruption Perception Index is an internationally published annual ordering of the countries of the world according to "the degree to which corruption is perceived to exist among public officials and politicians."

4. ***Unemployment Rate***

Unemployment occurs when a person is available and willing to work but currently without work. The prevalence of unemployment is usually measured using the unemployment rate, which is defined as the percentage of those in the labor force (able and willing to work) who are without jobs.

5. ***Per Capita Income***

Per capita income means how much each individual receives, in monetary terms. It is the measure of the amount of money of the yearly income generated in the country that each person earns in the country. When comparing nations per capita income reflects gross national product per person.

6. ***Literacy Level***

Literacy is typically described as the ability to read and write at a specified age.

7. ***School Enrollment Rates And Educational Opportunities***

Enrollment rates are statistical measures used in the education sector. In the paper I use enrollment in both primary school and secondary school. The analysis also focuses on the

population's possibility of attending university and on higher education opportunities in the country.

8. ***GDP Per Capita At Purchasing Power Parity (PPP)***

GDP on a purchasing power parity basis (the sum value of all goods and services produced in the country valued at prices prevailing in the United States) divided by population

9. ***Structure Of The GDP By Main Economic Sectors***

The index specifies the percentage contribution of agriculture, industry, and services to total GDP.

The following are also mentioned in the report:

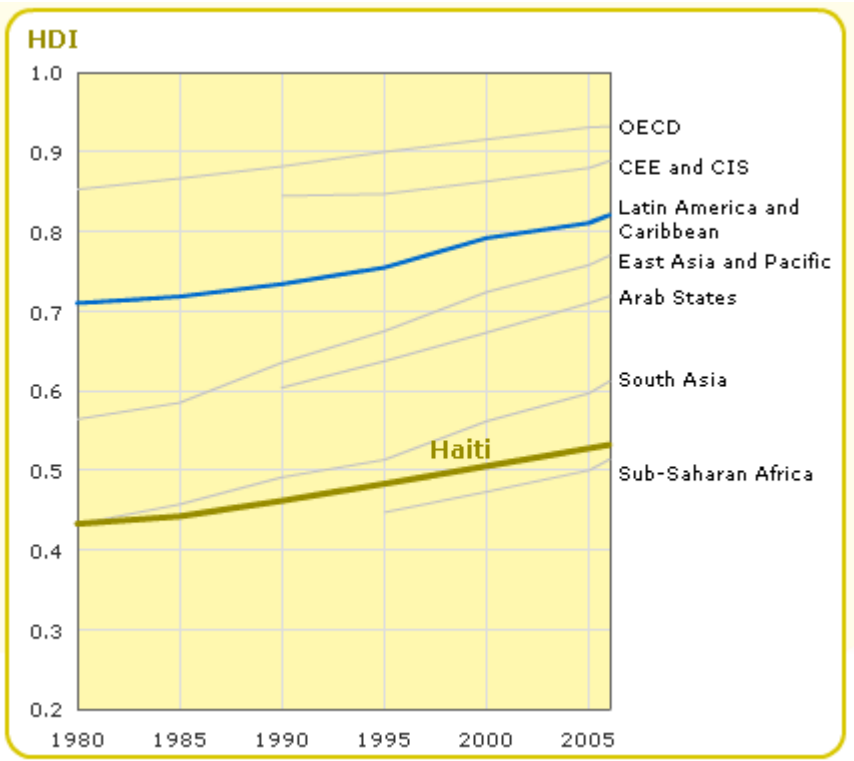
10. ***Business Environment***
    - The number of days it takes to open a business
    - Number of years and number of bureaucratic procedures for a private person to buy land from the state
11. ***Index of Economic Freedom***

    The Index of Economic Freedom is a series of 10 economic measurements created by the Heritage Foundation and Wall Street Journal. Its stated objective is to measure the degree of economic freedom in the world's nations.

B. Visual Statistical Data (from the UNDP site)

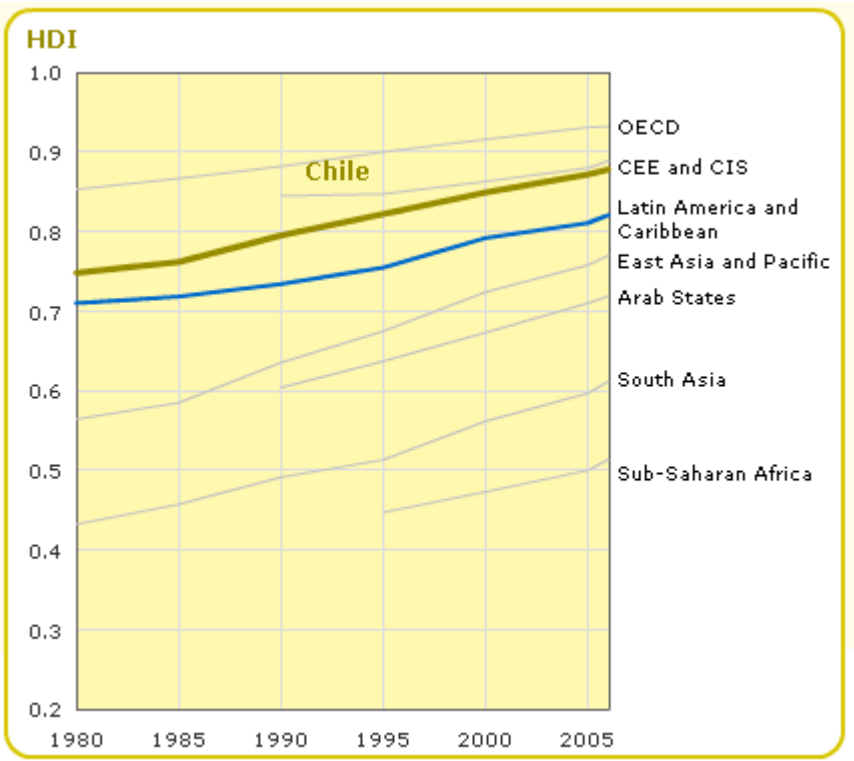
1: HDI Trends

Haiti



Source: Indicator table G of the Human Development Report 2009

Chile



Source: Indicator table G of the Human Development Report 2009

Table 1: Haiti's human development index 2007

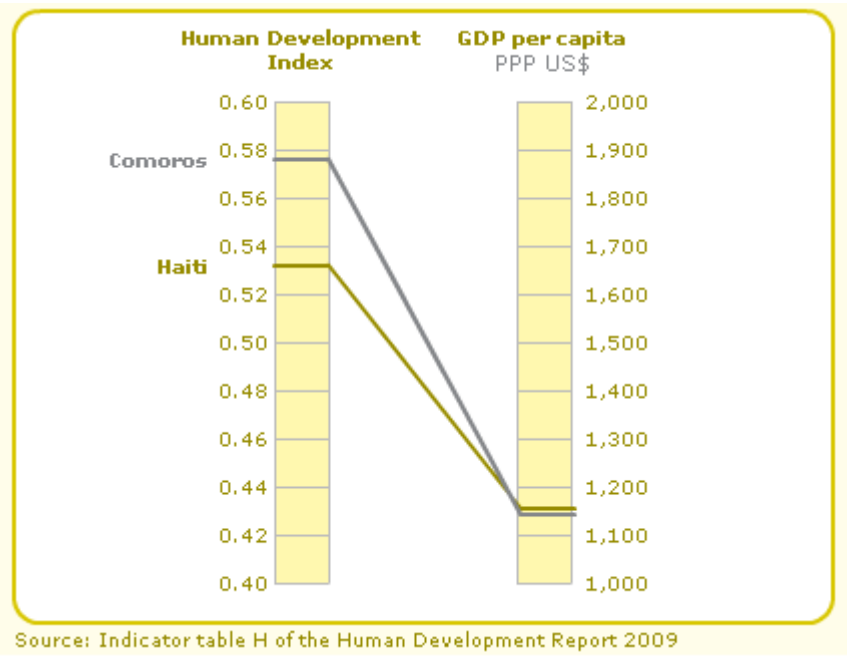
HDI value	Life expectancy at birth (years)	Adult literacy rate (% ages 15 and above)	GDP per capita (PPP US$)
1. Norway (0.971)	1. Japan (82.7)	1. Georgia (100.0)	1. Liechtenstein (85,382)
147. Kenya (0.541)	131. Myanmar (61.2)	123. Guinea-Bissau (64.6)	156. Gambia (1,225)
148. Papua New Guinea (0.541)	132. Benin (61.0)	124. Eritrea (64.2)	157. Tanzania (United Republic of) (1,208)
149. Haiti (0.532)	**133. Haiti (61.0)**	**125. Haiti (62.1)**	**158. Haiti (1,155)**
150. Sudan (0.531)	134. Timor-Leste (60.7)	126. Sudan (60.9)	159. Comoros (1,143)
151. Tanzania (United Republic of) (0.530)	135. Papua New Guinea (60.7)	127. Burundi (59.3)	160. Guinea (1,140)
182. Niger (0.340)	176. Afghanistan (43.6)	151. Mali (26.2)	181. Congo (Democratic Republic of the) (298)

Table 1: Chile's human development index 2007

HDI value	Life expectancy at birth (years)	Adult literacy rate (% ages 15 and above)	Combined gross enrolment ratio (%)	GDP per capita (PPP US$)
1. Norway (0.971)	1. Japan (82.7)	1. Georgia (100.0)	1. Australia (114.2)	1. Liechtenstein (85,382)
42. Slovakia (0.880)	29. Portugal (78.6)	38. Uzbekistan (96.9)	46. Czech Republic (83.4)	57. Libyan Arab Jamahiriya (14,364)
43. Hungary (0.879)	30. Cuba (78.5)	39. Bosnia and Herzegovina (96.7)	47. Switzerland (82.7)	58. Mexico (14,104)
44. Chile (0.878)	**31. Chile (78.5)**	**40. Chile (96.5)**	**48. Chile (82.5)**	**59. Chile (13,880)**
45. Croatia (0.871)	32. Denmark (78.2)	41. Montenegro (96.4)	49. Bulgaria (82.4)	60. Botswana (13,604)
46. Lithuania (0.870)	33. Slovenia (78.2)	42. Serbia (96.4)	50. Seychelles (82.2)	61. Malaysia (13,518)
182. Niger (0.340)	176. Afghanistan (43.6)	151. Mali (26.2)	177. Djibouti (25.5)	181. Congo (Democratic Republic of the) (298)

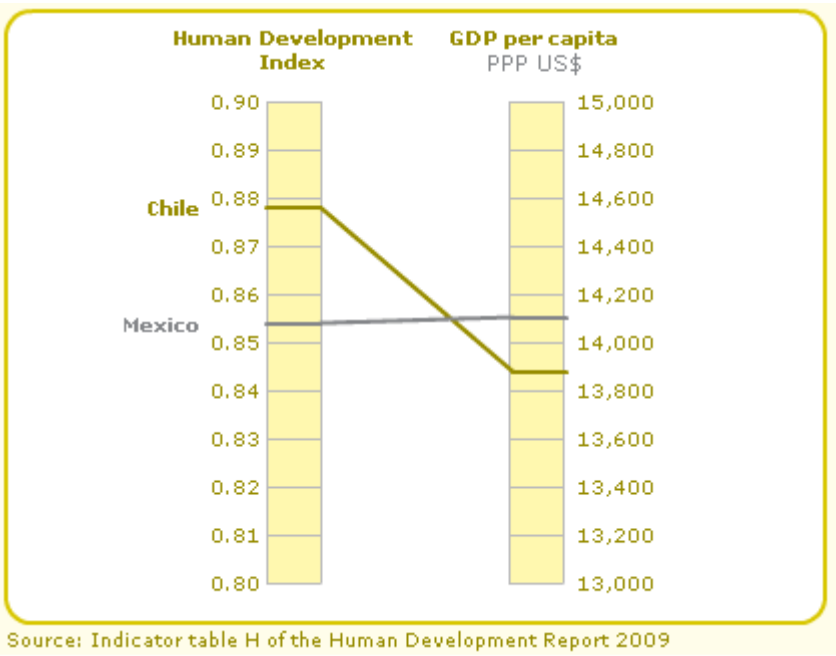
2: HDI vs. GDP per Capita

Haiti



Source: Indicator table H of the Human Development Report 2009

Chile



Source: Indicator table H of the Human Development Report 2009

Table 2: Selected indicators of human poverty for Haiti				
Human Poverty Index (HPI-1)	**Probability of not surviving to age 40 (%)**	**Adult illiteracy rate (%ages 15 and above)**	**People not using an improved water source (%)**	**Children underweight for age (% aged under 5)**
1. Czech Republic (1.5)	1. Hong Kong, China (SAR) (1.4)	1. Georgia (0.0)	1. Barbados (0)	1. Croatia (1)
95. Cameroon (30.8)	108. Timor-Leste (18.0)	123. Guinea-Bissau (35.4)	132. Vanuatu (41)	95. Solomon Islands (21)
96. Morocco (31.1)	109. Eritrea (18.2)	124. Eritrea (35.8)	133. Zambia (42)	96. Tanzania (United Republic of) (22)
97. Haiti (31.5)	**110. Haiti (18.5)**	**125. Haiti (37.9)**	**134. Haiti (42)**	**97. Haiti (22)**
98. Equatorial Guinea (31.9)	111. Cambodia (18.5)	126. Sudan (39.1)	135. Guinea-Bissau (43)	98. Rwanda (23)
99. Nepal (32.1)	112. Togo (18.6)	127. Burundi (40.7)	136. Kenya (43)	99. Benin (23)
135. Afghanistan (59.8)	153. Lesotho (47.4)	151. Mali (73.8)	150. Afghanistan (78)	138. Bangladesh (48)

Table 2: Selected indicators of human poverty for Chile				
Human Poverty Index (HPI-1)	**Probability of not surviving to age 40 (%)**	**Adult illiteracy rate (%ages 15 and above)**	**People not using an improved water source (%)**	**Children underweight for age (% aged under 5)**
1. Czech Republic (1.5)	1. Hong Kong, China (SAR) (1.4)	1. Georgia (0.0)	1. Barbados (0)	1. Croatia (1)
8. Montenegro (3.1)	21. Montenegro (3.0)	38. Uzbekistan (3.1)	45. Dominican Republic (5)	**2. Chile (1)**
9. The former Yugoslav Republic of Macedonia (3.2)	22. Hungary (3.1)	39. Bosnia and Herzegovina (3.3)	46. Ecuador (5)	3. Belarus (1)
10. Chile (3.2)	**23. Chile (3.1)**	**40. Chile (3.5)**	**47. Chile (5)**	4. Czech Republic (1)
11. Costa Rica (3.7)	24. Grenada (3.2)	41. Montenegro (3.6)	48. Mexico (5)	5. Ukraine (1)
12. Armenia (3.7)	25. Serbia (3.3)	42. Serbia (3.6)	49. Trinidad and Tobago (6)	6. Bosnia and Herzegovina (2)
135. Afghanistan (59.8)	153. Lesotho (47.4)	151. Mali (73.8)	150. Afghanistan (78)	138. Bangladesh (48)

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