

EMPIRICAL EVALUATION OF CHINA IMPORTS ON EMPLOYMENT IN THE SOUTH AFRICAN TEXTILE INDUSTRY

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Abstract

This paper is set to generate some empirical perspective on the impact of Chinese imports on employment levels in the South African textile industry. Using regression analysis as a method of inquiry, this paper critically assess the relationship that exist between textile imports and employment levels as well as between exchange rates and employment levels. South Africa's imports data, employment data and exchange rate (South African Rand per Chinese Yuan) for the period 1993 to 2011 is used to analyse the relationship between high level of imports from China and employment levels in the industry. Initial findings reveal that an increase in the value of textile imports from China will cause a decline in employment levels in the South African textile industry.

Key Words: South Africa, China, Textile Industries, Imports, Exports, Trade Agreement.

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INTRODUCTION

The main objective of this study is to conduct a critical assessment on how an increase in the level of cheap textile imports from China impacts on employment in the South African textile industry. There has been a growth in cheaper textile imports, predominantly from Asia which South Africa experienced since 1994 after joining the World Trade Organisation (WTO). The commitment to significant cuts in industrial tariffs has caused market disruption and injury to the domestic markets in South Africa (Woolfrey, 2009). As imports of cheap textile products increases, owners of textile factories continue to experience a huge loss of profits since the demand of local produced goods has dropped considerably.

According to Woolfrey (2009), the South African clothing and textile industry is highly uncompetitive by international standards. Recent experience of increasing textile imports from China, followed by rising imports from other countries in response to the restrictions levied on Chinese imports during 2007, clearly demonstrates that local manufacturers cannot easily compete with low-cost producers from South and East Asia which then result in local firms going out of business, with this in turn leading to significant job losses.

It is also important to note that, high cost of labour has been identified as one of the determinant that causes the South African textile industry to be unable to compete with imports. Manufacturing of textiles is highly labour-intensive and only countries that have low wages can have a distinct comparative advantage in the production of these goods. A crisis in this industry can lead to poverty which can consequently lead to more people depending on the Government for support (Woolfrey, 2009).

Theoretical Consideration

Although Adam Smith recognised the advantage of foreign trade which states that “*if a foreign country can supply another country with a commodity cheaper than the country can make it locally, the country can better buy it from them with some part of its own industry, employed in a way in which it has the advantage*”, recent literature however indicates that when foreign firms dump their merchandise in the domestic market or receive subsidies from their government, there will be, significant job losses and output reductions in import sensitive industries (Schumacher, 2012).

The world trade has moved from the traditional trade theories to the classical and then to the new theories of international trade. The evolution of today's standard theory of international trade goes back to the years between 1776 and 1826. Adam Smith's *Wealth of Nations* (1776) marked the evolution followed by David Ricardo's principles of economics (1817) and then the new trade theories (Sen, 2010). All these theories have contributed enormously in understanding the principles of trade related issues. According to Flatters and Stern (2007), the South African textile industry also benefited from a temporary export subsidy program which commenced in 1990.

According to Pugel and Lindert (1996), the Mercantilism thinking is still relevant especially in relation to employment. In many industries, high level of exports leads to job creation while a high level of imports leads to job losses. In the South African textile industry, an increase in textile imports from China created a crisis in the firms which led to income loss and hence job losses due to firms' closure. This raises questions on whether protections that were removed on imports must be brought back and export subsidies must be encouraged in ensuring that there is growth in the industry. Mercantilists advocates for Government intervention in ensuring that there is surplus in the balance of trade of a country.

Based on the fact that the mercantilism theory encourages more exports than imports, which is said to undermine social priorities, Adam Smith and other economists after him expressed a belief that national well-being is based on the ability to consume goods now and in the future which can be complemented by imports. Based on this belief, Adam Smith came up with a theory of absolute Advantage.

The theory of Absolute Advantage was based on the principle that if a country is absolutely more efficient at producing a good than another country can do, then it has an absolute advantage in the production of that good. This theory created free trade since a country will trade a good or service which it produces more efficiently for another good which is less efficient. Thus, countries would gain by trading and by specialising in goods in which they have an absolute advantage . This theory promotes that trade should not be restricted by tariffs but allowed to flow freely according to the market demand. In this theory, the objective is that people in the country must have a higher standard of living by being able to

obtain goods and services more cheaply and in greater abundance. Nation's wealth is therefore measured on the standard of living of the people in the country.

David Ricardo, following the principles laid by Adam Smith, formulated the theory of Comparative Advantage which suggest that trade is beneficial. The theory of comparative advantage refers to the ability of a country to produce a particular good or service at a lower marginal cost and opportunity cost than another country can do. This theory describes how trade can create value for both countries even when one can produce all goods with fewer resources than the other.

With the wave for trade liberalisation, which has affected the developing world during the globalisation process, certain tools were created for policymakers to justify the move for deregulation in the global economy. Trade barriers under the import-substituting regime were sought to be recognised as “social costs of protection” which were measured by “effective rate of protection that also tested the cost efficiency of domestic industries in comparison to international standards. The concept was used to categorise the goods and services which have the potential to be exported by developing countries which led to a change from import substitution to export promotion (Sen, 2010).

Economists over the years focused more on the theory of comparative advantage which placed emphasis on physical and natural influences over competitiveness, technological and human factors. The continuity of the theoretical development from the comparative advantage theory was revealed via Mill and Marshall to Heckscher, Ohlin and Samuelson model which explains the international division of labour in terms of different endowments of different countries with two factors of production (i.e. labour and capital). The two essential premises of the standard Heckscher-Ohlin model are that factors of production are immobile between countries and that these factors are used in different combinations to produce different goods (Goldin, 1990).

As Pugel et al (1996) indicate that under free trade, there were no incentive distortions, which are gaps between the private and social benefits or costs of any activity. They argue that, there are usually trade policy debates around the domestic production of goods that are currently being imported. On the other hand, they also infer that, import competition can lead to the downfall of domestic industries. In which case, protectionism will be the ideal solution

in coming to the rescue of the dying industry. What matters more according to Pugel et al (1996), is the gains that the country obtains from trade. They argue that there are some other policies that can work better to save the dying industries than import barriers which require a thorough diagnosis of the problem before coming up with an intervention.

There are also cases of dumping where countries sell their products at a very low price that cannot compete with the prices of an importing country. Dumping benefits buyers in the short term although it has long term impacts as it creates monopoly in the markets. Governments of importing countries have often levied antidumping tariffs which could either raise or lower the net national welfare of the importing country depending on the tariff size. This implies that the antidumping tariff can be good or bad based on how it is managed (Pugel et al, 1996). Would the South African Textile Industry benefit from any of the trade theories outlined above?

Drawing from the above three theories of trade, it is important to determine how the South African textile industry finds expression into the trade theories outlined above. According to the DTI (2007), the South African textile industry is amongst the most labour-intensive industries employing approximately 11% of total manufacturing employment while contributing around 0.6% to the country's GDP. As it has been evident from different studies conducted on the South African textile industry, the industry has been experiencing challenges that are mostly caused by the influx in cheap imports especially from china, it is critical to understand the underlying causes which are linked to the trade theories based on empirical evidence.

Reed and Morris (2008) posit that, underinvestment in both human and physical capital in the South African textiles industry has worsened the crisis which was mainly triggered by globalisation and a weak currency as well as the incapability of the industry in dealing with the rising imports penetration. They further argue that the Government policy that was designed to address the effects of liberalisation in the industry has largely been regressive and reinforced the perception of global trade as a threat rather than an opportunity which supported the Mercantilist view on trade.

Exchange rate and imports

The literature from (DTI, 2011) revealed that, Imports of textile products increased from R6,645 million in 2001 to R14,370 million in 2006. The strengthening of the rand post 2003

[hovering between 1\$ = R6 – R7 (SARB, 2005)] created easier access to the domestic market as well as hindering export opportunities into the global market. The appreciating exchange rate and the economic boom afforded retailers greater buying power in international markets which led to an increased level of imports. This also coincided with the indirect impact of global Chinese textile exports. A weak rand which South Africa experienced in 2009 [hovering between 1\$ = R9 – R10 (SARB, 2014)], however did not necessarily reduce the value of imported textile products as the value of textile imports from China increased from R7 billion in 2008 to R8 billion in 2009 (DTI, 2011).

Labour as a major factor of production in the textile industry

As Reed et al (2008) put it, high wage rates and total labour costs, relatively few hours worked per week, high level of absenteeism and inefficient workers lead to high unit labour costs and low levels of productivity. High rates of absenteeism impact on production time foregone and can reduce quality resulting in higher unit costs and therefore lower productivity. They argue that even if the sector is capital-intensive, flexibility (ability to work for 24 hours) is critical since textiles firms incur huge costs each time a machine needs to be started at the beginning of a new shift. Countries like China has greater labour market flexibility which enables textile firms to move to full capacity operating for 365 days, 24 hours a day which make them to be more competitive. Furthermore, investing in more sophisticated machinery in the textile industry will reduce unit labour costs which will consequently raise productivity. In more labour-intensive firms, it is critical to invest in human resources to ensure that there is an improvement in the skills level of workers which can also increase efficiency levels and productivity.

However, with the above unfolding and based on the empirical evidence related to the South African context, can quantitative restrictions reduce the level of imports?

The DTI (2007) convincingly inferred that, the domestic market for textile products in South Africa grew substantially in 2002. It further explained that, the value of textiles grew from R17,460 million in 2001 to R28,800 million in 2005, which illustrates an improvement. However, the situation changed over the years when domestic demand decreased, which led to a crisis in the industry as indicated in figure 1 below (Reed et al, 2008).

Figure 1: Domestic Demand of textile products in South Africa



Source: DTI - Using SIC codes 311, 312 for textiles

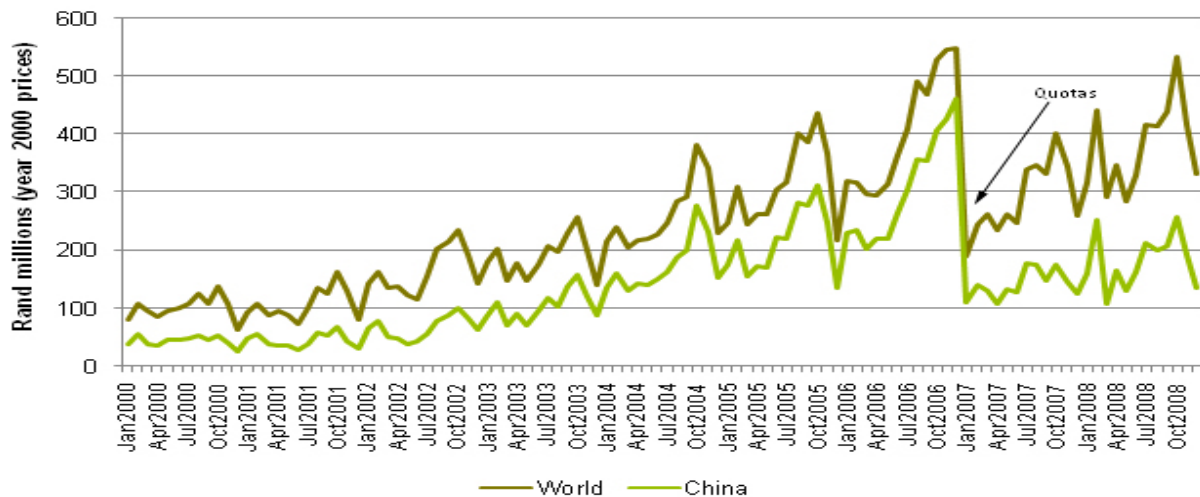
During 2006, South Africa imposed quantitative restrictions on certain textile lines from China, although implementation was delayed until the beginning of 2007. The quotas were aimed at limiting the increase of textile imports from China, in trying to improve the market of domestic products (Woolfrey, 2009).

In an analysis conducted on the first 18 months of the quota period, there was evidence of a significant decrease in imports from China. After this initial drop, the targeted imports appeared to stabilise and resume their cyclical trends, but at levels slightly lower than before the quotas were introduced. However, imposing quotas on one country does not really reduce the overall level of imports since other countries might view that as an opportunity for them to benefit, and increase their imports during the quota period. (Woolfrey, 2009).

In a study conducted by Van Eeden (2009), it became evident that, during the quota period, the value of Chinese imports of the targeted lines were 6% lower than in the earlier period, which represented a decline of R281 million. However, the value of overall imports of the lines which were targeted by the quotas was 33% higher during the quota period. It was proved that imports from a number of other countries such as Bangladesh, Vietnam and Malaysia were significantly higher during the quota period. Figure 2 below illustrate South

Africa's imports of Clothing and Textiles in Quota Lines from China and the World from 2000 to 2008 (monthly).

Figure 2: South Africa's imports of clothing and textile



Source: Van Eeden (2009)

The above figure clearly illustrates that while quotas are identified to be an effective way of limiting imports of the targeted goods, as the Mercantilists argue, they can also be ineffective at limiting imports depending on which countries they are imposed to. If the labour costs and productivity levels are lower, it would appear that instead of turning to local manufacturers, South African retailers would simply source their goods from other low-cost producers of clothing and textiles such as Malaysia and Bangladesh which suggests that Chinese imports are not the only problem facing the local industry in South Africa (Van Eeden, 2009).

Woolfery (2009) in the same vein argued that, South African producers are at a competitive disadvantage not just with China, but with many other producers of textiles. He further postulates that the situation can only change if local producers can compete with their international counterparts in terms of prices, reliability and quality.

In supporting Van Eeden's findings, Reed et al (2008) were rather cautious when they posit that quotas did not only fail to achieve the intended aim of improving output, employment and investment in the local industry, but also resulted in a negative overall effect, since it also damage vital relations between local producers and retailers which are critical for the survival of the industry. What is the impact then of trade liberation of employment?

Lee (2005), defines trade liberalisation as a move towards free trade through the reduction of tariff and other related barriers. It is generally perceived as the major driving force behind globalisation. There has been increasing flows of goods and services across national borders which have been the most visible aspect of the increasing integration of the global economy in recent years. Many criticise trade liberalisation and blame it for causing problems such as rising unemployment and wage inequality, increased exploitation of workers in developing countries, poor employment conditions and labour standards, de-industrialisation and marginalisation of low-income countries, poverty and global inequality as well as degradation of the environment. These however does not mean that free trade does not have advantages in terms of improved allocation of resources and consequent gains in productive efficiency and economic growth which are a basic principles of mainstream economic analysis.

Lee (2005), further argues that the impact of trade liberalisation on employment is significant as the level of employment is a key determinant of the overall economic welfare, especially in developing countries like South Africa where systems of social protection is not that strong. He inferred that, the impact of trade liberalisation on the level and structure of employment determines, to a large extent, its impact on the quality of life measured by poverty, wage and income distribution as well as the quality of employment.

Trade itself, is usually associated with growth in the economy, which does not necessarily mean that trade liberalisation can improve growth. Trade liberalisation if pursued without due consideration to the strategic context of a given economy, can have a negative impact on growth itself (Rahman, Bin Shadat and Raihan, 2007).

Chinembiri (2010) alluded that, South Africa is one of the countries that changed from inward looking trade policy characterised by high tariffs, quota restrictions and import substitution policies towards a liberalised export focused trade strategy. This increased openness did not provide expected rapid employment growth, but seems to have led to formal sector employment declines.

With the above in mind this study seeks to understand the real reasons for the huge influx of Chinese imports in South Africa

Ever since South Africa joined the WTO, China has been the largest trading partner of South Africa with the trade volume of approximately 19.4 % of the total trade volume between

China and Africa (DTI, 2011). Many have questioned China's relations with South Africa because of the perception that there seem to be huge trade imbalances which are more in China's favour. Large-scale dumping of cheap manufactured products has impacted negatively on local industries.

The important question is, what could have caused this trade imbalance and dumping? According to Biyase et al (2007), the WTO required that its members gradually reduce quotas on textile imports. All quotas were indeed removed by 1 January 2005 under this agreement. However, South Africa's tariff liberalisation programme, went far further and was significantly quicker than required by the GATT agreement and WTO regulations which consequently gave the domestic industry a riskily short time to adjust.

By being a member of the WTO, it will not be easy for South Africa to re-adjust its tariffs as it has to comply with the fundamental principles of the WTO. Because of this, South Africa may find it difficult to impose any type of restriction on the increase of imported goods, which only leaves it with a choice to empirically assess the effect that such an increase of imports would have in the long term in their growth as well as in the sectoral and total employment in the country (Biyase et al, 2007).

The fundamental principles of the WTO are meant to ensure that there is a good trade relation between trading countries; however, based on how they are implemented and managed, they can create or destroy good trade relations. The free trade principle for instance, which encourages world trade by lowering trade barriers, can harm good trade relations with countries that are highly competitive. The production level of China is highly uncompetitive as compared to South Africa due to the costs of production that are very low in China as argued in the literature presented in this report. For South Africa to succeed as a member of the WTO, it is important that the trade environment is developed domestically to allow the country to compete with other member countries.

Methodological Approach

The study has used Regression equation to analyse the data and interpret the results. This method of inquiry is set to explain each variable that forms part of the equation this will give a clear indication to understand what constitute endogenous and exogenous variables.

The study used the following multiple regression equation:

$$X = \alpha + \beta_1 I + \beta_2 e + \mu$$

Where X – is the (endogenous variable) dependent variable

α , β_1 , & β_2 – are the constant variables

I & e – are (exogenous) independent variables

μ – is the error term which is assumed to be normally distributed and independent. The error residual consists of 3 components which are:

- Random error;
- Measured error; and
- Effect of all other factors which are excluded from the model.

The endogenous variable X is explained by a component that varies systematically with the exogenous variables I and e and by the random error term μ , which represents all other factors affecting X.

The endogenous variable X, for the study represents the employment levels within the textile industries in South Africa and the exogenous variables are:

I – Imports in value (Special woven fabrics, tufted textile fabrics; lace tapestries; trimmings and embroidery in rand); and

e – Exchange rate (South African cents to the Chinese Yuan). $\beta_1 < 0$ and $\beta_2 < 0$

$\beta_1 < 0$: There is a negative relationship between imports and domestic industry's employment levels because an increase in the level of imports will reduce the demand of domestically produced textile goods which causes job losses.

$\beta_2 < 0$: There is a negative relationship between exchange rate and domestic industries employment because a strong rand will make imported goods to be cheap, increasing their demand and resulting to a fall in production capacity of domestic industries and thereby increasing job losses.

The study utilises time series data that were collected over the years. Data include annual levels of employment in the textile industry, the value of imports from China and exchange

rate levels (South African Rand per Chinese Yuan). There are 19 data points or observations that will be analysed annually and the time frame of the study is from 1st January 1993 to 31st December 2011. The main sources of data in this study are the Department of Trade and Industry (DTI), The Textile Federation and the South African Reserve Bank (SARB). The data is made public in the DTI and SARB websites which is open for everyone to access and is available on request from the Textile Federation.

Data collection method

The data collection method includes desk research from the DTI, Textile Federation and SARB websites. Where there were limitations in collecting data from the organisations, relevant branches within the organisations were contacted for assistance.

Method of data analysis

To analyse the impact of a high level of textile imports from China on employment levels in the South African textile industries, regression method is used. Regression analysis is a collective name for techniques for the modelling and analysis of numerical data consisting of values of a dependent variable (also called response variable or measurement) and of one or more independent variables (also known as explanatory variables or predictors). The parameters are estimated so as to give a "best fit" of the data. Most commonly the best fit is evaluated by using the least squares method, but other criteria have also been used.

Variables that will be utilised in this study are non-stationary time series. The econometric consequences of non-stationary data can be quite severe, leading to least squares estimators, test statistics and predictors that are unreliable. A stochastic process is the economic model generating the time series variable which is an economic variable that is observed over time. A stochastic process (time series) is stationary if its mean and variance are constant over time and the covariance between two values from the series depends only on the length of time separating the two values and not on the actual times at which the variables are observed.

Data validation

The current literature and theory on the impact of imports on employment provides hypotheses of what the impact is. The findings of the research are generalised since the impact of imports on employment are measured by different variables or indicators such as

increase or decline in productivity and job losses (Bryman, 2012)

Hypothesis

Hypothesis established for this study are:

1. High level of cheap textile imports is associated with a decline in domestic industries productivity, measured in employment levels;
A strong rand is associated with high levels of imports, thereby indirectly reducing employment levels within the textile industry.

DATA ANALYSIS AND INTERPRETATION

The study uses a Statistical Package for Social Sciences (SPSS) software which is a Windows based programme that is used to perform data entry and analysis as well as creating tables and graphs. In this section, a series of tests are conducted to measure the relationship between the exchange rate, the level of textile imports from China and employment in the South African textile industries.

The SPSS software will be utilised to run frequencies, calculate Descriptive Statistics, compare Means, conduct Cross-Tabulations, conduct T-Tests, and conduct ANOVAs as well as running various types of regressions that assist in analysing the impact of imports from China on employment in the South African textile industry. Excel package is also utilised to create graphs that clearly illustrate the relationship between the variables being analysed.

Presentation of data

The table below provide the data collected from secondary sources for the South African imports of textile products from China (in value), employment levels in the South African textile industry and exchange rates (SA cent per China Yuan Middle rate). The data was collected from the Department of Trade and Industry (Imports), the Textile Federation (Employment levels) and the South African Reserve bank (exchange rates).

Table 1: Employment, Imports and exchange rate data

Year	Employment data in the textile industry (No)	Imports of textile from China(In Value) - Textile and textile articles	Average Annual Exchange rate (SA cent per China Yuan Middle rate (R1 = 100 cents)
1993	65054	204233199	57
1994	68165	249936611	41
1995	66142	236017606	43
1996	78694	333059812	45
1997	75875	380682874	60
1998	58267	439587924	42
1999	53997	557789751	74
2000	55080	1002381156	84
2001	53384	1204676620	104
2002	54519	1829773525	127
2003	57794	2445725368	91
2004	51208	3920808284	78
2005	46518	5136624873	78
2006	46895	7522365774	85
2007	47647	6069625522	93
2008	45637	7264853044	119
2009	40207	8580876970	123
2010	36057	10011000028	108
2011	34556	11099269487	112

Before analysing the data as presented in the table above, it is important that the frequency of data for each variable are checked. A frequency distribution can reveal the number of missing values if any, outliers and extreme values as well as the central tendency, variability and shape of the distribution. It should be noted that, the data being used in this study is readily available in the secondary sources identified above.

Variables analysed in this study are non-stationary time series. The econometric consequences of non-stationary data can be quite severe, leading to least squares estimators, test statistics and predictors that are unreliable. A stochastic process (time series) is stationary if its mean and variance are constant over time and the covariance between two values from the series depends only on the length of time separating the two values and not on the actual times at which the variables are observed. The danger of obtaining significant regression results from unrelated data when using non-stationary series in regression analysis is obtaining spurious regression results.

Frequency tables

According to tables 2, 3 and 4 below, the collected data (Employment, Imports and Exchange rates) is valid at all points and there are no missing values. The data was sorted in an ascending order before the frequency tables were created using SPSS.

Table 2: Frequency table for Employment levels in the textile sector

Statistics

Employment

N	Valid	19
	Missing	0

Employment in the textile industry

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	34556	1	5.3	5.3	5.3
	36057	1	5.3	5.3	10.5
	40207	1	5.3	5.3	15.8
	45637	1	5.3	5.3	21.1
	46518	1	5.3	5.3	26.3
	46895	1	5.3	5.3	31.6
	47647	1	5.3	5.3	36.8
	51208	1	5.3	5.3	42.1
	53384	1	5.3	5.3	47.4
	53997	1	5.3	5.3	52.6
	54519	1	5.3	5.3	57.9
	55080	1	5.3	5.3	63.2
	57794	1	5.3	5.3	68.4
	58267	1	5.3	5.3	73.7
	65054	1	5.3	5.3	78.9
	66142	1	5.3	5.3	84.2
	68165	1	5.3	5.3	89.5
	75875	1	5.3	5.3	94.7
	78694	1	5.3	5.3	100.0
Total		19	100.0	100.0	

Table 3: Frequency table for Imports

Statistics

Imports

N	Valid	19
	Missing	0

Imports of textile from China(In Value)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	204233199	1	5.3	5.3	5.3
	236017606	1	5.3	5.3	10.5
	249936611	1	5.3	5.3	15.8
	333059812	1	5.3	5.3	21.1
	380682874	1	5.3	5.3	26.3
	439587924	1	5.3	5.3	31.6
	557789751	1	5.3	5.3	36.8
	1002381156	1	5.3	5.3	42.1
	1204676620	1	5.3	5.3	47.4
	1829773525	1	5.3	5.3	52.6
	2445725368	1	5.3	5.3	57.9
	3920808284	1	5.3	5.3	63.2
	5136624873	1	5.3	5.3	68.4
	6069625522	1	5.3	5.3	73.7
	7264853044	1	5.3	5.3	78.9
	7522365774	1	5.3	5.3	84.2
	8580876970	1	5.3	5.3	89.5
	10011000028	1	5.3	5.3	94.7
	11099269487	1	5.3	5.3	100.0
Total		19	100.0	100.0	

Table 4: Frequency table for exchange rates

Statistics

Exchange Rates

N	Valid	19
	Missing	0

Average Annual Exchange rate (SA cent per China Yuan Middle rate (R1 = 100 cents)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	40	1	5.3	5.3	5.3
	42	2	10.5	10.5	15.8
	45	2	10.5	10.5	26.3
	60	1	5.3	5.3	31.6
	74	1	5.3	5.3	36.8
	78	2	10.5	10.5	47.4
	84	1	5.3	5.3	52.6

85	1	5.3	5.3	57.9
91	1	5.3	5.3	63.2
93	1	5.3	5.3	68.4
104	1	5.3	5.3	73.7
108	1	5.3	5.3	78.9
112	1	5.3	5.3	84.2
119	1	5.3	5.3	89.5
123	1	5.3	5.3	94.7
127	1	5.3	5.3	100.0
Total	19	100.0	100.0	

Correlations Analysis

Correlations in this study are run using scatter plotting and correlation tables. Correlation is a statistical method used to assess a possible linear association between two variables. Correlation is measured by the correlation coefficient, which represents the strength of the putative linear association between the variables being studied. A correlation coefficient of zero indicates that no linear relationship exists between two continuous variables, and a correlation coefficient of -1 or $+1$ indicates a perfect linear relationship. The strength of relationship can be anywhere between -1 and $+1$. The stronger the correlation, the closer the correlation coefficient comes to ± 1 (Mukaka, 2012).

According to Mukaka (2012), if the coefficient is a positive number, the variables are directly related (i.e., as the value of one variable goes up, the value of the other also tends to do so). If, on the other hand, the coefficient is a negative number, the variables are inversely related (i.e., as the value of one variable goes up, the value of the other tends to go down).

Scatter plotting is normally used to examine the association of two continuous variables. A positive correlation means that as the value of one set of data increases, the other data will also increase while a negative correlation means that as the value of one set of data increases, the other data will decrease.

Figures 4 below show a negative and linear correlation between employment and import data presented. As the level of imports increase, employment levels drops.

Figure 4: Scatter plotting for Employment and Import levels

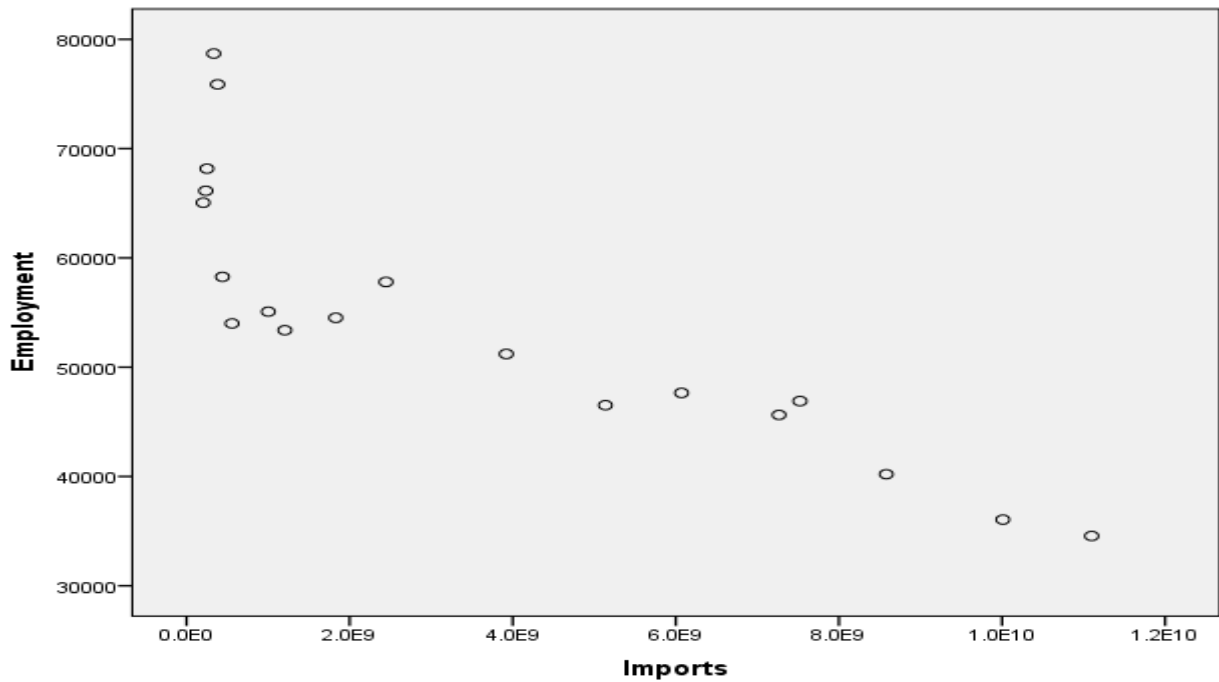


Figure 5 below shows that there is a negative and non linear correlation between employment and exchange rate as the data do not follow a linearity pattern.

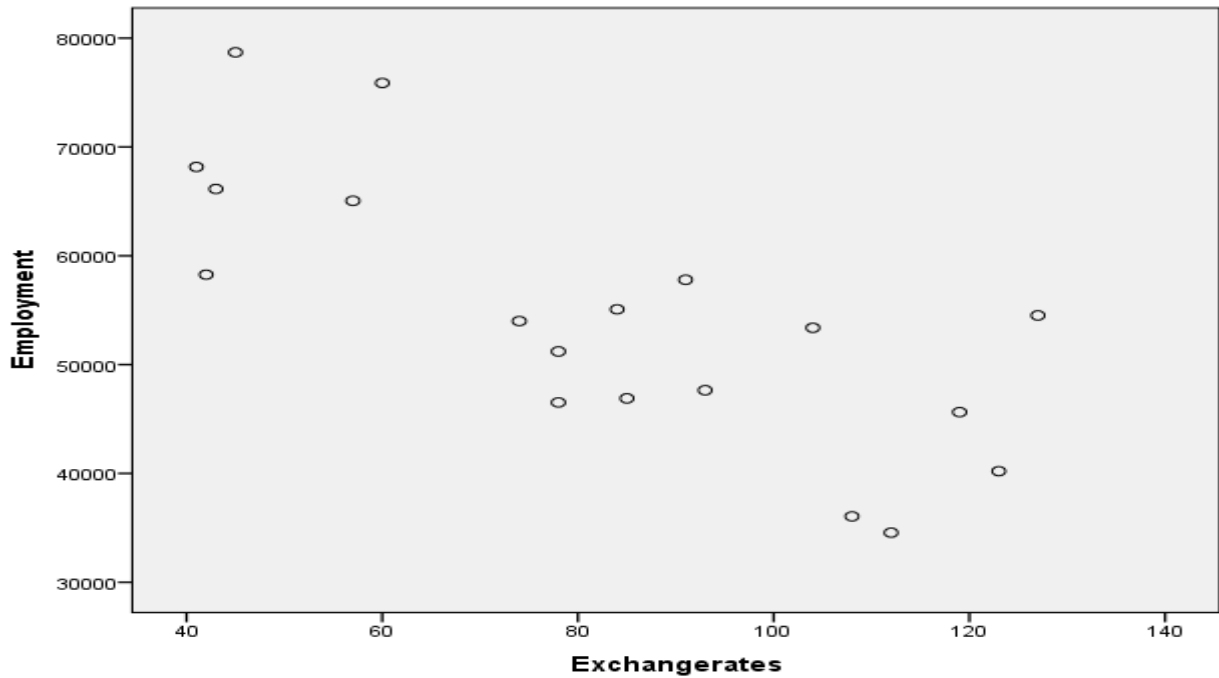


Figure 5: Scatter plotting for Employment and Exchange rates

The study uses the Pearson’s correlation coefficient which measures the strength of the linear relationship between two scale (ratio or interval) variables. Table 5 below, shows a negative correlation between employment levels in the South African textile industry and imports of textile products from China while table 6 shows a negative relationship between Employment levels in the South African textile industry and exchange rates.

Table 5: Correlations – Employment and Imports

		Employment in the textile industry	Imports of textile from China(In Value)
Employment in the textile industry	Pearson Correlation	1	-.866**
	Sig. (2-tailed)		.000
	N	19	19
Imports of textile from China(In Value)	Pearson Correlation	-.866**	1
	Sig. (2-tailed)	.000	
	N	19	19

** . Correlation is significant at the 0.01 level (2-tailed).

Table 6: Correlations – Employment and Exchange Rates

		Employment	Average Annual Exchange rate (SA cent per China Yuan Middle rate (R1 = 100 cents))
Employment in the textile industry	Pearson Correlation	1	-.765**
	Sig. (2-tailed)		.000
	N	19	19
Average Annual Exchange rate (SA cent per China Yuan Middle rate (R1 = 100 cents))	Pearson Correlation	-.765**	1
	Sig. (2-tailed)	.000	
	N	19	19

** . Correlation is significant at the 0.01 level (2-tailed).

4.5 Statistical tables

Table 6 below provides the descriptive statistics which provide the mean, range and the standard deviation for employment, imports and exchange rates. The number of data points

analysed for all variables is 19. The mean explains the average in terms of the data provided for the research period while the standard deviation measures how widely spread the values in a data set are. If the data points are all close to the mean, then the standard deviation is close to zero and if many data points are far from the mean, then the standard deviation is far from zero. If all the data values are equal, then the standard deviation will equal to zero. The descriptive statistics of the model were generated by SPSS utilising the data presented in table 1.

Table 6: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Employment in the textile industry	19	34556	78694	54510.32	12253.953
Imports of textile from China(In Value)	19	204233199	11099269487	3604699390.95	3732960530.313
Average Annual Exchange rate (SA cent per China Yuan Middle rate (R1 = 100 cents)	19	41	127	82.32	28.601
Valid N (listwise)	19				

According to the results in table 6 above, the average number of people employed in the South African textile industry between the period 1993 and 2011 is **54 510** with the standard deviation of **12 254**. The average value of textile imports from China during the period of study (1993 – 2011) amounts to **R3, 6 billion** with the standard deviation of **R3.7 billion** while the annual exchange rate (SA cent per China Yuan) is averaged at **82 cents (R0.82)** with the standard deviation of **28.6**.

The model summary provided in table 7 below is used to determine how well a regression model fits the data. The "R" column represents the value of the multiple correlation coefficient *which* can be considered to be one measure of the quality of the prediction of the dependent variable (Employment in the South African textile industry). The R value of 0.89, in the table below, indicates a good level of prediction. The "R Square" column represents the coefficient of determination, which is the proportion of variance in the dependent variable that can be explained by the independent variables (i.e., it is the proportion of variation accounted for by the regression model above and beyond the mean model). The R^2 value of

0.81 shows that that the independent variables explain 81% of the variability of the dependent variable (employment).

Table 7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.898 ^a	.807	.783	5706.182

Predictors: (Constant), Average Annual Exchange rate (SA cent per China Yuan Middle rate (R1 = 100 cents), Imports of textile from China(In Value)

Table 8: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2181900532.590	2	1090950266.295	33.505	.000 ^b
	Residual	520968187.515	16	32560511.720		
	Total	2702868720.105	18			

a. Dependent Variable: Employment data in the textile industry

b. Predictors: (Constant), Average Annual Exchange rate (SA cent per China Yuan Middle rate (R1 = 100 cents), Imports of textile from China(In Value)

F-ratio in the ANOVA table above tests whether the overall regression model is a good fit for the data. The table shows that the independent variables (Imports and Exchange rates) statistically significantly predict the dependent variable (Employment): $F(2, 18) = 33.505$, $p < .0005$ (i.e. the regression model is a good fit of the data).

Table 9: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	73633.313	4479.356		16.438	.000
	Imports of textile from China(In Value)	-2.113E-6	.000	-.644	-4.288	.001
	Average Annual Exchange rate (SA cent per China Yuan Middle rate (R1 = 100 cents)	-139.785	64.310	-.326	-2.174	.045

a. Dependent Variable: Employment

Unstandardised coefficients in table 9 above indicate how much the dependent variable varies with independent variables, when all other independent variables are held constant. The Unstandardised coefficient, B_1 , for imports is equal to -2.11 which mean that for each R1 million increases in textiles imports value, there is a decrease in Employment levels of 2.11. Furthermore, for every R1 increase in the South African rand (appreciation of the rand), employment in the textile sector decrease by 140 due to the fact that a strong rand makes imported goods to be cheaper, leading to an increased demand of such products thereby reducing employment levels in the industry.

Table 9 above also shows that there is a negative but significant relationship between employment in the textile sector and imports from China. There is also a negative and significant relationship between employment in the South African textile sector and Exchange rate.

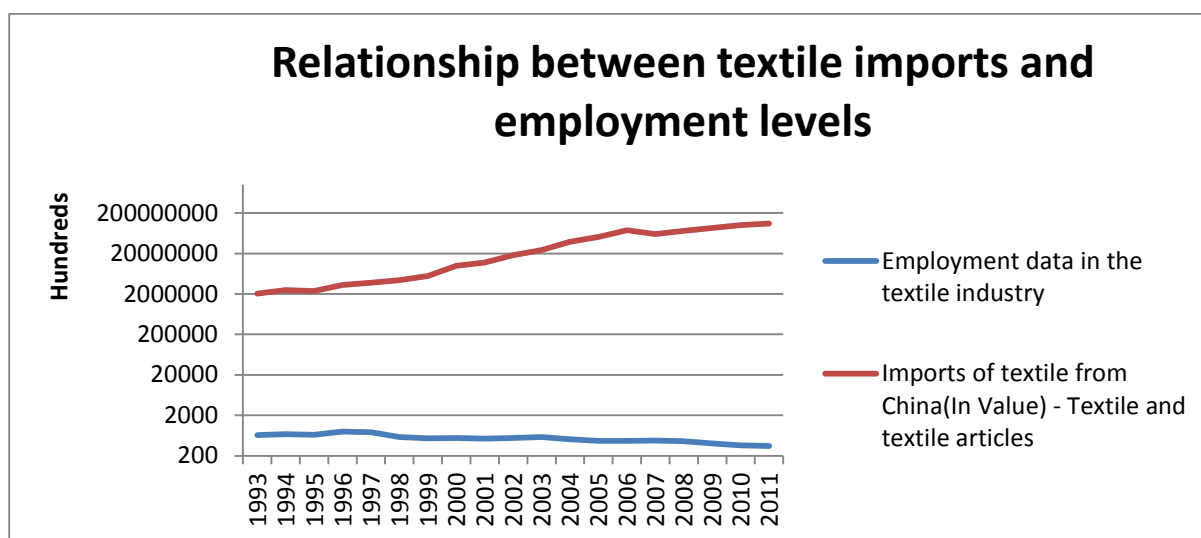


Figure 6: Graphical presentation of the relationship between imports and employment

The graphical presentation above (figure 6), illustrates the relationship between imports and employment levels within the textile industry which shows that an increase in imports of textile products lead to a fall in employment levels within the textile industry. In terms of the graph above, an increase in the value of imported Chinese textile products from R209 million in 1993 to R11 billion in 2011 resulted in a decrease in employment levels within the South African textile industry from 65 thousands in 1993 to 34 thousands in 2011. This shows that

there is a negative and significant relationship between imports and employment in the South African textile industry.

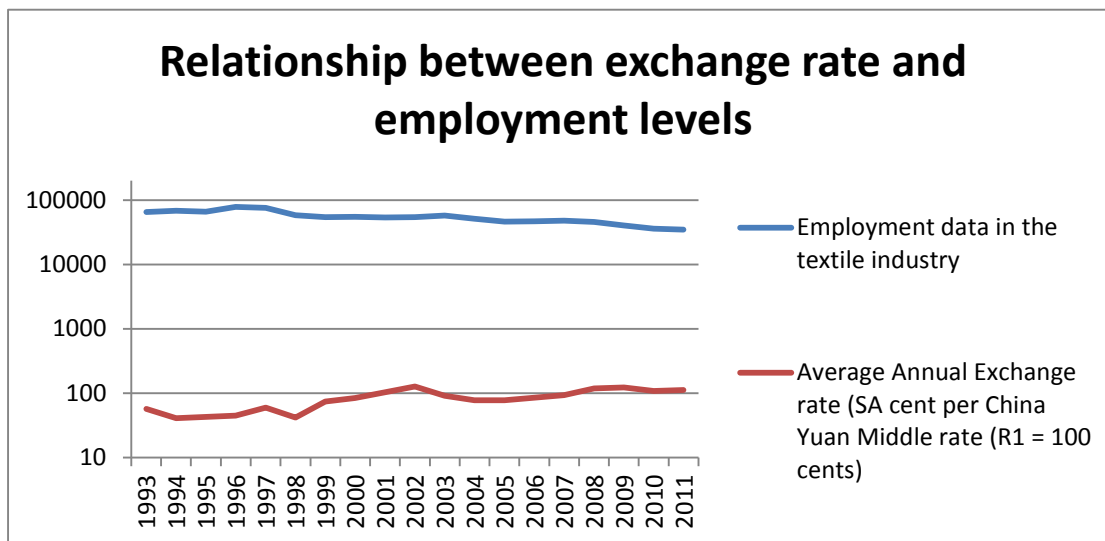


Figure 7: Graphical presentation of the relationship between exchange rates and employment

Figure 7 above illustrates the relationship between employment levels within the South African textile industry and exchange rates (South African cent per China Yuan). The graph shows a negative but indirect relationship between employment levels within the textile industry and exchange rates, as a strong rand contributes to an increase in imported textile goods thereby negatively impacting on employment levels within the industry as shown in figure 7 above, notwithstanding other underlying factors that impact on the level of imported goods such as labour costs, tariff levels and trade rules.

In 1996, the rate to exchanging 1 Chinese Yuan in South Africa was 45 cents which weakened to R1.12 in 2011. During the same period, the textile imports value from China increased from R300 million in 1996 to R11 billion in 2011 while employment levels decreased from 78 thousands in 1996 to 34 thousands in 2011. The graph (figure 7) also shows that a weak rand does not necessarily have a positive relationship since the level of imports continued to increase even when the rand weakened.

CONCLUSIONS

The South African textile industry has experienced various periods of growth and decline. As proven by many studies conducted on the textile industry, cheap imports from China have negatively impacted the industry which led to different interventions by Government. Literature shows that underlying factors that impact the industry by increasing imports are fluctuating currency, import quotas, high labour costs and lack of a comprehensive industrial and sectorial policy which resulted in uncoordinated and fragmented response to the challenges that face the textile industry.

Although imports in the targeted lines from China dropped substantially due to the imposed quotas, other countries increased their imports which did not reduce the overall import level. The South African textile industry has the necessary experience and know-how to enable it to reposition itself, as a producer of higher value-added and high quality textiles. Although the DTI programmes to support the industry are starting to show improvements, serious questions should be raised about the industry's ability to become internationally competitive.

It also appears that the evolution of trade theory, from old trade doctrines to the new trade theories has impacted policy on the continuing support of the free trade doctrine to determine policy for developing areas, which is pushed mainly by advanced nations. Furthermore, policies that are pursued by advanced nations rely more on the new trade theories doctrine of strategic trade. The uneven power relations between the rich and poor nations across the globe contribute to a continuous irregular combination of policies, to which trade theory unfortunately has contributed much. Much of the concern of the policymakers with the micro-theoretic formulations of trade theory, both old and new, are related to a total neglect of the macroeconomic issues relating to the national as well as the world economy.

The recognition of the difference between trade policy and policy of trade liberalisation is more critical. This distinction is important for protecting some policy space that can promote the country's development priorities. By adopting an analytical policy regime, effective support to the growth and development of small and informal sector activities with substantial employment and poverty alleviation effects can be provided, although such opportunities seems to have been missed to a large extent in many countries

REFERENCES

Biyase and Bonga-Bonga (2007), The Impact of Chinese Imports on South African Employment: An Empirical Perspective, University of Johannesburg

Bryman (2012), Social Research methods, 4th edition, Oxford

Chinembiri (2010),

An Empirical Assessment of the Impact of Trade Liberalization on Employment in South Africa, A paper for Trade and Industrial Policy Studies, Australian Government

Democratic Alliance, textiles sector crisis – the DA’s 8-step solution, http://www.da.org.za/docs/591/textilesectorcrisis_document.pdf

Flatters and Stern (2007), Trade and Trade Policy in South Africa: Recent Trends and Future Prospects, 2019 Scenarios Research, Development Network Africa

Goldin (1990), Comparative Advantage: Theory and application on developing country agriculture, OECD development centre, Working Paper No. 16, (Formerly Technical Paper No. 16)

Lee (2005), Trade Liberalization and Employment, DESA Working Paper No. 5, http://www.un.org/esa/desa/papers/2005/wp5_2005.pdf

Mukaka (2012), A guide to appropriate use of Correlation coefficient in medical research, Malawi Med J, <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3576830/>

Pugel and Lindert (1996), International Economics, 10th edition, Irwin, United States of America
Ravenga (1992), The Impact of Import Competition on Employment and Wages in U. S. Manufacturing the Quarterly Journal of Economics (1992) 107(1): 255-284
Rowley (2002), Trade Protectionism, For the Encyclopedia of Public Choice

Rahman, Shadat and Raihan (2007), the impact trade liberalisation on employment in Bangladesh, Centre for Policy Dialogue (CPD) and International Labour Organization (ILO), http://www.cpd.org.bd/downloads/Summary_TL%20and%20employment.pdf

Reeds and Morris (2008), A Sectoral Analysis of Skills Gaps and Shortages in the Clothing and Textile Industry in South Africa, Policy Research in International Services and Manufacturing (PRISM), School of Economics, University of Cape Town, South Africa

Schumacher (2012), Adam Smith's theory of absolute advantage and the use of doxography in the history of economics, University of Potsdam, Germany

Sen (2010), International Trade Theory and Policy: A Review of the Literature, Working Paper No. 635, Levy Economics Institute of Bard College

Textile Federation (2007), Textile Industry Statistics, <http://www.textfed.co.za/>

Van Eeden, and Fundira (2008), South African quotas on Chinese clothing and textiles: 18 month economic review, Tralac Working Paper No 08/2008

Vlok (2006), The Textile and Clothing Industry in South Africa, The Future of the Textile and Clothing Industry in Sub-Saharan Africa

Woolfrey (2009), An assessment of the trade measures proposed as part of the Department of Trade and Industry's Draft Rescue Package for the clothing and textile industry, Working Paper No 5/2009. Stellenbosch, Tralac,

Wolmarans (2011), the impact of trade policies on the South African clothing and textile industry: a focus on import quotas on Chinese goods, Stellenbosch University, South Africa

www.thedti.gov.za/ Trade publications

<http://www.resbank.co.za/Research/Statistics/Pages/OnlineDownloadFacility.aspx>

