

# **Measuring the Impact of the U.S. on South Africa Before and After the Apartheid**

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## **Abstract**

South Africa and its political and economic conditions have been a topic of discussion for years. The purpose of the authors in this paper is to do an analysis of the economy of South Africa.

**JEL classification numbers:** E31, C35

**Keywords:** Africa, Apartheid

## **1 Introduction**

We are going to break our discussion into two periods, one before the apartheid, and one after. At the same time, we will try to measure the impact of the U.S. on South Africa, and this will be done with the use of some regression models

## **2 History**

In the history section of the paper, we are going to briefly discuss the history of South Africa. Our purpose in this section is twofold. First is to introduce the reader to South Africa from a historical perspective, and second the discussion of apartheid, which was one of the most critical issues in South Africa for years.

### **2.1 Before Apartheid**

Africa is a very rich country in natural resources such as fertile farmlands, and mineral resources. Also it is internationally known for its mines of diamonds and gold, as well as

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strategic metals such as platinum. South Africa has gone through a lot of changes over the years, of which some were good and some were costly for its people. History shows that South Africa was inhabited by people for thousands of years, and the oldest inhabitants were the Khoisan language groups, and today they are found in the western sections. Other inhabitants of South Africa today are the Bantu language group which goes back to around 100 AD, and the Nguni which are ancestors of the Zulu and Xhosa, which goes back to around 1500.

The first Europeans that reached South Africa were the Portuguese, followed by the Dutch East India Company, and later the French and the Germans settled in the Cape. Around the 18<sup>th</sup> century, the British gained control of the Cape of Good Hope, and this British settlement started a long conflict between the Afrikaners and the British. This war was not the only war the British were involved in South Africa. Around 1870 we see the discovery of diamonds at Kimberley and large gold deposits around 1886 in Witwatersand. Both of these discoveries led a lot of Europeans, the majority, of which were British, to immigrate and invest in South Africa. This influx drew a reaction from the Boer, of the Boer Republic, and this reaction led to the Anglo-Boer Wars of 1880 - 81, and 1899 - 1902. The outcome of these wars was that by 1910 we have the formation of the Union of South Africa as a self governing body of the British Empire.

In continuing with the discussion of the history of South Africa, there are other incidents that highlighted its background. One of those things was the formation of the African National Congress (ANC), and its purpose was to eliminate all the restrictions against the blacks. Later in 1948 the National Party (NP), won the so called all-white elections, which started immediately passing laws for stricter policy against the blacks. This of course led to the apartheid.

## 2.2 During Apartheid

Then in the 60s as a result of protests, both the ANC and the Pan-African Congress (PAC), were outlawed and Nelson Mandela along with a number of other black leaders was imprisoned. The apartheid policy in its attempt to achieve preferential treatment for whites was very successful, and this can be seen in the table that follows:

Table 1: Apartheid and the people of South Africa

				1978	BLACKS	WHITES	
Population					19 mil.	4.5 mil.	
Land allocation					13%	87%	
Share of national income					< 20 %	75%	
Ratio of average earnings					1	14	
Minimum taxable income					360 rand	750 rand	
Doctors/population					1/44000	1/400	
Infant mortality rate					20% urban	2.70%	
					40% rural		
Annual expenditure on education per pupil					\$45	\$696	
Teacher pupil ratio					1/60	1/22	

Source: [HTTP://WWW-CS-STUDENTS.STANFORD.EDU/](http://www-cs-students.stanford.edu/)

Below we are going to present a timetable including some of the highlights of South Africa's history:

1948: The National Party of Dr. Malan comes to power, and the apartheid is voted upon by the white majority

1949: The apartheid government passed the Group Areas Act, and 3.5 million people were forced out of their homes

1956: 20,000 women marched in Pretoria to protest against legislation to tighten the apartheid, against the movement of black women.

1959: Anti-apartheid campaigns launched in London

1960: The UN commemorates those that were killed in a peaceful anti-apartheid demonstration in Sharpeville

1973: The UN General Assembly defined the crime of apartheid as inhumane acts

1986: The United States government passed the Comprehensive Anti-apartheid Act, prohibiting new trade and investment in South Africa

1988: South Africa was expelled from most international sport bodies

1990: President de Klerk lifts a 30 year old ban on the country's main black opposition group, ANC (African National Congress) and Nelson Mandela is released unconditionally

1992: An all-white referendum is approved to dismantle apartheid

1994: April, Mandela is elected as the first black president of South Africa

1995: Mandela presides over the inauguration of South Africa's first Constitutional court.

As mentioned previously, South Africa's history goes back thousands of years. As a result the timeline lists only some of the highlights.

### **3 Current Economic Conditions**

#### **3.1 Current Population Distribution**

In this section we are going to try to evaluate the economic conditions in South Africa now, which of course is a number of years after the abolition of the apartheid.

South Africa is a country with a population of about 50 million of which the majority live and work in four areas. Cape Town, Port Elizabeth, Durban and Johannesburg. As a result, these four cities make the biggest and strongest contributions in the South African economy. South Africa is a middle income country, with strong indicators of a developing economy, and has the most stable economy of the African continent.

#### **3.2 Unemployment Rates and the Economy**

Although South Africa has a stable and fairly strong economy, it is generally accepted that one major thing is holding this economy back. It has one of the world's lowest labor participation rates and as a result a very high unemployment rates. Research shows that only 40% of the working age population has jobs, whereas in other countries this number is 60 to 75%. It is obvious that this puts a constrain on South Africa's economic growth, since it is understood that in order to create jobs for all these people the country needs a continuous growth rate more than 6% for many years, and to some this number is at least 20 years.

As we all know, over the last couple of years the world economy had and still has some major problems that caused serious economic problems. South Africa was not immune to that. As a result of the turmoil, its growth dropped from 5.5% in 2007 to 3.7% in 2008, and its output shrank by 1.8%. For 2010 the government expects a growth rate of 2.3% and

3.2% for 2011, but the OECD is a little more optimistic with 3.3% and 5% respectively. Although these are fairly good rates considering everything that is happening, they are still not good enough to improve poverty and unemployment which is around 25% not counting those who are discouraged and stop looking for a job.

### 3.3 GDP, Exports, and Imports

In summarizing the economy of South Africa, we see an economy with a GDP for 2009 of \$287 billion, a per capita GDP of \$5787, an unemployment rate that was mentioned earlier of about 25%, and exports in 2009 of \$71.9 billion and imports of \$75.7 billion. Looking at these numbers, if it was not for the unemployment rate, we cannot say that this is a bad economy considering what is happening in the world, but that unemployment rate is too high to allow any encouragement. Finally the next two figures show some of the trading partners of South Africa and the percentages of exports and imports to and from these countries of the total.



Figure 1: Exports % of total

Source: [http://www.economywatch.com/world\\_economy/southafrica/export-import.html](http://www.economywatch.com/world_economy/southafrica/export-import.html)

Figure 1 shows some of the exports of South Africa in percentages of the total, and to whom. Obviously South Africa needs to encourage a little more trade with Japan, U.S. Germany and U.K. since almost 40% of its exports go there.



Figure 2: Imports % of total

Source: [http://www.economywatch.com/world\\_economy/southafrica/export-import.html](http://www.economywatch.com/world_economy/southafrica/export-import.html)

Figure 2 shows the imports of South Africa in percentages of total, and we can see that about 30% of imports come from Germany, China, and the U.S.

#### 4 Statistical Analysis

In this section we are going to show and discuss some of the major indicators of South Africa, such as the Gross Domestic Product, the Growth Rates, GDP per capita, Inflation, exports and imports. This data will give us a better picture about what is happening in South Africa.

Table 2: South African Data 1970 - 2009

	1	2	3	4	5	6	7
YEAR	INFLA.	X BIL US \$	FDI NET	GDP CON.	GDP GR.	GDP PER	IMPORTS
	%	2000=100	BIL US \$	2000=100	ANN. %	CAPITA	2000=100
1970	0.04	17.96	0	68.6	0.05	3104	17.6
1971	0.06	18.51	0	71.5	0.04	3163	19.4
1972	0.06	19.07	0	72.7	0.02	3143	16.9
1973	0.1	18.08	0	76	0.05	3213	18.9
1974	0.12	17.19	0	80.6	0.06	3334	22.4
1975	0.13	16.99	0	82.1	0.02	3316	21.7
1976	0.11	17.73	0	83.9	0.02	3319	19.5
1977	0.11	18.54	0	73.8	0	3246	16.9
1978	0.11	19.15	0	86.3	0.03	3275	16.9
1979	0.13	19.51	0	89.6	0.04	3325	16.7
1980	0.14	19.51	0	95.5	0.07	3463	19.9

1981		0.15	18.46	0	100.6	0.05	3561	22.6
1982		0.15	17.97	0	100.2	0	3460	18.7
1983		0.12	17.73	0	98.4	-0.02	3310	15.7
1984		0.12	18.21	0	103.4	0.05	3390	18.8
1985		0.16	20.04	-0.5	102.1	-0.01	3263	16.2
1986		0.19	19.3	-0.12	102.2	0	3181	15.8
1987		0.16	20.19	-0.303	104.3	0.02	3167	16.3
1988		0.13	21.85	0.093	108.7	0.04	3223	19.8
1989		0.15	22.33	-0.363	111.3	0.02	3227	19.9
1990		0.14	22.23	-0.103	110.9	0	3152	18.8
1991		0.15	21.88	0.047	109.8	-0.01	3056	19.2
1992		0.14	23.09	-1.93	107.5	-0.02	2929	20.2
1993		0.1	25.48	-0.28	108.8	0.01	2903	21.6
1994		0.09	26.12	-0.886	112.3	0.03	2934	25.1
1995		0.09	28.97	-1.245	115.8	0.03	2960	29.3
1996		0.07	31.06	-0.231	120.8	0.04	3020	31.9
1997		0.09	32.7	1.486	123.9	0.03	3030	33.6
1998		0.07	33.77	-1.08	124.6	0.01	2975	34.3
1999		0.05	34.19	-0.08	127.6	0.02	2972	31.4
2000		0.05	37.03	0.691	132.9	0.04	3020	33.1
2001		0.06	37.92	10.79	136.5	0.03	3040	33.2
2002		0.09	38.29	1.88	141.5	0.04	3108	34.9
2003		0.06	38.34	0.23	145.7	0.03	3159	37.8
2004		0.01	39.42	-0.604	152.3	0.05	3264	43.6
2005		0.03	42.8	5.61	160.4	0.05	3398	48.4
2006		0.05	45.99	-6.11	169.4	0.06	3548	57.2
2007		0.07	48.72	2.75	178.6	0.05	3702	62.4
2008		0.12	49.87	11.76	185.2	0.04	3796	63.3
2009		0.07	40.12	3.82	181.9	-0.02	3689	52.3

## Legend:

1. Inflation, Consumer prices (annual %) International Monetary Fund
2. Exports of goods and services (constant 2000 bil. US \$) World bank national accounts
3. Foreign Direct Investment, net (BoP, current US bil. \$) International Monetary Fund and Balance of Payments Statistics Yearbook.
4. GDP (constant 2000 bil. US \$) World bank national accounts
5. GDP growth (annual %) World bank national accounts
6. GDP per capita (constant 2000 US \$) World bank national accounts
7. Imports of goods and services (constant 2000 bil. US \$)

Just by looking at Table 2, we can see the direction of the South African economy, and the table is broken in two to separate the years of the apartheid from the years after. From this data we can see that this is an economy moving the right direction, especially after the abolition of the apartheid in 1992. For example, and this is shown in Figure 3, inflation since 1992 has been in low single digits whereas before it was in double digits and as high as 19% in 1986. Also the Gross Domestic Product which was \$110 bill. In 1991, the last year of the apartheid, has increased to \$182 bill. During 2009, an increase of 65% and this is shown in Figure 4 below. Another thing that shows good improvement is exports, which doubled since 1991, which means they need to concentrate on this, since obviously they have things that the world wants.

Below we see the figures discussed above showing the Inflation Rate and the GDP.

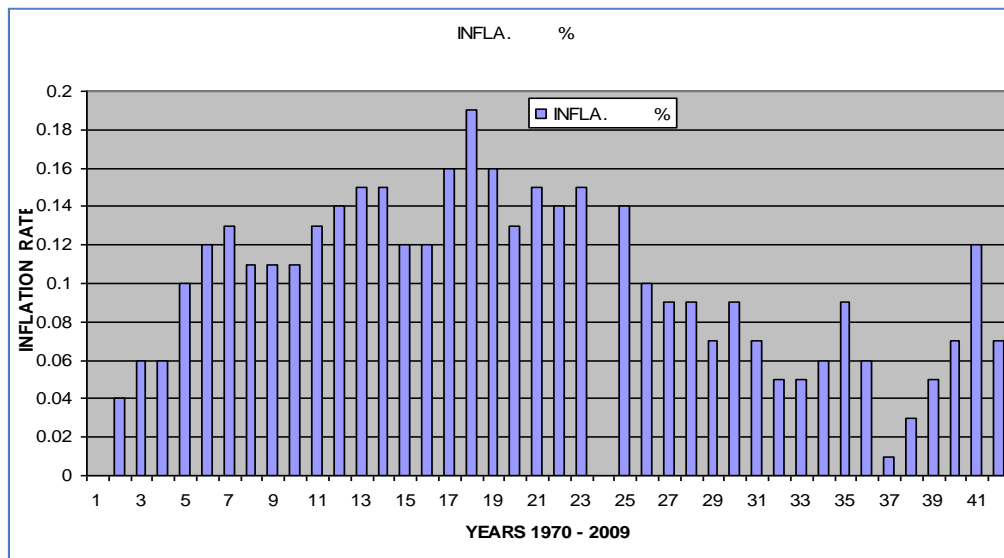


Figure 3: % Inflation

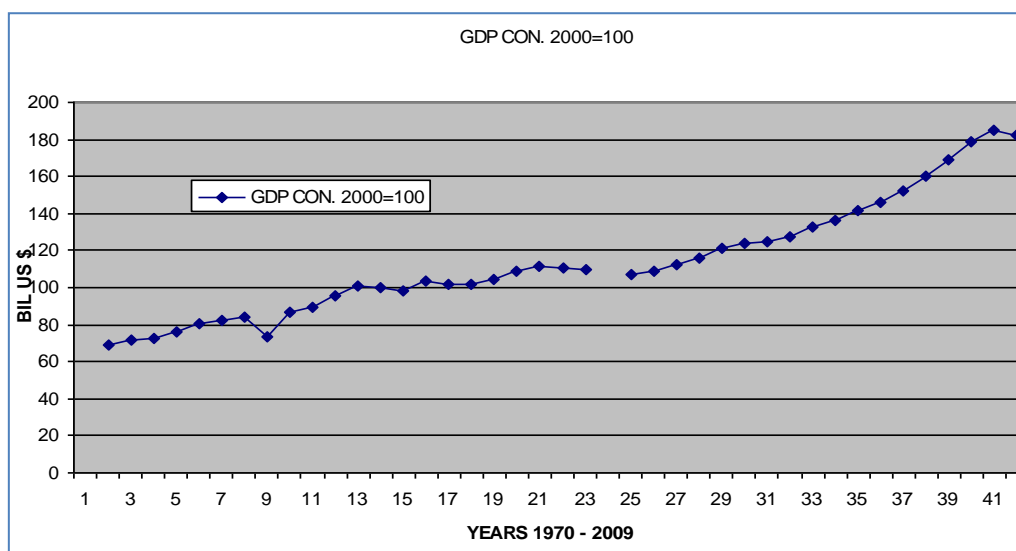


Figure 4: GDP

## 5 Conclusion

This section is going to bring everything that was previously discussed together and draw some conclusions. Also in this section we are going to discuss some challenges that South Africa faces, along with some recommendations.

South Africa, just like all countries, has its ups and downs, and some more severe than others. The South African economy is considered to be a middle income economy, but it has the world's lowest labor participation, around 40%, which of course creates a very high rate of unemployment. One other problem that South Africa is facing as a result of the economic turmoil is that its growth rate dropped from 5.5% in 2007 to 3.7% in 2008, and the government expects the rate to be 2.3% for 2010 and 3.2% for 2011.

Although the economy is improving, there are still several challenges that the government faces:

1. The legacy of apartheid must be removed from people's minds, but this will take a long time.
2. The society as a whole needs to improve, so the government needs to find ways to do that.
3. Although businesses, jobs, and education are improving, the government needs to find ways to eliminate the inequalities created by the apartheid among the population.

In conclusion, some recommendations that can improve the situation in South Africa are the following:

1. Encourage more savings and investment
2. Eliminate product – market regulations
3. Credit should be easier for small business
4. Fight youth unemployment which is a chronic problem.

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## Appendix

In the appendix, we ran some simple regressions to measure different aspects of South Africa's economy.

### Regression Model 1

Our first model used South Africa's GDP as the dependent and the U.S. GDP as the independent. We used the data from the pre-apartheid years, 1970 - 1991. The  $R^2 = 0.887$  and  $P = 6.66 \times 10^{-11}$ . Since  $P$  is much less than 0.05, the hypothesis that U.S. GDP does not impact South Africa's GDP pre-apartheid is rejected at the significance level of 5%. We are 95% confident that the slope of the regression equation is between 10.5 and 14.7 which means that a \$1 trillion increase in U.S. GDP will cause a small rise in South Africa's GDP pre-apartheid. This is shown in Figure A below.

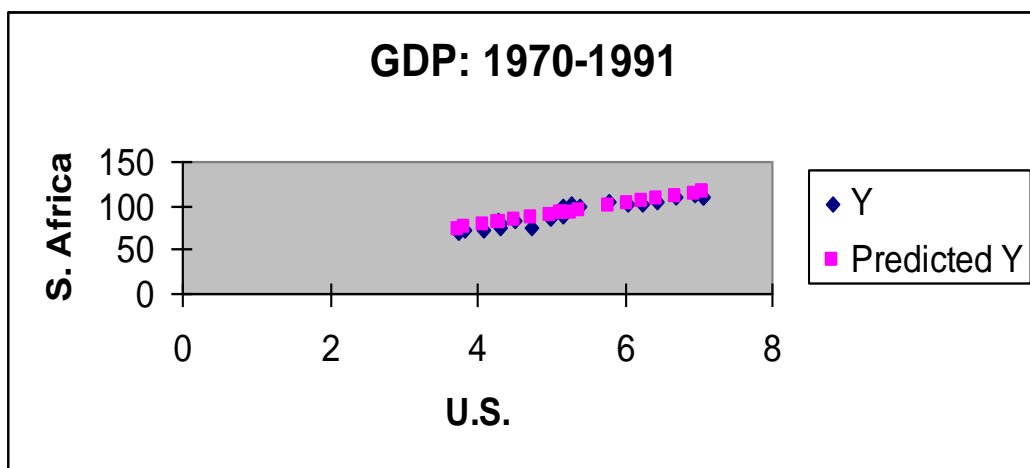


Figure A: GDP 1970-1991

### Regression Model 2

Our second model used South Africa's GDP as the dependent and the U.S. GDP as the independent. We used the data from the post-apartheid years, 1992 - 2009. The  $R^2 = 0.915$  and  $P = 5.52 \times 10^{-10}$ . Since  $P$  is much less than 0.05, the hypothesis that U.S. GDP does not impact South Africa's GDP post-apartheid is rejected at the significance level of 5%. We are 95% confident that the slope of the regression equation is between 13.7 and 19.0 which means that a \$1 trillion increase in U.S. GDP will cause a small rise in South Africa's GDP post-apartheid. Both the R-squared and slope are slightly larger than in the pre-apartheid model. This is shown in Figure B on the next page.

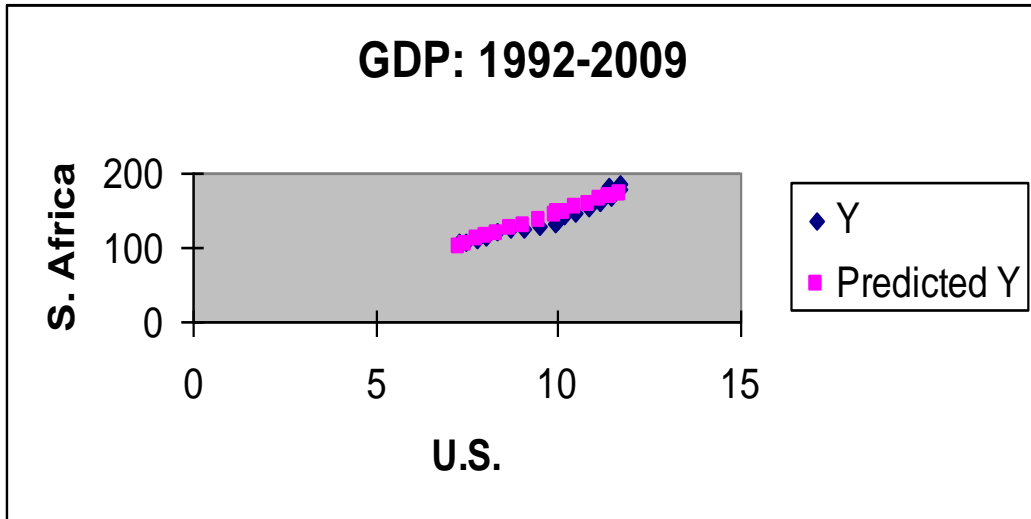


Figure B: GDP 1992-2009

Regression Model 3

Our third model used South Africa’s GDP as the dependent and South African Imports as the independent. We used the data from the pre-apartheid years, 1970 - 1991. The  $R^2 = 3.38 \times 10^{-6}$  and  $P = 0.993$ . Since  $P$  is much greater than 0.05, the hypothesis that South African Imports does not impact South Africa’s GDP pre-apartheid is accepted at the significance level of 5%.

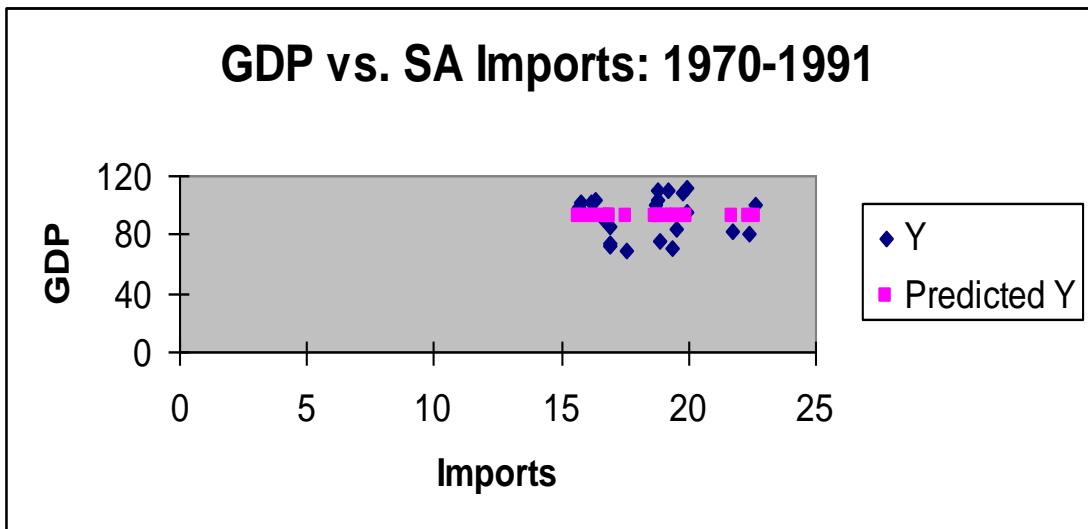


Figure C: GDP vs SA imports 1970-1991

Regression Model 4

Our fourth model used South Africa’s GDP as the dependent and South African imports as the independent. We used the data from the post-apartheid years, 1992 - 2009. The  $R^2 = 0.936$  and  $P = 5.59 \times 10^{-11}$ .

Since  $P$  is much less than 0.05, the hypothesis that South African Imports does not impact South Africa's GDP post-apartheid is rejected at the significance level of 5%. We are 95% confident that the slope of the regression equation is between 1.62 and 2.15 which means that a \$1 billion increase in South African Imports will cause a small rise in South Africa's GDP post-apartheid. The contrast in results between model 3 and this one deserves further exploration.

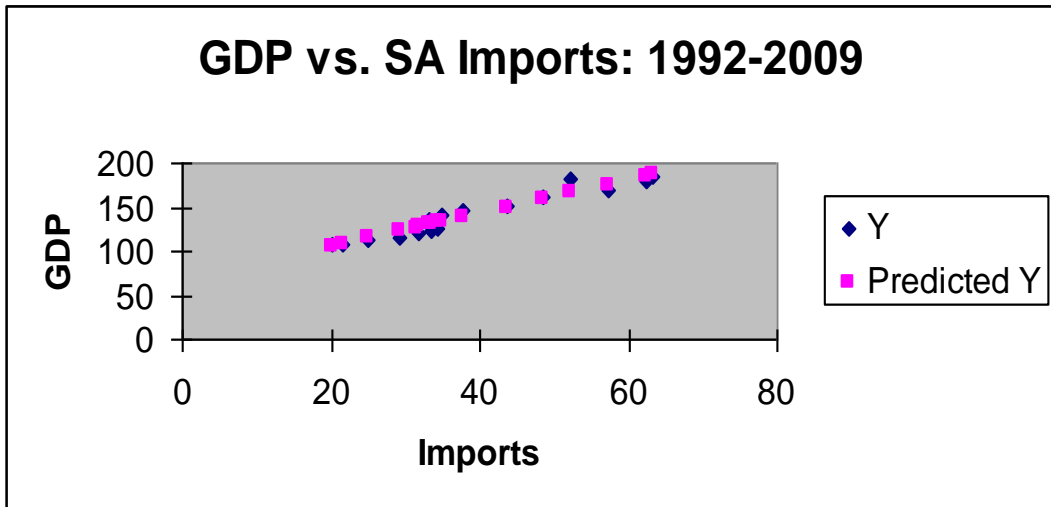


Figure D: GDP vs SA imports 1992-2009

#### Regression Model 5

Our final model used South Africa's GDP as the dependent and Net Foreign Direct Investment in South Africa as the independent. We used the available data from 1985-2009. The  $R^2 = 0.207$  and  $P = 0.022$ . Since  $P$  is less than 0.05, the hypothesis that Net Foreign Direct Investment in South Africa does not impact South Africa's GDP is rejected at the significance level of 5%. We are 95% confident that the slope of the regression equation is between 0.505 and 5.96 which means that a \$1 billion increase in Net Foreign Direct Investment in South Africa will cause a small rise in South Africa's GDP. The results are shown in Figure E on the next page.

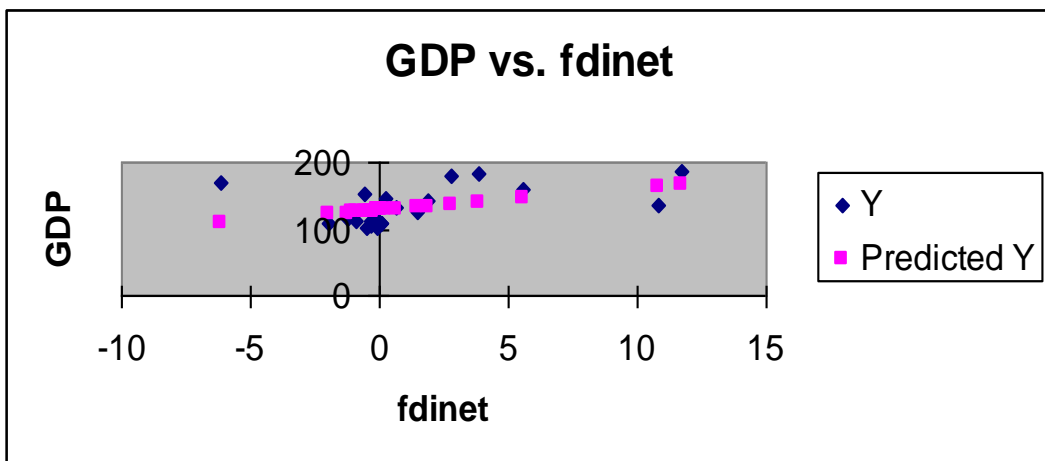


Figure E: GDP vs fdinet

In concluding the appendix, our results show that post-apartheid, U.S. GDP has had a slightly stronger effect on South Africa's economy. The effect that imports have had on South Africa's economy appears to have changed dramatically post-apartheid. This is a subject for further exploration. It also appears that foreign direct investment in South Africa is also having an effect on the economy of that country.