

12-2013

# The Role of Population Growth In An Emerging Multipolar Economic World.

Casey C. Horner

*East Tennessee State University*

Follow this and additional works at: <https://dc.etsu.edu/honors>



Part of the [Economic Theory Commons](#)

---

## Recommended Citation

Horner, Casey C., "The Role of Population Growth In An Emerging Multipolar Economic World." (2013). *Undergraduate Honors Theses*. Paper 175. <https://dc.etsu.edu/honors/175>

This Honors Thesis - Open Access is brought to you for free and open access by the Student Works at Digital Commons @ East Tennessee State University. It has been accepted for inclusion in Undergraduate Honors Theses by an authorized administrator of Digital Commons @ East Tennessee State University. For more information, please contact [digilib@etsu.edu](mailto:digilib@etsu.edu).

THE ROLE OF POPULATION GROWTH IN AN EMERGING MULTIPOLAR  
ECONOMIC WORLD

Thesis submitted in partial fulfillment of Honors

By

Casey Horner

The Honors College

Midway Honors Program

East Tennessee State University

November 20, 2013

---

Casey Horner, Student

---

Dr. Steb Hipple, Faculty Mentor

---

Dr. Jill Hayter, Faculty Reader

---

Robert A. Russell, Faculty Reader

## **Table of Contents**

<b>Introduction</b>	<b>3</b>
<b>Background Information</b>	<b>4</b>
<b>Country or Region Examinations</b>	
United States of America	<b>10</b>
Europe	<b>16</b>
Japan	<b>22</b>
China	<b>28</b>
India	<b>35</b>
<b>Overall Country or Region Comparisons</b>	<b>42</b>
<b>Conclusions</b>	<b>45</b>
<b>Appendix</b>	<b>47</b>
<b>Works Cited</b>	<b>48</b>

## **Introduction**

This study is an empirical study. The literary review includes three primary data sources. The three data sources: Central Intelligence Agency's World Factbook, OECD: Organisation for Economic Co-Operation and Development, and Worldbank's HNP: Health Nutrition and Population are all primary sources required for the study. All can be accessed on the Internet. Other informational sources provide context information.

This examination will use: (1) social measurements stemming from economic theories and movements and (2) economic measurements in order to show the shift from a bipolar economic world into a multipolar economic world. It will show that India and China will become significant economic world powers, the United States will maintain its world power, and Japan and Europe will lose some economic world power but will be able to stay within the realm of world leaders in the future. Presently, the economic world is experiencing a complete shift where the bipolar economic world will come to an end, and a multipolar economic world will reemerge.

## **Background Information**

The terms being used in this examination, *bipolar* and *multipolar*, are crucial macroeconomic views of the world economies of the recent past, present, and future. Therefore, the definition and explanation of each require deep historical context and academic support. The historical context and academic support are decisive in the characteristics and shifts from one worldview to another; or in this case, we see a shift from a bipolar economic world to a multipolar economic world.

First, the template of a bipolar world comes from the powers left as a result of World War II. Prior to the two World Wars, there were many countries that had economic strength around the globe. But with the devastation left in the wake of both great global wars, especially World War II, there were new global powers and an economic shift. The United States of America became the dominant power in the Western Hemisphere, and with the help of the Americans during reconstruction; Japan regained their strength and became the dominant power in the Eastern Hemisphere. These two countries were the bipolar powers in global economics. Meanwhile, the devastated countries of Europe and England stayed close to the United States and Japan in the bipolar background. They were never far from the standards of the two global powers. In fact, the strength of the somewhat newly constructed European Union has come to surpass these two bipolar powers in some economic data here recently such as total GDP (World Factbook). Still, the two bipolar powers that emerged from the gunpowder and toxic ashes of World War II were the United States and Japan. They were to remain the two global dominant powers until recent economic shifts due to certain factors within each nation and the global economic infrastructure.

In comparison, the template for a multipolar world can be easily traced back to the pinnacle of European and Asian colonization. The colonization, world affairs, and global economy of the 1500's are a prime century to examine. Many nations were conquering lands at a rapid rate. The flags of each of these nations were contested, taken down by natives, and raised again by the overwhelming and powerful armies of the conquering nations. England, Portugal, Spain, France, the Dutch, Italy, Japan, China, Mongolia, Persia, the many dynasties, and many others were trying to control and dominate as much land as possible. More land means more wealth; more wealth means greater power in military, diplomacy, and economics. Still, one of the most powerful nations, England, did not claim the entire world. They nearly did with one-third of the globe under their rule, but not completely. The conquering nation failed in colonization due to the rebellious natures of the native people who they were attempting to control. Riots, assassinations, and revolutions are evident throughout the centuries of attempted colonization. The American Revolution, First Sino-Japanese War, Russo-Japanese War, Kaocen Revolt, Dagami Revolt, and many others are just a few examples of revolts against colonialism. With these revolts and other strains on the conquering nations, many of their outlying colonies were freed from their rule. This was the initial decline and shift from the multipolar economic worldview.

Overall, due to the global economy and other national economic components, there is still a high possibility and even an inevitability of the return to a more multipolar economic worldview. Presently, there are new global players in the fight for multipolar power in addition to the older economies like the United States, Japan, and Europe as a whole. The new players include India and China. Meanwhile, the older economies are facing a slippery slope and an economic downfall in the near future. Japan is the farthest down this slope with Europe and the United States following. Europe and the United States are compared to Japan throughout this study. If these nations and regions do not keep themselves in check, then each will likely be unable to return to being a global power. China and India have been able to surpass these once powerful nations and regions with a larger workforce and a modern form of economy that is focused not only on technology but also on the services necessary for the successful use of each technological device. This has propelled China and India as the forerunners for the possible reemergence of a multipolar worldview in the near future of global economy. Japan, the United States, Europe, China, and India could make up the future multipolar map.

Along with the global perspective of nations and their economic strength, there are theoretical and paradoxical observations that are integral to the completion and overall view of the possible global economic shift. These types of observations are closely tied to the national economic components that can either harm or help the strength of each nation and its people. Like the bipolar and multipolar economic worldviews, these observations are compared against one another as the older views and projections against the present observations. Thomas Robert Malthus contends for the theoretical observations and the older conceptions; the Demographic-Economic Paradox vies for the paradoxical observations and the present observations. Each is integral to the overall understanding of the global economic shifts since each helps form the theoretical and paradoxical explanations.

Thomas Robert Malthus was a man concerned with economics, demographics, and the relationship between these during the late 1700's into the early 1800's. He was making views, projections, and conclusions during the growing success of the Industrial Revolution. In short, Malthus is well known for many controversial statements, conclusions, and publications. His most referred to publication is *An Essay on the Principle of Population*. He is a renowned, historical economic philosopher that is studied around the world in classrooms and in depth by economists, scholars, and politicians. His beliefs are better known as the Malthusian school of thought. Malthus was concerned with population growth and it exceeding the natural resources of the world. Malthus states in his *An Essay on the Principle of Population*, "The power of population is indefinitely greater than the power in the earth to produce subsistence for man" (Malthus, 4). Most importantly, Malthus believed that population would grow rapidly amongst the higher standard of living classes. To him, the better benefits, wealth, and overall standard of living promoted larger families (Malthus).

Still, Malthus warned against overpopulation. His answer to overpopulation was in the form of two checks, positive and preventive. Positive checks refer to the raising of the death rate. They include hunger, illnesses, and warfare. The second

was known as preventive checks. These included anything that could lower the birth rate. Lowering birth rate includes birth control, later marriages, and later additions to families. Positive and preventive checks, if used properly and by the greater part of the population, would ensure higher standard of living for all and an increase in economic stability. In other words, the upper classes would produce the majority of the younger population. In turn, this young population would grow to better society for themselves and the lower classes as well. Also, the majority of the population would be from the higher classes. Therefore, the well educated would outnumber the less educated and would positively advance the civilization and economy. He argued in his *An Essay on the Principle of Population*, "Yet in all societies, even those that are most vicious, the tendency to a virtuous attachment is so strong that these is a constant effort towards an increase of population. This constant effort as constantly tends to subject the lower classes of the society to distress and to prevent any great permanent amelioration of their condition" (Malthus, 7). If population growth continued on a large scale, Malthus concluded that it would not better the lower classes in their standards of living or in society. Only population growth in the higher classes could better society (Malthus).

Malthus stressed that economic existence and advancement could not occur without these checks. Also, agricultural improvements could not expand these possibilities of advancement. He states,

That the increase of population is necessarily limited by the means of subsistence. That population does invariably increase when the means of subsistence increase, and, that the superior power of population is repressed, and the actual population kept equal to the means of subsistence, by misery and vice (Malthus, 37).

Only the positive and preventive checks could ensure a strong future and a healthy, stable population. The world was producing all that it could, no agricultural advancement could add to its production. Also, it was the role of the higher social classes to produce the majority of the population due to their better benefits and ability to positively affect the economy, society, and nation (Malthus).

On the other hand, the more modern global economic observation is the Demographic-Economic Paradox. It contradicts the Malthusian theory of the higher social classes producing the majority of the population. This paradox realizes the inverse correlation amongst prosperous and developing countries. The prosperous countries tend to have higher standards of living including a high literacy rate, high education attainment rate, high sanitization percent, and strong GDP per capita. The middle class in these countries is long established and mostly originates from an industrialized economy and its prosperity. Most likely, these countries' middle class and comfortable living stem from the Industrial Revolution age. The Demographic-Economic Paradox has observed, over time, that this middle class has actually done the opposite that Malthus predicted, as did the lower classes and developing countries. The paradox points out that the middle class has slowed its reproduction or birth rate. This could mainly be a result from women seeking higher education, careers, and deciding to have children later. In fact, there is a commonality of later births of first children averages in these countries. They have fewer children even with the better benefits than the less fortunate. Meanwhile, the growing economies

have a higher birth rate. In connection to this increasing birth rate and growing economy, these developing countries tend to have more rural land, higher rural population, and much lower standards of living. Still, each social and economic statistic within the developing or growing countries, including urbanization rate, has been increasing rapidly and steadily in the past few decades (Population Connection).

Overall, these two theories are the exact opposite of each other. Malthus predicted from an older worldview; the Demographic-Economic Paradox draws upon observational data that we only have on the global economy since World War II. Even though Malthus seems outdated, his theory is still viable in the attempt to stabilize falling economies such as the once bipolar economic powerhouses. The Demographic-Economic Paradox provides a template for growing economies such as the possible multipolar economic contenders. The combination of Malthus's wisdom and the Demographic-Economic Paradox observations provide a plausible population movement that can allow for a multipolar economic worldview to reemerge in the near future.

The result of the combination of Malthus and the Demographic-Economic Paradox is the Zero Percent Growth group, theory, and movement. It was originally founded in the 1960's as a radical population movement that warned of overpopulation. It originally thought that the global population couldn't keep growing without a great collapse in sustenance and disease. Since then, it has transformed into a global movement with viable theories and methods (Population Connection). This includes the combination of the two opposing theories mentioned.

The Zero Percent Growth's connection to Malthus's theories is the belief in preventive checks and the belief in population outreaching its own natural sustenance. The movement spreads advocacy for family planning, sex education, and birth control to all developing areas in order to meet the preventive checks. The movement also helps devastated and poorer areas with sustainable agricultural and irrigational systems for its population and the natural resources at hand (Population Connection).

In contrast, the Zero Percent Growth movement also connects to the truths found in the Demographic-Economic Paradox. It agrees that there is a larger population boom in the poorer areas and lower classes. It devises outreach programs in order to help these areas such as advocacy, education, and agricultural aide. It is not concerned about the advocacy, education, and agricultural aide for strong, powerful nations (Population Connection).

In turn, the Zero Percent Growth movement has created its own theory based upon one standard measurement. This standard measurement is the Sustainable Fertility Rate. This rate is so viable that it is used globally. This rate is the movement's answer to the fertility balance. The Sustainable Fertility Rate is set at 2.1 percent (Population Connection). The decimal allows for the possibility of childhood deaths before reaching the procreation age (Low Fertility and Sustainability). If the country, region, or economy remains at or above the Sustainable Fertility Rate, then the procreating population will supply enough native-born people to fill the workforce positions in the future. In other words, the Sustainable Fertility Rate helps measure a country's ability to sustain its working



class, employment, national GDP, and other components such as: standards of living, education, and GDP per capita.

The location of a nation's, region's, or economy's fertility rate in respect to the Sustainable Fertility Rate can give strong indications of the questioned economy's stability and strength.

If the fertility rate is above 2.1 percent, then the nation in question is most likely war torn or developing. There is little access to contraceptives or a not used very often. There are many births with some not reaching adulthood probably. The developing country has very poor standards of living yet attempting to improve all conditions.

If the fertility rate is around 2.1 percent, then there is a steady GDP growth but no strong increase. The GDP per capita and total GDP are increasing, but the increase is not very large. The middle class is either newly established or in the process. The standard of living is good. Some economies or nations that are falling below 2.1 percent, but still remaining rather close like the United States, share some of these characteristics even though the middle class has been prominent for a long time.

If the fertility rate is below 2.1 percent, then pressure is being placed on the nation or economy. These tend to be high-income nations that have been enjoying high standards of living for a considerable length of time. For instance, the GDP per capita is high and has been for this considerable length of time. The concerns start with the fact of not being able to sustain the working force at such a low percentage. Also, the smaller youthful population has the pressures of taking care of the much larger aging population. In other words, there is a ratio of many elders to fewer youths. Japan is experiencing this straining ratio of many elders to fewer youths.

A common and very useful diagram used to express the age sections within a population is a population pyramid. In the case of a country or economy with a fertility rate below 2.1 percent, the population pyramid would result in a somewhat upside down pyramid. The top would have a large section with it narrowing toward the bottom. True, the bottom would not end in a point, but it still will be narrower than the top. This represents the overwhelming pressure placed on the small amount of youthful workers by the larger aging population. First, the younger generations will have to provide for themselves and their families. Then, they will also have to provide for their elders and most likely government services for the elderly such as homes and medical aide. Lastly and most important, the younger generations will not be able to fill all the open jobs left by the much larger workforce that has retired or become too old to work. This vacancy of workers, mainly in the unskilled jobs, will allow immigrants to enter the country by the masses. The immigration is necessary if the economy wishes to continue functioning and producing at its same rate. The immigration will not cease when the unskilled jobs are filled. More immigrants will fill the country looking for skilled work. The immigrant population would then begin to outnumber the native born due to the low fertility rate of the native people. When the majority shifts, so does the culture and needs of the people. The necessary job replacement by the immigrants might spark cultural clashes and takeovers. Still, there is even a darker truth. The GDP of the nation will slow because the job replacement will still occur too slowly. The

economy will face downfall until the immigrants can establish a strong foothold in the declining nation. For a nation or economy to fall below the Sustainable Fertility Rate, it sends a shockwave across the dominos of a once stable economy. The once powerful, immovable dominos begin to fall.

Each component already mentioned - the shift from a bipolar economic worldview into a multipolar economic worldview; the characteristics of the Malthusian school of thought versus the present observations of the Demographic-Economic Paradox; the attempted balance of each theory by the Zero Percent Growth movement resulting in the Sustainable Fertility Rate; and the characteristics, results, and future projections of each country or economy according to its fertility rate relation around the Sustainable Fertility Rate – will be examined across five separate economies with two focused variables. The five separate economies are Japan, Europe, the United States, China, and India. The two focused variables are social and economic. The social variables are fertility rates of each economy, their approximation to the Sustainable Fertility Rate, and total population. The economic variables are the trends of the GDP per capita and total GDP of each economy. With the social and economic variables, the study will be able to examine the economy's ability to sustain itself and the possibility of an emerging middle class due to increasing standards of living. The time period comparisons will be for future projections beginning in the present until 2050. With this complete timeline, the examination will be able to address any worldview shift of power. Overall, the study will help show the global shift in power from two dominant economies to multiple powerful economies.

## **Country or Region Examination**

### **United States of America**

The United States of America is currently an economic world power. Even with its large amount of national debt, the United States has been able to maintain power within the global economic realm. However, there is concern that the United States might begin to decline and follow in the footsteps of Japan and Europe. Future projections for the United States are not as positive as China's and India's but also not as negative as Japan's and Europe's. The United States falls in the middle of these five economic entities when it comes to being a world power in a multipolar economic world. If the United States adheres to the future projections, then the country as a whole will remain stable and so will the country's economic power globally. But, if it were to deviate in the Sustainable Fertility Rate, then the United States would follow future projections similar to Japan and Europe. Therefore, the United States must maintain its current percentages of fertility, total GDP, and GDP per capita to sustain its social and economical needs in order to remain a world power in a multipolar economic world.

#### **Social Components**

First, the observed social factors of the United States need to be examined. The United States has a fertility rate close, but still lower, than the Sustainable Fertility Rate of 2.1. The fertility rate is 2.06 (The World Factbook). With this slightly lower fertility rate, there still is a concern that the entire population might not be replenished. Still, this concern is not as great as the same concern is in Japan and Europe. Although, the origination of this low fertility rate is the same as Japan's and Europe's. The low fertility rate stems from a large, comfortable middle class that became quite solidified at the end of WWII. Great prosperity, higher standards of living, emphasis on self-sufficiency, higher education standards helped create the age group known as Baby Boomers. Access to sanitation facilities and clean drinking water is 100% nationwide. Literacy is 99% nationwide amongst the male and female populations. Also, the years to complete an education is high with 17 years for the total population, 16 years for the male population, and 18 years for the female population (The World Factbook). In turn, this Baby Boomer generation furthered the increase in standards of living by waiting longer to start a family. The mother's mean age of firstborn child is 25 years old (The World Factbook). At the end of these lifestyle shifts, the fertility rate became established along the borderlines of the Sustainable Fertility Rate.

Consequently, there is a slightly larger proportion of elderly to the proportion of the youth and working age population. The main contributors are the aging of the Baby Boomers and the slightly smaller fertility rate. Still, there is a slight economic dependency placed upon the workforce due to the larger aging and retiring elderly proportion. In future projections, there is also youthful dependency that might affect the economic stress of the workforce. The economic stress leads to a slower and less productive GDP. In this case, the economic stress will only slow

the GDP production of the United States slightly. In the end, more money will be spent with a slightly smaller GDP being produced and standards of living will be slightly affected. The slightly smaller workforce will not only have economic stresses, but there will also be social and cultural conflicts that will arise with the necessity of immigration.

Like Japan and Europe, the United States currently relies upon and will need immigration in order to fulfill job openings. These job openings will be for the less desirable jobs. Americans will continue to fill higher qualified occupations due to their current standards of living and emphasis upon education. Thus, Americans will remain higher on the social ladder with immigrants on the lower rungs. This is evident by examining the multiple ethnicities across the entire nation. The United States is the land of opportunity for the immigrant masses. But like Japan and Europe, the United States is also facing the cultural conflicts due to the differing cultures of the various immigrants and Americans. The conflicts will only continue to worsen if there is no action taken to eliminate the tension between immigrants and Americans.

The United States is a current world power that is facing either remaining powerful or losing its position as a world power in the near future. If the United States maintains its current momentum then its global power will continue. If the United States fertility rate slips any lower then it will follow the footsteps of Japan and Europe. It will eventually lose its economic strength. The nearly self-sustaining fertility rate and dependency rate from the elderly and youthful proportions create social, cultural, and economic problems. Immigration is necessary for the workforce, which, in itself, brings more conflict. Slightly slower and slightly less GDP is a consequence. Still, the United States has a strong opportunity to be a world power in a multipolar economic world. If resolutions for the social problems can be applied, the United States will be a world power in a multipolar economic world.

### **Economic Components**

The United States is on the border of remaining a world power or losing its global strength with its slightly lower fertility rate in comparison with the Sustainable Fertility Rate. As examined above, if the United States remains steady then it will be able to self sustain its native working force. Likewise, if the United States maintains or betters its economic components then it will be able to self sustain its global power as a world leader even within a multipolar economic world. The economic components include the increasing total GDP, increasing GDP per capita, growing middle class, and the sectors the economy is based upon.

The United States of America's total GDP will continue to increase steadily. Currently, the total GDP for the United States is between \$13,063 and \$14,642 billions in US 2005 PPP dollars. As seen in the total GDP graph in economic graphs below, the rate of change is steady. The United States of America's GDP per capita also show a steady increase in the economic graphs below. Currently, United States of America's GDP per capita is between \$42,086 and \$45,208 in US 2005 PPP dollars. The steady increases of both total GDP and GDP per capita show that the United States is maintaining its position as a world power. Yet with only steady

incremental increases, the United States might be surpassed by other world powers in the near future.

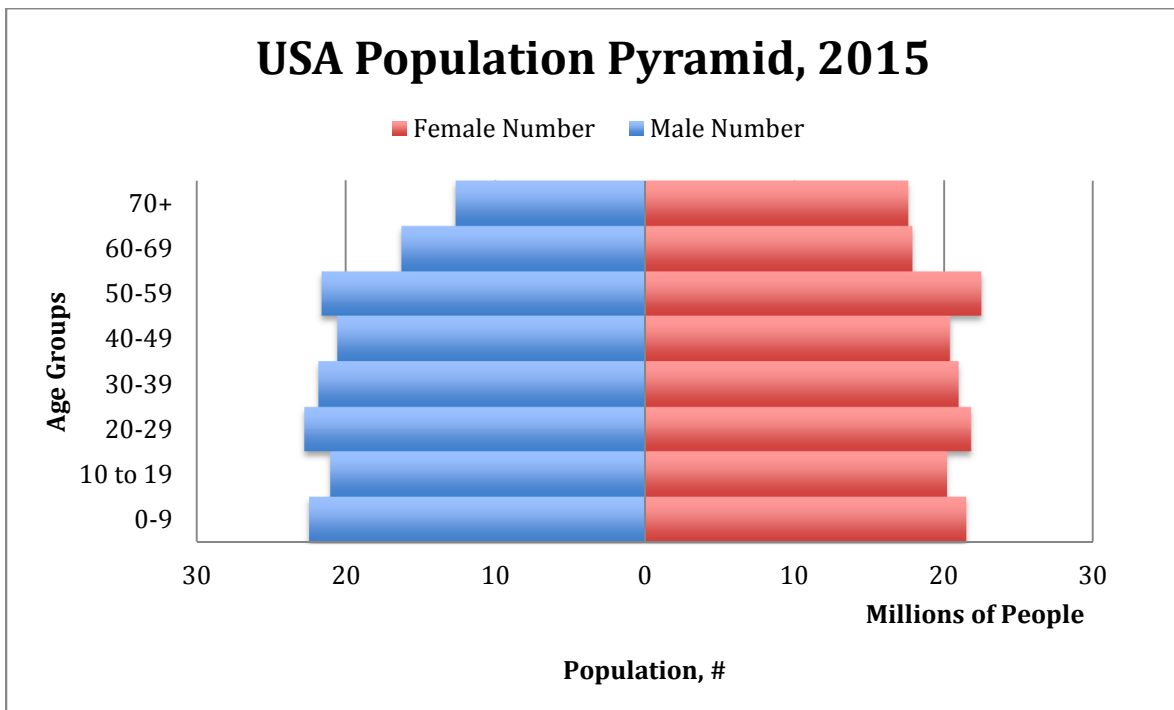
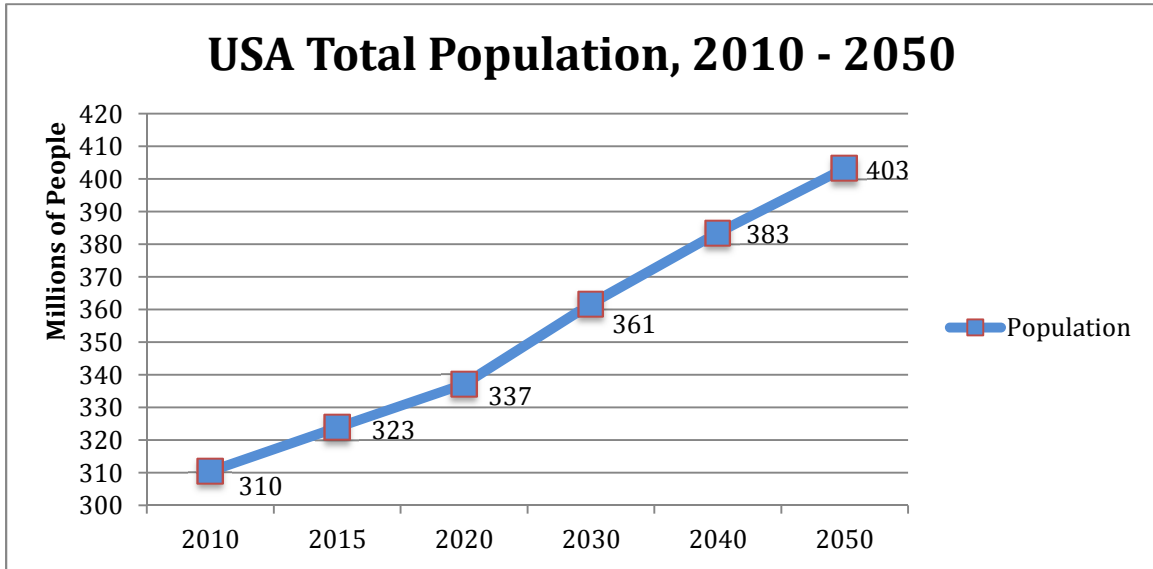
The measurement of US 2005 PPP dollars allows for cross comparisons without the concern of inflation. Inflation is taken out of the equation. This measurement, US 2005 PPP dollars, is used throughout the economic comparisons and graphics. All total GDP graphs are set to billions of US 2005 PPP dollars and GDP per capita is set to thousands of US 2005 PPP dollars.

The United States of America's economy is built upon three sectors: agriculture, industry, and services. There is a seriously lopsided percentage of total GDP composition amongst these three sectors. The service sector contributes 79.7% of the total GDP with industry at 19.2% and agriculture at 1.1% (The World Factbook). The large service sector has allowed the United States to be strong globally in today's market. Yet, the disproportion amongst these sectors can be the downfall of the economy, such as it is for Japan. In order to find more economic strength, the United States should attempt to find balance amongst these sectors. Still, the United States is ranked second in total GDP in the world. It is only bested by the European Union, according to CIA (The World Factbook). Even with this high ranking, the GDP real growth rate is still fairly low at 2.2% (The World Factbook). This could lead to loss of economic strength in the global market. At this rate, the United States, as projected and seen in the economic graphs below, will be surpassed by India and China in total GDP.

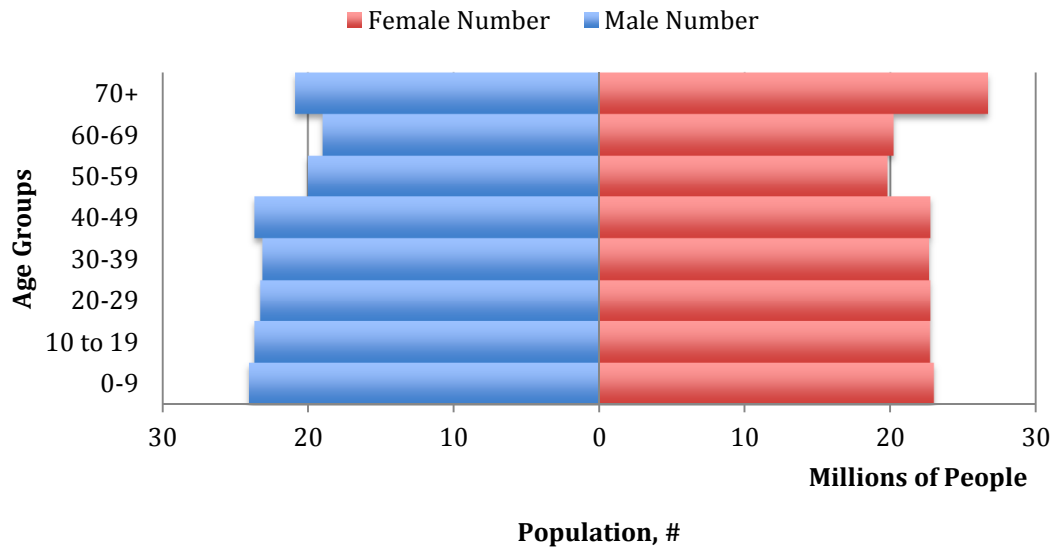
Another contributing factor to the projections for the United States is the GDP per steady increase. Currently, the GDP per capita is between \$42,086 and \$45,208. This can be seen in the economic graphs below. These measurements are the highest out of all the economic entities at their current GDP per capita measurements. The United States will have the highest GDP per capita in all future projections, even though there will be an uneven distribution of wealth amongst the upper, middle, and lower classes. This shows that the high living standards will remain in the United States economy and society. Also, the middle class will grow in size. Currently, the middle class makes up 68% of the total population (The World Factbook). The middle class will likely continue to increase in size if the GDP per capita and total GDP continue to increase.

As projected in social and economic graphs below, the United States has the very strong possibility of continuing to be a world power in a multipolar economic world. The continuance of its power only happens if it continues with its fertility rates and economic rates in both total GDP and GDP per capita. It will have the highest GDP per capita out of the examination economic entities, but will be surpassed by India and China in total GDP. If the United States could find economic balance amongst its business sectors, then it might be able to gain more prosperity and total GDP. Still, the nearly self sustain fertility rate for the United States is able to replenish its native workforce. In turn, this work force is able to produce a large GDP that ensures an increasing GDP per capita. This increasing GDP per capita helps stimulate a large and possibly growing middle class, which then circles back to the nearly self sustain fertility rate. With this combination, the United States will continue on its path toward being a world power in a multipolar economic world, and it will not follow in Europe and Japan's economic fall.

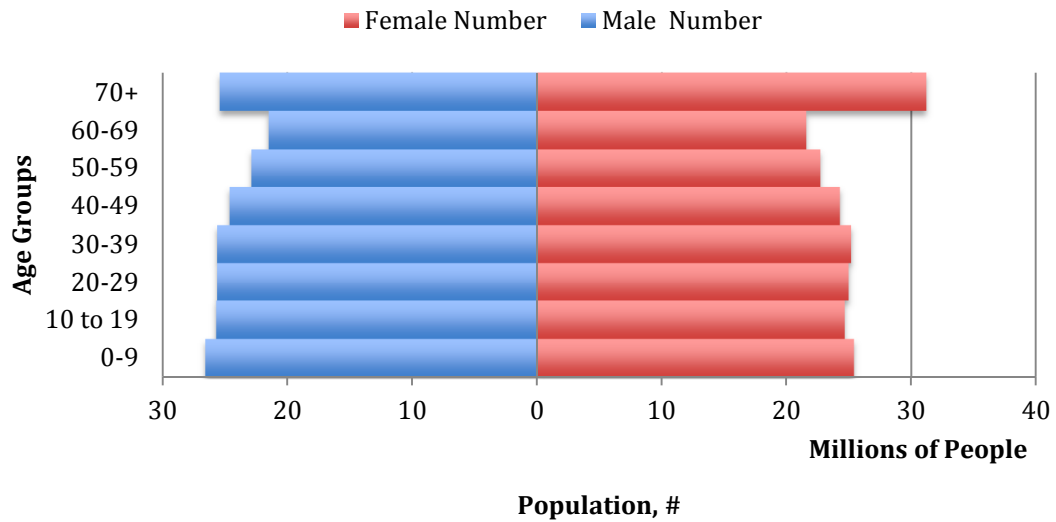
## Social Graphs



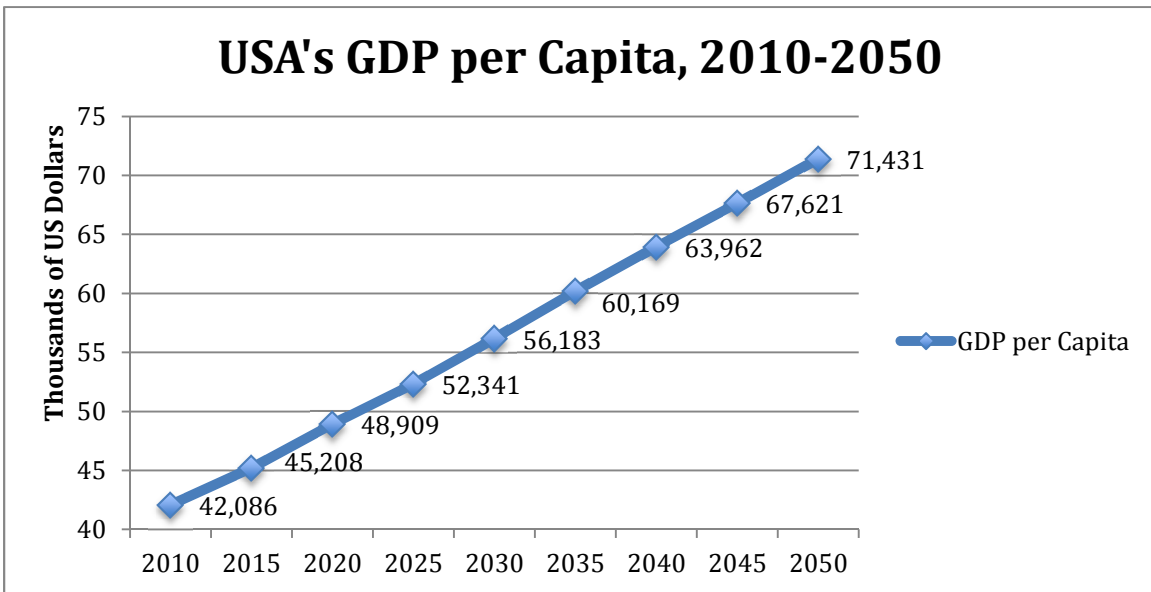
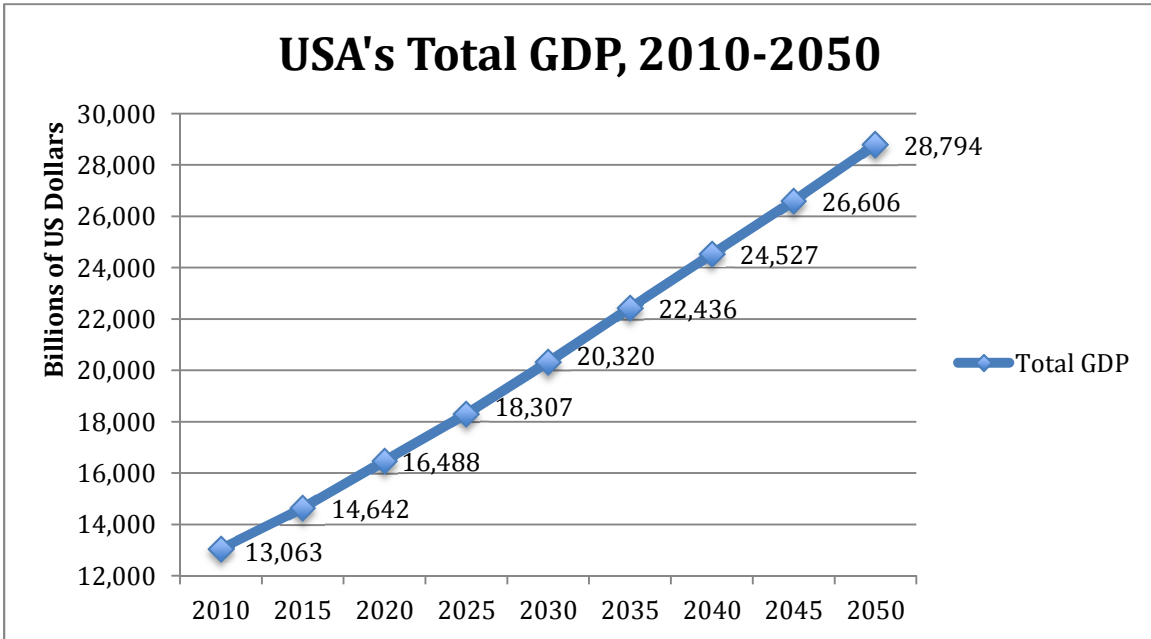
## USA Population Pyramid, 2030



## USA Population Pyramid, 2050



## Economic Graphs





## Europe

Europe, like Japan, is a former economic world power. In this study, the term “Europe” will be used to refer to the data section of Euro Area (15 Countries). This data section is the most sufficient data for Europe. Surprisingly, finding concurrent population statistics for Europe is a real challenge. The source for these statistics comes from the Organisation for Economic Co-Operation and Development, OECD, database. It uses only 15 countries out of Europe, not the Eurozone. The 15 countries include: Belgium, Germany, Greece, Ireland, Spain, France, Italy, Cyprus, Malta, Luxembourg, Netherlands, Austria, Portugal, Slovenia, and Finland (OECD). The social and economic factors and situations that are occurring and will occur within this list of countries can be related to the entirety of the Europe region. Therefore, the focus on the concentrated list will help predict the future projections for all of Europe. The future projections for Europe are not as bleak as Japan, but still Europe is losing strength as an economic world leader. Like Japan, Europe is experiencing a large, comfortable middle class with a lower fertility rate, a lack of sustainability in the population, a large elderly dependency within the total population, and a sluggish GDP. These social and economic problems have led and will lead Europe to lose strength and their position as a global power. Still, Europe has a chance to regain strength and their position as a world power in a multipolar economic world if there can be resolution to the social and economic conflicts it faces.

### Social Components

First, the observed social factors of Europe need to be examined. Presently, Europe’s fertility rate is lower than the Sustainable Fertility Rate of 2.1. Europe’s fertility rate is 1.59 (The World Factbook). With this lower fertility rate, Europe is unable to replenish its native-born workforce. Like Japan, Europe is experiencing the consequences of a large, comfortable middle class. This middle class also stems from the WWII era. And like Japan, the middle class experienced great prosperity that led to high standards of living and lifestyle shifts. More emphasis was placed on education, becoming self-sufficient, and starting families later in life. That is how the middle class of Europe became very comfortable and resulted in low fertility rates.

Consequently, there is a large elderly dependency on a much smaller youthful proportion in the total population of Europe. This can be observed in the population pyramids in the social graphs below. The elderly dependency adds to the economic stress that the smaller, youthful workforce is facing. The economic stress leads to a slower and less productive GDP. Overall, more money will be spent with smaller GDP being produced and standards of living will be adversely affected. The smaller workforce does not only affect the region economically, but there are also social and cultural conflicts that arise with the necessity of immigration.

Once again, like Japan, Europe is faced with the necessity of immigration. With the low fertility rate, Europe is unable to self-sustain its workforce. Yet with the emphasis on education, only Europeans are filling the higher qualified occupations. Thus, the immigrants are coming by the masses to fill the less desirable

jobs. This can easily be viewed by the various ethnicities found in the urban centers throughout Europe. To the immigrants, going to Europe and becoming employed there is advancement. But like Japan, Europe is also facing cultural conflicts due to the various cultures that the multitudes of immigrants are bringing to the area. These conflicts will only worsen if the necessity of immigration remains and the immigrant population continues to increase.

Europe is a former world power. It is safe to say that Europe is following Japan's misguided footsteps. Europe is second, following Japan, in loss of global power from its former position. The low fertility rate and high elderly dependency rate leads to social, cultural, and economical problems. Immigration is necessary for the workforce, which, in itself, brings more conflict to the people. Slower and less GDP means less global power. Still, Europe can make strides to better itself in the multipolar economic world. If resolutions for the social problems can be applied, Europe has the capability of being a world power in a multipolar economic world.

### **Economic Components**

Europe is a former power that has fallen from its once powerful position, but still not quite as far as Japan. This fall from power was examined with the social components in the section above. It is unable to sustain its native working class with its low fertility rate. But like China, Europe will experience a unique situation with the combination of a peaking and declining total population and an increase in both total GDP and GDP per capita in 2040. Still, Europe will remain surpassed by Japan and the United States in GDP per capita. But Europe will be superior to Japan in the total GDP projections. These comparisons can be viewed in the economic graphs below. Therefore, it is evident that Europe has not fallen and will not fall as far as Japan will in the future.

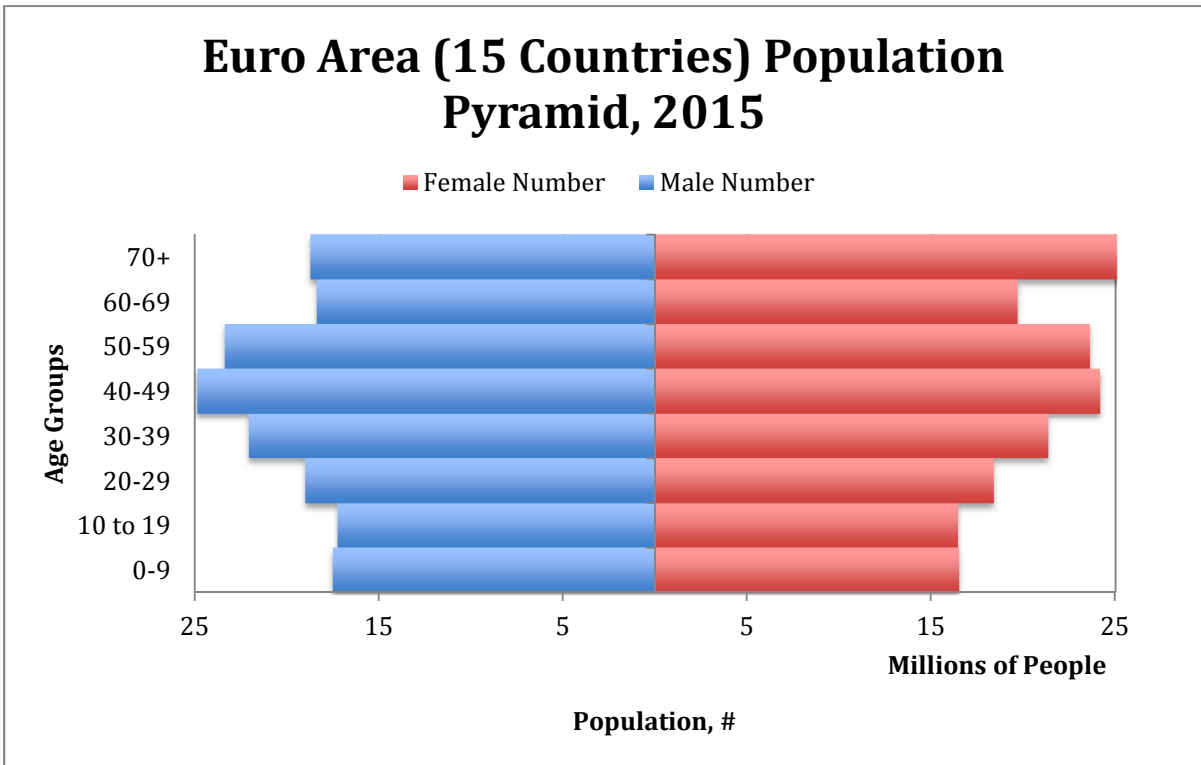
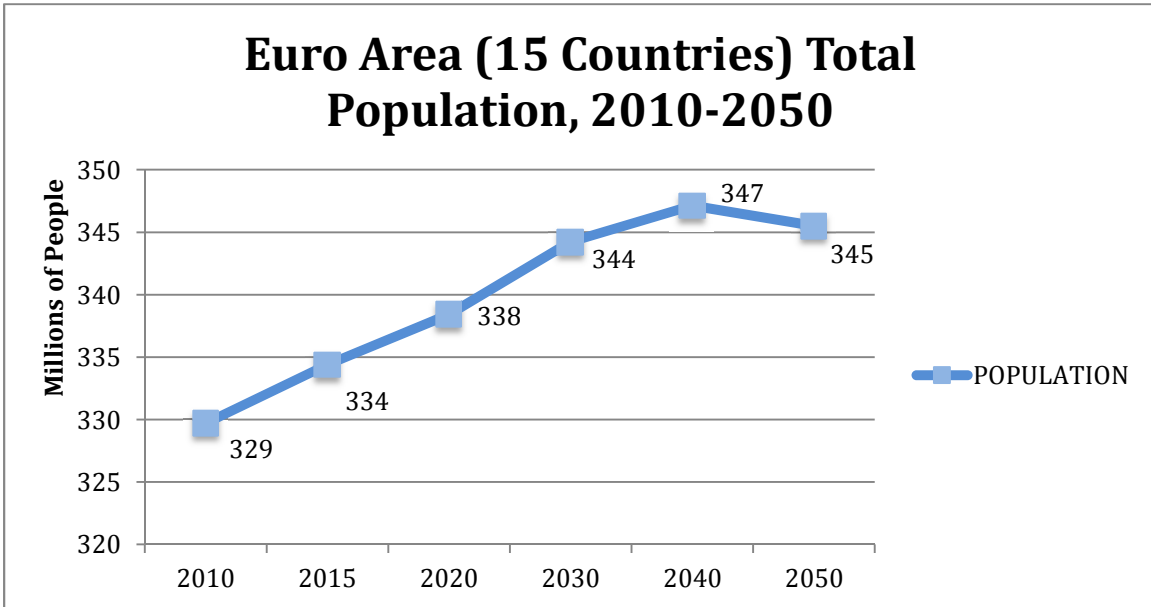
Europe's total GDP will continue to increase slowly. Currently the total GDP for Europe is between \$9,852 and \$10,213 billions of US dollars. As seen in the total GDP graph in economic graphs below, the rate of change is steady but not excessive. This might be due to the recent economic hardships faced by many of the countries included in the economic entity Euro Area (15 Countries). Also, the large elderly dependency on the working class might affect the rate of increase for total GDP. In 2040, Europe will reach its total population peak and decline. Yet as viewed in the economic graphs, the total GDP will continue to increase. This familiar occurrence, yet very unique according to economic theories, happens to China but much earlier in the year 2025. Also, Europe's projected total GDP will remain higher than Japan's projected total GDP. A slow but steady rate of increase for total GDP will allow for Europe to maintain some economic strength in a multipolar economic world.

Another contributing factor to Europe's fall from economic power is its slow increase in GDP per capita. Currently, Europe's GDP per capita is between \$29,883 and \$30,543 of US dollars. These measurements are very comparable and close to the measurements for Japan. Yet, Europe will never surpass Japan's GDP per capita in the future projections of this examination. This most likely occurs due to the larger population that Europe will have compared to Japan's future total population. In 2050, Europe will have 345,512,654 people to Japan's total population of 108,546,623. This can be viewed in the economic graphs below. It is easier to have a

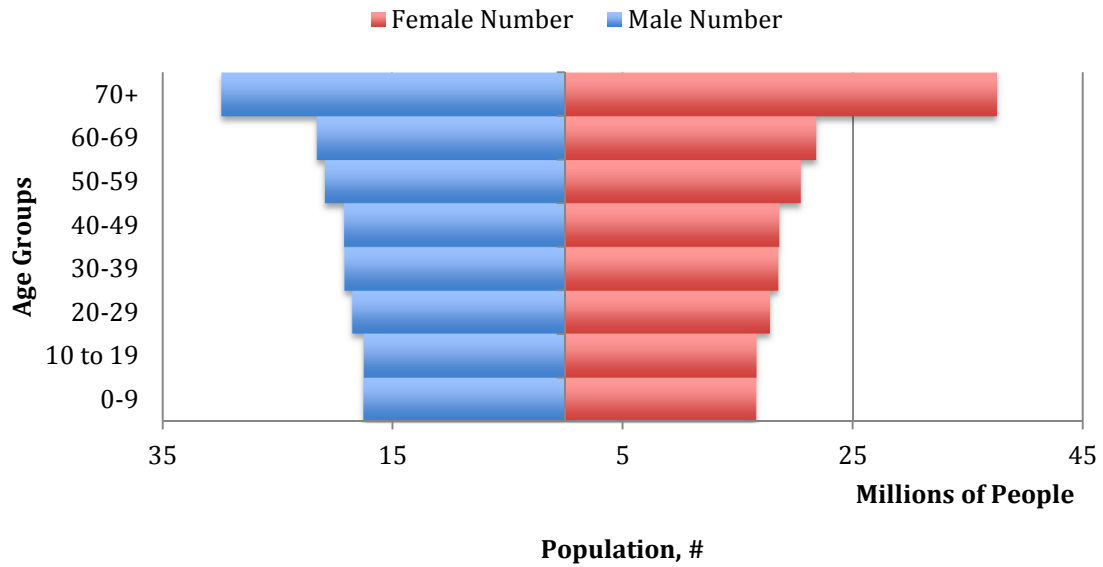
higher GDP per capita when there are less people as in Japan's case against Europe. Still, a lower GDP per capita is a sign of a loss in economic power.

Overall, Europe will be faced with a unique situation like China. It will face a total population peak and decline in 2040, but it will continue to see a slow and steady increase in total GDP and GDP per capita even with the total population peak and decline. It will remain more globally powerful than Japan, but also fall short of the other economic entities in this examination. The higher GDP per capita, even with a somewhat large population, throughout the projections show that a higher standard of living will remain. Europe will have to face the obstacle of an aging workforce and large elderly dependency proportion with a smaller, active workforce. Even with this obstacle, Europe will be able to maintain some economic strength and contend for being a world power in a multipolar economic world.

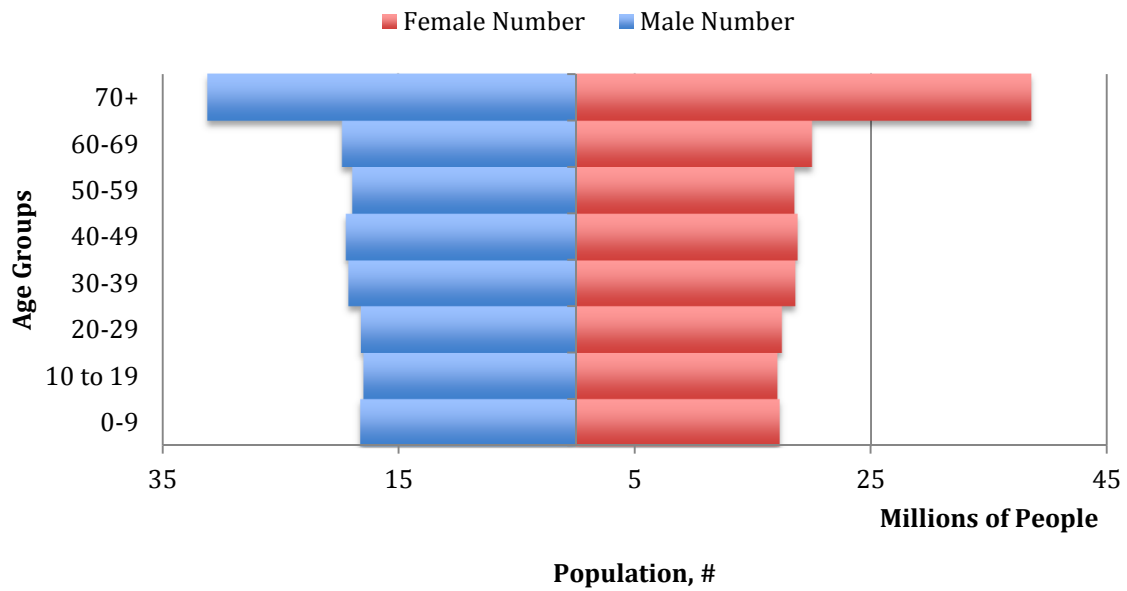
**Social Graphs**



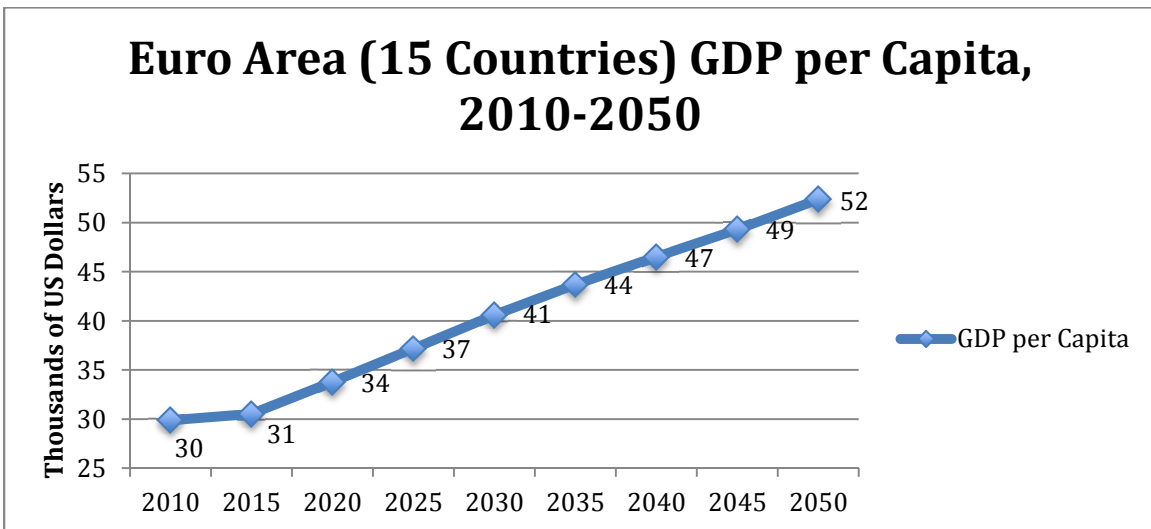
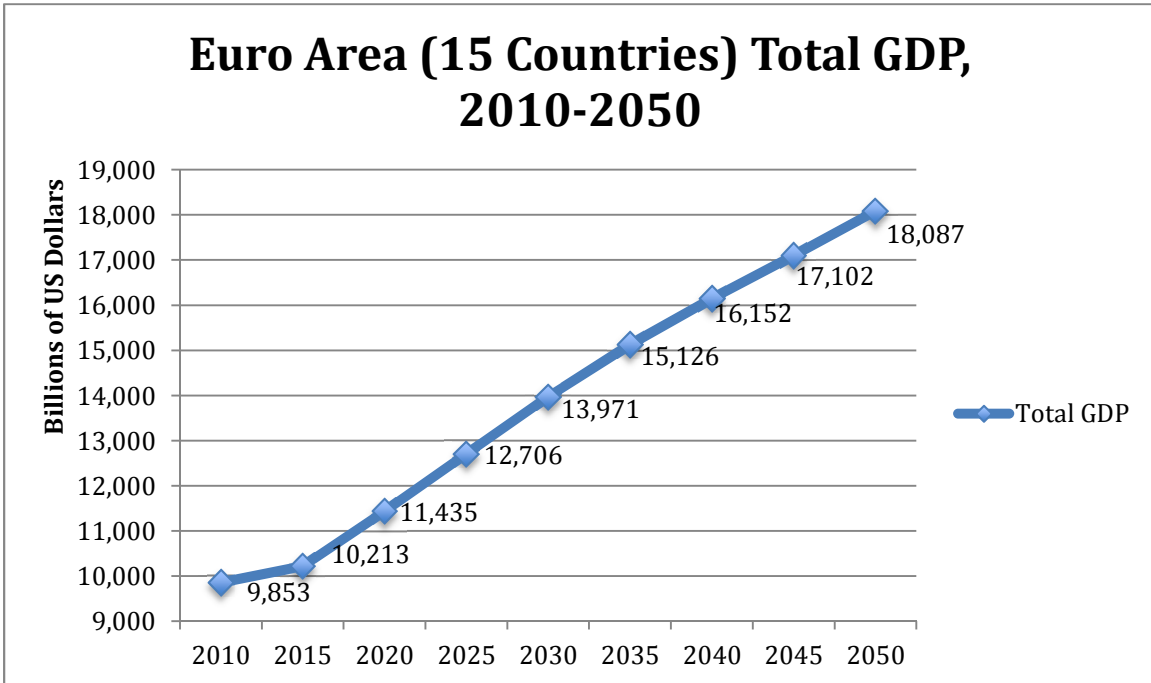
## Euro Area (15 Countries) Population Pyramid, 2040



## Euro Area (15 Countries) Population Pyramid, 2050



**Economic Graphs**



## Japan

Japan is a former bipolar economic world leader. It is also the country out of the former world powers that has fallen the farthest from its prime. After WWII, Japan became a world leader with aid from the United States. Japan fueled their growing economy and nation with industry. Japan grew so quickly that by the middle of the 20<sup>th</sup> century, it was competing globally with the United States and Europe. The living standards and demographics of Japan also began to become similar to the United States and Europe. The middle class was large and established. The middle class was also becoming comfortable with their lifestyles. When this occurs, the fertility rate of the country begins to decrease and sustainability weakens. When sustainability weakens, the country also begins to face GDP decline. This is what has happened to Japan. The combination of having a large and comfortable middle class, a larger proportion of elderly people to the younger workforce, and the resulting sluggish total GDP have taken Japan out of contention for being the world economic leader that it once was. Still, Japan will retain its position as a world power in a multipolar economic world if it can find a solution for the overwhelming social dependency problem and the economic struggle with a sluggish total GDP.

### Social Components

First, the observed social factors of Japan need to be examined. Presently, Japan's fertility rate is well under the Sustainable Fertility Rate. Japan's fertility rate is 1.39 (The World Factbook). This is well below the 2.1 Sustainable Fertility Rate. The low fertility rate stems from Japan's large, comfortable middle class. The formation of this middle class originates after WWII. As time passed, the middle class grew larger and increased its standards of living. Sanitation, education, salaries, vacations, and overall lifestyles shifted and improved. Access to sanitation facilities and clean drinking water is 100% for all of Japan. Literacy is 99% for all of Japan. School life lasts on average 15 years for Japanese women with males attending, 16 total years, (The World Factbook). Child bearing age for the masses becomes later, and families began to only have one child instead of multiple. The mean for mother's first-born child is 29.4 years old (The World Factbook). This comfort in their lifestyles led to the low fertility rate and the lack of self-sustainability in the workforce.

This means that Japan is unable to replenish its workforce with native-born workers. Japan must rely on immigrants to fill jobs. These jobs are mainly the less desired occupations, because the Japanese are still very focused on highly paid and high status careers. Therefore, within the workforce, the Japanese are at the top of the ladder and the numerous immigrants fill the lower rungs.

In continuation, this large middle class is aging. It has a smaller youthful proportion following it. The dependency level that is created by this situation is quite large. The proportion comparison of old to young can be seen in the population pyramids in the social graphs below. The dependency and smaller native-born workforce leads to more problems socially and economically.

Japan is facing a cultural shift with the significant amount of immigrants filling the empty job slots. Immigration levels are high. These immigrants, mainly Pacific islanders, are bringing their cultures with them. Cultural conflicts arise. Critically, Japan is an island and can only contain and sustain a finite number of people. Therefore, the actual size of Japan is slowing the cultural shift due to the influx of immigrants. Only so many immigrants can live in Japan when the native-born population continues to live there as well.

Also, Japan is facing economic problems due to its demographics and high level of elderly dependency. The smaller workforce means that the overall GDP for Japan will be smaller and slower to increase over time. The heavy elderly dependency means more economical hardships placed on the families in the workforce age groups. Overall, more money will be spent with smaller GDP being produced and standards of living will be poorly effected.

Japan is the former world power that is in the furthest decline from its former position. The low fertility rate and high elderly dependency rate leads to social, cultural, and economical problems. Immigration is necessary for the workforce, which, in itself, brings more conflict to the people. Slower and less GDP means less global power. Still, Japan can make strides to better itself in the multipolar economic world. If solutions for the social problems can be applied, Japan has an absolute capability of being a world power in a multipolar economic world.

### **Economic Components**

Japan is facing economic problems due to a large elderly dependency in the population, a smaller total GDP, a smaller GDP per capita, and an unbalance in the three sectors that make up its economy. The large elderly dependency was examined in the social components section above and can be viewed with the population pyramids in the social graphs below. Economically, Japan is being surpassed by many other economic entities. Japan is no longer its former economic stronghold. The United States, China, and India surpass it in total GDP and it is projected to stay this way. Japan will not see an economic decrease in total GDP and GDP per capita, but it will see slower rates of increase. This is partially due to its social components, but also conjugationally due to the way its economy is built.

Japan's economy is based upon three sectors: agriculture, industry, and services. In the total labor force occupation and contribution to total GDP, the service sector is the largest. The service sector employs 69.8% of the total labor force with industry at 26.2% and agriculture at 3.9%. Likewise, the service sector contributes 72.5% of total GDP with industry at 26.3% and agriculture at 1.1% (The World Factbook). This lop-sided economy has caused strengths and weaknesses. In the present global economy, the service sector has allowed Japan to retain economic strength nationally and globally. On the other hand, the lack of industry and agriculture has contributed to the necessity of imports, which can harm the strength of the overall economy. The fact that Japan is an island can also contribute to the necessity of imports, especially for food, just because of this lack of land. Also, Japan is experiencing a very low GDP real growth rate of 2% (The World Factbook). This is the lowest amongst the economic entities in this examination. This leads to the loss



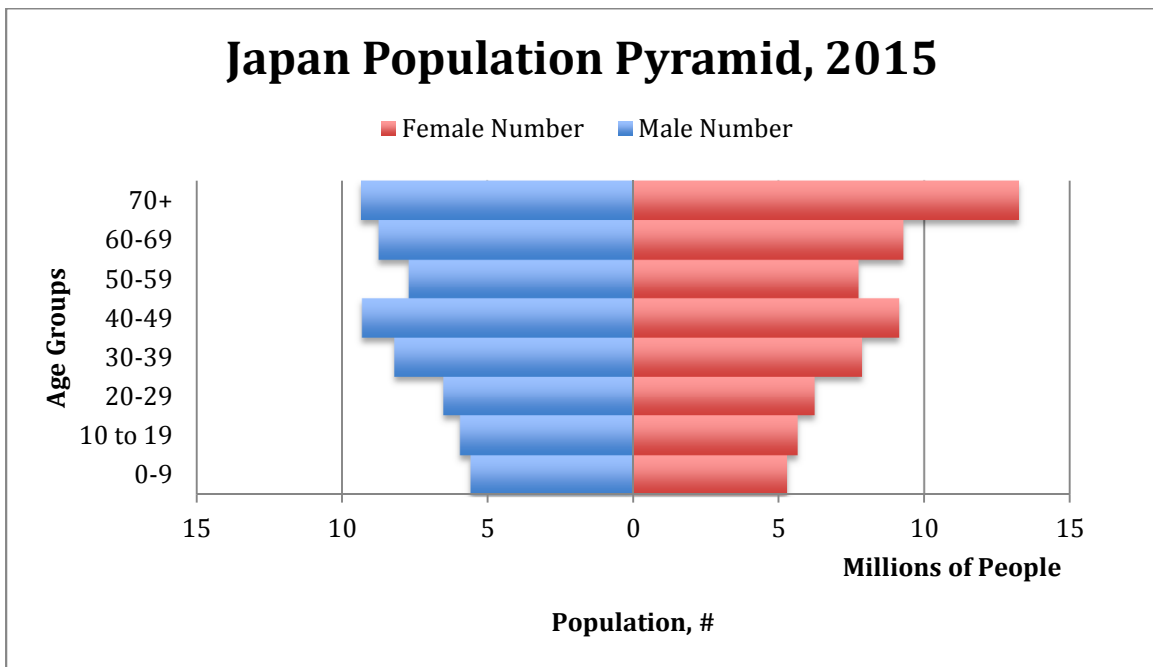
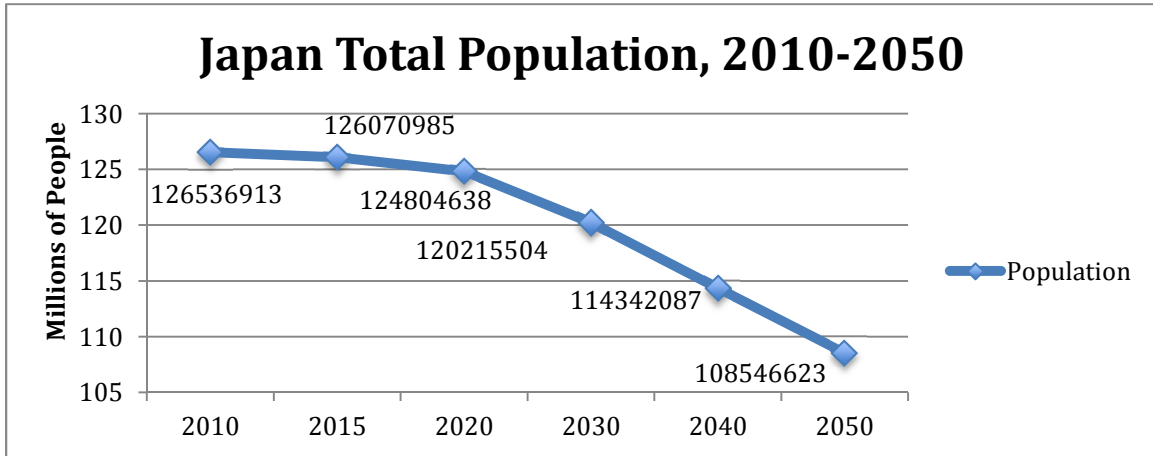
of global power in total GDP for Japan. Like stated above, Japan has fallen to the fifth spot of total GDP in the world, according to the CIA (The World Factbook).

As seen in the total GDP line graph in the economic graphs below, Japan's current total GDP is between \$3,954 and \$4,161 billions of US dollars. Only India's 2010 total GDP measurement is lower, but still has a higher 2015 total GDP measurement. This means that Japan will be completely surpassed even by the European countries selected for this examination, which do not make up the European Union. Japan will continue to see total GDP increases, but there will be none that will surpass the other multipolar economic world contenders.

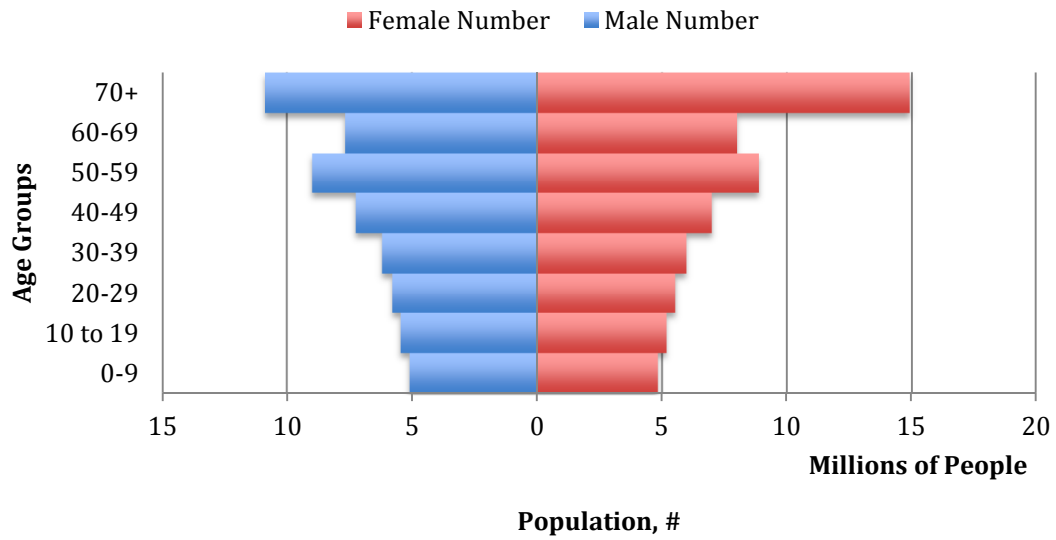
Another contributing factor to Japan's loss of economic power and projected slow economic growth is the slow increase in GDP per capita mixed with the high dependency placed on the future workforce by the elderly. Currently, the GDP per capita in Japan is between \$31,254 and \$33,007 of US dollars. This can be found in the economic graphs below. This is a number that is more easily comparable than most. This is an average GDP per capita found in former bipolar economic world powers. There will also be a slow but steady increase in the future for Japan, as projected on the graphs in the data section. However, combine the slow increase in GDP per capita with the large dependency placed upon the working class by the large proportion of elderly and the result is economically weak for the future working class generations. On the whole, more income will be spent just to adhere to new responsibilities. The working class will have to cover themselves, any new family, and any older or retired family members. This will make an economic hardship that may lead to other social and economic conflicts for Japan.

As projected in the social and economic graphs in the data section, Japan will face daunting obstacles to remain powerful in a multipolar economic world. First, it must overcome the social weakness of having a low fertility rate compared to the Sustainable Fertility Rate. Next, it must find a way to economically meet the needs of the large elderly dependency proportion. Then, it must find a way to keep GDP high with a declining total population. It must do this with the combination of a slowly increasing total GDP and GDP per capita. Finally, it must find balance within its labor force sectors in order to find new strength. Japan will continue to be strong economically, as projected by the graphs in the data section. Yet, Japan still has many obstacles and conflicts that it must overcome in order to remain a contender in the multipolar economic world.

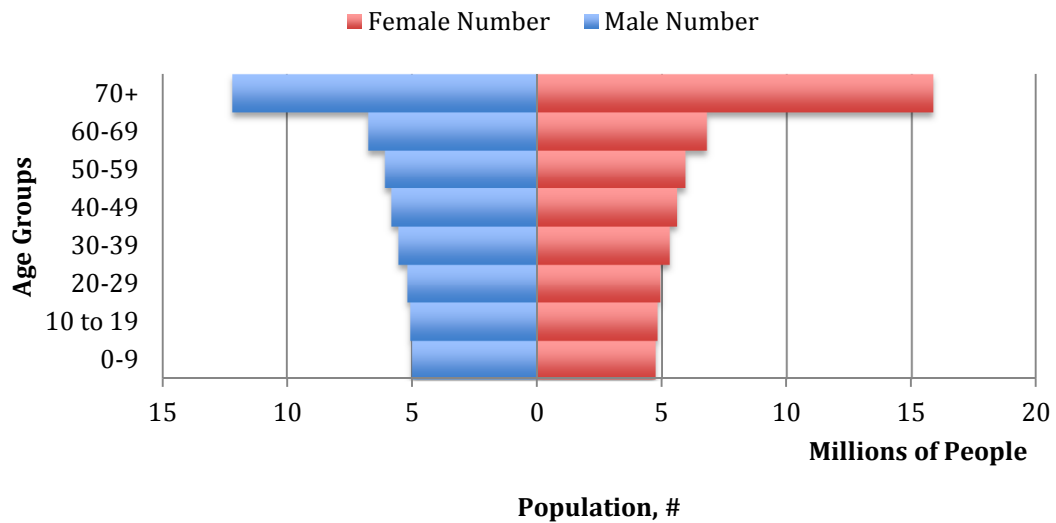
## Social Graphs



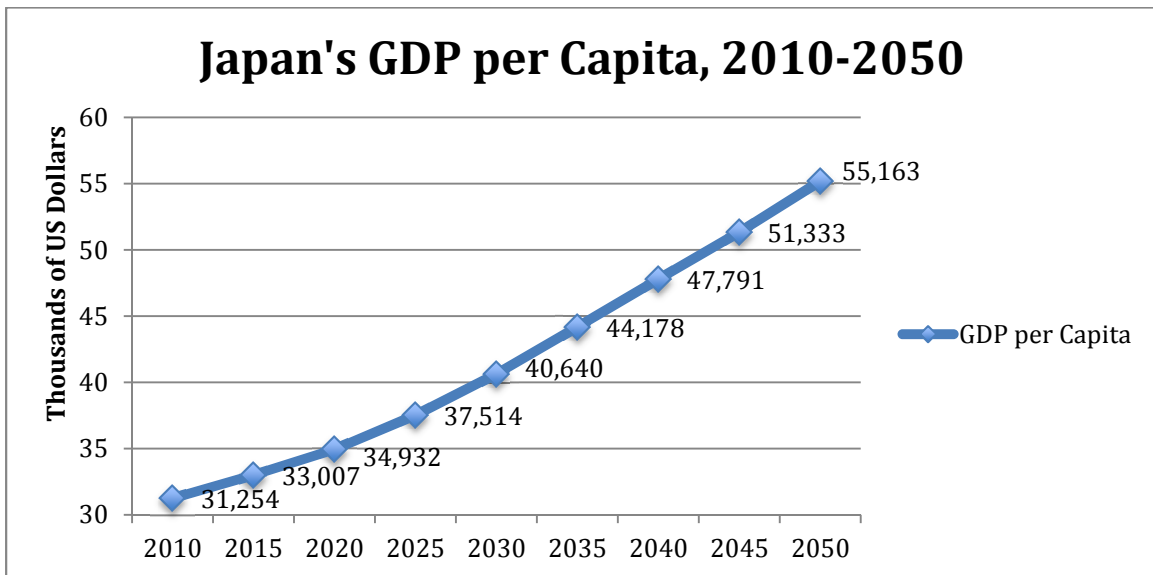
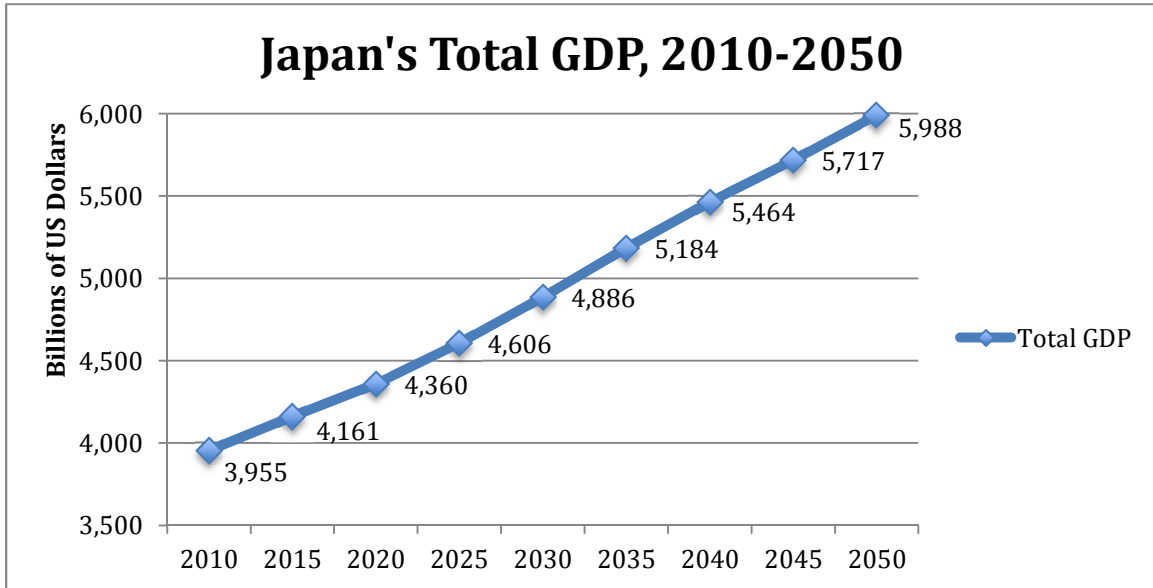
## Japan Population Pyramid, 2030



## Japan Population Pyramid, 2050



## Economic Graphs



## China

China is the most likely new leading global power. It will be a leader in the multipolar economic world. India is near it only in total population. China exhibits the necessary social factors for growth that will lead it to become a world leader: fertility rate, large proportion of youth compared to elderly, strong business sectors, and increase standards of living. China also exhibits the necessary economic factors for becoming a world power: GDP per capita increase, overall GDP growth, and the creation and growth of a middle class. The combination of social and economic factors allow for China to become a likely new global and multipolar economic power.

### Social Components

First, the observed social factors of China differ slightly from the understood necessities of becoming a world power. The slight difference or exception from the standard social factors of a growing world power arises in China's fertility rate. In order for a country or region to become a world power, this study has shown that the country or region must have a fertility rate higher than the Sustainable Fertility Rate of 2.1. China differs in this. China's fertility rate is lower than 2.1 and is actually 1.55 (The World Factbook). Keep in mind that China has the largest population in the world. So how and why does this work? China has had a limit on how many children a family could have until recently. Legally, families could only have two children. Also, China's large population has been able to self-sustain just by its sheer volume in the workforce. Currently, China's large youth proportion fulfills the workforce needs. With the combination of the government's rule about the number of children and the country's massive population, China has been able to overcome the global power creation necessity to exceed the Sustainable Fertility Rate.

On the other hand, this self-sustainment will not last for long. As the study and the charts show in the social graphs below, China will reach a peak in total population and have a large proportion of elderly compared to youth. It is predicted that China will hit the peak of their total population in 2025. At this time, there will also be an age demographic shift of more elderly population dependency on a smaller proportion of working age population. China's overwhelming size and the aging of the present working force will be two causes for China's peak and decline in overall population.

Also, another hindrance for China's population growth might result from the cultural preference for males. Like India, China's culture is focused on male heirs. Thus, China faces the same problem of reproduction of future generations as India does due to having too many males and not enough females. The population pyramids in the social graphs below show this lop-sided ratio between the genders. This disproportion could be another cause for China's peak and decline in overall population in the future decades.

Continuing with the necessary social factors, China is experiencing a period of urbanization while keeping a large sector agricultural. China's urbanization rate is 2.85%. Meanwhile, the proportion of people living in the agricultural areas is

49.3% of the total population (The World Factbook). This is nearly half of all Chinese that live within the rural and agricultural areas. This allows for the country to continue its increase in total population. Food supply is abundant for the large numbers. Also, the agricultural area makes up a large business sector for China. The proportion of agricultural areas to the urban centers is a two-fold advantage: one creates a large food supply for the population and advancement of the urban centers; secondly, it also creates a large and highly profitable business sector for the overall GDP of China.

In company with the urbanization rate and the large agricultural areas, possibly consequently due to both factors, China has experienced an improvement in its standards of living. These improvements are within the sanitation and education areas.

The improvements within the sanitation area pertain to the sanitary facilities access and availability to clean drinking water. China has better access to each in comparison to India. Simply, China has been able to maintain and improve their sanitary facilities and availability to clean drinking water for a longer time period than India.

First, China has a high percentage of improvements for sanitary facilities in both the urban and rural areas. The total improvement is 64%. The urban and rural areas have seen noticeable improvements as with 74% and 56% respectively (The World Factbook). With all of these totals, either for a specific area or the country as a whole, it is clear that over half of the people of China are connected to modern waste disposal technology. Improved sanitary facilities will only benefit China in the future. This is a basic necessity for the population growth in China.

Secondly, the majority of the Chinese people have access to clean drinking water. Overall, 91% of the total population has access to improved drinking water sources. Urban and rural areas have high improvement to drinking water percentages with 98% and 85% respectively (The World Factbook). These high percentages will only aide in the growth of the total population. Clean drinking water improvements will only benefit China in the future. Like the improvements of the sanitary facilities, the improvements to the access of clean drinking water are a basic necessity for the massive population of China and its continuing growth.

Commonly, the education area has shown significant increase. China's students are globally known to have high scores in science and mathematics. The students' success and the advancements in education stem from the literacy percentage and the total school life expectancy number. Literacy is defined as anybody over the age of 15 that can read and write (The World Factbook). The total population that is literate is 95.1%. Of the total male population, the literate percentage is 97.5%, and of the total female population, the literate percentage is 92.7%. With these literacy percentages, the school life expectancy is long. The total population, male population, and female population are 12 years long in their school careers (The World Factbook). The combination of these two areas, literacy percentage and school life years, help show the strong educational background that the Chinese people have. It is another necessary factor that will only benefit China in the future and in its race for the world leader in a multipolar economic world.

On the other hand, China still has obstacles to overcome. Some sanitation within the rural areas still needs improvement. Total sanitation that needs improvement is 36%; urban and rural areas that need improvement are 26% and 44%, respectively (The World Factbook). Also, the other main obstacle for China to overcome is culturally bound. Like India, China has a strong preference for male children. There is a lop-sided proportion for males between the genders in future generations. This can be viewed with the population pyramids in the social graphs below. The difference between the genders is not as great as in India's future projections. Still, the preference for males might lead to reproductive conflicts in future generations. Simply, there are not enough women for all the men. These issues must be addressed in order to better serve the present people of China and prepare for China's future generations.

Even with the obstacles that the country must face, China is a present world power and has all the necessary factors to become a world leader in a multipolar economic world. China's population size, urbanization rate, large and self-sufficient agricultural sector, and improved sanitary and education areas will only strengthen the country. The only concerns arise in the unimproved areas of sanitation and the disproportion between males and females. Still, China is growing exponentially in the social area. This growth will propel it into being a world leader. The second area of necessary factors, economics, only strengthens China's possibility of becoming a world leader in a multipolar economic world.

### **Economic Components**

China has many economic components that are necessary for the prosperity that it is currently experiencing and the projected prosperity that it will experience. These economic components include an increasing GDP per capita and an increasing total GDP. It is uncertain if there will be an actual increase in the size of China's middle class due to the population decline in 2025. Yet as patterns of the bipolar economic world exemplify, GDP growth and GDP per capita growth stem an increase in the size of the middle class. Therefore, there is a strong possibility that China might still experience a slight growth in the middle class even with a decline in total population beginning in 2025. The success of China's economy is partially based upon its large population, but mainly based upon its strength and balance in three sectors: agriculture, industry, and services.

China's economy is built upon three sectors: agriculture, industry, and services. The employment rate in each is almost equally divided among these three sectors. The service and agriculture sectors are larger with 35.7% and 34.8% of the total labor force, respectively. The industry sector makes up 29.5% of the total labor force. Even though the labor force is nearly evenly divided amongst these sectors, the composition of GDP by each sector is not. The industry and service sectors are close in what they contribute to the total GDP of China. The industry sector is the largest GDP contributor with 45.3% of total GDP. The service sector is close with 44.6% of total GDP. Agriculture is very small but makes up the rest with 10.1% of total GDP (The World Factbook). As many consumers know, China makes many products. "Made in China" labels can be found on almost any type of product or good. This is proof of China's massive global influence in the industry sector.

Meanwhile, China is able to control and introduce many new software and technology-based products and goods. Therefore, their service industry is integral for these items along with many other service needs for a population that large and an economy that caters to the world. With the labor force distribution and the global success of two large sectors, industry and services, China is able to sustain a very high GDP real growth rate of 7.8%. China is in the top three of economic entities in the world. It is ranked third by the CIA (The World Factbook). European Union is ranked first; United States is ranked second (The World Factbook).

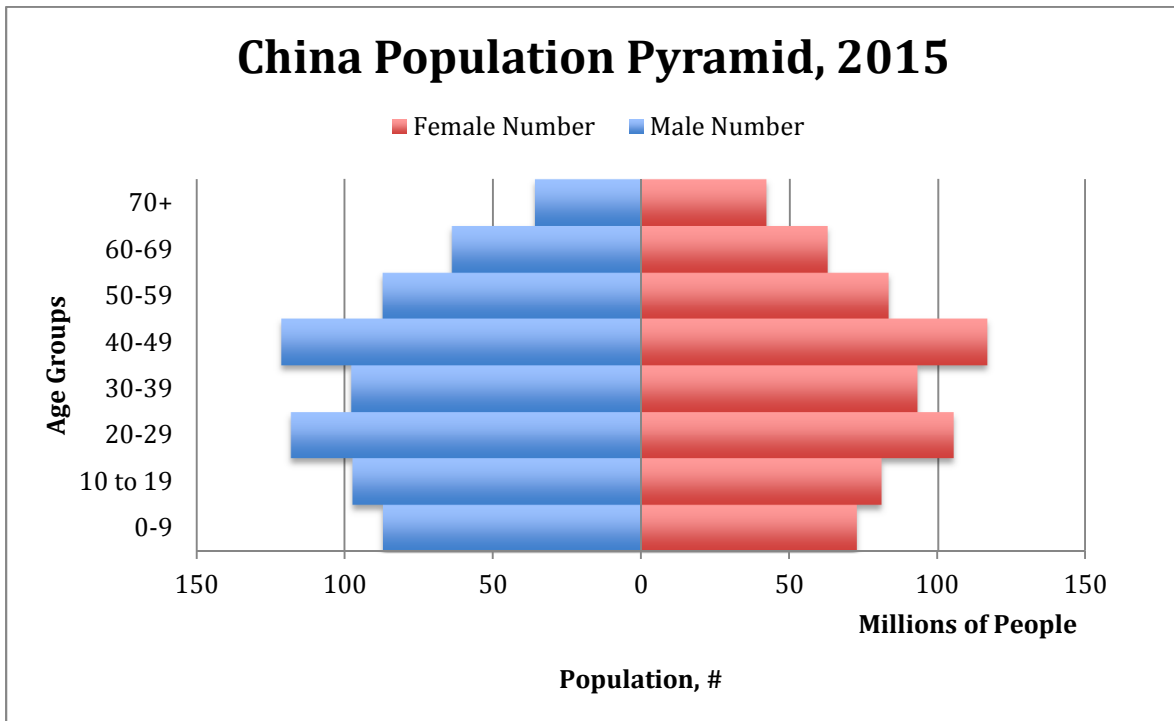
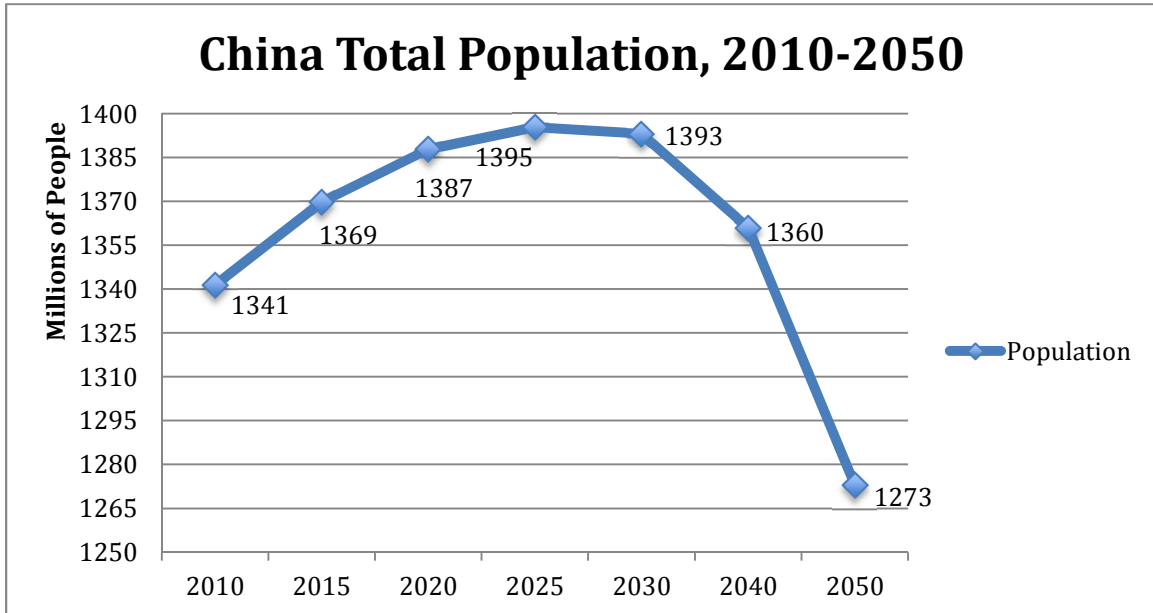
As seen in the total GDP line graph in the economic graphs below, China's current total GDP is between \$9,126 and \$13,623 billions of US dollars. In 2025, China will surpass the United States, which currently has the highest total GDP according to the economic graphs below. China will continue to increase its total GDP, even with the peak and decline of its total population in 2025 and thereafter. If China continues to economically prosper, as projected in the data section, then China will become the leader in the multipolar economic world, even with the odd factor of a declining total population.

Another contributing factor to China's current prosperous economic growth and its projected multipolar economic leadership is the increase in GDP per capita. There is a projection of a constant increase in GDP per capita, which only goes hand in hand with the constant increase in total GDP. Currently, China's GDP per capita is between \$6804 and \$9945 of US dollars. This can be seen in the economic graphs below. This is initially thought of as a low number, but like India, this number is spread out over a very large population. China's total population is even larger than India's total population. Also, China's GDP per capita is larger than India's GDP per capita. Therefore, China is stronger than India. Currently, China's middle class makes up 81.5% of the total population (The World Factbook). This large middle class and the GDP per capita, even though it is to be understood that there is an uneven distribution of wealth amongst the upper, middle, and lower classes, help solidify China as a strong economic force. This productive economic base will provide an influential beginning for a future multipolar economic world leader, even if there is a significant total population decline.

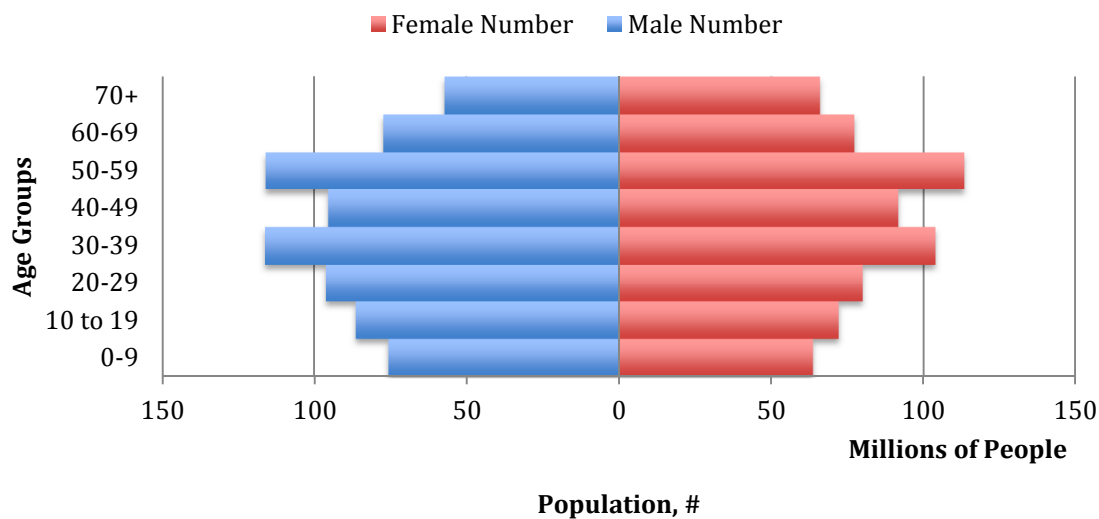
As projected in social and economic graphs below, China is prospering even with its unique social components and future social projections. With its large population, China is able to make up for its low fertility rate compared to the Sustainable Fertility Rate. It is still able to replenish its work force just by its sheer size. In turn, this workforce is able to produce a large GDP that ensures an increasing GDP per capita. This increasing GDP per capita comes full circle back to the population with the possibility of a large middle class remaining after the total population peak and decline in 2025. Possible conflicts that may arise in the future for China are the imbalance between the genders that stems from the cultural preference for male children, the sanitation problems with a quickly urbanizing and large population, the uneven distribution of GDP per capita among the economic classes, and the peak and decline of total population in 2025. Even with these obstacles and possible conflicts, China is in a strong economic position to overcome them. China is on a very direct path to becoming the world leader in a multipolar economic world.



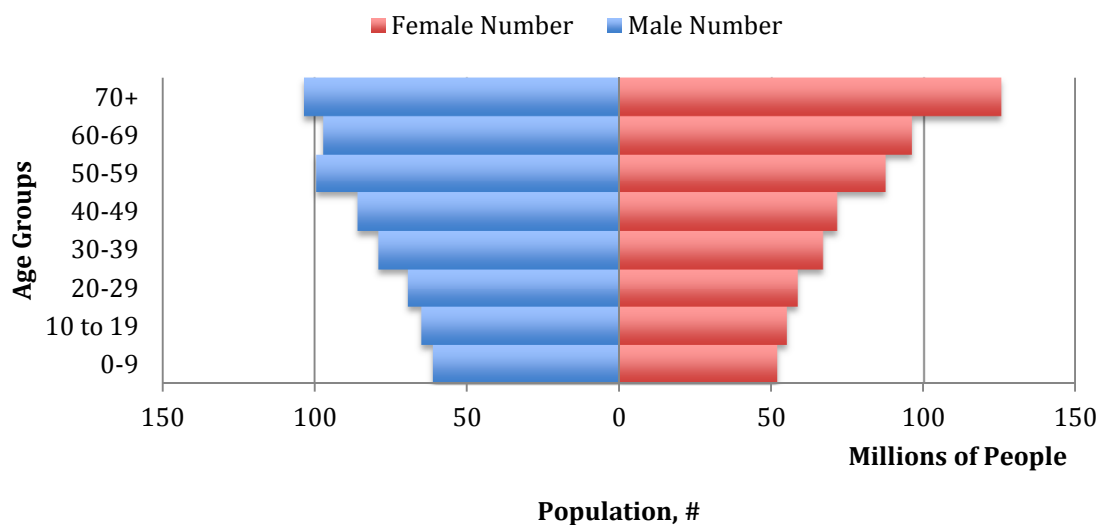
## Social Graphs



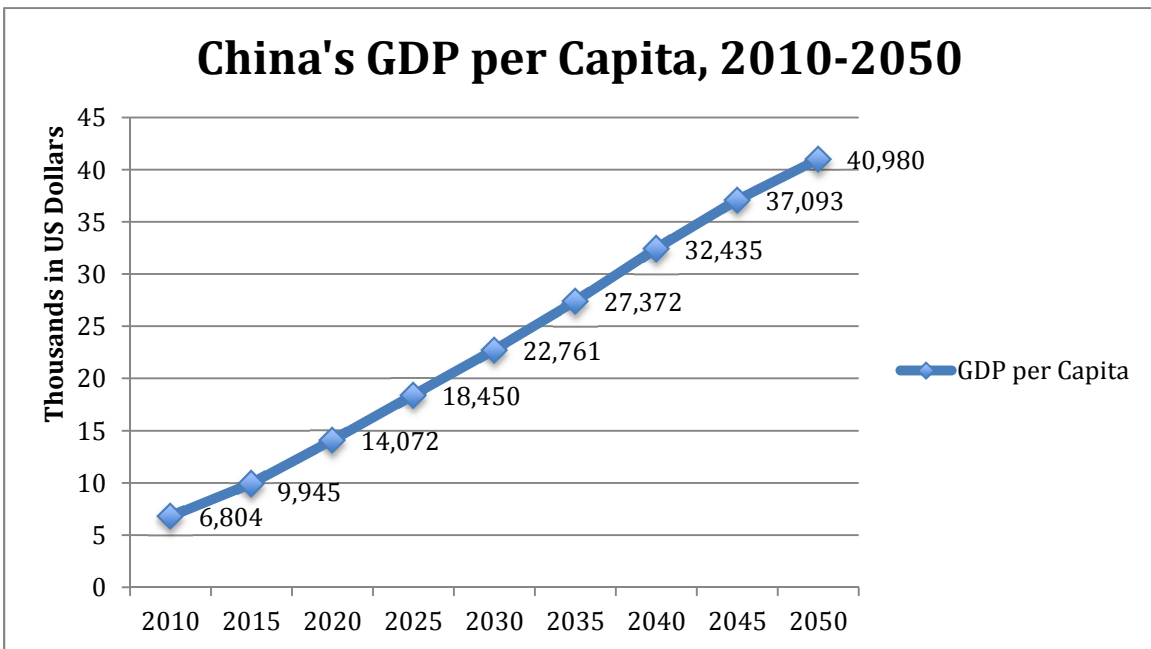
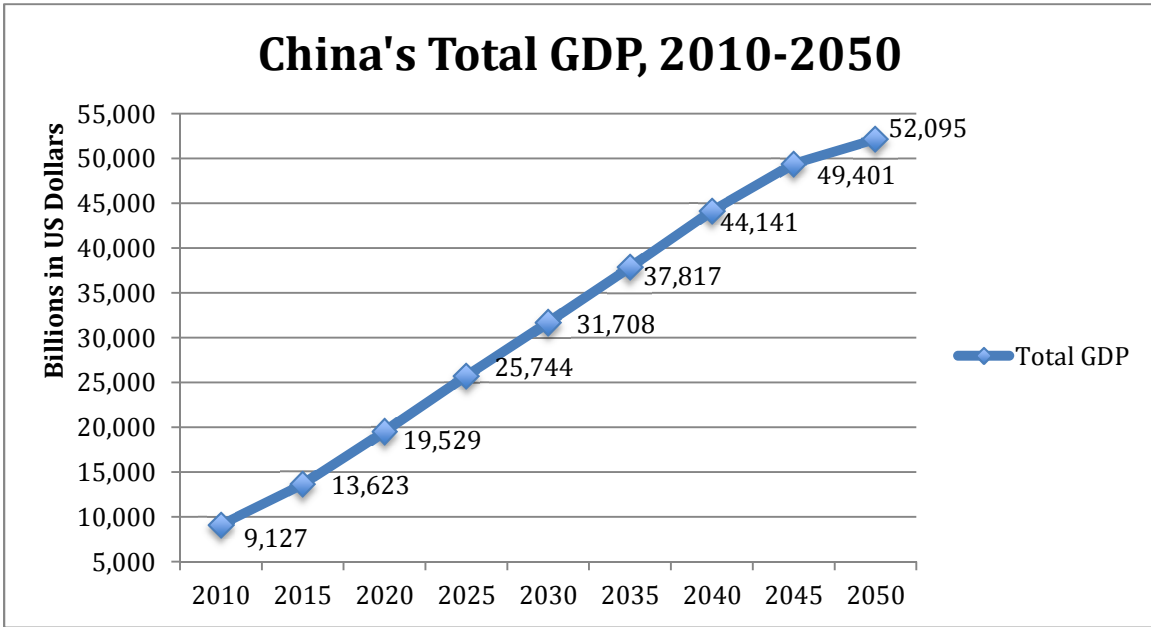
## China Population Pyramid, 2025



## China Population Pyramid, 2050



**Economic Graphs**



## India

India is the second strongest competitor for the shift toward a multipolar economic world. It is only bested by China, who has been growing longer and more quickly than India. India exhibits the necessary social factors for growth that leads it to be a contender for a world leader. The fertility rate, percentage of youth, urbanization, and increasing standards of living are among these social factors. India also exhibits necessary economic factors for world contending growth. These factors include GDP per capita increase, overall GDP growth, and the creation and increase of a middle class. The combination of social and economic factors allow for India to be a strong contender for a global and multipolar power.

### Social Components

First, the social factors need to be observed. The fertility rate of India is higher than the Sustainable Fertility Rate of 2.1. The total fertility rate for India is 2.55(The World Factbook). This means that the native people at procreation age are able to sufficiently produce enough native-born children to sustain their native population and work force. Jobs can be filled without the necessity of immigration. As seen in the population pyramids in the social graphs below, India is able to produce a larger percentage of youth than of the aging demographics. India does not only achieve this once, but continues to do so until 2050. India's overall population, which is the second largest in the world, only continues to increase as shown in the social graphs below as well.

On the other hand, there is one factor within the population that might hinder India's growth in the future. India is successful in replenishing their native-born numbers for the workforce. The proportion of elderly is much smaller compared to the proportions of the working class and youth. Yet, within this large proportion of working age and youth, there are clearly more men to women within the demographics of India. The population pyramids in the social graphs below illustrate this lop-sided proportion between the genders. This proportion is culturally influenced. The Indian culture has a strong emphasis and preference for males. Where there are more males than females, reproduction, especially at constantly high rates, can become a problem. Therefore, if this culturally influenced demographic continues, India might face sustainability and replenishment problems with their native-born population and workforce.

Continuing with the necessary social factors, India is experiencing an urbanization period. The majority of the population is mainly rural. The rural population makes up 68.7% of the total population. Even though this is over half of the population, the urbanization rate is strong and has remained steady. The urbanization rate is 2.47%(The World Factbook). The combination of a large rural sector and steady urbanization rate create a unique situation. The large rural sector allows for a sustainable agricultural sector for the economy and India's people. The increasing population will have an access to a large amount of food. This sustainability through agricultural needs also allows for an increase within the business sectors in the urban centers. The people moving from the rural areas to

the urban centers for jobs and opportunities will also have the benefit of a large food supply. Therefore, the urbanization rate will be sustained due to the larger rural sector within the population.

In the sanitation area, there has been an improvement of sanitary facility access and drinking water. Each is important when the population is increasing at its rapid speed. The sanitary facility access refers to any improvements in human waste disposal technology. The overall increase in this area affects 34% of the total population. In the separation of the urban and rural demographics, the increases are 58% and 23% respectively (The World Factbook). True, the overall increase is not that significant when it is compared to the total population of India. The main focus should be directed to the improvements made in the urban centers. This is extremely crucial to the growth of India when an urbanization movement is underway. Likewise, the improvements to drinking water sources have increased. The total improvement of drinking water is 92%. In the separation of the urban and rural demographics, the improvements are 97% and 90% respectively (The World Factbook). This means that the majority of India's population has access to clean drinking water. This is another basic necessity, as is the large agricultural sector and improved sanitary facilities, which will only benefit India into the future.

Commonly, the education area has shown significant increase. The advancement stems from the literacy percentage and total school life expectancy number. Literacy rate is defined as anybody over the age of 15 that can read and write. The total population that is literate is 62.8%. Of the total male population, the literate percentage is 75.2% and percentage of females is 50.8%. Along with these literacy percentages, school life expectancy has grown. The total years spent in school for the entire population is 11 years. Males match the 11 years while females have 10 years of schooling (The World Factbook). The combination of these two areas, literacy percentage and school life years, help show a highly regarded standard of education in India. It is another necessary factor that will only benefit India in the future and in its goal to being a world power.

On the other hand, India must continue to work to improve their sanitation, health care, education, and cultural conflicts. There are still many unimproved sanitation areas both in the urban and rural demographics. This unimproved sanitation leads to many health care problems. Some of these illnesses are easily linked to poor sanitation. Bacterial diseases, various forms of hepatitis, typhoid fever, malaria, and many other infectious diseases are at a very high risk of contraction. Also, education spending is very low; only about 3.3% of the total GDP is spent on education (The World Factbook). Therefore, the children who will create the future might have outdated technology, poor education environments, and lack of teachers. Finally, there are cultural conflicts, old and new ones, which are at the center of everyday life in India. These must be addressed in order to better serve the present people of India and prepare for the future generations of India.

Even with the obstacles that the country must face, India is on the fast track in becoming a world power. Socially, India has the capability of sustaining its native born population by maintaining a fertility rate above 2.1. This will allow for India to replenish the working force on its own without the need of immigration. The only concern will be the unbalance between males and females when questioning the

continuance of the high fertility rate. India is also facing a high urbanization period that is resulting in improvements of standards of living. These improvements are crucial for the continuing growth of India and its people. The second area of necessary factors, economics, only strengthens the contention for India becoming a multipolar economic world power.

### **Economic Components**

India has many economic components that are necessary for it to be a contender as a multipolar economic world power. These economic components include an increasing GDP per capita, an increasing total GDP, and an increasing middle class size due to higher standards of living. India is experiencing a great economic increase that is partially due to the increase in population. India is also experiencing this great economic increase due to how its economy is built.

India's economy is built upon three sectors: agriculture, industry, and services. Agriculture has the largest employment number with about 53% of the entire labor force. Service and industry sectors follow with 28% and 19% of the total labor force, respectively. Although the agriculture sector employs the most Indians, this sector does not contribute the most to overall GDP. The service sector provides over half of the total GDP. The service sector is 56.5% of total GDP. Industry and agriculture sectors contribute the rest with 26.1% and 17.4%, respectively (The World Factbook). This large service sector has allowed India to prosper in the present-day world economy that is strongly centered on services. Overall, India is experiencing a 6.5% GDP real growth rate. In this examination, India's GDP real growth rate is only bested by China. Continuing, India's high GDP real growth rate has placed India within the top five countries in the world in total GDP. India is ranked 4<sup>th</sup> by the CIA. Only the European Union, United States, and China are higher (The World Factbook).

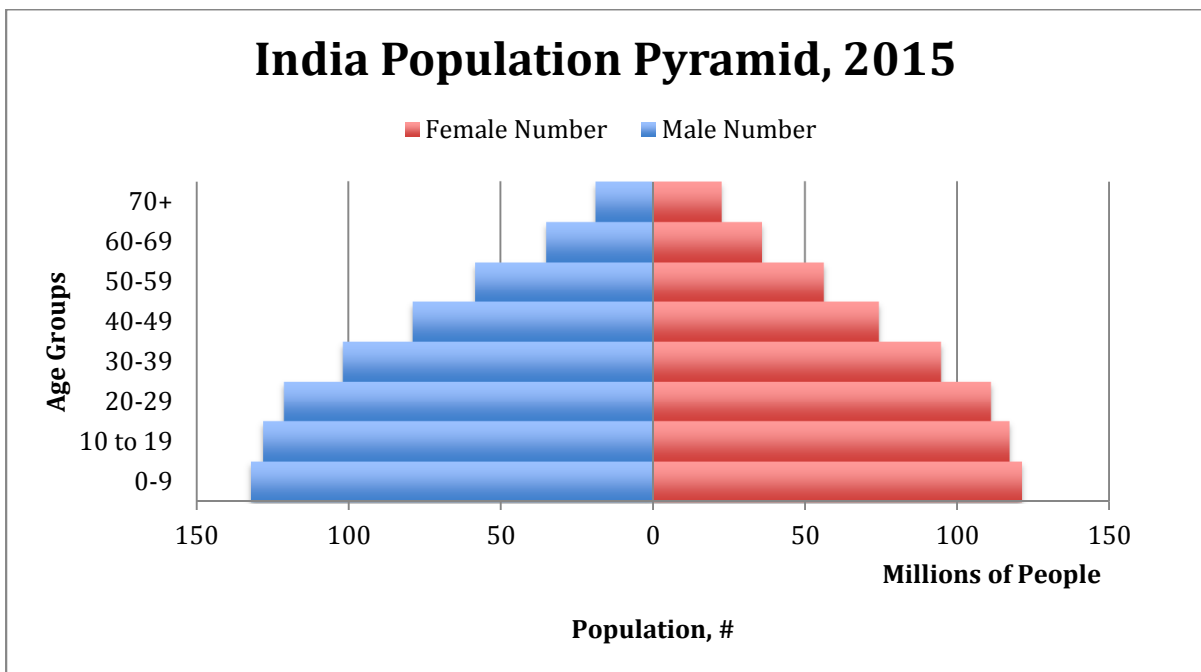
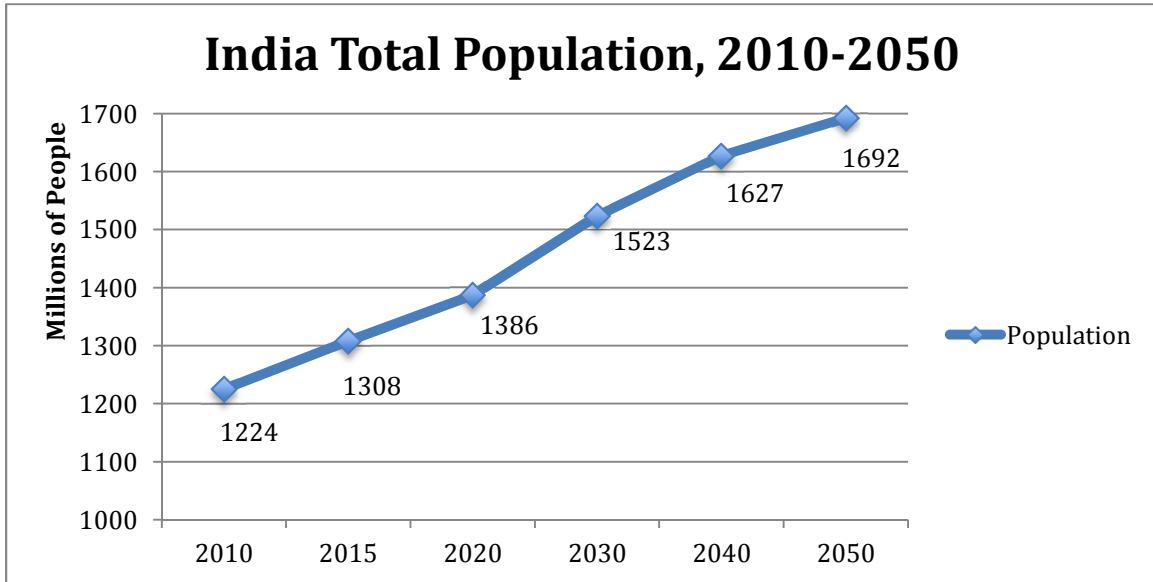
As seen in the total GDP line graph in the economic graphs below, India's current total GDP is between \$3,636 and \$4,885 billions of US dollars. It is projected to easily grow larger than Japan's total GDP in the future. If India continues to prosper economically, as projected in the economic graphs below, then India will become a multipolar economic world power.

Another contributing factor to India's current prosperous economic growth and its projected multipolar economic contention is the increase in GDP per capita that has in turn led to a larger, more powerful middle class. A known factor for the creation and increase in a middle class is growth in GDP per capita. GDP per capita is a standard of living that positively correlates with the economic prosperity of the people and the country. If GDP per capita increases then the prosperity of the people and the country increases. Currently, the GDP per capita in India is between \$2969 and \$3734 of US dollars, as seen in the economic graphs below. This is not very much in most American minds, but keep in mind of how large India's current and projected populations are and will be. Currently, India's total population is more than 3 times the size of the United States. Therefore, this smaller amount of GDP per capita is spread across a much larger population, even though there are uneven economic distributions among the upper class, the middle class, and the lower class as to be expected. Consequentially, India's middle class is growing. Currently,

India's middle class is 65.3% of the total population (The World Factbook). The size of the middle class will only grow as the population increases, the GDP per capita increases, and the overall GDP and power of the country increases.

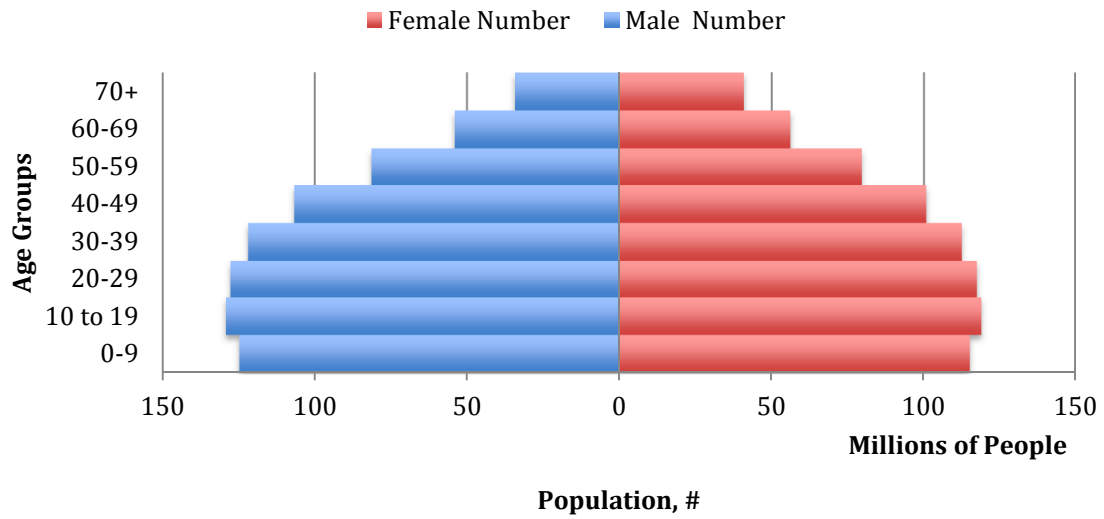
As projected in social and economic graphs below, India is prospering. It is above the Sustainable Fertility Rate and able to replenish its native work force. In turn, this work force is able to produce a large GDP that ensures an increasing GDP per capita. This increasing GDP per capita helps stimulate a growing middle class, which then circles back to the high fertility rate of India. Possible conflicts that may arise in the future for India are the imbalance between the genders that stems from the cultural preference of male heirs, the sanitation problems with a quickly urbanizing and large population, the uneven distribution of GDP per capita among the economic classes, and any overwhelming debts that the country might incur. Even with these obstacles and possible conflicts, India is in a good position to overcome them. India is on a very direct path, according to population and GDP growth, to becoming a contender in the future multipolar economic world.

## Social Graphs

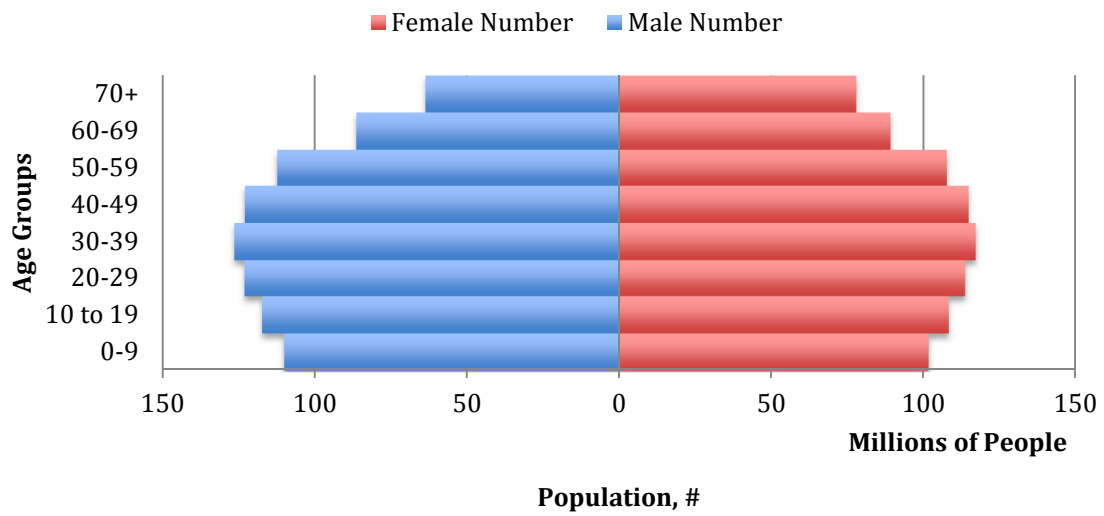




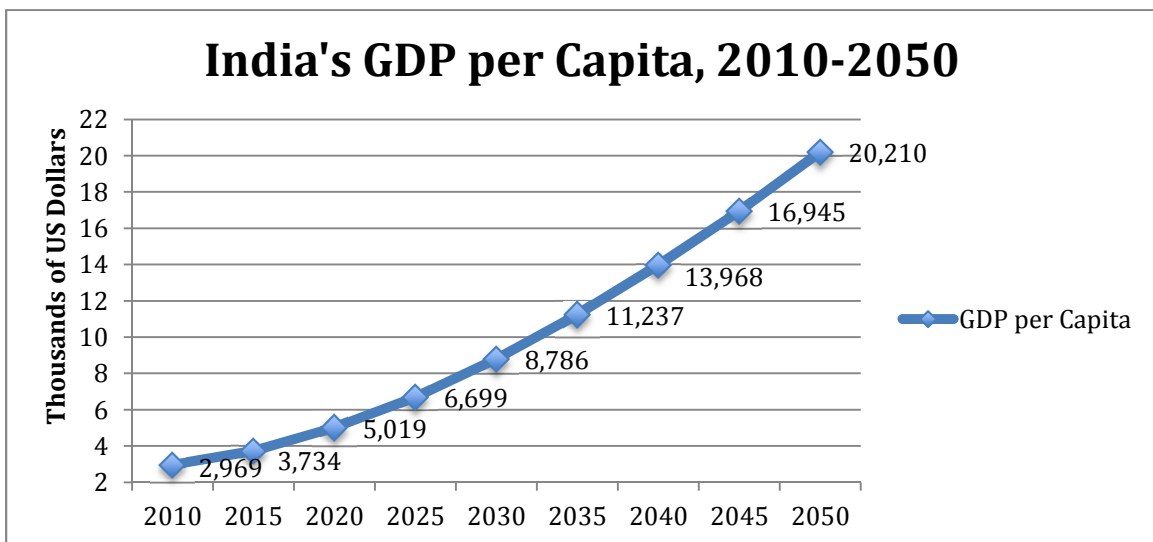
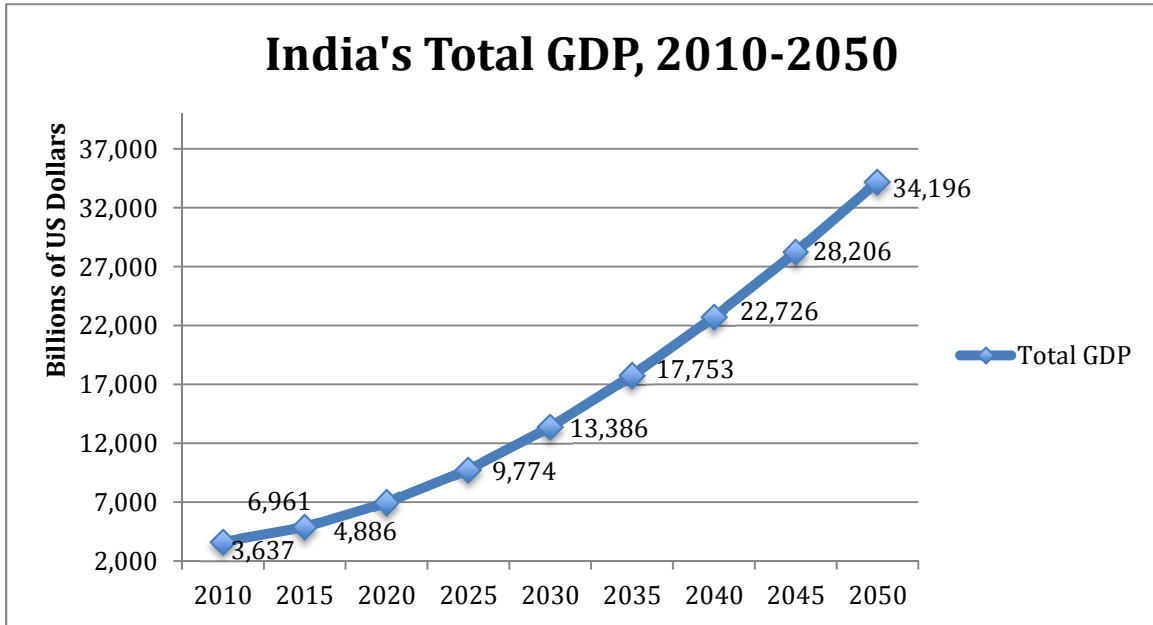
## India Population Pyramid, 2030



## India Population Pyramid, 2050



## Economic Graphs



## **Overall Country or Region Comparisons**

### **Social**

The social overall comparisons are based upon the population pyramids and the total population line graphs that can be found at the end of each economic entity's examinations. The focus is upon the basic observations, not the implementations and possibilities. Those observations can be found in each individual examination section.

#### **Population Pyramids**

First, the observations are based upon the population pyramids. Japan and Europe have weak fertility rates in comparison to the Sustainable Fertility Rate. Japan's fertility rate and population proportions are more severe than Europe in this observation. This results in a smaller, younger native population that is unable to fulfill all places within the workforce. It also causes a large elderly dependency upon the smaller, younger population.

Next, the United States is found between the extremes of falling countries and growing powers. It is slightly below, but very close to the Sustainable Fertility Rate. This means that the population can nearly sustain itself and the workforce. There is only a slightly larger elderly dependency on the younger workforce.

Continuing, India has a high fertility rate well above the Sustainable Fertility Rate. The population can easily sustain itself and the workforce with its high fertility. The only conflict is the cultural preference for males. This might lead to reproduction problems and population self-sustainment issues in the future.

In contrast, China has a fertility rate lower than the Sustainable Fertility Rate but is still able to sustain its workforce. The lower fertility rate is due to government policy. The sustainment is due to the sheer total population size of China. Still, there is a preference for males in this culture that could lead to the same problems as India.

#### **Total Population Line Graphs**

First, the observations are based upon the total population line graphs. Japan is in total population decline. It will go from 126,536,913 people in 2010 to 108,546,623 people in 2050. This can be easily linked to the low fertility rate being unable to sustain the population.

Next, China and Europe will face a peak and decline within the projected years. China will face a peak of 1,395,253,431 people in 2025 and decline to 1,273,005,300 people in 2050. This can be linked to the low fertility rate set by the government finally catching up to the total population, a large number of elderly passing away, or the country reaching maximum resource limits. Likewise, Europe will face a peak and decline in total population. It will reach a peak of 347,127,721 people in 2040 and decline to 345,512,654 people in 2050. This can also be attributed to the low fertility rate or a large amount of elderly people passing away.

Finally, the United States and India will see increases throughout the examined time periods. The United States will see an increase from 310,381,942 people in 2010 to 403,102,552 people in 2050. India will see an increase of 1,224,624,327 people in 2010 to 1,692,034,926 people in 2050. India will have the most people out of the examined countries and region in 2050.

## **Economic**

The economic overall comparisons are based upon the total GDP and GDP per capita line graphs that can be found at the end of each economic entity's examination. The focus is upon the basic observations, not the implementations and possibilities. Those observations can be found in each individual examination section.

### **Total GDP Line Graphs**

First, the observations are based upon the total GDP line graphs. There is one country that is a former bipolar economic world leader that will be surpassed in total GDP. This country is Japan. It will still continue to slowly increase its total GDP from \$3,954 billion in 2010 to \$5,987 billion in 2050. This slow increase in total GDP can be attributed to the low fertility rate and the unbalance of its business sectors.

The next region with the lowest total GDP, but superior to Japan, is Europe. Europe will also have a slow rate of increase in total GDP. It will increase from \$9,852 billion in 2010 to \$18,087 billion in 2050. This slow increase can be attributed to the low fertility rate of the region.

Continuing, the middle ground for total GDP projections is the United States. It will experience a steady increase of total GDP. It will increase from \$13,062 billion in 2010 to \$28,793 billion in 2050. This steady increase can be attributed to the fertility rate of the country that is only slightly less than the Sustainable Fertility Rate. It will be able to sustain the native workforce. Therefore, there will be a more steady increase of total GDP.

Next, there is one country that will see large increases in total GDP that can be attributed to a very high fertility rate. This country is India. The total GDP will increase from \$3,636 billion in 2010 to \$34,195 billion in 2050. India will surpass the United States in total GDP.

Finally, there is one country that will see steady increases in total GDP, but have a low fertility rate that results in a population decline. This country is China. It will see a large total GDP increase from 2010 with \$9,126 billion to \$52,094 billion in 2050. China will have the highest total GDP out of the examined countries and region.

## **GDP per Capita Line Graphs**

First, the observations are based upon the GDP per capita line graphs at the end of each economic entity's examination. Japan will see a slow increase in GDP per capita with a complete total population decrease and slow total GDP increase. The GDP per capita will increase from \$31,254 in 2010 to \$55,163 in 2050. This can be attributed to a declining population and an increasing total GDP. More wealth can be distributed amongst the entire population, even though it is to be understood that there is an unequal distribution among the upper, middle, and lower classes.

China and Europe will be faced with a unique situation of peaking and declining total populations combined with increasing total GDP and GDP per capita. As stated above, each will experience a peak in population and an increasing total GDP. The total population peaks will be 2025 for China and 2040 for Europe. Through these peaks and declines, like Japan's complete population decline, China and Europe will increase GDP per capita. China will drastically increase from \$6,804 in 2010 to \$40,980 in 2050. Europe will increase from \$29,883 in 2010 to \$52,348 in 2050. Each drastic increase can be attributed to the smaller population and increasing total GDP.

Next, there is one country that will have a steady increase in GDP per capita: the United States. The steady increase can be attributed to the steady total GDP increase and the constant, nearly self-sustaining fertility rate. The GDP per capita will increase from \$42,086 in 2010 to \$71,431 in 2050. The United States will continue to have the highest GDP per capita throughout the examined time period.

Finally, India will experience large increase in total GDP and GDP per capita with the combination of a high fertility rate. The GDP per capita will increase from \$2,969 in 2010 to \$20,210 in 2050. This final GDP per capita will also be in combination with the largest total population at in 2050 amongst the examined countries and region.

## **Conclusions**

The created projections are for median outcomes and are therefore preferable to high and low projections. These median outcomes resemble the most likely outcomes and should be used for the analysis. Since these are the most likely outcomes, alternative projections are not necessary for this empirical study.

Throughout this examination, social and economic data has been used to show the shift from a bipolar economic world to a multipolar economic world in the near future. The former world powers are losing economic strength to two new emerging countries, India and China. The former world powers that have lost significant strength are Japan and Europe. The United States falls in between the falling former world powers and the growing new world powers.

The social measurement for these economic entities is the Sustainable Fertility Rate of 2.1. This rate stems from the Zero Percent Growth Movement that is built upon the Demographic-Economic Paradox. The paradox is in contrast to the Malthusian Theory. The Malthusian Theory states that the upper and middle classes will continue to increase the population with a high fertility rate. Therefore, the Demographic-Economic Paradox realizes that this is not the case. The upper and middle classes become comfortable in their high standards of living. The higher standards of living have improved and there is extended education for men and women, with more opportunities for women and a desire to start a family later in life. With these factors, the fertility rate is reduced for the higher income nations. Therefore, the Zero Percent Growth Movement strove to create a fertility rate that could be used globally in order to manage and predict population growth. The result was the Sustainable Fertility Rate. It is defined as the capacity of a population to replenish its workforce with native-born children.

One major advantage that this standard fertility rate allows is the easy comparison of countries. In this examination, each economic entity has been compared against the Sustainable Fertility Rate. The comparison has proven commonalities. The economic entities that have a significant lower fertility rate are also experiencing a lag in total GDP and GDP per capita. This is projected for Japan and Europe. The United States is once again found in between the falling former world powers and the growing new world powers for this comparison. Its fertility rate is slightly less than the Sustainable Fertility Rate. The United States can continue its success as long as it remains near the Sustainable Fertility Rate. Another commonality that was found was that if a country has a high fertility rate, then it is also experiencing a strong increase in total GDP and GDP per capita. This country is India. The only exception to the allocation around the Sustainable Fertility Rate and economic success is China. China is experiencing and is projected to experience a strong increase in total GDP and GDP per capita, but its fertility rate is well below the Sustainable Fertility Rate. The key for this to happen is the pure size of China's total population. It can sustain itself in future projections.

The second major advantage social comparison used in this examination is the creation of population pyramids. Population pyramids show the age groups throughout a population. The population pyramids are also split by genders. In this

graph, the dependency and reproduction conflicts can be examined. The dependency, especially in this examination, is focused on the large proportion of the elderly compared to the workforce. Elderly dependency is significant in any economic entity that is experiencing and predicted to experience economic lag. Japan and Europe are the main two. The United States is in the middle between the falling former world powers and the growing new world powers. The United States have a possible elderly dependency hardship with the aging Baby Boomers. In contrast, the economic entities with a smaller elderly dependency proportion, India and China, will experience more economic growth. Social components are very important throughout this examination, but economic components, total GDP and GDP per capita growth, are necessary to complete the entire picture of the future projections.

The economic measurements throughout this examination are total GDP and GDP per capita. The predictions of each have been used to show the strength that each economic entity will have and whether each economic entity will be able to be a multipolar economic world power. Total GDP has been used to show how select economic entities will surpass former world powers. These select entities are India and China. United States is consistently increasing and stable but will be surpassed by both India and China in total GDP. Japan and Europe will maintain their positions below the United States. Likewise, GDP per capita has been used to show how some select entities will increase their standards of living significantly or slightly. The significant increases have been predicted in India and China. The United States is consistently increasing and stable but not at the same high rate of India and China. The slight increases in standards of living have been predicted in Japan and Europe. These economic measurements have added to the full scope of the predicted future multipolar economic world.

In conclusion, this examination has used social and economic measurements in order to show the shift from a bipolar economic world into a multipolar economic world. It has shown that India and China will come to significant economic world power, the United States will maintain its world power, and Japan and Europe will lose some economic world power but will be able to stay within the realm of world leaders in the future. Presently, the economic world is experiencing a shift. Consequently, the bipolar economic world will come to an end, and a multipolar economic world will reemerge.

## Appendix

This appendix is concerned with the creation of the social and economic graphs used in this examination. The social graphs include the population pyramids and total population line graphs. The economic graphs include the GDP per capita and total GDP line graphs. Each was created specific with Excel for this examination.

The three data sources: Central Intelligence Agency's World Factbook, OECD: Organisation for Economic Co-Operation and Development, and Worldbank's HNP: Health Nutrition and Population are all primary sources required for the study. The CIA is able to give specific numbers in social and economic areas for all economies. The OECD was able to give projected population, total GDP, and GDP per capita for all economies. It also supplied the Euro Area (15 Countries) for Europe. The HNP from the Worldbank gave exact population projections separated by gender and age groups for all economies. All sources can be accessed on the Internet

First, there is one economic entity that must be explained. The Euro Area (15 Countries) is a data examination that can be applicable to the entire European region both socially and economically. The 15 countries include: Belgium, Germany, Greece, Ireland, Spain, France, Italy, Cyprus, Malta, Luxembourg, Netherlands, Austria, Portugal, Slovenia, and Finland. This is not the Eurozone. This number and list for the Euro Area is based off of the list found on the OECD site (OECD).

Next, the social graphs include the population pyramids and total population line graphs. Each population pyramid was created with age groups that are separated by gender. The information to create these population pyramids was found on the HNP site (HNP). Then, each piece of data was compared proportionally to the total population of each economic entity found on the OECD site (OECD). For the Euro Area (15 Countries), each country was found on HNP and added together in order to find the total age groups, which were separated into genders. After the creation of the population pyramids, the total population of each economic entity found on the OECD site could be used for the total population line graphs.

Next, the economic graphs include the GDP per capita and total GDP line graphs. These are set to 2005 US PPP. Since the social graphs were created to be concurrent with the OECD data site, the data for each type of line graph was obtained directly from the OECD site (OECD). Within the OECD data site, the years for each and all graphs could be selected (OECD).



## Works Cited

*HNP Stats*. World Bank. <http://web.worldbank.org/>. Web. 5 June 2013.

“Low Fertility and Sustainability.” *World Watch Magazine*, 17.5 (2004). Web. 5 June 2013.

Malthus, Robert. *An Essay on the Principle of Population*. 6<sup>th</sup> ed. London: John Murray. 1826. Print.

*OECD.StatExtracts*. Organisation for Economic Co-Operation and Development. “Economic Outlook NO. 93- June 2013- Long-Term Baseline Projections.” <http://stats.oecd.org/>. Web. 5 June 2013.

*Population Connection*. <http://www.populationconnection.org/site/PageServer>. Web. 5 June 2013.

*The World Factbook*. Central Intelligence Agency. <https://www.cia.gov/library/publications/the-world-factbook/>. Web. 5 June 2013.