

## CHINA'S ONE-CHILD POLICY AND THE POPULATION EXPLOSION

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### Abstract

*Since 1950, the Earth has seen dramatic population growth, adding an extra four and a half billion people in just 60 years to reach almost 7 billion people worldwide. The population would have been significantly higher had it not been for the One-Child Policy in China, the longest and most intensive birth planning program that the world has ever seen.*

*This policy has resulted in China avoiding a majority of the environmental, social, economic, and developmental woes that other developing countries have been subject to, but at a price. While it has helped China's development, this policy has led to a slew of human rights infringements, government interference into its citizen's lives, and a population that is both ageing extremely rapidly and suffering from an unbalanced male-to-female ratio.*

### I. INTRODUCTION

Humanity has been around on this earth for two million years or more, and for the vast majority of that time, it is estimated that less than five million people inhabited the Earth. Two thousand years ago, the world's population had just reached around 250 million people. From that time until the beginning of the Industrial Revolution in 1750, the Earth's population tripled to 728 million people, (Todaro and Smith, 2009) slightly over half of China's estimated 1.337 billion people today. (CIA, 2011) Over the next two hundred years the population grew to a just over 2.5 billion people. Since that time, the world's population has exploded. In just 60 years, our skyrocketing populace has reached almost 7 billion people. (U.S. Census Bureau, 2011) This translates to approximately 79 million additional people every year (U.S. Census Bureau, 2011) and another billion people added every 12 to 15 years.

The economic and social impacts of the population explosion have been a hotly contested issue since the Industrial Revolution. Many argue that the world is running out of food, land, and fresh water to sustain the millions of new people added to the world yearly. Others, such as pro-natalist Julian Simon and many

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religious leaders, contend that there is nothing wrong with a rapidly increasing population. Simon believes that ‘genius’ is the ‘ultimate resource’ and “will solve for any problems arising from population growth.” (Todaro and Smith, 2009) As far as pro-natalists are concerned, some of our greatest times of advancement, such as the Industrial Revolution and Green Revolution, were possible due (at least in part) to higher labor supplies. (Kulkarni, 2011)

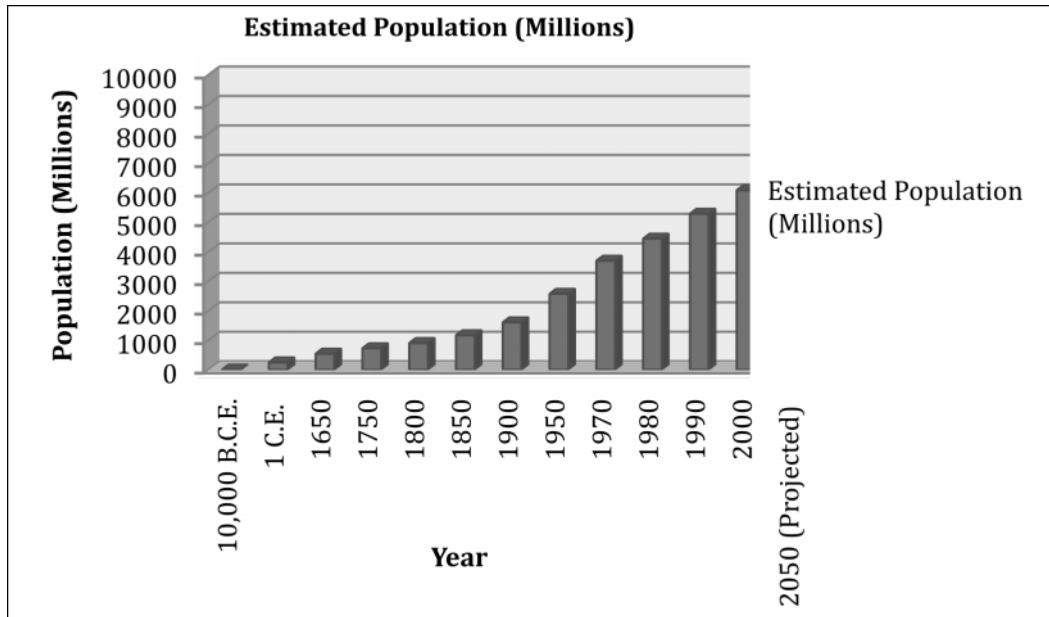
The case of China is the perfect backdrop for this debate. While the People’s Republic started as vehemently pro-natalist under Mao Zedong, (Scharping, 2003) as time went on and the demand for food, water, education, housing, and employment grew, Chinese leaders began to realize that their population growth was unsustainable and there was a consensus that a birth limitation policy was necessary. (White, 2006) China would never have been able to maintain its economic growth had it not adopted the One-Child Policy, a birth planning policy limiting every Chinese citizen, with some exceptions, to one child per family. I will examine the history of this policy and its criticisms, as well as its relation to Todaro and Smith’s examination of the population explosion and the possible negative consequences of population escalation, the Malthusian Population Trap, and Dependency Theory. The table and the graph below show the history of the world’s population growth, with expansion increasing dramatically around 1950.

**Table 1**  
**Estimated World Population Growth Through History**

<i>Year</i>	<i>Estimated Population (in millions)</i>	<i>Estimated Annual Percentage Increase in the Intervening Period</i>
10,000 B.C.	5	
A.D. 1	250	0.04
1650	545	0.04
1750	728	0.29
1800	906	0.45
1850	1,171	0.53
1900	1,608	0.65
1950	2,576	0.91
1970	3,698	2.09
1980	4,448	1.76
1990	5,292	1.73
2000	6,090	1.48
2050 (projected)	9,036	0.45

*Source:* Warren S. Thompson and David T. Lewis, *Population Problems*, 5th ed. (New York: McGraw-Hill, 1965), p. 384; United Nations, *Demographic Yearbook for 1971* (New York: United Nations, 1971); Population Reference Bureau, *World Population Data Sheet* (Washington, D. C.: Population Reference Bureau, 1998, 2001); United Nations, *Report on the World Social Situation, 1997* (New York: United Nations, 1997) p. 14. (Todaro and Smith, 2009)

Table 2



## II. THE PEOPLE'S REPUBLIC OF CHINA AND REASON'S FOR BIRTH PLANNING

The People's Republic of China is the largest country in the world in regards to population and fourth largest in the world as far as landmass. After World War II, Mao Zedong led the communists to “[establish] an autocratic socialist system that, while ensuring China’s sovereignty, imposed strict controls over everyday life and cost the lives of tens of millions of people” (CIA, 2011) during China’s Great Leap Forward and Cultural Revolution. In 1978, Deng Xiaoping succeeded Chairman Mao and focused on market reforms to spur economic development. Though by the year 2000 output had quadrupled and for a majority of the populations’ living standards had improved, political controls still remain strict. (CIA, 2011)

The One-Child Policy started from the viewpoint of economic planning. Deng Xiaoping had a “goal of quadrupling social product and reaching a moderate standard of living with a gross national product of US\$ 1,000 per capita until the turn of the century.” However, all of the projections the country had for reaching this goal stipulated that China’s population would not exceed 1.2 billion people in the year 2000. (Scharping, 2003) Essentially, Deng Xiaoping and his economic planners were worried about a Malthusian Population Trap, which will be discussed later. Were the population to keep growing at the rate it had been before birth planning policies came into effect, there would be no way for the per capita income to reach the goals that they had set, or really rise much above subsistence levels.

When Deng Xiaoping came to power there were numerous concerns over extreme population growth. The generation of revolutionaries who were now in charge of the Chinese government had personally experienced famine during past revolutions and economic planning periods such as the Great Leap Forward. During the last famine, from 1959 to 1961, 16 to 27 million Chinese had died; consequently, they were most worried about food shortages. (Scharping, 2003) Although food shortages and high food prices are often not the sole cause of protest, riots, and revolutions, they frequently play either an underlying role or act as a catalyst, (Holland, 2011) which many Chinese rulers accepted and wanted to counteract.

The next concern was that if China's population were left unchecked, there would be no way that the government would be able to find work for the succeeding generations, and mass unemployment would become a chronic problem. "Politburo member Wang Zhen summed up the situation in January 1980: 'With great efforts we created 7 million additional jobs last year, but more than 10 million new infants have been added at the same time.'" (Scharping, 2003) The Chinese government knew that creating seven million new jobs in a single year was a monumental achievement, but acknowledged that it still was not enough to meet the demands of a rapidly expanding population.

Furthermore, China was having trouble simply sheltering its growing population, not to mention educating such vast numbers of children. The problem became so bad that in 1986, parents in Shanghai were told "to prepare for instruction by shifts and to make arrangements for the supervision of unattended children." Though there have been large-scale construction efforts for housing along with housing and education reform since the 1980s, both still remain a struggle for China among a still growing population. (Scharping, 2003).

"Finally, demographic growth carries definite implications for China's environment." Though most environmental questions have been viewed by developing countries as a luxury that can be dealt with later in their development process, China has already had to address the concerns of air quality and water resources. (Scharping, 2003) The work done to improve air quality before and during the 2008 Beijing Olympic Games is evidence of that trepidation. (Ahearn, 2011).

As a result of the urgent struggles China's government was encountering from a rapidly expanding populace to meet growing demands for food, employment, housing, education, and improvements in the environment, it was decided a birth plan must be put in place. Consequently, a "strict birth limitation policy was one of the few issues that stood above the politics of elite struggle, a rare area of leadership consensus." (White, 2006) There was mass agreement among the Chinese leadership that something needed to be done, but what exactly was still up for debate.

### **III. INTRODUCTION OF THE ONE-CHILD POLICY**

Song Jian, a scientist and state minister, used computer modeling to develop strategies to counter five different scenarios for China's future population growth.

Starting with a goal of zero population growth by the year 2000, the State Council Office for Birth Planning used his model to recommend, "that the birth limitation policy be revised to advocate only one child per couple and impose penalties on those who had a second child." (White, 2006).

Though the implementation of this policy has varied at different times, the general idea is that the government would both encourage one child per family and discourage people from having larger families, or a carrot and stick approach. People were encouraged "through a package of financial and other incentives, such as preferential access to housing, schools, and health services." Chinese citizens were then discouraged to have larger families through "financial levies on each additional child and sanctions which ranged from social pressure to curtailed career prospects for those in government jobs." (Kane and Choi, 1999).

#### **IV. THEORY AND EMPIRICAL RESEARCH**

According to Michael Todaro and Stephen Smith, current empirical research narrows down the possible negative consequences that population escalation can have on a nation into seven main categories. These are economic growth, poverty and inequality, education, health, food, environment and international migration. (Todaro and Smith, 2009) China struggles from these issues relatively less than other developing countries for a single reason: the One-Child Policy.

Although population expansion is not solely to blame for poor economic growth, it does have an effect. An increased population lowers the per capita income of a country, primarily when coupled with income growth less than that of the population. This is especially true in countries that rely heavily on agriculture, as the more people there are in a country the more they have to share the land and its produce. In some cases this can even lead to what is known as a Malthusian Population Trap.

In 1798, Reverend Thomas Malthus explained his belief that unless a population was curbed by other factors like a dwindling food supply, it would grow at a geometric progression, doubling every 30 to 40 years. Concurrently, due to the naturally diminishing returns of the land, food supplies could only be expected to grow arithmetically. As a result, it would be impossible for food supplies to match the growth rate of the population, causing per capita income to fall. This would lead to a trap that the country would be unable to escape from, keeping a stable population living "barely at or slightly above subsistence levels." The only cure to this problem would be for the population to restrain themselves and limit the number of their offspring, which is why many regard Malthus as the father of the modern birth control movement. (Todaro and Smith, 2009).

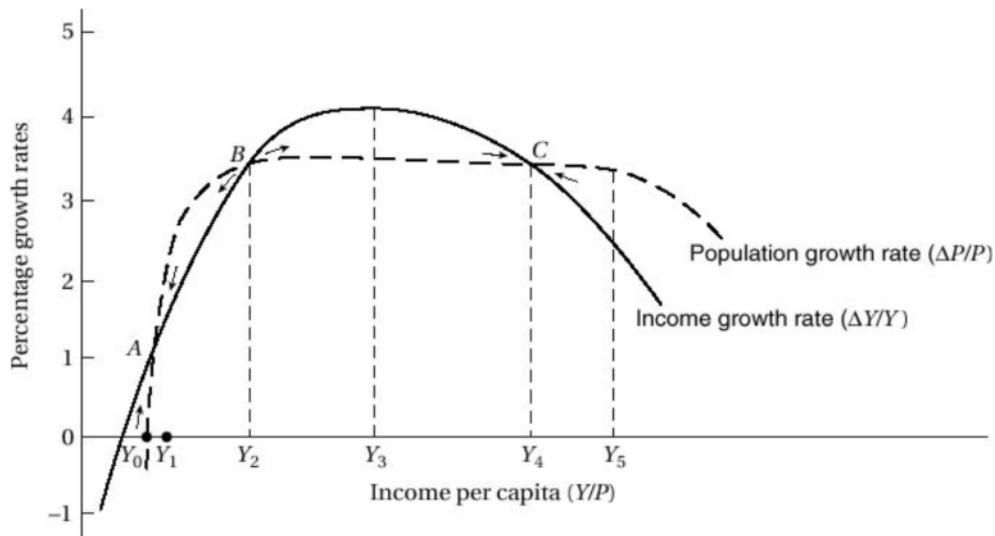
Though Malthus was born too early to take into account innovations to technology and agriculture that have increased food production, such as those during the Green Revolution, one in seven people in the world will still go to bed hungry tonight, (World Food Programme, 2011) so his assertions still have merit. The way

these population traps translate to modern-day poor nations is that these countries will not be able to rise greatly beyond subsistence level without either the preventative check of birth control or “positive checks.” Those positive checks can be either man-made or natural. Natural positive checks would be disasters such as floods, earthquakes, hurricanes, disease or even starvation. Man-made checks include wars, revolutions, and coups. These checks on population growth, either preventative or positive, “will inevitably provide the restraining force.” (Todaro and Smith, 2009).

While Chairman Mao Zedong himself opposed the ideas of Malthus, believing Marx and the Soviet Union had already proved them wrong, (Scharping, 2003) Deng Xiaoping eventually had to admit “without birth planning, ‘economic growth would be consumed by population growth.’” (Scharping, 2003) The figure below represents this situation. From point A to B, a population trap is represented. Since population rates are growing faster than income, per capita income must fall back to the original subsistence level, represented by  $Y_1$ . Only when income growth outpaces population growth will an equilibrium be reached, represented by  $Y_2$ , which then allows for positive growth in per capita income. In order to maintain income growth at higher levels than population growth and avoid a population trap, Deng Xiaoping instituted the One-Child Policy in China.

Poverty and inequality, the second negative category discussed by Todaro and Smith, is difficult to connect to population expansion at the national level, but at the household level the evidence is persuasive. As per capita income falls and with it government tax revenue, the poor are the first to feel the pain. The evidence can

**Table 3**  
**The Malthusian Population Trap**



(Todaro and Smith, 2009)

be seen by the current protests and riots around the world from London to Athens to Cairo. Inequality begins to increase as the poor suffer from job cuts and as the government begins to implement austerity measures such as reductions to healthcare and education. "To the extent that large families perpetuate poverty, they also exacerbate inequality." (Todaro and Smith, 2009).

As discussed earlier, the growing Chinese population became such a logistical problem in the areas of housing, healthcare, and education, that China even had a period where it started schooling its children in shifts to meet the demand from millions of new students. (Scharping, 2003) Poverty and inequality was increasing, which is something that the One-Child Policy was created to address. While this is still an issue that China, and indeed much of the world, still suffers from, its tremendous economic growth and One-Child Policy has helped diminish these problems. Deng Xiaoping was shooting for a per capita income of \$1000 in the year 2000, that income is now \$7,600 just a decade later. (CIA, 2011).

Education is the third negative category and can suffer greatly from a rapid population growth. Large family sizes and low per capita income also greatly decrease the likelihood that a family can provide sufficient education for their children. Even in the United States, much of education funding comes from property taxes. This essentially means that the lower income a neighborhood, the less funding their school gets, and the worse the education, expanding the inequality even more. China's One-Child Policy has helped to partly alleviate the stress that their schools would have otherwise felt. Nationwide literacy has been steadily increasing for the past two decades. In 1990, the average number of years a child was in school was just 5.45, (Shegai and Kulkarni, 2010) and 22 percent of Chinese were considered illiterate. (World Bank, 2011) Since then, the time the average Chinese citizen is in school has increased to 11-12 years and now only 8.8 percent are illiterate. (CIA, 2011).

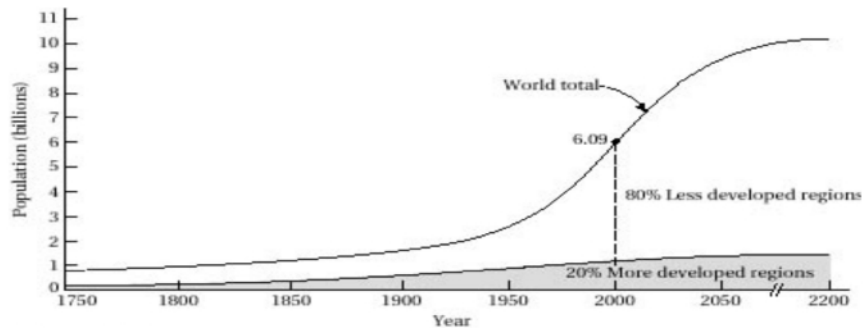
Todaro and Smith's fourth negative category, healthcare is a field that already struggles in less developed countries (LDCs) and population growth can intensify those woes. High fertility rates in LDCs, which have inadequate health care systems, means they cannot sufficiently take care of their populace and can lead to high maternal mortality rates. Elevated birth rates "increases the health risks of pregnancy, and closely spaced births have been shown to reduce birth weight and increase child mortality rates." (Todaro and Smith, 2009) This healthcare issue has been far less detrimental in China than in other LDCs due to China's One-Child Policy, which has led to a birth rate of just 1.54 children born per woman, the 182<sup>nd</sup> lowest birth rate out of other countries in the world. The infant mortality rate, while improving, is still around 1.6 percent, ranking 113<sup>th</sup> in the world, (CIA, 2011) though it has fallen almost ten percent in the last forty years. (World Bank, 2011).

Increasing populations, especially in less developed countries where food distribution is already a problem, can lead to food shortages, which is the fifth negative consequence of population growth. "Over 90 percent of additional LDC

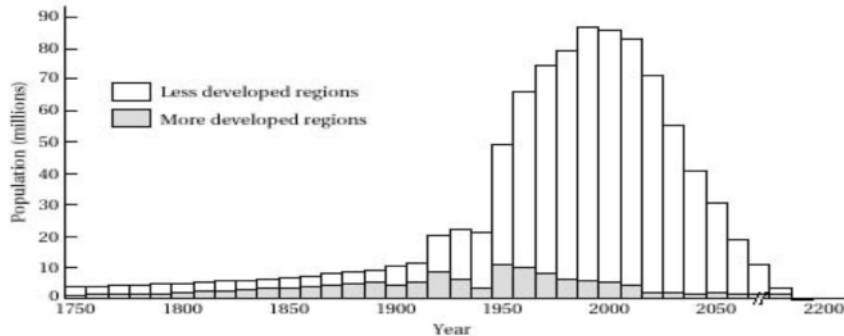
food requirements are caused by population increases.” (Todaro and Smith, 2009) Hunger is currently the world’s number one health risk and “kills more people every year than AIDS, malaria, and tuberculosis combined.” (World Food Programme, 2011) Since developing countries account for 92 percent of people being added to the world (Kulkarni, 2011) and 98 percent of the world’s undernourished people, (Food and Agricultural Organization, 2011) this problem will only continue to be exacerbated.

The two graphs below represent the history and projection of the world’s population growth as a ratio between more developed countries, such as North American and Western European nations, and less developed countries, such as China, India, African, and South American nations. As shown below, beginning after World War II around 1950, the percentage of the world’s population living in less developed countries began to increase and has been doing so ever since.

**Table 4**  
**Population Growth, 1750-2200: World, Less Developed Regions, and More Developed Regions**



(a) Absolute size



(b) Increase by decade

Sources: Thomas W. Merrick, “World population in transition,” *Population Bulletin* 41 (April 1986): 4, and United Nations, *Report on the World Social Situation, 1997* (New York: United Nations, 1997), pp. 14–15.

Note: The less developed regions are Africa, Asia (minus Japan), and Latin America; the more developed regions are Europe, the former USSR, Japan, Oceania (including Australia and New Zealand), and North America (Canada and the United States).

(Todaro and Smith, 2002)



While China may have been able to reduce the percentage of its malnourished population from 15 to 10 percent from 1992 to 2004, (International Food Policy Research Institute, 2010) this 10 percent still accounts for 134 million people. Between China and India, 40 percent of the hungry people in the world are accounted for. (Food and Agricultural Organization, 2011) One of the primary factors for the institution of the One-Child Policy in China was due to food shortages that an increasing population would only aggravate. (White, 2006) To Deng Xiaoping, it was an embarrassment for China to have thirty-years of revolution and still have citizens begging for food. (Scharping, 2003).

When coupled with precipitous economic expansion, rapid population growth can help lead to significant damage to the environment in a variety of forms. This sixth category of negative consequences includes, "forest encroachment, fuelwood depletion, soil erosion, declining fish and animal stocks, inadequate and unsafe water, air pollution, and urban congestion." (Todaro and Smith, 2009) Environmental degradation is especially evident in China, where despite incredibly aggressive pollution control tactics prior and during the 2008 Beijing Olympics, air quality was still worse than typical U.S. cities. However, due to these tactics the time around those games was "marked the first time many young Beijing residents had ever seen a bright blue sky, and it reminded older residents of a sight last seen decades earlier." (Ahearn, 2011).

Currently 11 percent of Chinese still do not have access to reliable drinking water and 45 percent do not have safe sanitation facilities. (CIA, 2011) In 2006, China passed the United States as the world's worst polluter of carbon dioxide (CO<sub>2</sub>), releasing more than 7 billion tons of CO<sub>2</sub> in 2008. (United Nations Millennium Development Goals, 2011) Though the One-Child Policy has undoubtedly lessened this environmental harm, with an estimated economic growth rate of 10.3 percent, (CIA, 2011) these figures are likely to get worse before they ever get better.

The seventh category of negative consequences, international migration, is unlike the other six. While the others are inflicted upon the less developed country, "some of the economic and social costs of international migration fall on recipient countries, increasingly in the developed world." (Todaro and Smith, 2009) This has become increasingly important in the United States with immigration from a variety of places but primarily Mexico, and in Europe with vast amounts of immigration from Africa, and even parts of the Middle East and Eastern Europe.

This immigration, both legal and illegal, can have a variety of reasons, but usually results from "an excess of job seekers (caused by rapid population growth) over job opportunities..." (Todaro and Smith, 2009) Currently, China has a net migration of -0.33 people per every 1000 people, (CIA, 2011) which means China is losing almost half a million people a year. "Its emigrants go mainly to non-European members of the Organization for Economic Cooperation and Development... and according to the International Organization for Migration it

is the world's major country of origin." The countries the largest numbers of Chinese have been arriving in are Canada, Japan, and the United States. (United Nations, 2011).

When looking at the growth of population in less developed countries, their dependency burden must also be looked at. The dependency burden refers to children under age 15 and the elderly 65 years and older, "in the sense that they are nonproductive members of society and therefore must be supported financially by the country's labor force..." (Todaro and Smith, 2009) Most developed countries have a dependency ratio of about 30 percent, while LDCs have a dependency ratio of between 40 to 60 percent. (Kulkarni, 2011) Largely as a result of its One-Child Policy, China has a dependency burden in between those of developed and less developed countries, somewhere around 36.5 percent, with about 17.6 percent youth and 8.9 percent elderly. (CIA, 2011).

## **V. CRITICISMS OF THE ONE-CHILD POLICY**

Though China's One-Child Policy has helped to curb the growing population of the largest country in the world and therefore alleviated a portion of the woes China would have experienced had their population continued to grow at the rate it was, there are several criticisms against it. The Executive Committee of the Human Rights Commission believes that, "the coercive one child per couple policy is, in scope and seriousness, the worst human rights abuse in the world today." (Tom Lantos Human Rights Commission, 2009).

The tactics used by China to enforce this policy among its 1.3 billion citizens are "marked by pervasive propaganda, mandatory monitoring of women's reproductive cycles, mandatory contraception, mandatory birth permits, coercive fines for failure to comply, and in some cases, forced sterilization and abortion." Those who get pregnant and refuse to abort could see their child denied basic rights such as education, healthcare, and marriage. The parents can be fined ten times their average annual income, be thrown in jail, have their homes destroyed or even their child killed. (Tom Lantos Human Rights Commission, 2009).

The societal pressures used against these women are staggering. The woman may be thrown in jail, and if she runs to escape this fate, her families, friends, colleagues, and neighbors could be subject to punishment in her stead, everything from being denied birth permits to being thrown in jail and beaten to being fired from their government jobs. (Tom Lantos Human Rights Commission, 2009) In the rare situation where the woman is able to withstand this immense pressure, she may actually be forced to undergo an abortion. (Hearing before the Committee on International Relations, 2004) It is reported that in just one county in China, there were 10,000 forced abortions a year. The fear and pressure felt by these women is immense, and "the [World Health Organization] reports 500 females suicides per day in China... [where the] suicide rate for females is three times higher than for males." (Tom Lantos Human Rights Commission, 2009).

The One-Child Policy has also led to selective abortion and infanticide of females, as males are considered superior. This is one instance where better healthcare can actually be detrimental. Better healthcare means more access to ultrasounds, which has led to the abortion of millions of female fetuses. Many of those females who are born have been abandoned and left to die of starvation or exposure. Furthermore, the One-Child Policy has led to increase human trafficking and sexual exploitation of women from within China and without, resulting from the estimated “30 million Chinese males who will not be able to marry due to the shortage of women in China.” (Tom Lantos Human Rights Commission, 2009).

The trend in human trafficking has not been limited to women either. It is estimated that there is a black market in stolen children where around 70,000 are bought and sold each year. There is even new evidence “that Chinese officials have begun stealing babies and children to sell for foreign adoption.” (Tom Lantos Human Rights Commission, 2009).

Though there were precursors to the One-Child Policy, they were not near as intensive and effective. This rather quick change from relative reproductive freedom to the One-Child Policy means that China has become the most rapidly ageing nation in the world. Similar to the baby boom in the United States but on a larger and more extreme scale, it is estimated that while in the year 2000 there were 87 million elderly in China, by 230 there will be between 243 and 252 million. (Zeng, 2009) By 2040, China will have as many people with dementia as the rest of the world put together. (Qiu, 2007).

These may actually be the last few years of the One-Child Policy. Due to experts in China acknowledging the sex ratio and age ratio imbalances in China, “in the plenary sessions of the annual Chinese People’s Political Consultative Conference and the National People’s Congress, a two-child policy was proposed, to start in 2015.” (The Lancet, 2011).

## **VI. CONCLUSIONS**

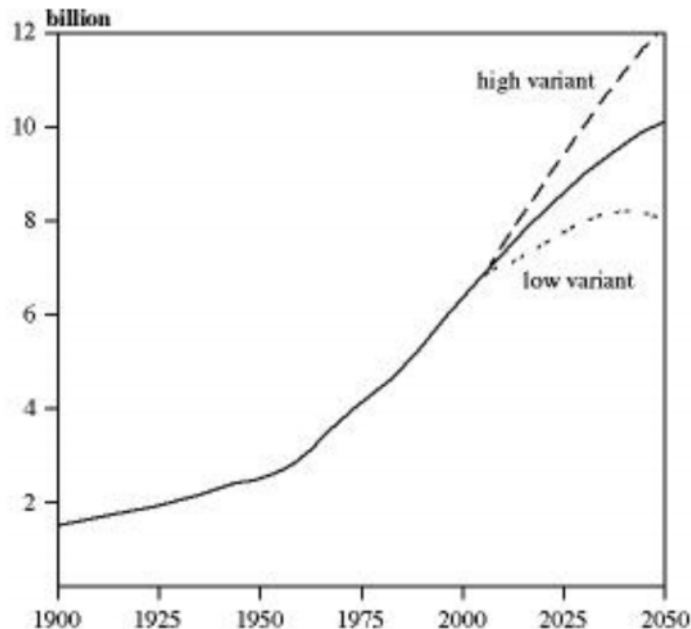
China’s One-Child Policy has undoubtedly contributed to its dramatic economic growth suffering from but a small portion of the negative consequences many less developed countries experience. The restraints it has set on its population growth have limited the negative consequences it could potentially have suffered from in economic growth, poverty and inequality, education, healthcare, and food. While still needing immense improvements in these areas, along with the environment and international migration, the One-Child Policy has helped China to avoid many of the pitfalls that generally accompany rapid population growth in developing regions, including Malthusian population traps and high levels of dependence. China’s policy to limit its population growth has unquestionably contributed to the birth of the major world power it has become today.

Concurrently, however, this policy has been extremely detrimental to its people. In order to enforce such an intrusive, ambitious, and intensive birth plan, the

Chinese government has had to become deeply involved in the lives of its citizens, often to the point of committing human rights abuses. Through enforcement by means of coercion, forced sterilization and abortion, social stigmatization, and other brutal means, China has created a culture of fear and paranoia around pregnancy. These policies have also resulted in increased abortion and infanticide of females, and a burgeoning male population with millions of men unable to wed due to a lack of women. As the One-Child Policy has been around for more than thirty years, the results of such a sudden and dramatic drop in birth rates has also contributed to China becoming the world's most rapidly ageing country, with hundreds of millions of elderly people that will account for almost a fifth of China's population in the next couple of decades.

In a certain sense of the world, China's One-Child Policy could be deemed successful, though it is my opinion that the cost is far too high. The route that China took to enforce its policy included too much brutality and invasion into people's lives. Though overpopulation in the world, especially the developing regions, must be dealt with in some way, less coercive, abusive, and destructive tactics must be used. Curbing population growth should not be done at the expense of human and civil rights, and such extreme programs will undoubtedly lead to some of the afflictions that China is feeling today. China has realized that the current policy is not sustainable, and a new, Two-Child policy may be on the near horizon.

**Table 5**  
**Possible World Population Trends**



(Global Change Research Program, 1998)

The US Global Change Research Program (USGCRP) has submitted that there are three possible variations on the world's population growth, the high, middle, and low variants. The middle variant would be a world where population growth experiences slight decreases commiserate with global trends as countries begin to develop more. The high variant represents a world where developing countries do not curb population growth, either because they do not continue to develop or there is no change in population growth as they do. The low variant would be a world where developing countries institute plans to decrease the birth rate, though hopefully not as coercive as the One-Child Policy. The differences in these worlds that the USGCRP has proposed are stark, with the high variant being a world filled by "...oceans of poverty and despair..." the middle variant similar to what we have today, and the low variant approaching a utopia. The three variants are represented in the graph below.

The food, water, and land shortages along with the other negative consequences of overpopulation discussed earlier should not be downplayed; they are a significant threat. While other developing countries need to try to find ways to restrain their population growth, the current Chinese model should not be considered an alternative. If the right options are found, perhaps one day we can live in the more utopian world the USGCRP suggests is possible.

### ***Bibliography***

- Todaro, Michael P. and Smith, Stephen C. (2009), "Economic Development," (Edinburgh Gate, England: Pearson Education Limited).
- "The World Factbook: East & Southeast Asia: China," *Central Intelligence Agency*: Week of August 8, 2011, Accessed August 9, 2011, <https://www.cia.gov/library/publications/the-world-factbook/geos/ch.html>.
- "U.S. & World Population Clocks," *U.S. Census Bureau*: August 10, 2011, <http://www.census.gov/main/www/popclock.html>
- "International Data Base: World Vital Events Pert Time Unit: 2011," *U.S. Census Bureau: International Programs*: June 27, 2011, <http://www.census.gov/population/international/data/idb/worldvitalevents.php>
- Shegai, Svetlana (2010), "Family Planning in China," in *International Economic Development: Theories, models & case studies of countries leading the change*, edited by Kishore G. Kulkarni, (New Delhi: Matrix Publishers).
- "Hunger Stats," *World Food Programme: Fighting Hunger Worldwide*: 2011, Accessed August 10, 2011, <http://www.wfp.org/hunger/stats>
- "Data by Country: China," *The World Bank: Working for a World Free of Poverty*: 2011, Accessed August 9, 2011, <http://data.worldbank.org/country/china>
- "China Data," *The World Bank: Working for a World Free of Poverty*, 2011, Accessed August 10, 2011, <http://www.worldbank.org/en/country/china/data>
- Kulkarni, Kishore G., "Class Notes," July 27, 2011 "Global Hunger Declining, but Still Unacceptably High: International Hunger Targets Difficult to Reach," *Food and Agriculture Organization of the United Nations*: September, 2010, <http://www.fao.org/docrep/012/al390e/al390e00.pdf>

- “2010 Global Hunger Index: The challenge of Hunger: Focus on the Crisis of Child Undernutrition,” *International Food Policy Research Institute: Sustainable solutions for ending hunger and poverty*: October, 2010, <http://www.ifpri.org/publication/2010-global-hunger-index>
- Ahearn, Ashley, “Air Pollution in China, with Junfeng (Jim) Zhang,” *Environmental Health Perspectives: National Institute of Environmental Health Sciences*: June 8, 2011, <http://ehp03.niehs.nih.gov/article/Article.action?articleURI=info:doi/10.1289/ehp.trp060811#r3>
- “Carbon dioxide emissions (CO<sub>2</sub>), thousand metric tons of CO<sub>2</sub> (CDIAC),” *Millennium Development Goals Indicators: The official United Nations site for MDG Indicators*: July 7, 2011, <http://mdgs.un.org/unsd/mdg/SeriesDetail.aspx?srid=749&crd=>
- Scharping, Thomas, “Birth Control in China 1949-2000: Population Policy and Demographic Development,” London: RoutledgeCurzon, 2003.
- White, Tyrene, “China’s Longest Campaign: Birth Planning in the People’s Republic 1949-2005,” (Ithaca: Cornell University Press, 2006).
- “Regional Fact Sheet: Asia,” *United Nations: International Migration and Development*: 2006, Accessed August 10, 2011, [http://www.un.org/migration/presskit/factsheet\\_asia.pdf](http://www.un.org/migration/presskit/factsheet_asia.pdf)
- Holland, Lynn, “Class Notes,” August 8, 2011.
- Todaro, Michael P. and Smith, Stephen C., “Economic Development,” (Edinburgh Gate, England: Pearson Education Limited, 2002).
- Kane, Penny, and Choi, Ching Y., “China’s one Child Family Policy,” *British Medical Journal*: October 9, 1999, <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1116810/>
- Tom Lantos Human Rights Commission, “An Evaluation of 30 Years of the One-Child Policy in China,” *Hearing before the United States House of Representatives: One Hundred and Eleventh Congress: First Session*: November 10, 2009.
- Zeng, Yi, “Challenges of Population Aging in China,” *China Economic Journal* Vol. 2, No. 3: November 29, 2009.
- Qiu, Jane (2007), “Ticking Time Bomb Faced by China’s Ageing Population,” *The Lancet Neurology*, Vol. 6, Issue 7.
- “China: Human Rights Violations and Coercion in One-Child Policy Enforcement,” *Hearing before the Committee on International Relations: House of Representatives: One Hundred Eight Congress: Second Session*: December 14, 2004.
- “The End of the One-child Policy in China?,” *The Lancet*, Vol. 377, No. 9770: March 19, 2011.
- “Which World? – A look at Three Plausible Trend-Based Scenarios of the Future,” *US Global Change Research Program*: October 22, 1998, <http://www.usgcrp.gov/usgcrp/seminars/981012FO.html>