

POPULATION EXPLOSION AND ECONOMIC DEVELOPMENT: COMPARATIVE ANALYSIS OF BRAZIL AND MEXICO

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Introduction:

“Two thousand years ago population growth and production were positively correlated. More people meant greater productivity and security.”¹ The current modernization and technological advancement of today’s world is highly attributable to centuries of rapid population growth and economic expansion. Hundreds of years ago, when societies and economies initially began to flourish, success was dependent upon a productive agriculture sector. A growing population meant more workers and laborers who would increase overall output. With more productive labor, the economy inevitably expanded and society reaped the financial benefits. Centuries ago, population booms were positive indications of the potential for long term economic growth.

High fertility rates during these times allowed for increased laborers and also helped overcome the correspondingly exorbitant death rates. The combined effects of “famine, disease, malnutrition, plague and war” resulted in death rates that were high and inconsistent.² Given the lack of modern medicine that many countries faced until recently, death rates remained relatively elevated for several centuries. Thus, in order to have any net population growth and eventual economic development, fertility rates had to be elevated.

¹ Zuberi, Tukufu, et al, 467.

² Todaro, Michael P., and Stephen C. Smith, 265.

In the twentieth century, modernization and technological expansion allowed societies to gain control of the ailments that previously killed large percentages of the population. Suddenly, societies were equipped to overcome famine, malnutrition, and other life threatening diseases. Rapid technological advances in modern medicine and sanitation drastically reduced global mortality rates. Increased technology also improved labor productivity. This combination of both technological and medical improvements set the conditions for unprecedented booms in world population growth.”³

Despite a rapid decrease in mortality rates, global fertility rates remained constant and caused exponential growth within the global population. No longer do birth rates struggle to keep up with death rates. Currently, global fertility rates far outweigh mortality rates, forcing the world to confront serious population growth issues. With almost 7 billion people, the world population is placing a huge strain on natural resources. Unfortunately, the projections for the future do not appear to be improving. As the table shows, estimates for the 2050 population are just over 9 billion people, more than doubling the world population since 1980.

Year	Estimated Population (millions)⁴
1650	545
1750	728
1850	1,171
1950	2,576
1970	3,698
1980	4,448
1990	5,292
2000	6,090
2050*	9,036

* projected

³ Hewlett, Sylvia Ann and Richard S. Weinert, 20.

⁴ Todaro, Michael P., and Stephen C. Smith, 265.

Can the world support this many people? Will continued population growth have a positive effect on our current global economy? Scientists and researchers declare that the world's natural resources have a carrying capacity of 4 billion people.⁵ This means that by 2050, there will be more than twice the feasible amount of people drawing from the world's water sources, oil wells, and natural gas reserves. Not to mention that population growth incites more garbage production, more cars on the road and higher demands for food production.

Given the constraints that the world is already facing, just to provide for the current seven billion people, how will the additional two billion fair? Will economies continue to develop under the strain of this growth? By using two of the world's largest countries, Brazil and Mexico, and some of the relevant growth indicators available, this paper seeks simply to analyze the effects of population growth on these countries. There will be no judgments or decisions as to either country's potential for economic success or decline. Instead, these two countries are used simply to show some of the current economic and population growth circumstances that are relevant in the developing world.

Population Growth:

The debates over population growth are contentious and multifaceted. There are no clear cut answers. No previous "experience" exists to forecast potential outcomes. In 1750, just a few centuries ago, the world population was a mere 728 million people.⁶ The possibility of the world population reaching nine billion people in three hundred years probably seemed unfathomable. Additionally, rapid technological modernization and globalization allowed for virtually instantaneous economic growth around the world.

⁵ McMichael, Tony, 188.

⁶ Todaro, Michael P., and Stephen C. Smith, 265.

Whether societies have the capabilities to sustain such a feat remains to be seen. Until a definitive answer pinpoints the correlation between population growth and economic development, the debates will undoubtedly continue to rage.

Led by Julian Simon, some scholars subscribe to the pro-natalist population argument. These researchers believe that the world is always capable of supporting more people. Higher population growth means more labor, which in turn, results in higher productivity. Under such a theory, it will always be possible for the world to absorb more people and reap the economic benefits of a larger labor force. Simon postulated that people will always be able to develop alternative solutions as natural resource supplies begin to diminish.⁷ According to pro-natalist principles, as population growth increases, so do the possibilities for economic development. One can not help but wonder, however, if Simon and his followers ever fathomed a global population that would near seven- and potentially nine- billion people.

Speaking in sheer numbers, it is fairly simple to understand that in order for a country to have a higher population and be economically better off, the national gross domestic product (GDP) must grow alongside the population. In order for a country to maintain the same standard of living while the population propagates, the GDP must simultaneously increase.⁸ If the economy does not grow as rapidly as the population, people essentially become poorer and no economic growth results. When the national GDP is unable to grow at the same rate as the population, there may be an economic decline, and people actually become worse off than before the population increase. While this does not contradict the pro-natalist theory, it does make clear that a population

⁷ Carnell, Brian.

⁸ Kerbo, Harold R., 41.

is not inherently able to absorb a population increase. If the additional people are unable to be productive, economically contributing members of society, it is unlikely that the economy will benefit from these additional people.

According to Thomas Malthus, who wrote in the late 1700's, continued population growth is not inevitable. Instead, limited food supplies and land impede the capacities of a "burgeoning" population to grow infinitely. Under such circumstances, Malthus hypothesized that a population would eventually stop growing right around subsistence level. Once land and food supplies could no longer produce enough to keep people alive, population growth would taper off.⁹ Malthus predicted that a population reproducing based upon levels of food and land availability would have a chronic low level, if not absolute, poverty. To him, continual exponential population growth was precluded by the world's limited resources.

While theories developed hundreds of years ago still hold some relevance today, the ultra-rapid modernization and globalization of the world have created a set of circumstances that virtually no one could predict. The economic inequalities between rich and poor countries are almost insurmountable. Most developed countries are the epitome of growth: constant economic and technological improvements that exceed the steady rate of population replacement. Some developed countries even have negative population growth, meaning that a couple has fewer than two children. If these people are gradually made better off (i.e.: wealthier), they have a higher propensity to save a portion of their income. According to the Harrod-Domar model of economic growth, this increased savings will perpetuate higher rates of aggregate income growth and

⁹ Todaro, Michael P., and Stephen C. Smith, 278.

accordingly, development.¹⁰ This theory does not question population per se, but instead, the ability of people to save and improve their own quality of life. For some economists, this system of growth is more favorable because countries promote virtuous cycles of economic stimulation without placing the primary focus on population.

However, the comfort of an improving quality of life is not the scenario in the majority of today's developing countries, where saving is rarely a viable option. In many of these countries, agriculture and other labor intensive industries dominate the economy, perpetuating the appeal of high fertility rates. If more children provide labor, then ideally a family is made better off by the additional wages. Many developing countries have a relatively "high demand for children" because of the expected return in both labor "and the provision of financial support for parents in old age."¹¹ The integral part of this plan, however, is that children survive to working age. In many developing countries, where infant mortality rates are markedly high, such a guarantee is virtually nonexistent. Therefore, large families with many children seem beneficial in order to increase the likelihood that some will grow to adulthood and care for ailing parents.¹² Given these circumstances, it appears as no surprise that population growth rates can range between 2.8 and 3.2 percent in developing countries. Developing world children are an investment, imperative for the future livelihood of their parents.

Another population problem very pertinent to developing countries is that of rural communities. As a country develops and modernizes, the amount of land used for agriculture diminishes. Families previously dependent on an agricultural livelihood are "displaced for 'various forms of modernization' or through the encroachment of other

¹⁰ Todaro, Michael P., and Stephen C. Smith, 279.

¹¹ Todaro, Michael P., and Stephen C. Smith, 285.

¹² Kerbo, Harold R, 45.

forms of economic activity.”¹³ Those living in rural areas quickly find themselves landless and possibly without an income. This likely leads people to migrate to urban areas, where jobs are seemingly more prevalent. Urban areas within developing countries suffer under the double burden of population growth and the influx of rural migrants. As urban areas quickly grow, oftentimes without the necessary infrastructure to weather such a population increase, slums develop around the city, and poverty, crime, and disease become complications that hinder future growth within these countries.¹⁴

High population density forces minimal resources in urban areas to be stretched thin. A potential lack of running water, electricity, and sanitation in urban areas makes perfect conditions for infectious disease to spread.¹⁵ When a child or other family member suffers from poor health, part of the family’s income must be diverted to medical expenses. For an already poor family, such expenses oftentimes require more than is financially available. A family may end up selling assets and going into debt to keep a family member healthy. Once this happens, a family is likely to remain in poverty for the long-term, thus perpetuating the vicious cycles under which developing countries toil.¹⁶ In this scenario, saving never becomes a viable option and developing countries are never able to build sustainable infrastructure or overcome poverty.

The unique circumstances under which population growth evolved during the last several centuries make it difficult to predict the progression of the next several decades. The world certainly cannot sustain the same rapid and exponential increase that has evolved since the 1700’s. Similarly, the growth of the global economy depends on the

¹³ Parnwell, Mike, 6.

¹⁴ Kerbo, Harold R, 47.

¹⁵ Franko, Patrice, 447.

¹⁶ Walker, Neff, et al.

eventual development of today's lesser developed countries. There will never be true "globalization" until each country is equally integrated into the global system. Yet, how do we ensure that such development becomes possible? Each country brings a diverse set of resources, characteristics, and problems; can we ever hope to remedy the negative development conundrums for the global good?

While each lesser developed country must chart its own development course, it is valuable to learn from the experiences of others. No one country should be left to reinvent the development wheel. Two countries with valuable experience in weathering a population explosion are Brazil and Mexico. Within a span of several decades, both Brazil and Mexico underwent population and economic changes equivalent to what many "advanced" nations encountered in "one to two centuries."¹⁷ While both countries still grapple with many developing country obstacles and characteristics, the 2007 Human Development Indicators rank Brazil and Mexico among "high human development" countries. (Mexico (0.829) ranks 52nd out of 177; Brazil (0.800) ranks 70th).¹⁸ As the following case study will show, economic development changed as Brazil and Mexico underwent rapid (and severe) population growth, and only recently has each country been identified as having high human development. Ideally, the experiences of Brazil and Mexico, still in the midst of continual development, can provide hope to countries currently struggling to overcome extreme population booms.

Brazil and Mexico: A Case Study:

For most economists and scholars, the correlations between economic development and population growth are not always straightforward or clear. Various

¹⁷ Butler, Edgar W., James B. Pick and W. James Hettrick, 307.

¹⁸ Human Development Report 2007.

social, cultural, and political characteristics determine the number of children that a family desires. For many people, especially in developing countries, foretelling the future of the economy is not the most pragmatic way to make decisions about having children. Furthermore, there are those who believe that resource and space limitations do, in fact, impose population restrictions, therefore causing a natural growth limit.

Twelve of the fifteen most populous countries fall under today’s standards of “developing world.”¹⁹

“The Fifteen Largest World Countries”

Country	2007 Population (millions)
China	1,318
India	1,132
United States	302
Indonesia	232
Brazil	189
Pakistan	169
Bangladesh	149
Nigeria	144
Russia	142
Japan	128
Mexico	107
Philippines	88.7
Vietnam	85
Germany	82

¹⁹ 2007 World Population Data Sheet.

Ethiopia	77
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(Countries in blue denote “developed” world)

Naturally, many people would automatically conclude that population growth cannot adumbrate economic development. *If* such a prediction were possible, the fifteen most populous countries would, theoretically, be leaders of the developed world. Brazil and Mexico, however, are two countries that have weathered severe population booms and now show positive signs of economic development. Both of these countries present excellent examples to analyze how indicators can imply economic progress. The following analysis studies Brazil and Mexico over the last several decades in an effort to determine if population growth induces or delays economic growth, or if we can even make such a correlation.

Despite overall increases in GDP and population, societal growth in Brazil and Mexico tends to be a slow, steady climb, while GDP fluctuations are much more erratic, with periods of expansion followed by decline, as the graphs in the Appendix illustrate. Even as an economy dips, suffering a loss, a population may still be increasing, as was often the case in Brazil and Mexico. This essentially had the consequence of making people poorer during these cycles. The diverse influences on population growth and economic development make it difficult to use one to predict the other. However, there are certain indicators that offer viable predictions of economic advancement to illustrate how Brazil and Mexico ultimately developed.

As noted earlier, both Brazil and Mexico, although still considered developing countries, fall under the United Nations’ designation as “high human development.” This is undoubtedly a positive indication, serving as an acknowledgment that Brazil and Mexico have managed to progress over the last decade. However, within each country,

severe income and lifestyle inequalities persist. While Mexico City, Mexico and São Paulo, Brazil are two of the world’s largest cities,²⁰ and are sufficiently modernized and “developed,” millions of others in each country still suffer from endemic poverty. The rapid globalization and development of mainly urban regions has left rural areas lagging behind. For this reason, Brazil and Mexico are caught in a limbo state, where the developed and developing worlds coexist under the same national boundaries.

In the late 1940’s and early 1950’s, Brazil and Mexico experienced drastic population explosions:

Population Explosion²¹

Year	Brazil	% Change	Mexico	% Change
1800	3.3	---	5.8	---
1900	17.0	415.15	13.6	134.48
1920	31.0	82.35	14.3	5.15
1940	41.1	32.58	20.1	40.56
1960	70.0	70.32	36.0	79.10
1970	93.0	32.86	48.0	33.33
2003	177.0	90.32	105.0	118.75

In Brazil, fertility rates hovered above six children per woman during this time and coupled with decreasing mortality rates to impart an incredible burden on the economy.²² During this time, rapid migration from the countryside into Brazil’s cities was chaotic and disorganized. It was during this massive population boom that the notorious *favelas* of Brazil developed.²³ The informal sector of Brazil grew exponentially during this time; formal urban employment could not keep pace with the out-migration from rural areas. The informal economy was the only place where migrants could find jobs. For several

²⁰ Kerbo, Harold R., 48.

²¹ Hewlett, Sylvia Ann and Richard S. Weinert, 16.

²² Skidmore, Thomas E., 138.

²³ Skidmore, Thomas E., 139.

decades, the informal sector provided employment for thousands of Brazilians. However, the consequences have been long lasting as Brazil still struggles with a highly stratified society, rife with overwhelming income disparities.

Shortly after Brazil began its rapid population increase, a similar rise in fertility launched Mexico into an explosive population boom. Between 1930 and 1959, Mexico had one of the world's highest rates of population growth.²⁴ Fertility rates skyrocketed to almost seven children per female at the height of the boom. During the same period, fertility reached nearly eight children per woman in rural areas.²⁵ Improved sanitation and medical care helped ensure that the majority of infants survived, and suddenly Mexico underwent unpredicted population growth. The Mexican economy simultaneously witnessed productivity improvements in both conventional and maquiladora industries which helped absorb the labor migrating from rural areas. Nevertheless, as Mexico City rapidly expanded and developed, many urban migrants were met with unemployment and overcrowded cities. Similar to Brazil, deep inequalities developed during this time and have henceforth hindered most development potential.

In order to look at what exactly changed during these decades of population growth, there are indicators that represent certain aspects of development that may not be readily apparent in GDP data. Fertility rates are simply the average number of children born to females within a country,²⁶ and are one of the most correlated factors to population growth. The implications of fertility rate also signify a woman's role in society which indicates overall (societal and economic) development. Two children per

²⁴ Pérez López, Enrique, 68.

²⁵ Butler, Edgar W., James B. Pick and W. James Hettrick, 308.

²⁶ Kerbo, Harold R., 43.

female maintain a population growth rate of virtually zero. The further a country is from this baseline, the more rapidly the population is growing.²⁷ If GDP does not grow as rapidly, the people within the country get poorer.

Although Brazil and Mexico had fertility rates of six and seven children per woman, respectively, in the mid 1900's, the last fifty years have witnessed a drastic change. By 1975, the fertility rate in Brazil had dropped to 4.7 children per woman.²⁸ Part of this drop is attributable to women becoming increasingly active in the labor force.²⁹ As women started contributing to household income, consumption patterns improved, and many families experienced the financial benefits to women earning an income outside the home. By 1975 in Mexico, the fertility rate had decreased to 6.5 children per woman.³⁰ During this time, the Mexican government adopted family planning programs in an effort to gain control over population growth.³¹ As a result, women began having fewer children and the early 1980's witnessed a "feminization of the labor force" as more women became income earners.³²

By 2005, fertility rates in Brazil and Mexico had plummeted even further. Each country now hovers just above replacement, with fertility rates of 2.3 in Brazil and 2.4 in Mexico.³³ As Brazilian and Mexican societies developed, family planning programs improved, and there were more opportunities for women to join the labor force. This does not mean, however, that the population booms in Brazil and Mexico are entirely over. Given the past half century of high fertility rates and population growth, the

²⁷ Kerbo, Harold R., 44.

²⁸ Human Development Report 2003.

²⁹ Skidmore, Thomas E., 204.

³⁰ Human Development Report 2003.

³¹ Todaro, Michael P., and Stephen C. Smith, 296.

³² Middlebrook, Kevin J., and Eduardo Zepeda, 523.

³³ Human Development Report 2007.

number of children becoming adults and having their own children is astronomically high. Even though this generation may only have fertility rates between two and three children, there are simply more people of child-bearing age because of the past boom. For this reason, it can take generations for a population to steady its growth rates.³⁴ Nevertheless, given the indicators that reflect the drastic decrease in Brazilian and Mexican fertility rates, there is reason to expect economic development within these countries. Ideally, the resources no longer being spent on children are now being saved and invested in technology and modernization. Fertility rates are a fairly strong indicator of economic growth, and for this reason, it would be careless to neglect the economic development that has transpired in Brazil and Mexico over the last half century.

Another highly correlated, pertinent indicator is infant mortality. Typically, when economic development improves and society becomes better off, infant mortality decreases. A country's infant mortality rate also serves as a proxy for the improvements within a health system, which ideally progress with development as well. Integrated in an infant mortality rate is the number of skilled health professionals attending a birth; when a woman goes to a clinic or hospital to have her baby under the supervision of trained medical personnel, the chances of the baby surviving improve. Similarly, ameliorated hygiene and sanitation are also reflected in a lower infant mortality rate.

As infant mortality rates decrease it seems only natural that a population experiences aggregate growth: fewer deaths during infancy increase the population. Such was the case in Brazil and Mexico, where infant mortality rates began to drop in the 1960's and have further declined since. The decrease in infant mortality in each country is not only attributable to the improvements in prenatal and infant care, but also to better

³⁴ Butler, Edgar W., James B. Pick and W. James Hettrick, 332.

preventative care. The overall health of women generally improved during these decades, thus improving the chances for a healthy birth.³⁵

Infant Mortality Rates (per 1,000 live births)³⁶

Year	Brazil	Mexico
1960	115	94
1970	95	79
1980	67	56
1990	50	37
2000	35	25
2002	33	24
2005	31	22

Ideally, as children grow up, they too reap the benefits of improved health systems, therefore making them more productive, contributing members within a society. Given the proclivity for infant mortality rates to decrease as economic development increases, one could argue that Brazil and Mexico have witnessed economic development over the last half century. Furthermore, as more children survive into adolescence and adulthood, this would also explain the population boom. Considering infant mortality rates alone, it would be fair to say that Brazil's and Mexico's progress is reflective of the economic gains that have been made during the last fifty years.

Moreover, as a country develops, average life expectancy typically increases. Modernized countries with advancements in health care and technology typically allow

³⁵ Skidmore, Thomas E., 139.

³⁶ "Infant Mortality Rates."

people to live longer lives. Average life expectancy is also negatively correlated to infant mortality rates: as infant mortality decreases life expectancy typically improves. As the table shows, Brazil and Mexico experienced increasing life expectancy during the same periods that infant mortality rates were decreasing. When children are given adequate care and nourishment as children, they have a higher predilection for a productive adulthood.

Life Expectancy³⁷

Year	Brazil	Mexico
1955	50.9	50.6
1960	53.3	55.1
1970	57.6	60.1
1980	61.5	65.1
1990	64.5	69.6
2000	67.1	72.5
2006	72.3	75.4

Interestingly, Mexico initially had a lower life expectancy than Brazil, but improved at a faster pace between 1955 and 1960. This may be attributable to Mexico’s rapid increase of manufacturing industries (also a sign of development), that minimized some of the physical hardships felt during periods of dominant agriculture.³⁸

Importantly, life expectancy is also highly correlated to poverty levels. Higher poverty typically denotes lower life expectancy. Therefore, as life expectancy improves within a country, one may surmise that extreme levels of poverty are decreasing. The

³⁷ Brazil GDP; Mexico GDP.

³⁸ Middlebrook, Kevin J., and Eduardo Zepeda, 30.

dramatic increase in life expectancy- over twenty years in both countries- is most likely reflective of a possible decrease in poverty. This also serves as another sign of economic development. As development commences and people are made better off, endemic poverty is apt to decline. However, Brazil and Mexico are both suffering from highly polarized inequalities within their respective societies. Income inequalities increased during the last twenty years, thus leaving many Brazilians and Mexicans toiling in destitution.³⁹ Consequently, life expectancies in Brazil and Mexico are not entirely appropriate indicators of economic development. There has been clear development progress, yet the caveat of poverty and inequality stifles the true indicative power of life expectancy gains.

Declining mortality rates coupled with high fertility rates lead to an overwhelming “dependent population.” Children under age 15 and adults over age 65 are typically not productive laborers.⁴⁰ This unequal distribution of productive adults compared to unproductive children and elderly, called the dependency ratio, places an enormous strain on resources. A working adult typically supports several children and elderly relatives, spreading an income thin over a large family.⁴¹ Furthermore, as income is quickly consumed by food, medical costs, and maintaining a subsistence level lifestyle, there is often nothing extra to save or invest. This lack of savings means that families have virtually no wealth and the economy lacks the technological investments to expand. High dependency ratios often overwhelm a developing country, leaving no resources for economic investment.

³⁹ Middlebrook, Kevin J., and Eduardo Zepeda, 584.

⁴⁰ Baer, Werner, 8.

⁴¹ Kerbo, Harold R., 41.

The improvements in infant mortality and life expectancy have created an incredible dependency burden on the working populations of Brazil and Mexico. Both countries have large populations of children and elderly who are considered “unproductive labor.” For many developed countries, the dependency ratio is between 20 and 22 percent.⁴² However, as the table illustrates, the ratios in Brazil and Mexico are much higher. In 2000, the dependency ratio in Mexico neared 40 percent.

Dependency Ratio in Brazil & Mexico⁴³

	2000				2005				2015*		
	Under 15	Over 65	Ratio		Under 15	Over 65	Ratio		Under 15	Over 65	Ratio
Brazil	28.8	5.1	33.9		27.8	6.1	33.9		25.4	7.7	33.1
Mexico	33.1	4.7	37.8		30.8	5.8	36.6		25.6	7.5	33.1

* = predicted

With such high dependency ratios, there is an increased demand on consumption that is not being met by production. More resources, goods and services are required to attend to the population than the working labor force can produce.⁴⁴ The outcome of such inequalities between consumption and production force certain portions of the population to consistently be deprived of goods and services, thus infringing upon potential economic development.

The decreasing dependency ratio in Mexico and Brazil is the result of fewer children under fifteen and a slight increase in the proportion of people over age 65. Despite the current burden of high dependency ratios in Brazil and Mexico, there is reason to hope that the next decade will yield positive change. From this projected data, Brazil and Mexico appear to have fertility rates and life expectancy more under control, which are signs conducive to economic development. By 2015, both countries are

⁴² Economics of Development Class Lecture, September 22, 2008.

⁴³ Human Development Report 2007.

⁴⁴ Rodriguez, A.

expected to have lower dependency ratios than in 2000, which is optimistic for development. Both countries exhibit signs of a maturing labor structure⁴⁵ and as the dependency ratio decreases, households will hopefully have more expendable resources to save and invest. According to the Harrod-Domar theory, this increase in savings would also stimulate economic development.⁴⁶ Since the dependency ratio accounts for fertility rate, infant mortality rate, and life expectancy, it serves as a valuable indicator of overall economic development. Brazil and Mexico both show signs of improved, *and improving*, development. If the dependency ratios continue to decline over the next several decades, both countries would ideally see corresponding increases in economic development, provided that resources are expended appropriately.

One consequence of a high dependency ratio is the inability for society and the economy to increase social expenditures. As a result, spending on education is minimal. For this reason, measuring education levels within a country is a tangible indicator of development. Societies with stronger economic development are more likely to invest heavily in education. Literacy rates serve as a compelling proxy indicator for education; high literacy usually signifies elevated levels of educational attainment, thus reflecting social investments related to development.

Although neither Brazil nor Mexico exhibit exemplary expenditures on education, the past thirty years have witnessed quite a drastic improvement. In the 1980's, Brazil's school system was one of the worst in the developing world. Illiteracy hovered above 20 percent, and workplace employers were often forced to provide training that normally

⁴⁵ Middlebrook, Kevin J., and Eduardo Zepeda, 523.

⁴⁶ Todaro, Michael P., and Stephen C. Smith, 105.

would have been provided in school.⁴⁷ Furthermore, wealthy families sent their children to private schools, which further reduced the investment in the public education system, and emphasized the growing disparities between rich and poor. Mexico’s school systems witnessed much the same phenomenon, without such soaring illiteracy rates; there was a clear class of educated “haves” that achieved to the detriment of the “have-nots.”

Nevertheless, as government expenditures within both Brazil and Mexico improved, so did literacy rates.

Literacy Rates (% above age 15)⁴⁸

Year	Brazil	Mexico
1970	66	74
1985	78	90
2005	88.6	91.6

Given the correlation between improved literacy and economic growth, one may surmise that ameliorated literacy rates in Brazil and Mexico are reflective of economic progress. However, neither country matches the literacy rates achieved by other developing countries. (See “Developed World Literacy Rates” in the Appendix). If Brazil and Mexico wish to improve economic development, additional resources must go towards education. A literate, educated workforce is conducive to economic progress. Education serves as an investment in the future labor force to promote economic growth. Just as the Harrod-Domar theory invokes saving and investment as the basis for development, so

⁴⁷ Skidmore, Thomas E., 201.

⁴⁸ Human Development Report 2007.

must Brazil and Mexico invest in their human capital as a source of economic development.

Another social expenditure that enhances development is that of health. A healthy workforce is likely to be productive and efficient, thus improving development within a country. Given the connotation of HIV/AIDS as a “developing world disease,” one may garner development status from HIV/AIDS levels within a country. Limited data accessibility for HIV/AIDS presents a challenge for using such an indicator. Primarily, the problem with HIV/AIDS statistics is that long term data is not readily available. When the epidemic broke in the late 1970’s and early 1980’s, many stigmas were related to the disease, which prevented accurate data collection. Furthermore, until recent treatments were available, many people, especially in developing countries, were reluctant to be tested.⁴⁹ The clandestine nature of HIV/AIDS statistics does not make it overly conducive to being a development indicator.

It is worth noting that 42 percent of AIDS cases within Latin America are in Brazil.⁵⁰ However, HIV/AIDS prevalence in Brazilians aged 15 to 49 has dropped 0.2 percent (from 0.7 to 0.5) since 2003.⁵¹ Even though this gives no long term indication of how the disease has progressed in Brazil, it is nonetheless a positive sign of development. Since 2003, Mexico has maintained a 0.3 percent prevalence rate among the population aged 15 to 49.⁵² Again, the ability to control, rather than exacerbate, a predominately developing world disease bodes well for the health systems of Mexico and Brazil. The HIV/AIDS indicator in no way encapsulates each country’s health system as a whole.

⁴⁹ Castro, Arachu and Paul Farmer.

⁵⁰ Franko, Patrice, 385.

⁵¹ Human Development Report 2007.

⁵² Human Development Report 2007.

Instead, it merely provides an indication as to the value of health, which is directly linked to economic development. Given the steady or decreasing nature of HIV/AIDS in Brazil and Mexico, it is reasonable to deduce that economic progress is present in each country.

While infant mortality rates may provide the best health indicator and education levels are seemingly complex to measure, it is important to remember that these statistics provide a snapshot of what promotes development. Did the tangible improvement of development indicators arise from overall globalization and advancements in technology? Or did the population boom push society to develop more quickly and efficiently? Would Mexico and Brazil have experienced the same developmental amelioration without several decades of extreme population growth?

One may never have a finite answer to these questions: measuring economic development in relation to population growth is not an explicit relationship. Population growth does not necessarily beget economic development. Much depends on governmental policies and the ability of the economy to modernize. Mexico and Brazil are simply two examples of countries that struggled through a population boom and are now on the pathway to development. Does this give hope to countries like Bangladesh, Vietnam, and Ethiopia, who are currently struggling to modernize under a growing population? If Brazil and Mexico are any indication, there is hope: the population boom may not *cause* economic development, but economic growth is obviously possible.

Conclusion:

While the analysis of indicators often provides a solid foundation for determining economic development, it is imperative to remember the diverse histories of various countries. Political leadership, which determines investment and growth policy, is often

different between countries. When analyzing economic growth, one cannot discount the policies that set the groundwork for modern development. The difficulty with indicators is that society and the economy do not change simply as a result of population growth. Rarely is it an either / or philosophy. Typically there is an amalgamation of influences and factors. Inherently, the combination of policy and population growth probably influences economic development. It is easy to simply state that “savings incentives and fiscal policy determine economic growth,” thus completely negating the impact of population. But what does increased savings or poor investment do to fertility rates or life expectancy? The world is a conglomeration of political, social, religious, economic, and personal factors that make it difficult to identify one single entity as “the” determinant for economic growth. Furthermore, if investments are not made in human capital, then population growth undoubtedly has a detrimental effect on an economy.

“Rapid population growth itself is a destabilizing force in society.”⁵³ Given the implications that arise from rapid population growth, it is abundantly clear why it may take decades for a society to stabilize after a population boom. Resources, especially financial, are not abundant. There are limits and stipulations for how politics, economics, and society interact with each other. A country is only as developed as its poorest, weakest area. In order to find true development, one must look past indicators and isolate inequalities within a country. When these (typically rural) areas develop, whole populations can benefit, no matter how large. Then true economic development abounds.

Can population growth be beneficial to economic growth? Absolutely. Can population growth be detrimental to economic growth? Undoubtedly. Pinpointing a singular factor for economic growth appears short sighted and neglects the other

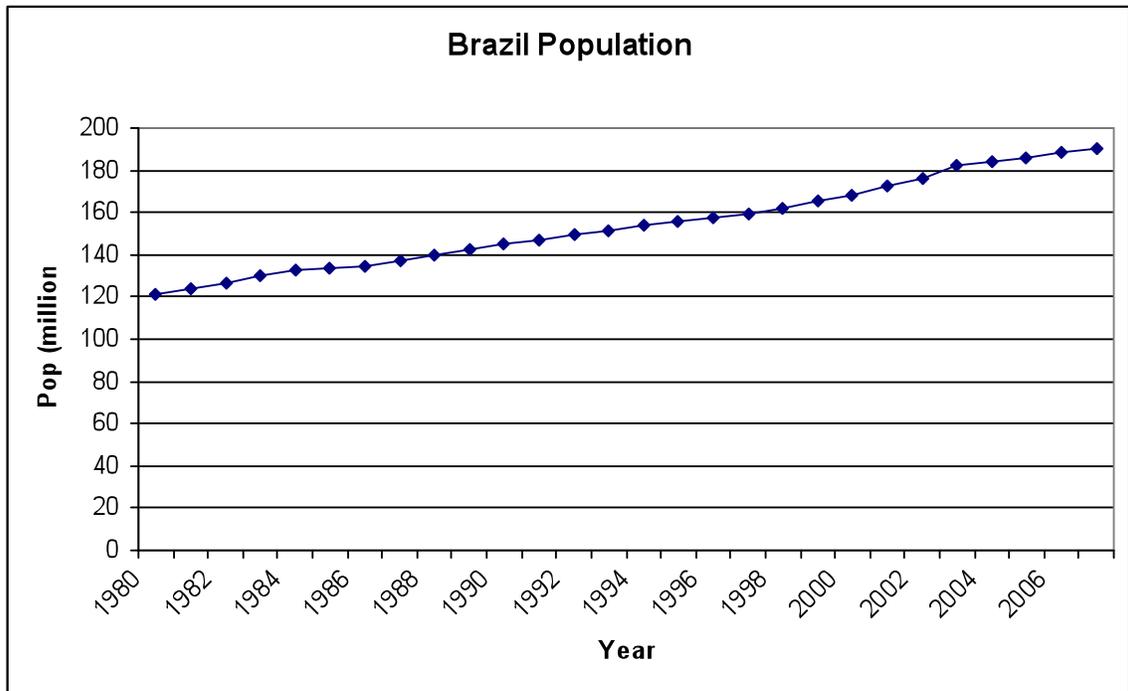
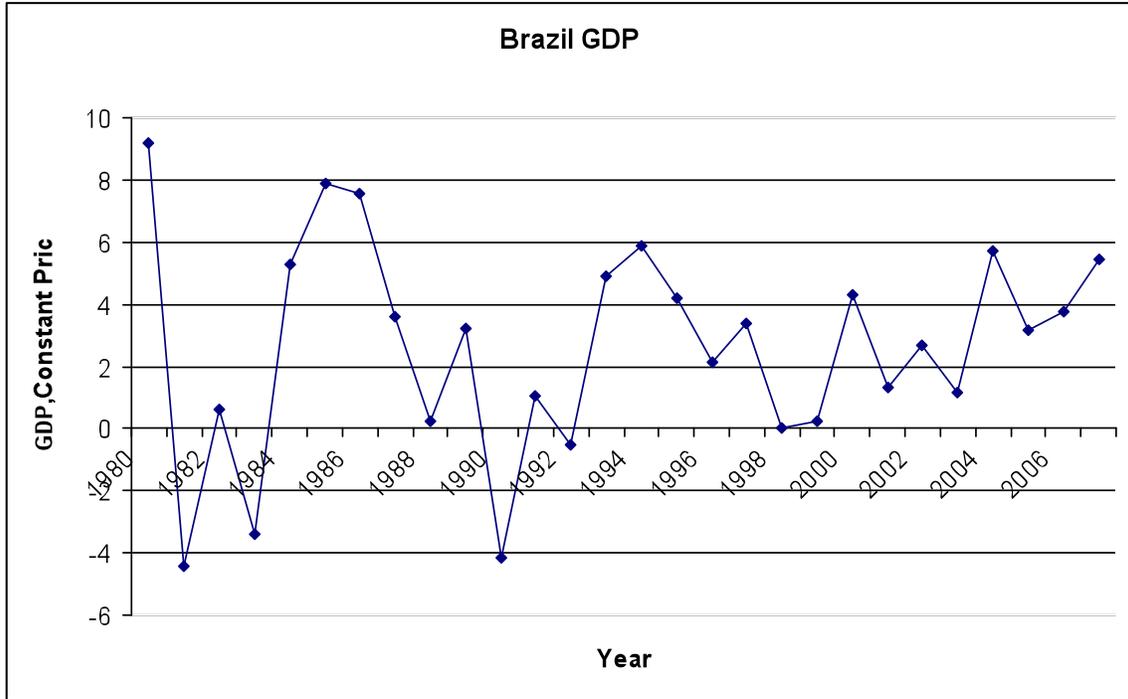
⁵³ Hansen, Roger D., 5.

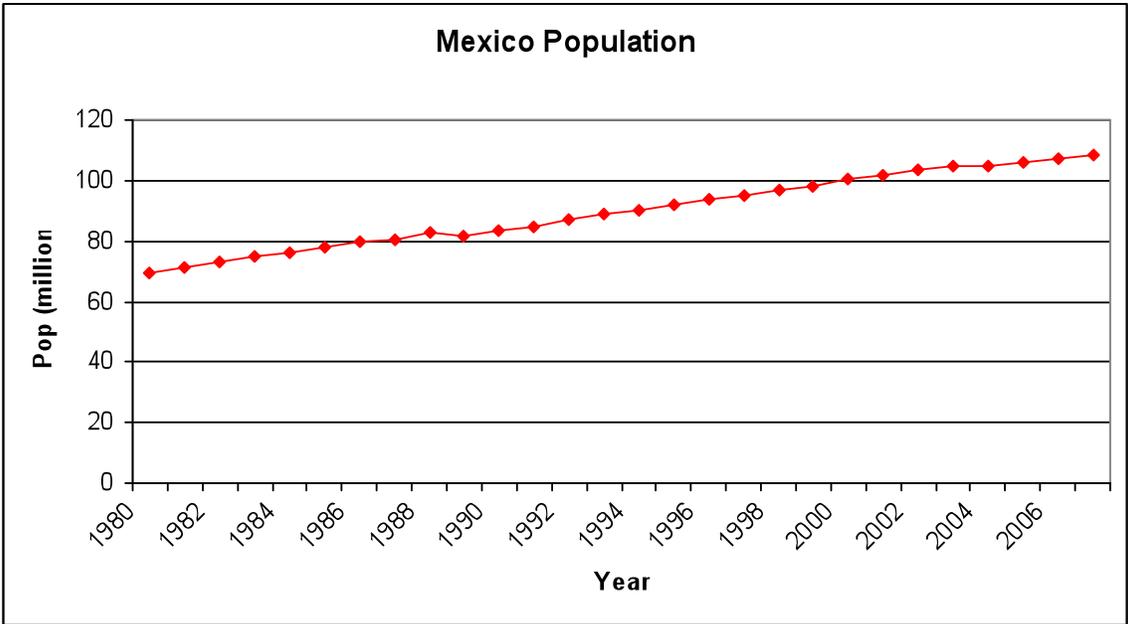
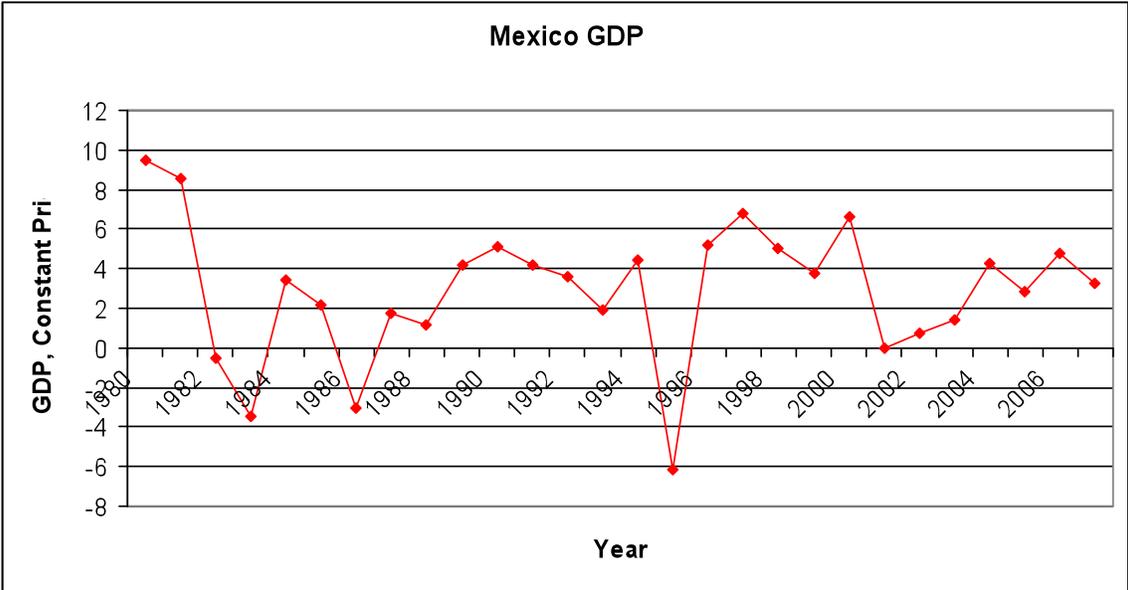
influences that determine consumption patterns, reproduction preferences and development possibilities. “The rate of economic development is also determined by the rate of population increase, by the rate of capital accumulation, by technical progress and by shifts within the labor force.”⁵⁴ Considerations of economic growth must be holistic and comprehensive.

To think that our world has unlimited resources appears imprudent. However, to attempt population control as a form of economic growth also seems foolish. Brazil and Mexico have managed to forge ahead with a larger population, and China and India are not far behind. We cannot look at population growth *as* economic development. Rather, we must look at population growth *within* the contexts of economic development. We cannot analyze one without considering the other. To do so would discount the progress of countries like Brazil and Mexico, and it is a disservice to the future of countries just beginning their path to development.

⁵⁴ Pérez López, Enrique, 24.

APPENDIX





Developed World Literacy Rates

HDI Rank	Country	Literacy Rate
1.	Iceland	99
2.	Norway	100
3.	Australia	99
4.	Canada	99
5.	Ireland	99
6.	Sweden	99
7.	Switzerland	99
8.	Japan	99
9.	Netherlands	99
10.	France	99
11.	Finland	100
12.	United States	99
13.	Spain	98
14.	Denmark	99
15.	Austria	98
16.	United Kingdom	99
17.	Belgium	99
18.	Luxembourg	100
19.	New Zealand	99
20.	Italy	98

Data from the CIA World Factbook. Updated October 2008. Available from <https://www.cia.gov/library/publications/the-world-factbook/>.

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