

## A STATISTICAL ANALYSIS OF THE ECONOMY OF ARGENTINA

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### ABSTRACT

In this paper, the authors will try to do an in depth study and analysis of Argentina's economy. Argentina, just like any other country during the last six or seven years, had its own economic meltdown. Recently though, it seems that other economic problems are impacting Argentina. The goal in this paper is to present and discuss the current situation, and if possible to make some projections. To that end the authors are going to present data for about thirty five years, including Gross Domestic Product, Growth Rates, Population, Unemployment and Trade. Based on this the conclusions will be derived.

### HISTORY

It is widely accepted that the history of anyone or any country is very important. It is very important for a country to know where it came from and what it went through, in order to figure where it is going and its future.

Argentina is one of the largest countries of South America, with a population of 43 million. Only Brazil is bigger than Argentina. Argentina has a history that goes back thousands of years,

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and since it is not possible to discuss all of them, only a couple of major events will be discussed and then the timeline that follows will give more historical information.

One of the earliest explorations of Argentina took place in 1516, and that was done by Juan Diaz. As a result, Argentina continued developing and Buenos Aires was established in 1580. All these took place under Spanish control, but finally Argentina declared independence in 1816. During World War I and II, Argentina remained neutral for the most part and the first post war president was Juan Peron. Peron though was very authoritarian, and a coup sent him in exile in 1955.

As mentioned above, a history of thousands of years cannot be covered in a couple of pages, so the timeline that follows, will present the highlights of Argentina's history.

#### ARGENTINA TIMELINE

- 1516 Juan Diaz the first European to enter Argentina
- 1580 Buenos Aires is established
- 1680 Portuguese established a trading post near Buenos Aires
- 1812 Jose de San Martin leads the fight for independence from Spain
- 1816 Argentina declares its independence from Spain
- 1853 Argentina became a republic after adopting a constitution
- 1859 Buenos Aires sets up its own independent state, but later defeated
- 1955 Juan Peron flees the country
- 1956 The constitution of 1853 is restored
- 1973 Juan Peron is elected President
- 1974 Juan Peron dies and his wife, Isabel becomes president
- 1976 A military coup deposes Isabel Peron

- 1982 Argentina goes to war with Britain over control of the Falkland Islands
- 1991 The government makes the peso equal to the value of the U.S. dollar
- 2001 Adolfo Rodriguez Saa is named interim president
- 2002 Congress elects Peronist Senator Eduardo Duhalde as president
- 2007 Cristina Fernandez de Kirchner sworn in as president
- 2009 Argentina claims parts of ocean, Antarctic and British islands as territory
- 2011 President Cristina Fernandez de Kirchner wins a second term
- 2013 Falkland islanders vote in favor of remaining a British territory

### **CURRENT LITERATURE – STATISTICAL ANALYSIS**

In this section the authors will present and discuss some of the most recent economic facts for Argentina, so that the reader will get a good idea about the current situation. Also in this section a number of economic indicators will be presented, and showed graphically so that at a glance the reader will be able to derive some conclusions.

Argentina based on this year's figures has a population of 43 million people, with a population growth rate of around .95% annually. As stated earlier, it is the second largest country in South America after Brazil, which is one of the border countries along with Bolivia, Chile, Paraguay and Uruguay.

Argentina is very rich in natural resources, and has a very educated population. It has benefited from these for years, but it also had some major problems as it will be shown below. One of the worst years for Argentina's economy was 2002. During this year its GDP was by 16% less than that of 1998, and as a result 60% of its people were under the poverty line. Fortunately, and as a result of expansionary fiscal and monetary policies, Argentina's GDP grew by 8.5% annually for the next six years, but there was a cost to that. Inflation increased as well.

At the present, Argentina's GDP is 484 billion U.S. dollars, with a GDP growth rate of 3.5%. The components of its GDP are, agriculture 9.3%, with products such as sunflower seeds, lemons, soybeans, grapes, corn, tobacco, peanuts, wheat and livestock, industry 29.7% with things such as food processing, motor vehicles, consumer durables, textiles etc, and 61% services.

Argentina has a labor force of 17.3 million, of which 5% is in agriculture, 23% in industry and as expected 72% in services, although this figure is a little outdated. It is also running an unemployment of 7.5%, which is one of its most important problems. Besides unemployment being a major problem of Argentina's economy, so is inflation, which is around 20.8%.

One very important component of Argentina's economy is trade. It has a total of 85.1 billion dollars of exports, of things like soybeans, petroleum and gas, vehicles, corn and wheat, and imports of about 71.3 billion dollars of things like machinery, motor vehicles, organic chemicals and plastics. The two figures that follow will give us a better picture about how Argentina compares to other countries when it comes to trade.

FIGURE 1



SOURCE : <http://www.countryreports.org/country/Argentina/exports.htm>

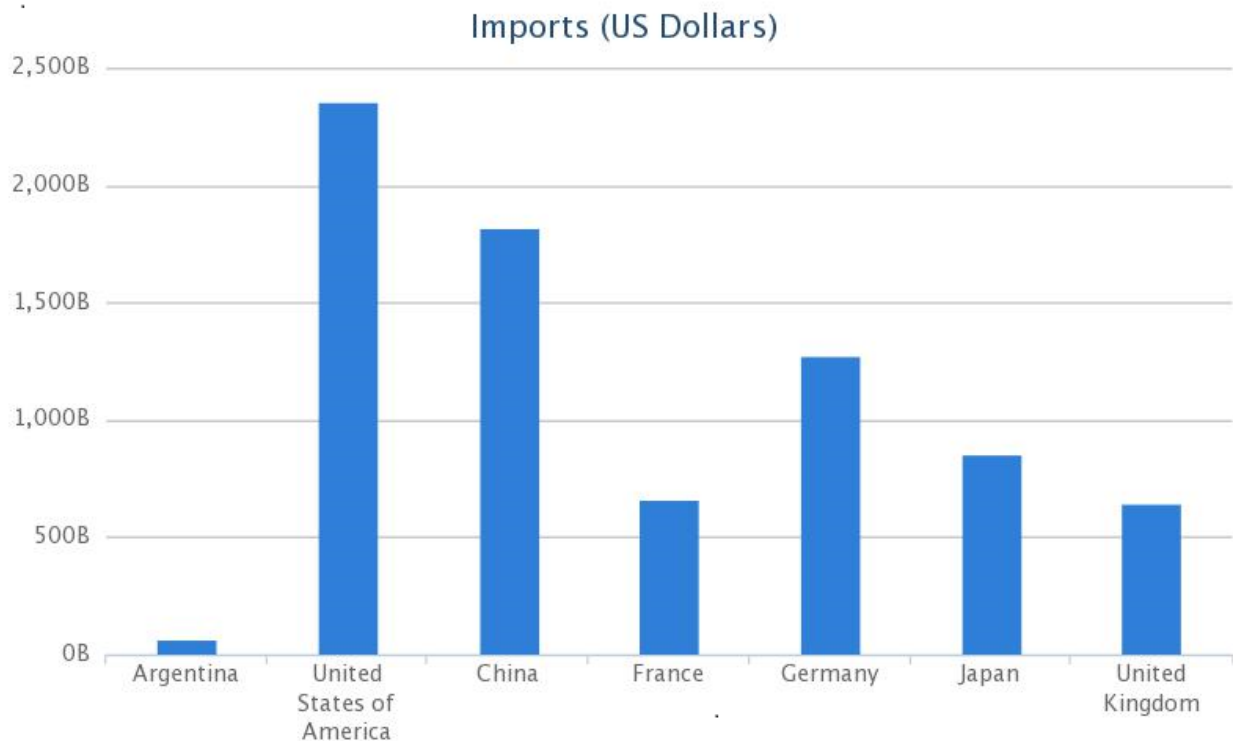
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From what can be seen on Figure 1 and compared to those countries, Argentina exports about 85 billion dollars, and the next lowest is United Kingdom with about 481 billion dollars, whereas the rest of the countries shown are in the trillions of dollars.

**FIGURE 2**



SOURCE: <http://www.countryreports.org/country/Argentina/imports.htm>

Figure 2 also shows that Argentina does not compare well with the countries shown with respect to imports. Argentina imports around 67 billion, which is the lowest, and United Kingdom is the second lowest with 646 billion. Of course this can be considered as good if it does not have to import that much to meet its need and runs a trade surplus.

Table 1 that follows shows a number of economic indicators for about 30 years, and this should give us a good idea how Argentina's economy is doing and which direction it is headed. All the dollar figures in this table are constant 2005 U.S. dollars.

TABLE 1							
ARGENTINA DATA 1980 - 2013							
	BILLIONS	BILLIONS	BILLIONS	BILLIONS	%	MILLIONS	%
YEAR	EXPORTS	IMPORTS	NET EXP.	GDP	GR. R	POPOUL.	UNEMP.
1980	10.9	15.8	-4.9	150.7	4.2	28.1	2.3
1981	11.5	14.5	-3	142.2	-5.7	28.6	4.5
1982	11.9	8.3	3.6	135.1	-5	28.9	4.8
1983	12.3	7.7	4.6	140.4	3.9	29.4	4.2
1984	11.9	8.1	3.8	143.5	2.2	29.9	3.8
1985	13.8	7.3	6.5	132.6	-7.6	30.3	5.3
1986	12.4	8.3	4.1	143	7.9	30.8	4.4
1987	11.9	9.2	2.7	147.2	2.9	31.3	5.3
1988	14.2	8.4	5.8	143.4	-2.6	31.7	6
1989	15.3	7	8.3	132.7	-7.5	32.2	7.3
1990	17.9	6.9	11	129.5	-2.4	32.6	7.3
1991	17.3	12.4	4.9	145.9	12.7	33.1	5.8
1992	17.2	20.5	-3.3	163.3	11.9	33.5	6.7
1993	17.9	23.5	-5.6	172.9	5.9	33.9	10.1
1994	20.6	28.5	-7.9	183	5.8	34.4	12.1
1995	25.2	25.7	-0.5	177.8	-2.8	34.8	18.8
1996	27.1	30.2	-3.1	187.7	5.5	35.3	17.2
1997	30.5	38.4	-7.9	202.9	8.1	37.7	14.9
1998	33.7	41.6	-7.9	210.7	3.9	36.1	12.8
1999	33.3	36.9	-3.6	203.6	-3.4	36.5	14.1
2000	34.2	36.8	-2.6	201.9	-0.8	36.9	15
2001	35.1	31.7	3.4	193.1	-4.4	37.3	18.3
2002	36.2	15.8	20.4	172	-10.9	37.7	17.9
2003	38.4	21.8	16.6	187.2	8.8	37.9	16.1
2004	41.5	30.5	11	204.1	9	38.3	12.6
2005	46.6	35.4	11.2	222.9	9.2	38.6	10.6
2006	49.3	39.3	10	241.6	8.4	38.9	10.1
2007	53.3	47.9	5.4	260.9	8	39.3	8.5
2008	53.7	54.3	-0.6	268.9	3.1	39.7	7.8
2009	48.9	43.8	5.1	269.1	0.1	40	8.6
2010	56	59.2	-3.2	293.7	9.1	40.4	7.7
2011	57.8	70.8	-13	318.8	8.6	40.7	7.2
2012	55.3	67.5	-12.2	321.8	0.9	41.1	7.2
2013	52.4	68.6	-16.2	331.3	2.9	41.4	..

**SOURCES: GDP, EXPORTS, IMPORTS, GROWTH RATES**

World Bank national accounts data, and OECD National Accounts data files

**POPULATION**

United Nations Population Division. World Population Prospects.

**UNEMPLOYMENT (% of total labor force)**

International Labour Organization, Key Indicators of the Labour Market data base

In Table 1 we see a number of things. First we see that even though Argentina's exports are increasing, other than 2009, its imports are increasing much faster, which give us a trade deficit for the last several year, although imports decreased for 2001 through 2007, and that gave Argentina a trade surplus for those years. Another thing that is worth mentioning in this table is the fact that even though population had a steady increase over the years, it increased from 28.1 million in 1980 to 41.4 million in 2013, which is an increase of about 47%, the GDP has increased by more than 120% during the same period. That means that the population increase did not have an impact on the GDP, and further study is needed to determine what caused such an increase on the GDP. Finally the table shows that unemployment has been as high as 18.8%, and that is one thing that contributed to the negative growth, and even though it has improved recently, 7.2 during 2012, it is still at unacceptable levels.

**FIGURE 3**

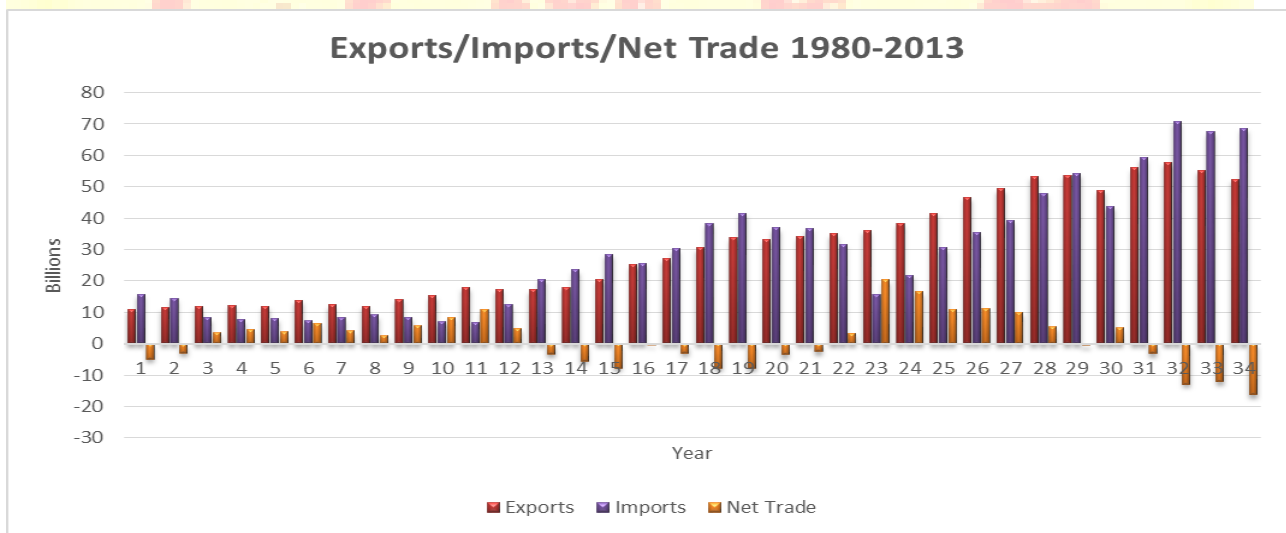
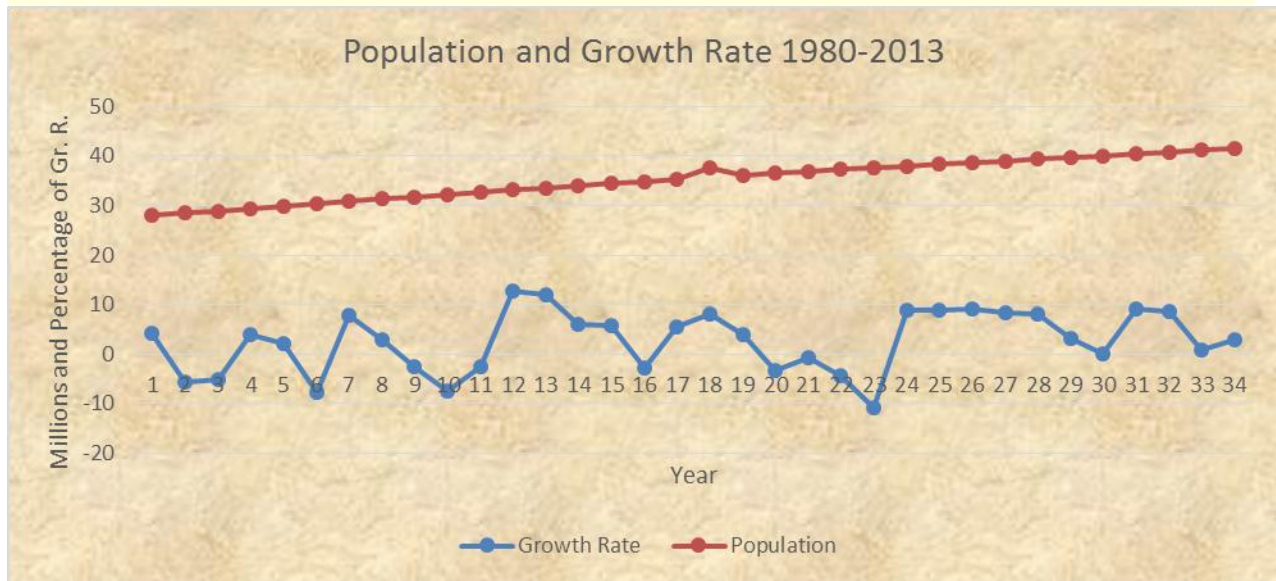




Figure 3 shows Argentina's trade over the last thirty some years. As can be seen during some years, Argentina had a trade surplus and in some a trade deficit. What needs further study though is why during the last three or four years imports increased a lot and exports decreased, resulting in the largest trade deficit since 1980.

**FIGURE 4**

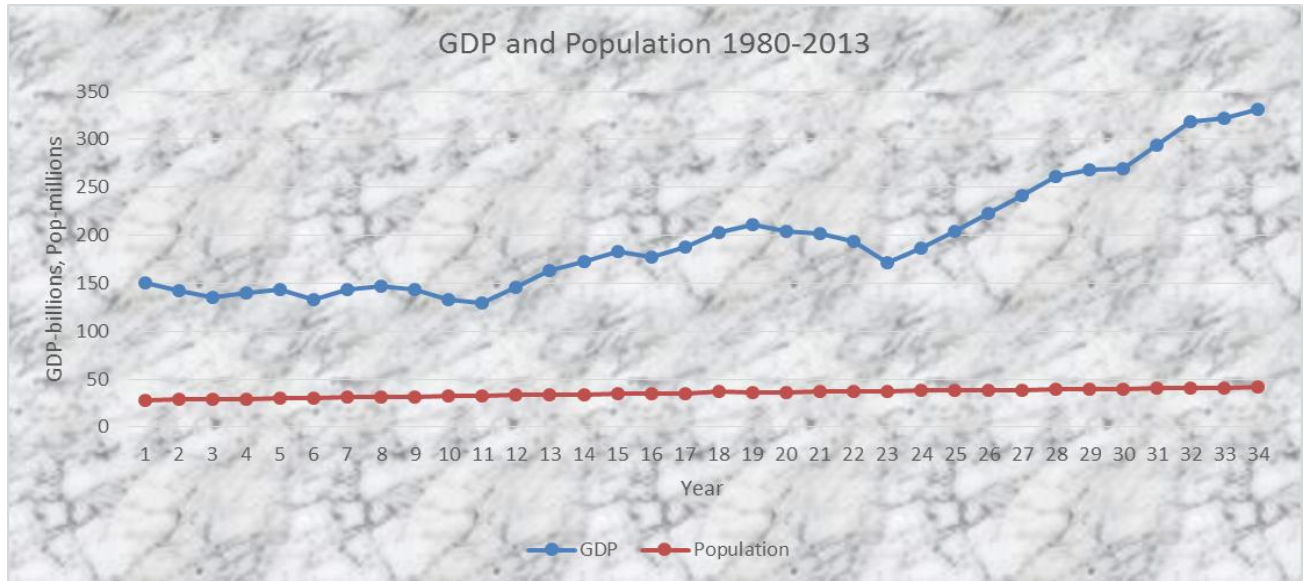


The figure above, Figure 4, shows the relationship between population and the growth rate. What can be seen here, is that even though population shows a steady growth since 1980, the growth rate is very unstable, and did not keep up with population. The authors are planning further study here to determine why the growth rate is so volatile.

The figure that follows, Figure 5, shows that the steady increase of the population has contributed to a tremendous growth in Argentina's GDP. This is also supported by Table 1, where we can see that since 1980 the population has increased by 47%, whereas the GDP has increased by 120%, although it had its ups and downs.

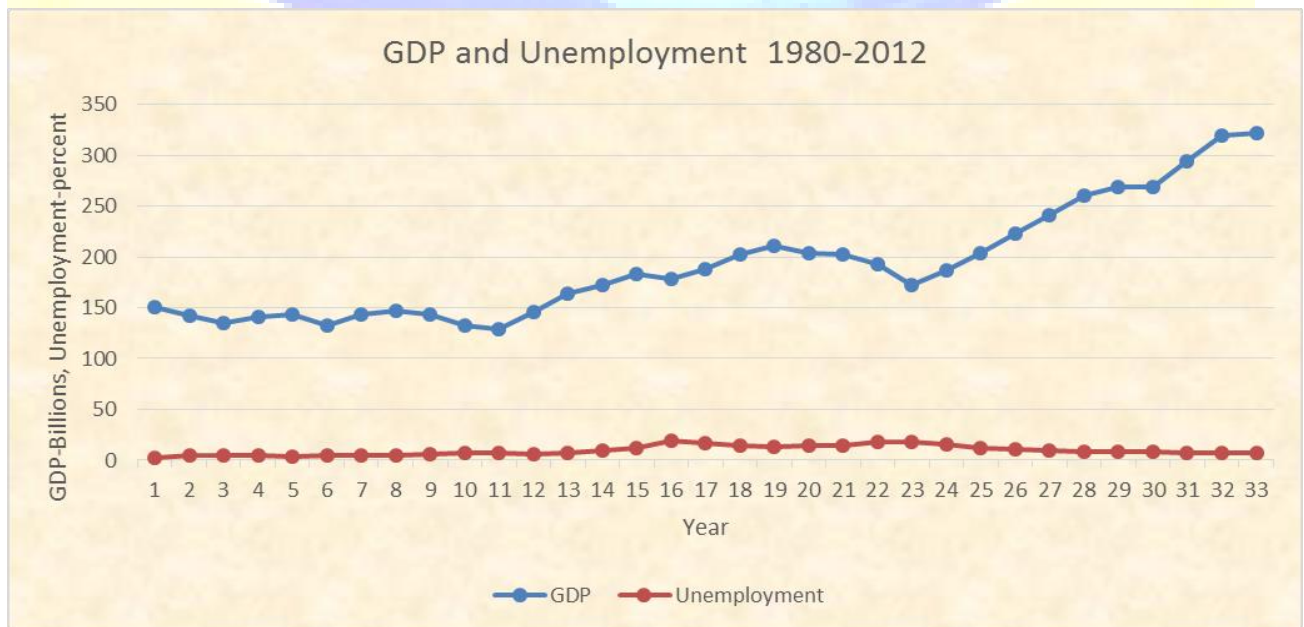


FIGURE 5



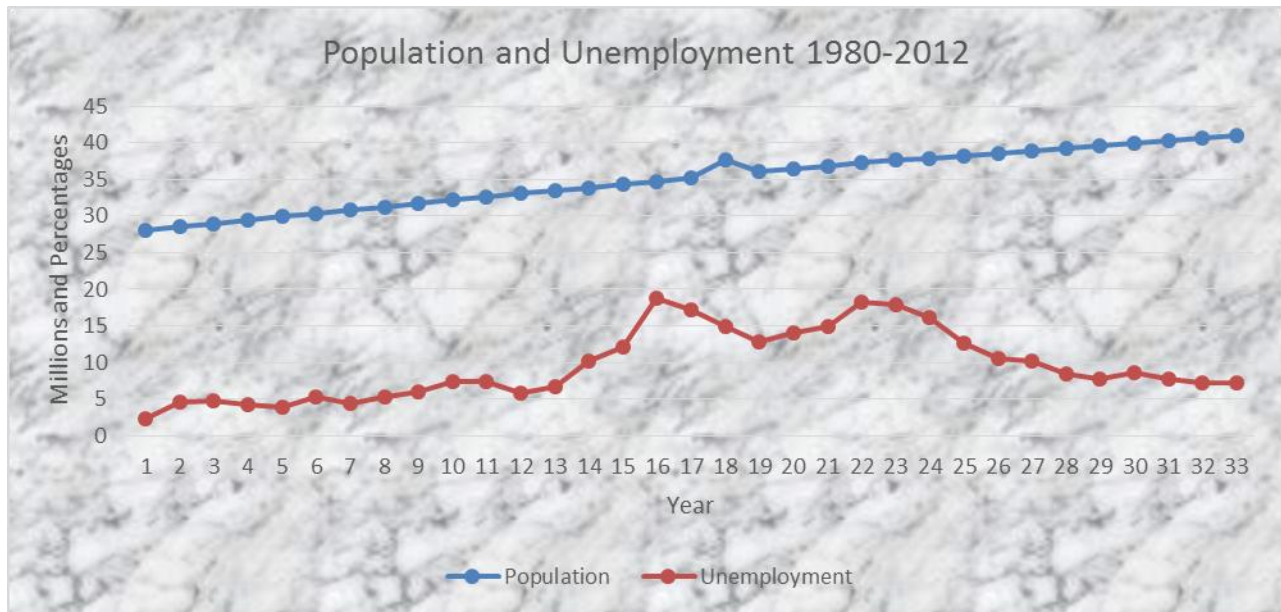
The next figure shows that even though unemployment has been as high as 18.8% during 1995, and as low as 2.3% during 1980, it did not have a negative impact on the GDP and this is very interesting.

FIGURE 6



What Figure 7 below shows, is that even though the population has been steadily increasing, it did not influence unemployment. In fact when population was increasing faster, unemployment was decreasing.

FIGURE 7



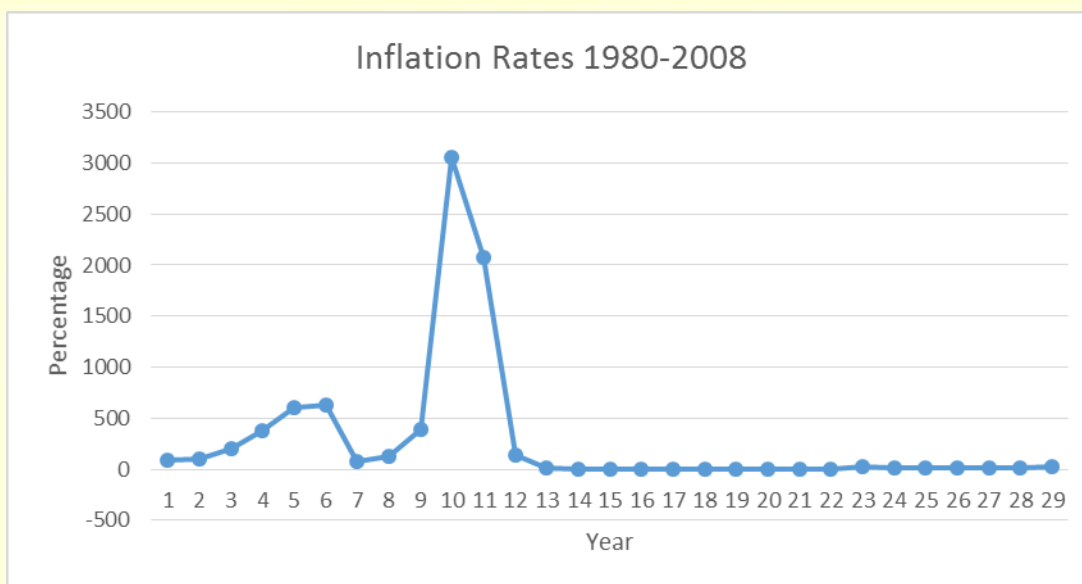
**TABLE 2**  
**INFLATION RATES ARGENTINA**  
**1980 - 2008**

YEAR	ARGENT.
1980	90.84
1981	106.36
1982	207.62
1983	382.35
1984	606.74
1985	625.8
1986	74.46
1987	127.09
1988	388.49
1989	3057.63
1990	2076.79
1991	132.95
1992	11.92
1993	-1.42
1994	2.85
1995	3.17
1996	-0.05
1997	-0.46
1998	-1.71
1999	-1.84
2000	1.04
2001	-1.1
2002	30.56
2003	10.5
2004	9.22
2005	8.84
2006	13.52
2007	14.16
2008	19.46

SOURCE: DDP QUICK QUERY. (n.d.). WORLD DEVELOPMENT INDICATORS  
ddpext.worldbank.org/

Table 2 shows that Argentina has some serious problems with inflation. Its inflation has been as high as 3057.63 in 1989, and it even had deflation for a number of years. Even though it is doing better lately, even a 19.42 during 2008 is too high by any standards. The rate of inflation for Argentina for a number of years is shown in the figure that follows below, and it can be seen how volatile it has been over the years.

**FIGURE 8**



It is obvious from Table 2 and Figure 8, that Argentina had its share of problems with inflation, reaching a high of 3057% in 1989. It seems though that they were able to find a solution to inflation, and they were able to bring it down to single digits in some years, even though now it is around 20%

**CONCLUSION**

In conclusion, the authors would like to point out a number of things. Our research has found that Argentina is very rich in natural resources, and also has a very educated population. We believe that if Argentina takes advantage of these two things, they can be very beneficial.

Our research also found that industry makes up around 30% of Argentina's GDP, and 61% comes from services. This means that 95% of Argentina's labor force is involved in these two sectors, which draws the conclusion that the government should invest heavily in these two, and this is also our recommendation as a solution to Argentina's economic problems.

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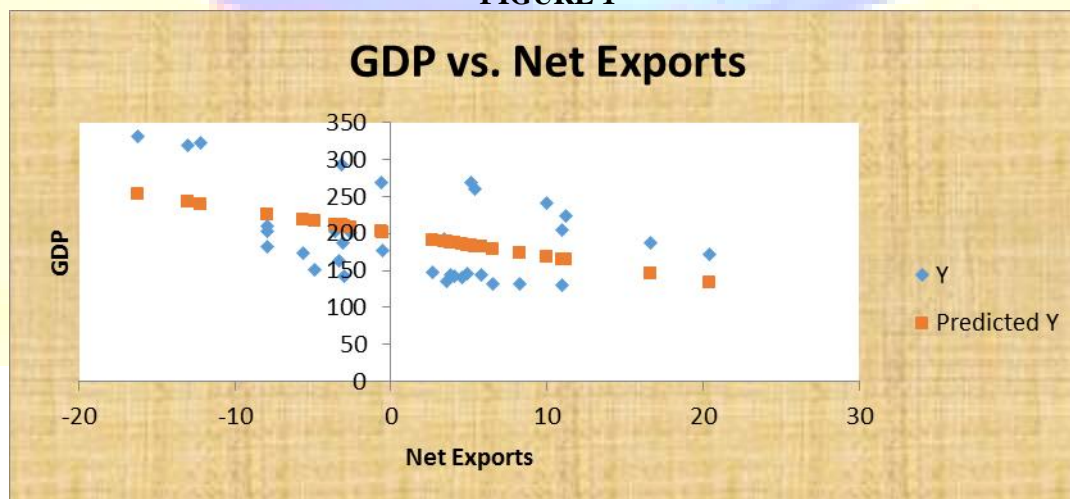
## APPENDIX

In this section of the paper, the authors ran several regressions using the data presented earlier in the paper. The regressions are an attempt to measure aspects of Argentina's economy. The hypothesis for each test is presented along with the findings and a graph illustrating the regressions.

### Model #1

The first model uses Argentina's net exports as independent and Argentina's GDP as dependent. The hypothesis is that Argentina's GDP does not depend on Argentina's net exports. The significance level of this test is 5%. The value of the  $R^2$  is 0.207, so that approximately 21% of Argentina's GDP is explained by the Argentina's net exports. The P value for this hypothesis test is 0.0068; since this value is less than 0.05 the hypothesis is rejected. These results are shown below in Figure 1.

FIGURE 1

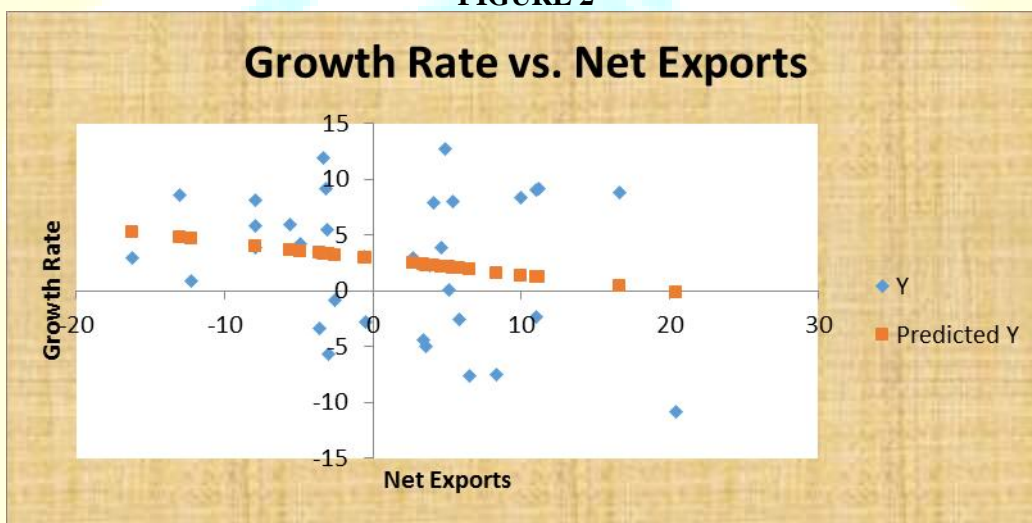




Model #2

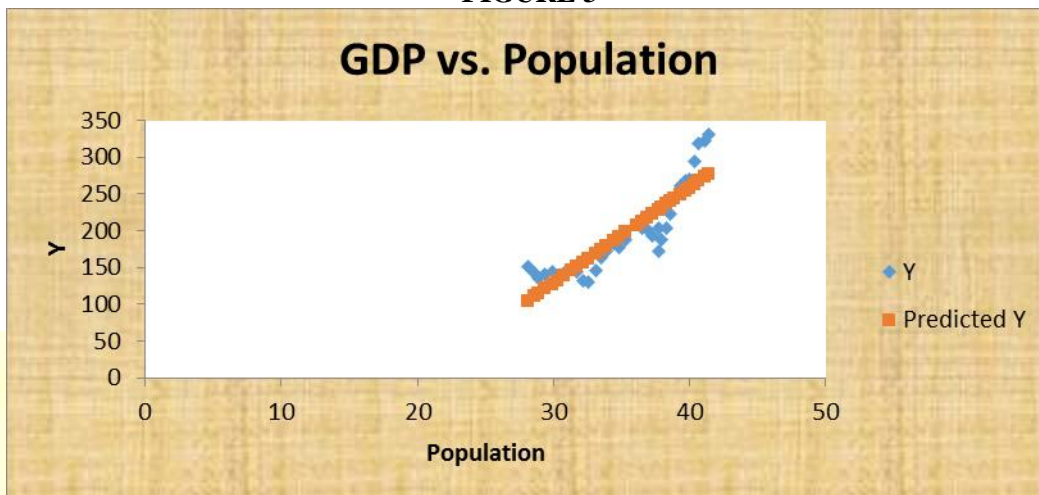
The second model uses Argentina's net exports as independent and Argentina's growth rate as dependent. The hypothesis is that Argentina's growth rate does not depend on Argentina's net exports. The significance level of this test is 5%. The value of the  $R^2$  is 0.039, so that approximately 4% of Argentina's growth rate is explained by Argentina's net exports. The P value for this hypothesis test is 0.261; since this value is greater than 0.05 the hypothesis is accepted. These results are shown in Figure 2 on the next page.

FIGURE 2

Model #3

The third model uses Argentina's population as independent and Argentina's GDP as dependent. The hypothesis is that Argentina's GDP does not depend Argentina's population. The value of the  $R^2$  is 0.788, so that approximately 79% of Argentina's GDP is explained by Argentina's population. The P value for this hypothesis test is  $2.54 \times 10^{-12}$ ; since this value is much smaller than 0.05 the hypothesis is rejected. These results are shown below in Figure 3.

FIGURE 3

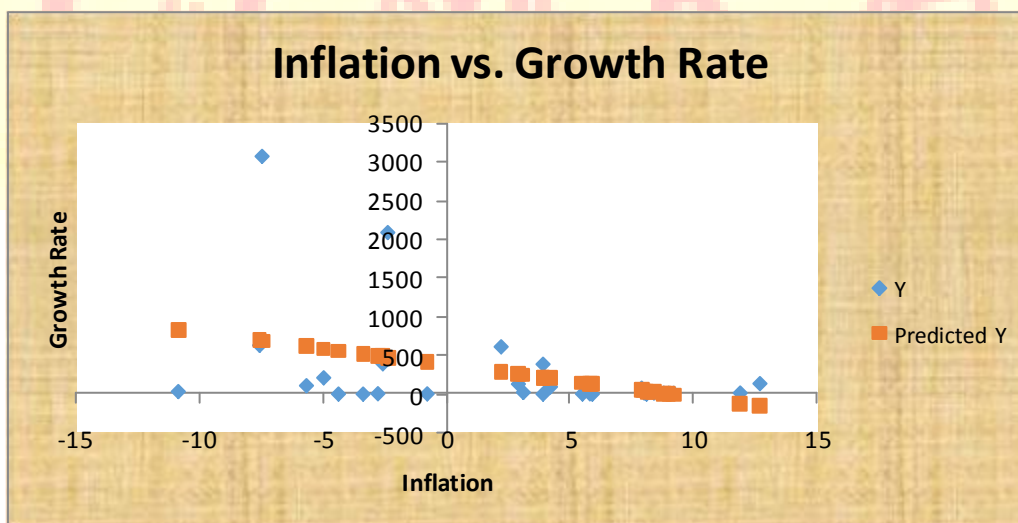


Model #4

The fourth model uses Argentina’s growth rate as independent and Argentina’s inflation rate as dependent. The hypothesis is that Argentina’s inflation rate does not depend Argentina’s growth rate. The value of the  $R^2$  is 0.157, so that approximately 16% of Argentina’s inflation rate is explained by Argentina’s growth rate. The P value for this hypothesis test is 0.033; since this value is much smaller than 0.05 the hypothesis is rejected. These results are shown below in

Figure 4.

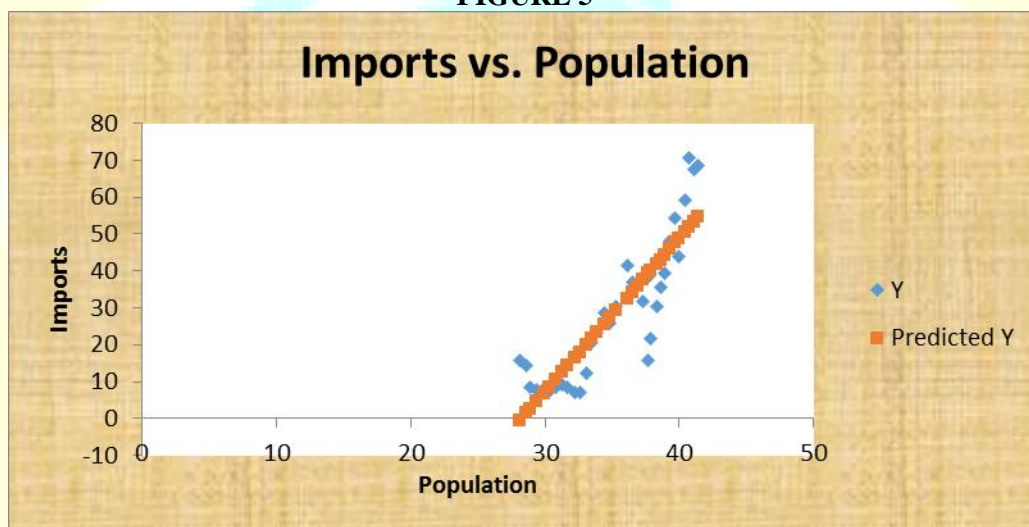
FIGURE 4



Model #5

Our last model uses Argentina's population as independent and Argentina's imports as dependent. The hypothesis is that Argentina's imports does not depend Argentina's population. The value of the  $R^2$  is 0.763, so that approximately 76% of Argentina's imports is explained by Argentina's population. The P value for this hypothesis test is  $1.53 \times 10^{-11}$ ; since this value is much smaller than 0.05 the hypothesis is rejected. These results are shown in Figure 5 on the next page.

FIGURE 5



In concluding this paper and its appendix, we would like to say that even though our regression models showed some interesting results, they are not conclusive by any means, and to this end, any suggestions or recommendations that will improve the paper will be appreciated. Also, hopefully our research will create more interest and further research in the topic.