

**Effects of openness to trade, exchange rate  
fluctuations and foreign direct investment on job  
creation in South Africa**

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## **DEDICATION**

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This dissertation is dedicated to my loving mother, Ms Brenda Musumali, as well as my beloved sisters, you are a precious gift of life.

## DECLARATION

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I declare that:

**“Effects of openness to trade, exchange rate fluctuations and foreign direct investment on job creation in South Africa”**

is my own work with exception to sources and quotations that are recognised by means of complete references. All sources obtained and quoted have been precisely recorded and acknowledged by means of thorough reference, and I have not previously submitted this dissertation to any other institution of higher learning to obtain any form of qualification or degree.

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**SIGNATURE**

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**DATE**

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November 2017

Vanderbijlpark

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## ABSTRACT

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Maintaining the growth and sustainability of jobs in a changing global market environment is crucial for establishing an enabling social and economic atmosphere for economic development, growth and wellbeing. Economic theory shows that the trade environment is an important determinant of the domestic economy's industry productivity, and growth. Factors constituting the trade environment such as trade openness, the exchange rate and foreign direct investment (FDI), may contribute to job creation especially across tradable and non-tradable sectors. Nevertheless, the effect of these factors on job patterns within a fast changing and highly integrated global market economy remains a point of debate. Empirical declarations have presented mixed findings on the subject matter and thus no single empirical consensus has been presented. Meanwhile, economic theory argues that potential effects of the aforementioned trade factors on a country's job patterns varies according to the orientation of jobs in either tradable or non-tradable sectors.

This study examined the effects of trade openness, the real effective exchange rate and FDI on job creation in South Africa's grouped tradable and grouped non-tradable sectors, as well as the individual tradable and non-tradable private sectors. It thus ascertained the long-run and short-run relationships between South Africa's tradable and non-tradable jobs against the country's trade openness, the real effective exchange rate and net-FDI from 1995 to 2016. The study also established the causal direction between trade openness and employment in the tradable and non-tradable sectors, the real effective exchange rate and employment in the tradable and non-tradable sectors, as well as FDI and employment in the tradable and non-tradable sectors. Results of employment in the grouped tradable sector and the grouped non-tradable sector were compared with the individual tradable and non-tradable private sectors/and or industries. The study employed various econometric statistical models inclusive of descriptive analyses, Panel Autoregressive Distributive Lag model (ARDL), the standard ARDL bounds test to cointegration, Error Correction Model and Toda-Yamamoto Granger causality test. The study also made use of a quantitative research methodology and included time series macro-economic variables such as non-agricultural employment in South Africa's selected economic sectors (manufacturing, mining, wholesale and retail trade, finance and construction), trade openness, the real effective exchange rate and net-FDI from 1995 to 2016.

Employment in the grouped tradable sector revealed a statistically significant and positive long-run relationship with trade openness. The long-run effects of both the real effective exchange rate

and net-FDI on employment was not significant. The short-run findings exhibited non-significant relationships between trade openness, the real effective exchange rate and net-FDI with employment in the grouped tradable sector. Moreover, results of employment in individual tradable sectors established no long-run and short-run relationships between employment trade openness, the real effective exchange rate and net-FDI in the mining tradable sector. Employment in the manufacturing tradable sector presented significant and negative long-run relationships with trade openness, the real effective exchange rate and net-FDI. Meanwhile, the short-run findings exhibited a significant and positive relationship between employment in the manufacturing tradable sector with trade openness, and significantly negative for net-FDI. Results of the short-run relationship between employment in the manufacturing tradable sector with the real effective exchange rate were not significant. Results of the Toda-Yamamoto Granger non-Causality results showed evidence of a bidirectional causal relationship between South Africa's trade openness and employment within the manufacturing tradable sector.

Furthermore, evidence of a significant and positive long-run relationship was revealed between employment in the grouped non-tradable sector with both South Africa's trade openness and the real effective exchange rate. Employment in the grouped non-tradable sector exhibited no long-run relationship with net-FDI. The short-run results established a significant relationship between employment in the grouped non-tradable sector and the real effective exchange rate. Whereas, the short-run relationship between employment in the grouped non-tradable sector with trade openness and net-FDI was not significant.

Findings of employment in the individual non-tradable sectors such the wholesale and retail trade, finance and construction sector, revealed positive and significant long-run relationships between employment in all the individual non-tradable private sectors (wholesale and retail trade, finance and construction) with trade openness and the real effective exchange rate. Nevertheless, there was a negative and significant long-run relationship between employment in the wholesale and retail trade sector with net-FDI, while the long-run relationships between employment in the non-tradable individual finance sector and employment in the individual non-tradable construction sector exhibited positive relationships with net-FDI. The short-run findings exhibited insignificant short-run relationships between employment in the wholesale and retail non-tradable sector with trade openness, the real effective exchange and net-FDI. Results revealed a positive short-run relationship between employment in the finance non-tradable sector and trade openness, and negative with the real effective exchange rate. Findings established in the Toda-Yamamoto

granger non-causality test further revealed a unidirectional causal relationship from South Africa's real effective exchange rate and employment in the finance sector. Lastly, employment in the construction non-tradable sector revealed a positive short-run relationship with trade openness, while no significant short-run relationship was revealed between employment in the construction sector with the real effective exchange rate and net-FDI.

Conclusively, in light of the tradable and non-tradable grouped sectors, increased trade openness is revealed to have a positive effect on employment in both grouped sectors in the long-run. Such long-run positive effects are only maintained by all non-tradable individual sectors when each private sector is distinctively tested for cointegration. South Africa's individual tradable sectors however, do not capture the positive employment effects of trade openness in the long-run. The positive employment effects of trade openness are only witnessed in the manufacturing sector's short-run period, nevertheless, these conditions are not able to be translated towards the long-run. Evenly, no cointegration was found in the mining sector. These findings thus conclusively suggest that South Africa's increased external exposure to the global market (trade openness) largely favours employment in the grouped non-tradable sector and its distinctive private sectors, as opposed to the tradable sector. Also, with both factors having a negative effect on employment in the long-run, the empirical nature of South Africa's exchange rate and FDI patterns do not significantly affect employment in the tradable sector, while employment in the mining sector does not respond to changes in the former and latter economic factors having not shown any form of cointegration. The manufacturing sector exhibited a negative and significant relationship.

Despite FDI being non-significant, a positive long-run effect on employment was revealed for the real exchange rate and FDI in the grouped non-tradable sector, whilst it was also positive but significant for the finance and construction sectors. Only employment in the wholesale and retail trade sector displayed a negative FDI relationship, but maintained a positive employment and real exchange rate interrelatedness. These results highlight the major differences between the tradable sector and non-tradable sector, as well as their distinct private sectors. The responsiveness of employment in each sector towards trade openness, the real exchange rate and FDI underlining South Africa's trade environment, has shown distinct patterns depending on whether it is tradable or non-tradable. The employment benefits obtained by one sector may conversely imply a negative effect on the other sector, being tradable or non-tradable. Findings also established that trade openness and the real effective exchange rate hold the most impact on employment or job patterns relative to FDI. This may be led by FDI's relatively low growth trajectories over the years.

**Keywords:** *employment, exchange rate fluctuations, foreign direct investment, Job creation, openness to trade, trade liberalisation.*

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## LIST OF ABBREVIATIONS

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ADF	:	Augmented Dickey-Fuller
AIC	:	Akaike Information Criteria
ARDL	:	Autoregressive Distributed Lag
ARMA	:	Autoregressive Moving Averages
ASGISA	:	Accelerated and Shared Growth Initiative for South Africa
COSATU	:	Congress of South African Trade Unions
CUSUM	:	Cumulative sum of recursive residuals
CUSUMSQ	:	(CUSUM) and the cumulative sum of squares residuals
DTI	:	Development of Trade and Industry
ECM	:	Error Correction Model
ECT	:	Error Correction Term
EMP	:	Employment
EPWP	:	Expanded Public Works Programme
EU	:	European Union
EWN	:	Eye Witness News
FDI	:	Foreign Direct Investment
FPI	:	Foreign portfolio investment
GDP	:	Gross Domestic Product
GEAR	:	Growth, Employment and Redistribution
HIS	:	Information Handling Services
H-O	:	Heckscher-Ohlin
HQIC	:	Hannan Quinn Information Criteria
IDC	:	Industrial Development Corporation
ILO	:	International Labour Organisation
IMF	:	International Monetary Fund
IPAP	:	Industrial Policy Action Plan
IPS	:	Im-Pesaran-Shin
ITAC	:	International Trade Administration Commission

ITED	:	International Trade and Economic Development
KPSS	:	Kwiatkowski-Phillips-Schmidt-Shin
M	:	Imports
MFN	:	Most Favourable Nation
NDP	:	National Development Plan
NGP	:	New Growth Path
NPC	:	National Planning Commission
OECD	:	Organization for Economic Co-Operation and Development
QLFS	:	Quarterly Labour Force Survey
RDP	:	Reconstruction Development Programme
SAARC	:	South Asian Association for Regional Cooperation
SACU-EFTA FTA	:	Southern African Customs Union- European Free Trade Association
SADC	:	Southern African Development Community
SAICA	:	South African Institute of Chartered Accountants
SARB	:	South African Reserve Bank
SBIC	:	Schwarz Bayesian Information Criterion
SIC	:	Schwarz Information criterion
SMME	:	Small and medium-sized enterprises
STATSSA	:	Statistics South Africa
TDCA	:	Trade, Development and Cooperation Agreement
TNCs	:	Transnational Corporations
T-Y	:	Toda-Yamamoto
UNCTAD	:	United Nations Conference on Trade and Development
VAR	:	Vector Autoregression
WTO	:	World Trade Organisation
WTO	:	World Tourism Organisation
X	:	Exports

# CHAPTER 1:

## INTRODUCTION AND BACKGROUND

---

### 1.1 INTRODUCTION

Foreign trade has increasingly become a driving force for many economies since the beginning of globalisation. Economies such as the Asian Tigers have established ground breaking economic breakthroughs led by increased foreign trade participation (Segerstrom, 2013:594). In passing, economic scholars and the various schools of thought have long alluded to the importance of foreign trade participation and liberalisation. However, a country's economic policy in pursuit of job creation faces mounting challenges and uncertainties amidst underlying globalisation and trade liberalisation factors (Meyer, 2014:66). Consequently, the exposure of South Africa's economy has left the South African government pressurised and compelled to attain neoliberal macroeconomic policy. This has led to various ramifications in the form of intensifying unemployment, inequality, job insecurity as well as an increase in the informal economy (Mathekga, 2009). Increased trade exposure and globalisation resonates with the country's vulnerable job patterns (Flatters & Stern, 2007). Changes in economic structures led by increased trade volumes arguably enforces labour displacements due to risks associated with trade openness, exchange rate movements, and foreign direct investment (FDI). The ability for a country to create jobs for its inhabitants is considered to be an important measurement of the wellbeing of its public sector and economic performance (Abdel-Moneim, 2015:67). Upon which, the provision of labour opportunities and job creation remains crucial and integral to economic development and welfare (Hull, 2009:69).

The vastly unprecedented increase in international trade and foreign integration necessitates the need to establish a distinction between a country's industries exposed to foreign competition and those which are not. Therefore, amongst a country's underlying job inhabiting dimensions are the tradable and non-tradable sectors which underline a country's division of its economy into two parts. The tradable sector accounts for a country's goods and services which can be consumed in a different country. On the other hand, goods and services produced in the non-tradable sector primarily and exclusively satisfies domestic demand (Attewell & Crossan, 2013:3-4). As such the division of jobs as tradable and non-tradable jobs thus represents a country's jobs in the primary, secondary and tertiary sectors within international economics (Frocrain & Giraud, 2017:2).

South Africa's apartheid-era was mainly characterised as a closed economy with an inward-looking policy (Chinembiri, 2010:1). On the contrary, the country's post-apartheid economy has fairly been considered to be a relatively open economy (Padayachee, 2010:2). As a result, the newly established trade and foreign integration policy plays a primary role in boosting growth and creating employment for unskilled and semi-skilled workers. This is most prominent in the tradable sectors which consist of agriculture, mining, manufacturing and tourism (Edwards & Lawrence, 2012:5a). Likewise, the openness of South Africa's capital markets has experienced an increase in cash inflows or FDI post 1994, albeit exposure to currency shocks (Arvanitis, 2005:67; The Presidency, 2014:1). The exposure of South Africa to foreign trade is characterised by extreme reliance on foreign capital to fund its significant gap consisting of investments and savings towards stimulating economic growth (IDC, 2013:29).

Moreover, contributors of trade theory such as Adam Smith, Heckscher-Ohlin and David Ricardo, *inter alia*, place emphasis on free trade and international economic integration for the expansion of trade within global markets in order to obtain effective competition allowing for increased efficiency (Chinembiri, 2010:1; Sen, 2010:2-4). However, the practicality of foreign trade integration in the midst of highly fluctuating exchange rates, a highly open economy, coupled with an inflow and outflow of FDI, may also be accompanied by company closures and job losses (Chinembiri, 2010:1). Also, underlying perpetual job dynamics which are potentially a result of international economic integration may be identified through the extent of openness to trade and exchange rate fluctuations (Campolmi & Faia, 2015:1; Chimnani *et al.*, 2012:11). This includes aspects of FDI within sectors of financial globalisation (Schmukler, 2004:3).

Openness to trade, as a means of international economic integration is amassed by myriad research platforms as a key to economic progress and advancement. Therefore, various scholars (such as Huchet-Bourdon *et al.*, 2011; Winters *et al.*, 2004; Yanikkaya, 2003) commend on increased productivity and economic growth as the two by-products of trade openness. Squalli and Wilson (2011:1745) describe the measurement of trade openness as exports plus imports as a share of gross domestic product, which is also projected as a conventional measure of trade openness. The latter falls under the assertion that "the higher a country's share in trade, then the more the benefits assumed by the respective country's economy" (Squalli & Wilson, 2011:1745). However, these benefits are accompanied by disparities between a country's tradable and non-tradable sectors where disparities in employment benefits may be experienced between the two sectors. South Africa's non-mineral tradable sector, such as the export-oriented manufacturing sector, is

characterised by induced unemployment and low growth resulting from the contraction and weakness of the sector relative to other countries which have availed themselves to growth opportunities amid increased trade integration (Rodrik, 2008:772).

On the other hand, the 2008 and 2009 world financial crisis is amongst the various examples of the cost of increased exposure to trade in such a manner that the global employment gap has consistently risen post the 2008 global financial crisis (ILO, 2015:11). Youth unemployment in countries most affected has faced worsening and heightened unemployment trends (Choudhry *et al.*, 2012:77). Particularly, South Africa lost about 484 000 jobs (with 150 000 jobs lost in manufacturing) in the third quarter of 2009 reaching over a million lost jobs at the end of the third quarter, and thereby resulting to an increase in the country's official unemployment rate from 23.2 to 24.5 percent (Padayachee, 2010:3-4; SARB, 2016). Based on this assertion, it is therefore evident that the labour market faces mounting uncertainty and unrests amidst exposure to trade along with risks accompanied by fluctuating exchange rates and aspects of FDI.

Moreover, a country's exchange of goods and services (exports and imports as a composite of trade openness) (Hodge, 1994:2) relies on the nation's exchange. The exchange rate is therefore considered as the primary price of the domestic currency relative to foreign currency (Alexandre *et al.*, 2011:4; Goldberg, 2009:1). Consequently, labour dynamics and patterns of resource reallocation amongst sectors are assumed to be influenced by exchange rate movements. However, this depends on a country's idiosyncratic characteristics such as its level of trade openness and technology (Alexandre *et al.*, 2011:967-970). For this reason, South Africa has gone from establishing a fixed exchange rate system in the 1960s and 1970s, to adopting myriad forms of floating exchange rate systems in the 1980s and 1990s in efforts to obtain a more suitable regime (Van der Merwe, 2013:1-8). Upon which, South Africa's determination of its exchange rate system has presently been left to market forces of demand and supply since the year 2000 based on a floating exchange rate regime (Van der Merwe *et al.*, 2014:148; Van der Merwe, 2003:2).

The exchange rate is an essential trade factor and therefore remains a crucial mechanism for controlling a country's level of unemployment. A country's degree of trade openness is a major determining factor which regulates the responsiveness of labour to the exchange rate (Chimnani *et al.*, 2012:11). Accordingly, job creation may be hindered by fluctuating exchange rates as a result of extreme wage hikes in the case of a country with resilient trade unions. Researchers thereby argue that the extent of this effect is dependent on a country's labour market characteristics (Andersen & Sorensen, 1988:263-268). Belke and Kaas (2004:248) assert that extreme

fluctuations in a country's exchange rate are likely to discourage firms from employing more workers. This is particularly the case where there exists increased wages and reduced returns for firms due to workers' improved wage bargaining power. The latter narrative is led by the premise that employment and investment decisions are characterised by high levels of irreversibility. Particularly, in the face of rigid corporate structures, the cost of reversing the decision of hiring a worker is high.

Traditionally, economic integration into the global market is known to promote the expansion of production and increased demand for exporting sectors' labour. Particularly, a depreciation in the exchange rate promotes the growth of local jobs in the manufacturing and non-manufacturing sectors (tradable and non-tradable sectors) (Huang & Tang, 2015; Koren, 2001:41; Yokoyama *et al.*, 2015:20). Nonetheless, competing importing sectors may face the likelihood of laying off workers due to an increase in competition and reduced domestic production (Jansen & Lee, 2007:24). Accordingly, job flows tend to be highly sensitive to changes in relative prices and exchange rate fluctuations, as trade liberalisation (openness) is accompanied by extreme demand volatility and shocks to firms (Haltiwanger *et al.*, 2004:192).

Increased fluctuations and uncertainty in the face of international economic integration may cause adverse employment and policy disturbances (Schmukler, 2004:10). Therefore the cost of foreign exposure leads to increased volatility as foreign shocks spill-over to other parts of domestic economies resulting in lasting economic and social disturbances (Hällsten *et al.*, 2010:165). Aggregate output within domestic economies may be affected through the production function based on output and price levels, seeing that monetary and fiscal policy modifications aimed at influencing aggregate output and prices are directly associated with exchange rate dynamics (Hodge, 2005:10).

Based on the above discourse, this study thereby aims to highlight the resulting effects of the foreign trade environment on South Africa's employment movements characterised by jobs created or jobs lost in the tradable and non-tradable sectors. For the purpose of this study, South Africa's level of trade openness, its fluctuating exchange rate and the inflow of FDI underline the considered factors within South Africa's foreign trade environment. These factors are undertaken as the employment determining factors and thereby serve as the study regressors.

## 1.2 PROBLEM STATEMENT

Job creation is considered to be a major economic objective for the South African government (Meyer, 2014:13). According to Redebe (2015:1), “tackling constraints to job creation remains a top priority for government”. However South Africa has maintained its position amongst the countries with the highest levels of unemployment and economic inactivity for middle-income countries (World Bank, 2015). Based on the country’s daunting economic performance, the focus on globalisation has been highlighted by authors such as Breitenbach and Slabbert (2008) as being unable to assist in combating South Africa’s unemployment and poverty challenges. Henceforth, alongside globalisation, Breitenbach and Slabbert (2008) points out that aspects of “*localisation*” may be considered in order to realise the engagement of the poor and unemployed population. The failure of South Africa’s labour market amid heightened international economic integration follows after the country’s inability to generate significant growth and employment in the recent decade, despite the social and economic transformations undergone since 1994 (Mahadea & Simson, 2010:391). As a result, the country’s economy continues to face tremendous and unsettling heightened levels of unemployment (Steyn, 2014). Rodrik (2008:772) stresses the consequential turmoil of such poor employment performance as a threat towards the country’s economic stability and democracy. Consequently, the World Economic Forum (2014:39) estimated in its global competitiveness report that South Africa’s unemployment rate was over 20 percent, while its youth unemployment was over 50 percent from the years 2014 to 2015.

In the midst of high levels of unemployment, South Africa has been faced with declining exports over the years coupled with an ever-fluctuating exchange rate (World Bank, 2014:17). Trade relations with countries such as China have posed negative and direct impacts on the country’s manufacturing sector’s output and employment, as well as the rubber, paper and metal sectors, and mostly the textiles and clothing sector (Edwards & Jenkins, 2014:2). Weaknesses in various economic sectors such as the export-oriented manufacturing sectors, have disadvantaged the country from obtaining steady growth rates and job creation opportunities (Rodrik, 2008:2-3). The country has also accounted for current account deficits on numerous occasions, characterised by decreased exports over imports despite having a prolonged exchange rate or weak currency (Anand *et al.*, 2016). Consequently, Frankel (2005) argues that current account deficits may potentially lead to social implications as domestic or local jobs may be lost to foreign countries, which provide South African residents with imported goods and services. Notably, the heightened level of

imports in South Africa resonates with patterns of reduced consumption of domestic products and exports, *inter alia* (Abedian *et al.*, 2006:47).

Seeing that trade openness, exchange rate fluctuations and FDI underline the foreign trade environment, an analysis of the aforementioned variables in explaining their effects and contribution towards aspects of South Africa's job movements is thereby a primary concern. Empirical studies (such as Andersen & Sorensen, 1988; Belke & Kaas, 2004; Chimnani *et al.*, 2012; Hällsten *et al.*, 2010; Jansen, 2007; Schmukler, 2004) may have studied these factors in isolation. This study thus seeks to highlight the short- and long-run relationships of the identified employment determinants and their potential effect on South Africa's tradable and non-tradable employment movements. In doing so, the study aims to establish a noble understanding and contribution to policy establishments and the academic environment with regard to the considered study objectives.

### **1.3 OBJECTIVES OF THE STUDY**

#### **1.3.1 Primary objective**

The primary objective of the study is to analyse the effects of openness to trade, exchange rate fluctuations and FDI on job creation in South Africa's economic sectors, particularly the country's tradable and non-tradable sectors.

#### **1.3.2 Theoretical objectives**

For the study to achieve its primary objective, the following study objectives are pursued:

- To provide definitions of concepts relating to job creation and employment rate, trade openness, exchange rate fluctuations and FDI.
- To establish a theoretic understanding of tradable and non-tradable sector classifications.
- To discuss employment theories.
- To discuss foreign trade theories relating to the relationships between job creation and aspects of foreign trade, inclusive of trade openness, exchange rate fluctuations and FDI.
- To provide a review of the trends and polices of South Africa's employment and trade.

- To review empirical findings on the potential relationships and the effects of trade openness, exchange rate fluctuations and FDI on South Africa's employment movements in tradable and non-tradable sectors.

### **1.3.3 Empirical objectives**

The following empirical objectives are formulated:

- To analyse the growth and trends of South Africa's employment rate, exchange rate fluctuations and FDI.
- To determine the long-run and short-run interrelations between South Africa's trade openness, exchange rate movements and FDI against the country's sectoral employment in the tradable and non-tradable sector groups/and or classifications.
- To determine the long-run and short-run effects of trade openness, exchange rate movements and FDI on sectoral employment in South Africa's individual private sectors.
- To provide a comparative analysis between South Africa's employment in individual sectors with tradable and non-tradable sectoral employment effects of trade openness, exchange rate movements and FDI.
- To examine the causal effects of the set explanatory variables (trade openness, exchange rate movements and FDI) and employment within South African sectors.

## **1.4 RESEARCH DESIGN AND METHODOLOGY**

This paper encompasses an empirical study and literature review. The study is thus based on the underpinnings of quantitative research using secondary data. Data being utilised is collected from the South African Reserve Bank (SARB) and Statistics South Africa.

### **1.4.1 Literature review**

The literature review and theoretic background of the study was accessed from journal articles, theses, books and other relevant sources. These sources were used in explaining the effect of South Africa's trade platform inclusive of openness to trade, exchange rate fluctuations and FDI and how these factors affect the country's employment or job movements in tradable and non-tradable sectors.

## **1.4.2 Data and Sample Period**

The study focuses on South Africa and involves the collection of data on the country's openness to trade data, FDI, exchange rate fluctuations (real effective exchange rate) and employment rate from 1995 to 2016. Data collected for the study is based on a time period of 88 quarterly observations from the year 1995 as of the first quarter to the fourth quarter of the year 2016, as this will discount for the apartheid regime's economic embargo. The study focuses on analysing the effects of South Africa's openness to trade (exports plus imports as a share of GDP), employment rate (denoting the nation's level of employment), exchange rate fluctuations and FDI.

## **1.4.3 Statistical analysis**

In order to evaluate the set objectives regarding the different variables in this study, an econometric analysis was conducted involving the analysis of descriptive statistics of the set variables, correlations analysis, as well as the long-run relationships by means of employing the panel ARDL and the standard ARDL bounds test to cointegration. The error correction model was employed in order to estimate the short-run relationships. Tests to cointegration were conducted on the basis of capturing the linear interdependencies of the set variables. The Toda-Yamamoto granger non-causality test was employed to analyse the causal relationship and direction of the variables.

## **1.5 SIGNIFICANCE AND CONTRIBUTION OF THE RESEARCH**

Seeing that South Africa, a developing and open economy, is faced with high levels of unemployment, a depreciating currency, a fluctuating exchange rate and increased international economic integration or trade openness (World Bank, 2014:17; World Bank, 2015), it is best to acquire updated knowledge on how these mechanisms affect the country's job creation. This may contribute towards finding optimal solutions that sustain and enforce the country to create more sustainable jobs, and make provision for endless endogenous and exogenous growth. Therefore, it is of utmost importance that the subject topic is studied and analysed in order to gain knowledge and provide further insight based on the findings of this study.

## **1.6 CHAPTER CLASSIFICATION**

This study comprises the following chapters:

**Chapter 1:** Introduction and background

This chapter presented the introductory issues and background which led to the study. It established an outline on the content of the study comprising of the problem statement, the various objectives, the contribution and scope of the research.

## **Chapter 2:** Review of theory and empirical literature

This chapter evaluates and reviews theory and literature specific to the concerns of the study. It details and analyses theoretic prepositions on the interactions or relationships between employment and trade openness, real exchange rate fluctuations and FDI in South Africa.

## **Chapter 3:** Review of variable trends and policies

This chapter conducted a trend analysis of South Africa's employment rate, trade openness, foreign exchange rate and FDI as per set objectives. In the context of assessing South Africa's trade openness; GDP, export and import variables were estimated to present a measure of the country's trade openness. In doing so, the chapter makes use of descriptive tools by means of graphs, tables and figures. Lastly, the chapter additionally provides a synopsis of South Africa's major employment and trade policies as well as the various trade instruments used by the South African government.

## **Chapter 4:** Research design and methodology

This chapter provides an explanation on the data, sample period, and the various models used in achieving the empirical objectives found in the study. South Africa's employment, trade openness, the real effective exchange rate and FDI have been fluctuating between 1994 and 2016. For this reason, suitable modelling layout is provided to account for distortions and variable dynamics.

## **Chapter 5:** Empirical Estimation and Discussion of Results

This chapter presents the findings and results of the study and further provides discussions on the empirical analysis of study in accordance with basic theories and recent studies.

## **Chapter 6:** Summary, Recommendations and Conclusion

This chapter comprises of a summary of the study, it concludes on the major findings of the study and gives recommendations, ideas and proposals for future research.

## **CHAPTER 2:**

### **REVIEW OF THEORY AND EMPIRICAL LITERATURE**

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#### **2.1 INTRODUCTION**

Job creation (employment growth) is a crucial economic development component and therefore its vulnerability to economic movements and shocks is of fundamental concern. Competition and exposure of domestic markets to foreign trade integration and globalisation may give rise to job creation and/or destruction within economic sectors (Jansen & Lee, 2007:19). Scholars ranging from Adam Smith (1776), David Ricardo (1817), and others, have long stressed the gains obtained from trade in the form of accelerated growth and improved productivity. The risk of international trade exposure however lies in the destruction or creation of domestic jobs. To the fulfilment of the study objectives, this chapter presents a theoretical presentation of definitions, theories and an assessment of empirical studies on job creation along with the underpinnings of foreign trade integration and/or liberalisation. Herein, trade openness, the real exchange rate and FDI are deliberated as some of the major components of foreign trade integration and/or liberalisation. In so doing, the chapter aims to assess literature on the linkages of South Africa's employment dynamics and the aforementioned aspects of foreign trade integration and/or liberalisation within the country's tradable and non-tradable sectors. The quantification of the extent to which the underscored factors affect South Africa's labour force, remains crucial for policy development.

#### **2.2 EMPLOYMENT AND JOB CREATION**

##### **2.2.1 Definitions and concepts**

Job creation and employment growth are concepts that are often used interchangeably in practice and within academic literature. Prior to assessing the conceptual understanding of job creation and employment growth, it is important to accentuate the objective and function of a job to be filled by a worker or a job seeker. Harvey (2012:1) classifies a job as any income-generating activity. Additionally, Arai and Heyman (1989:5) maintain that a job is "an employment position to be filled by a worker". Therefore, a job within a firm can be considered to be either occupied or unoccupied. Occupied jobs can be fully operational and producing, or idle and unproductive (Arai & Heyman, 1989:5). The disposal of an unproductive job is therefore subject to job destruction, while job creation takes place when an unoccupied job is occupied by a job seeker (Garibaldi, 1996:29).

Mortensen and Pissarides (1994:397) maintain that occupied jobs are distinctively intended to obtain dynamic transformations in a basic product by a single unit. The authors however maintain that the process of product transformation is idiosyncratic to the individual job and liable to costs and prices faced by the respective industry and the shocks in taste or productivity. Productivity shocks may arise from domestic or external shocks owing to competitive risk subdued to either negative or positive macroeconomic effects. Garibaldi (1998:247) explicitly points out that job creation reflects the aggregate positive employment variations at the establishment level as per time period. Accordingly, scholars such as Bonner *et al.* (2011), Fujita and Nakajima (2016) and Klette and Mathiassen (1996), define employment as an increase in the sum of all jobs across all establishments from their start-up periods to their point of expansion. With reference to the aforementioned researchers, job creation thus accounts for the increase in “employment” and may therefore be classified as employment growth.

The term employment deliberates varying contextual references depending on its application. In the South African context, employed persons are explicitly considered as those (excluding private contractors) earning a wage or a salary or other forms of remuneration for services rendered while working for a third party, either for the state, company, or person (The Department of Labour, 2004:4). An employed person is therefore presumed to be any person aged 15 years and older (Statistics South Africa (StatsSA), 2015:5). Accordingly, “formal and informal employment” form the two general types of employment (Altmand, 2003:163-164). StatsSA (2008:22) describes formal employment as the condition in which the worker is publically registered under a tax number to conduct an activity or work, while non-registered employment is devised as informal employment.

The two forms of employment can be subdivided into two underlying categories as either public or private employment. Likewise, public employment is characterised by jobs within and remunerated by the government or state agencies, while private employment accounts for jobs provided by non-governmental agencies such as private individuals, including companies or corporations (Bjerke, 2014:1; Lewis, 2017:1). This study however associates job creation to positive dynamic formations in employment of all establishments during a specified period in the short and long term. Consequently, job creation and employment growth are used interchangeably as job positions portraying income generating activities. Employment dynamics within South Africa’s post-apartheid era have been accompanied by contentious and rising concerns following the country’s heightened levels of unemployment, inequality and poverty which seem to highlight South Africa’s underlying labour market distortions (Kerr *et al.*, 2014:1). Additionally, the

country's level of inequality indicated by a Gini coefficient ranging from 0.66 to 0.69 (Bhorat, 2015:1) has placed South Africa amongst the worlds' most consistently unequal economies. In 2015, South Africa had an unemployment rate of 25 percent, while youth unemployment between the ages 15 to 24 was projected at a much higher rate being the lowest participation rate (Anand *et al.*, 2016:4).

Furthermore, the liberalisation of South Africa's trade borders and exposure to foreign trade, *inter alia*, is suggested to be amongst the major factors affecting the country's labour market dynamics. For instance, Kganyago (2012:3) notes that during the global economic crisis during the period 2008/2009, South Africa encountered a net job loss of 800 000 within the financial services sector, construction, and retail industries. These sectors were however noted to have obtained the most jobs during the 2003 to 2007 boom period. Also, South Africa's higher trade openness resulting from the adoption of a more outward-orientated policy has overseen disproportional distribution of gains from trade integration amongst industries and consumers. This is due to higher competition, where certain industries have been left destitute and undergone job losses, while others have gained from increased output and lower prices, amid exposure to foreign markets (Flatters & Stern, 2007:1).

Consequently, the contribution of South Africa's manufacturing towards employment and growth has been characterised by plummeting patterns over the past decades following a loss of competitiveness and productivity (Williams *et al.*, 2014:3). The latter has been led by the manufacturing sector's high cost base amid heightened administered prices and wages, as well as the high degree of globalisation characterised by cheaper and increased imports (Williams *et al.*, 2014:3). Anand *et al.* (2016:4) consequently contends that the country's rigid labour markets have also pushed for higher real wages, thereby inhibiting the labour markets from reaching equilibrium. South Africa's labour regulatory environment has also played an influential role on the country's labour market upon influencing job and worker flows. For instance, the country's trade unions, particularly, have been viewed as creating "unnecessary rigidity" within the labour market considering their role in projecting an active and vocal approach in labour market affairs (Armstrong & Steenkamp, 2008:2).

## **2.2.2 Approaches to job creation and employment**

The re-allocation of factors of production, such as labour, has been identified as the movement of the workforce from one employer to the next or within the same establishment. Various scholars (such as Fujita & Nakajima, 2016; Klein *et al.*, 2002) encapsulate dynamics within the labour

market by means of the labour markets' flow approach. This approach collectively underlines two main categories inherent of the movements and trends within the labour market, characterised as *worker flows* and *job flows*. It suggests that career dynamics comprising of workers' flexibility and mobility, involving their switching and search for jobs, in pursuit of improved wages or job benefits are comprised within worker flows (Davis *et al.*, 2005). The narrative advocates that the labour markets' entry into the labour force involves the movement of workers between employment and unemployment conditions under principles of supply-side events (Burgess *et al.*, 2000). However, job flows account for all developments within the labour market involving the creation and loss of jobs under the demand-side events of the labour force, or firms' demand for labour (Klein *et al.*, 2002).

Seeing that jobs vary and command unique skills and diligence from workers (Tattara & Valentini, 2004:3), acquiring aggregate productivity within each job necessitates efficient specialisation and resource re-allocation of factors of production from low to highly productive units for the most efficient use (Masso *et al.*, 2005:2). The process of resource re-allocation thereof, owing to labour market flexibility is subject to prospects of job creation and job destruction within job flows. Gross job flows on the one hand, account for the sum of job creation and job destruction within the labour market (Faggio & Konings, 2003:136). Notwithstanding, flexibility amid resource re-allocation within the labour force is measured as the rate of gross job re-allocation (Haltiwanger *et al.*, 2014:13).

Following the analysis by Garibaldi (1998:247), job destruction accounts for all the negative changes or losses in the amount of jobs within the labour force, or the aggregate negative employment variations at the establishment level within a particular time and area, whereas job creation measures employment gains owing to the expansion of prevailing establishments and newly created establishments (Haltiwanger *et al.*, 2012:3). The two concepts (job creation and job destruction) therefore represent on-going dynamics within job flows. This study is distinctively focussed on job creation in accordance with the labour market's demand-side events, particularly, the underlying developments and dynamics established within South Africa's job flow patterns.

## **2.3 GLOBALISATION & ECONOMIC INTEGRATION**

### **2.3.1 Definitions and concepts**

The term globalisation is widely recognised for its linkages on the underpinnings of foreign trade exposure and/or participation. Opposite to the focus on the foreign trade environment or

globalisation, Breitenbach and Slabbert (2008) highlight the focus on “localisation” which the mentioned authors highlight as being a focus on localising existing state programmes and policies within local or domestic communities. Moreover, globalisation may imply broader and multidimensional aspects as it additionally fixates on communication, political, social, and cultural dimensions within the global economy (IMF, 2008:2; Margalit, 2012:486; Rothenberg 2003:2), whereas economic globalisation and international economic integration, are commonly used concepts (Gokhale, 2010:1; Margalit, 2012:486; Selimi, 2012:364) amongst others, towards notable suggestions on foreign trade participation and integration. Though international economic integration is in itself identified as an element of the processes of globalisation (Selimi, 2012:363).

The concept “integration” prominently stands out as a salient feature of globalisation. It is identified by various scholars (such as Belassa, 1961:174; Shangquan, 2000:1; Taylor, 2001:1) as a form of consolidation of different entities within the global economy. In a similar fashion, Rothenberg (2003:2) attributes globalisation to the process of increasing and intensifying “integration” between diverse people, companies, and governments, whereas Saving (2006:3) classifies international economic integration as the process of lessening national borders for reduced tariffs and freer movement of goods and services, and more capital and labour mobility. Regardless, international economic integration is inherent of the manifestation of trade relations amongst independent economies and the consolidation of the world economy into a whole (Belassa, 1961:174).

International economic integration points to trade activities other than the wide encompassing influences and dimensions of globalisation. Accordingly, Rodrik (2000:178) associates the latter to the perfect integration of the markets for goods, services, and factors of production. This includes far-reaching activities ranging from foreign trade in goods and services, the inflow and outflow of FDI, labour migration between borders, and the growth in foreign multinationals (Margalit, 2012:486). International economic integration thus postulates the relaxation of myriad forms of discrimination such as the removal of trade barriers and is therefore characterised by varying degrees of integration in the form of economic unions, common markets, free-trade areas, and custom unions (McCarthy, 1996:72; Belassa, 1961:174).

According to Arribas *et al.* (2006:1), the abovementioned degree of openness or integration, classified in this study as “trade openness” and/or liberalisation, is exclusively measured as exports plus imports as a share of GDP ( $XM/GDP$ ). The latter measurement simply reflects the degree of the domestic economy’s openness in interacting with the rest of the world by taking into account the share of actual trade transactions in a country’s output levels (Selimi, 2012:374)

### 2.3.2 Trade openness

The role of trade openness towards growth acceleration in developing nations has not gone unnoticed. Its impact extends as far as these nations' economic growth and profits of individual firms (Rajagopal, 2007:5). Amidst international economic integration, the two production inputs underlying labour and capital inputs are both perfectly mobile across a country's domestic sectors. Similarly, labour may also be reallocated across firms within the same sector and considered immobile across countries (Betts & Kehoe, 2001:10). Meanwhile, the foreign market is characterised by flexible and mobile capital inputs that a country can lend or borrow from international markets (Piton, 2017:5). Likewise, the foreign market is consequently led by dimensions of market integration primarily in the form of the integration of tradable markets (Blanchard & Giavazzi, 2002).

Ulasan (2012:3) defines trade openness (liberalisation) as the removal or reduction of policy barriers or trade restrictions to international trade. Such a description includes tariffs, quotas, and other forms of restrictions which restrict foreign or international trade (Mushtaq *et al.*, 2014:56). Faini (2004:3) however suggests a more practical definition of trade openness classified as the sum of exports and imports divided by GDP, or as a share of GDP. The latter classification expounds the traditional measure of trade openness which has been employed by many researchers such as Adamu (2014), Adhikary (2011), Gries *et al.* (2009), and Yanikkaya (2003).

Other scholars have however argued on the merits of the aforementioned measure of trade openness. Accordingly, Harrison (1996:421-425) contends that the use of such a measurement raises certain limitations as trade flows are an imperfect proxy for trade policies such as policy barriers. In a similar manner, economies also differ in sizes and capital inflows which tend to affect trade. For instance, smaller trade shares have been acknowledged to be found in most large countries. Harrison (1996:421-425) also points out that alternative measures to trade openness such as direct measures which focus on the trade barriers, are complex and difficult to measure or calculate. Measurement problems typically arise in aggregating data onto overall indexes since trade barriers include administrative data i.e. average tariff rates or coverage ratios for non-tariff barriers.

Based on the above discourse, the present study adheres to the use of the formerly stated trade measure which estimates trade openness based on actual trade flows of imports and exports as a share of a country's GDP. The use of the underscored measure is driven by its popularity and intrinsic simplicity, as well as its robust estimation of a country's degree of trade exposure. In

practice, South Africa's adoption of a more outward-orientated policy since the year 1994 has been accompanied by increased integration with the global economy. This is indicated in the country's increased percentage share of exports and imports in its gross domestic product (Flatters & Stern, 2007:1).

Countries with higher trade openness or trade intensity are perceived to be more open to trade benefits (Squalli & Wilson, 2006:3). A common suggestion holds that open or outward-orientated economies are conventionally accepted to have better growth trajectories than closed or inward-orientated economies (Yanikkaya, 2003:57). However, open economies are subject to adjustments in the form of the extensive re-allocation of factors of production, particularly the movement of labour across firms in different economic sectors. These transitions are known to be idiosyncratic to each firm and tend to vary according to each firm's level of productivity (Itskhoki & Helpman, 2015:1).

Consequently, it has often been argued that productivity and employment are highly linked with one another. Potential links between the two components are thus driven by the shifts in production techniques towards more labour-intensive production for growth-driven employment and further job creation (Aksoy, 2013:8; Islam & Majeres, 2001:280; Squalli & Wilson, 2006:2). On this accord, models such as the endogenous technological change theory allude to developing nations' long-term growth benefits which can be achieved through trade openness under principles of increasing returns to scale resulting in increased output and employment (Pigka-Balanika, 2006:7).

Beyond the widely spread narrative of growth and employment benefits of trade, Cavallo and Frankel (2008:1431) identify two opposing views involving the effects of trade openness on a country's economy. According to Cavallo and Frankel (2008:1431), one view suggests that openness or increased domestic integration with the global market makes the domestic economy more vulnerable to crises or external shocks, while the other view refutes to the former notion further suggesting that open economies are less vulnerable to external shocks. According to Serrano (2008:2), the lowering of tariffs reduces the marginal cost of production via reduced costs of imported materials. Therefore, this promotes and encourages the expansion of production and potentially increases the demand for labour.

### **2.3.3 Exchange rate movements**

With the increasing integration of the global economy, the exchange rate remains a vital link between each countries' economic markets and the rest of the world (Salatin & Hami, 2015:1194). According to Catão (2007), much of the variations in real effective exchange rates across countries

are presented by price variations in the tradable goods relative to non-tradable goods, especially among developing countries. Changes in the exchange rate are a crucial element in understanding South Africa's employment dynamics and patterns and thus presents the importance of understanding any implication of a real appreciation or depreciation.

Gourinchas (1999:1) defines the real effective exchange rate as a price measurement of the domestic currency against a basket of foreign prices. It simply reflects domestic price adjustments relative to foreign currencies and thereby showcases the domestic price in terms of a foreign currency (Erdal, 2001:28; Goldberg, 2009:1). Meanwhile, fluctuations in the exchange rate can be viewed as the risks associated with unpredictable flows in the exchange rate (Ramasamy & Abar, 2015:276), whereas the volatility of the exchange rate point to persistent fluctuations in the latter (Alagidede & Ibrahim, 2016:2). Effects and influences of exchange rate fluctuations on the economy can thereby be seen amongst aspects of employment, economic growth, and inflation (Kandil *et al.*, 2007:466-477; Ngandu, 2009; Yokoyama *et al.*, 2015).

According to Alexandre *et al.* (2011:969-970), movements within the exchange rate affect the manner in which resources are re-allocated between economic sectors, while exchange rate impacts on labour developments are idiosyncratic to each country's level of technology and openness to trade. Increased international economic integration within the global market thereof, accounts for increased unanticipated exchange rate movements bringing about fluctuations in the global market, as a result, aggregate demand and aggregate supply are faced with uncertainty (Kandil *et al.*, 2007:469; Khosa *et al.*, 2015:1-2). The adjustment in South Africa's employment in the different economic sectors is made complex following the assertion that the country's Rand is likely overvalued (Saayman, 2007). According to Hodge (2005), such an assertion presents two possible implications, first, an overvaluation of the Rand presents a likely negative impact on the country's tradable sector and therefore a suitable result would be a real depreciation in the Rand exchange rate. On the contrary, a significant Rand weakening can potentially induce inflationary pressures which is detrimental to growth prospects in the long-run.

On the quest to creating sustainable employment in South Africa, the country's exchange rate has undergone cyclical movements over the years experienced in the form of depreciating and appreciating dynamics. An analysis by Ngandu (2009:111) suggests that South Africa's post-apartheid era presented slight appreciations of the Rand in the early 1980s, later accompanied by sharp depreciations in the last quarter of 1985, stretching forth to a significant depreciation in 2001. Moving forward, the Rand regained momentum after December 2001, accompanied by a significant appreciation against the Dollar during the following four years (Ngandu, 2009:111).

Nonetheless, a substantial plummeting in the Rand was experienced at the end of 2003 (Ricci, 2005:1). Consequently, the Rand encountered a sharp depreciation in 2008 following the 2008 global financial crisis, it further experienced another depreciation in 2013 amid the 2013 emerging markets jitters (Old Mutual Wealth, 2017:1-2).

Furthermore, Alexandre *et al.* (2011:4) postulates that fluctuations in domestic and foreign goods' relative prices are reflected in the real exchange rate. Thus, the competitiveness of firms in the international market is affected by these changes leading to the re-allocation of resources such as labour. Based on this assertion, an appreciation in the exchange rate, implying a decrease in foreign prices relative to domestic currency, may decrease domestic exporters' competitiveness and affect their investment decisions such as the hiring and firing decisions, as well as their profit margins. Kohler *et al.* (2014:47) adds that these fluctuations affect real economic activities through export demand and import demand changes. Export competitiveness in the foreign market tends to increase in the face of a real exchange rate depreciation, while imports are less competitive within the domestic borders resulting in heightened demand for domestic goods and services. Thus, sectors most affected by exchange rate fluctuations are those with higher trade openness (Alexandre *et al.*, 2011:4; Klein *et al.*, 2003).

Hua (2007:7) further presents three channels of employment effects of the exchange rate using the manufacturing sector. These channels include, firstly: "the technological channel" which is based on cost modifications of imported labour and other inputs consistent of either capital or labour-intensive units. This channel suggests that the replacement of domestic human capital by imports may harm the labour market. Secondly: the "export volume channel", which suggests that an appreciation in the real exchange rate tends to decrease export intensity and thus leads to low employment prospects, conversely, a real depreciation is favourable for employment creation as it increases export intensity. Lastly: the "efficiency channel", this channel suggests that a real exchange rate appreciation enforces the need for sectors to uphold productivity improvements. In such a case, wages or payment for labour thereby tends to increase, resulting to increased productivity or efficiency. This therefore enables increased production but with lower employment, thereby causing a negative effect on employment (Hua, 2007:12).

### **2.3.4 Foreign direct investment**

The nullification of constraints to global participation in the form of freer trade movements and reduced controls on financial transactions, *inter alia*, has overseen an unprecedented increase in international capital flows within global markets. Capital flows have become an important source

of funding particularly for developing nations (Albuquerque, 2003:354). Kirabaeva1 and Razin (2010:2) underline three major types of international capital flows as FDI (FDI), foreign portfolio investment (FPI) and debt or other investments. Debt flows are a form of foreign investment considered to be most volatile contrary to other types of international investment flows. Debt flows constitute flows in the form of bank loans, trade loans, currency, and deposits (Sandrey, 2013:1; Kirabaeva1 & Razin, 2010:2). FPI on the one hand, is considered as the procurement of stocks, financial market instruments, and bonds by foreign nationals with aims of obtaining a return, albeit having no form of ownership, international management, or forms of direct control (Sandrey, 2013:1). The latter is however considered to be a more stable investment flow than debt flows, nevertheless, it is relatively less stable than FDI (Kirabaeva1 & Razin, 2010:2).

Lastly, FDI is regarded as an international flow of capital, driven on making provision for control over affiliates to a company or multinational organisation and considered to be least volatile relative to other financial flows (Goldberg, 2009:1; Goldstein & Razin, 2006:272; Sula & Willett, 2009:297). FDI points to the cross-border expenditures for the acquisition or expansion of productive assets via the acquirement of corporate control (Froot, 1993:1). Unlike FPI, FDI accounts for the foreign ownership and direct control of domestic productive assets, this includes assets such as land, factories, and organisations, as well as intangible assets in the form of managerial capabilities, technologies, and marketing skills (Mehra, 2013:29). It's features of direct control makes FDI a more beneficial investment than other capital flows, as its direct control implication enables it to be managed more efficiently (Goldstein & Razin, 2006:272; Kirabaeva1 & Razin, 2010:2).

According to Sauvart (2013:15), benefits observed by host countries of FDI includes the introduction of new investment, the potential to generate training and employment opportunities, support human capital formation *via* skill development, transfer technology, integrate the host economy into the global economy through supply chains and trade, create spill-overs, and to boost a competitive environment, *inter alia*.

Notwithstanding, Kurtishi-Kastrati (2013:31-32) and Sauvart (2013:15) further caution that FDI benefits may also be accompanied by a myriad of costs in the form of the introduction or magnification of distortions in the host economy, severe balance of payments effects, the absence of linkages with the domestic economy, reduced competition due to monopoly power exerted by foreign firms, excessive abuse of transfer pricing actions, damaging social and environmental effects, the crowding out of local enterprises, and restrictive business practices. Sauvart (2013) further goes on to state that host countries may not materialise some benefits presented by FDI if

the host economy is not at a stage of development which permits it to extract sufficient intangible and tangible assets which Multinational Enterprises can present to establish positive contributions towards economic growth and development of the host country. Henceforth, the challenge to host economies lies in ensuring that FDI benefits occurs via economic policies which capitalize on the positive FDI effects while minimizing the negative effects.

Relating to the costs of FDI, FDI may not always be in the interest of the host country, especially in small economies, as dominant market positions of large international companies may be used to abuse the market. Henceforth, such power needs to be controlled (Kurtishi-Kastrati, 2013:31-32). With the slowdown in credit extensions as well as other impediments to micro or informal retails (BER 2013:2), Charles (2013) and Müller (2013) explain that South Africa, as well as other developing and developed economies, has increasingly transitioned towards establishing mall-based retailing or shopping centres, characterised by negative implications on the micro-retail and informal trader's sustainability and future potential for job creation.

Alam and Shah (2013:519), identify the major potential determinants of FDI as: market size, corporate tax rate, labour cost, political stability, labour productivity, inflation, the exchange rate, trade openness and the quality of infrastructure. Consequently, FDI has taken its place as an important component of an open and effective foreign integrated system, despite the fact that its benefits across nations and within economic sectors are not uniformly accrued (OECD, 2002:3-5). However, this form of investment remains an integral and wide-spread source of capital transfer (Froot, 1993:1), as well as a source of employment, income growth, and economic development (OECD, 2002:5). Therefore, FDI host countries may possess maximising benefits of foreign investment in the form of improved enterprise development, formation of human capital, increased technological spill-overs, while further promoting international economic integration (Kurtishi-Kastrati, 2013:26).

Seeing that domestic activities are in dire need for financing, domestic savings are often inadequate to meet these needs, FDI thereby constitutes the supply of total investment (Craigwell, 2006:1) and deficit financing (Jude & Pop Silaghi, 1998:1). Pinn *et al.* (2011:78) identify three scenarios in which FDI may affect employment. In the first scenario, employment may be increased through the launch of newly established businesses or the stimulation of employment across the production distribution stage. Secondly, employment may be maintained through the purchasing and restructuring of existing establishments. Thirdly, employment may be reduced by FDI via disinvestment as well as the closure of domestic businesses due to intense competition.

In efforts to address South Africa's accompanied economic imbalances of unemployment, poverty, and inequality of the post-apartheid era, the South African government set forth economic policies aimed at combating these challenges, and amongst the policy objectives is to stimulate and attract FDI (Mosia, 2012:1). According to Kandiero and Chitiga (2006:356), South Africa has managed to secure its place as one of Africa's largest recipients of net FDI inflows. However, the country still faces high rates of unemployment, as well as low employment growth and economic growth despite attempted developments (Paton, 2011:40; Vermeulen, 2015:2; World Bank, 2015:3). In the case of the United States owned auto industries, a common argument in contrast to the widely spread benefits of FDI on human capital formation, suggests that jobs established through FDI may be offset by the lost jobs in these industries as market share may be lost to foreign competitors. This, as a result, leaves the net amount of FDI-driven jobs to be as less significant than perceived (Hill, 2000).

#### **2.4 CLASSIFICATION OF TRADABLE AND NON-TRADABLE SECTORS**

Provided the expansion of domestic markets towards international integration, it is important to distinguish between a country's sectors exposed to foreign competition and those which are not. Labour dynamic outcomes driven by trade adjustments account for the distinction between tradable and non-tradable jobs. Therefore, a country characterised by a small open economy is considered to be a price taker in terms of its tradable sector, whereas activities within the non-tradable sector only face competition domestically (Piton, 2017:4). Simply, a small economy which is less productive and competitive may not compete in international trade and thus transactions of its tradable sector cannot affect market prices. As a result, such a market is compelled to accept the prevailing prices of the external markets.

Based on the traditional exchange rate theory, prices within the integrated world of tradable goods satisfy the law of a single price at all times. On the other hand, domestic market conditions project prices within the non-tradable sector (Betts & Kehoe, 2001:1). A group of scholars (such as Betts & Kehoe 2001:1; Bliss, 2004:3) suggest that goods within economic sectors can either be "tradable" or "non-tradable". The task of grouping sectors based on these categories therefore lies on the nature and degree of each sector's tradability (Mano & Castillo, 2015:10; Zeugner, 2013:2). Classifying a sector according to its tradability depends on its positioning along a continuum which moves from perfectly tradable to perfectly non-tradable positions. In so doing, the positioning of a sector on such a continuum is heavily dependent on both the sector's degree of export intensity as well as its import penetration (Ngandu, 2009:118). That is, the former accounts for each sector's

share of exports in aggregate sales, while the latter is the share of imports in aggregate domestic sales.

Based on the former and latter narratives, it thus follows that tradable sectors are those with high export intensities and import penetration, otherwise, sectors with low export intensities and import penetration can be classified as non-tradable sectors, and such is the case for most service sectors (Ngandu, 2009:118). Conventionally, the primary, secondary and tertiary sectors constitute the traditional classifications of economic sectors (Dasig, 2014:3). According to Dzhan (2012:12) and Wrigley (2010:12), the former includes all activities involving the process of securing and the extraction of raw materials, i.e. mining, agriculture, forestry, fishing, pastoral production, and hunting. Secondly, the secondary sector encompasses industries which convert raw materials into finished products, i.e. building construction, manufacturing, and public works. Lastly, the tertiary sector includes most services which facilitates both primary and secondary sectors for the transportation of raw materials and finished products to the marketplace for consumption based activities, i.e. distribution, wholesale, retail, transport, including financial, and legal services. Table 2-1 presents a summary of the sector classification involving the major industries.

**Table 2-1: Summary of primary, secondary & tertiary sectors**

1. Primary sector	<ul style="list-style-type: none"> <li>• Agriculture, Forestry &amp; Fishing</li> <li>• Mining &amp; Quarrying</li> </ul>
2. Secondary sector	<ul style="list-style-type: none"> <li>• Manufacturing</li> <li>• Construction</li> <li>• Water, Gas &amp; Electricity</li> </ul>
3. Tertiary sector	<ul style="list-style-type: none"> <li>• Wholesale &amp; Retail Trade</li> <li>• Transport, Communication &amp; Storage</li> <li>• Finance, Real Estate, Insurance &amp; Business Services</li> <li>• Catering &amp; Accommodation Services</li> <li>• Social, Community &amp; Personal Services</li> </ul>

**Source:** Makwembere (2014).

Furthermore, Ngandu (2009) highlights that the primary sector is predominantly tradable, this includes the mining sector of the secondary sector while the other industries are non-tradable. Meanwhile, non-tradable sectors are mostly sectors that fall within tertiary sectors due to their level of export intensities and import penetration. The author further adds that export intensities

and import penetration in sectors such as agriculture, mining and manufacturing is relatively high, and low in most service or tertiary sectors, such as construction, electricity and water, and other services.

By definition, tradable goods involve all goods that are free to move between countries in an internationally integrated market. These goods are produced domestically and consumed within the global market. Non-tradable goods then include all goods produced and consumed within the domestic market (Spence & Hlatshwayo, 2012:707-708). According to Gonzalez-Soriano (1990:233), non-tradable goods may not enter into international trade seeing that the cost of transportation or tariffs may be too high. As a result, transportation may not be feasible and for that reason, such goods should be sold and consumed domestically.

In the context of the South African economy, various scholars (such as Flatters & Stern, 2007; Hausmann, 2008; Mano & Castillo, 2015:22; Ngandu, 2009; Ojeda *et al.*, 2014:2; Rodrik, 2008:778; Spence & Hlatshwayo, 2014:273; Spence & Hlatshwayo, 2012:9) assert that the country's tradable activities include agriculture, manufacturing, mining, hunting, forestry, fishing and energy, while non-tradable activities includes construction, transport, electricity and water, finance, trade, retail, real estate, and other services. It is interesting to note that non-tradable sectors constitute about 80 percent of South Africa's economic sectors, whereas these sectors contribute the most towards the country's employment and GDP (Bhorat *et al.*, 2014:3). Accordingly, the country's non-tradable sector thus provides the majority of jobs and GDP relative to its tradable sector.

Following Ngandu (2009), Rodrik (2008), Zeugner (2013), and Mano and Castillo (2015), Table 2-2 is a summary of South Africa's suggested tradable and non-tradable industries according to their export and import intensities similar to that of New Zealand's industry classification presented by Attewell and Crossan (2013:7).

**Table 2-2: Summary of the sector classifications**

Tradable sectors	Non-tradable sectors
<ul style="list-style-type: none"> <li>• Agriculture, forestry, and fishing</li> <li>• Mining</li> <li>• Manufacturing</li> </ul>	<ul style="list-style-type: none"> <li>• Electricity, gas, water, and waste services</li> <li>• Wholesale trade</li> <li>• Retail trade and accommodation</li> <li>• Rental, hiring, and real estate services</li> <li>• Public administration and safety</li> <li>• Health care and social assistance</li> <li>• Arts, recreation, and other services</li> <li>• Financial and insurance services</li> <li>• Education and training</li> <li>• Construction</li> <li>• Professional, scientific, technical, administrative, and support services</li> <li>• Transport, postal, and warehousing</li> <li>• Information media and telecommunications</li> </ul>

**Source:** Attewell and Crossan (2013).

Bhorat *et al.* (2014:1) further extends that high export intensified tradable sectors are negatively affected by a real appreciation. An appreciation in the real exchange rate causes a decrease in demand resulting in the loss of domestic and foreign market competitiveness, thereby causing a decrease in output and employment. Bhorat *et al.* (2014:1) also adds import intensive tradable sectors benefit as a result of reduced marginal costs. The final outcome potentially results in reduced demand, employment and output within domestic sectors due to cheaper end-products and thus competition from abroad.

Furthermore, the Balassa-Samuelson effect and the unbalanced growth effect are two mechanism which attempt to explain economic integration effects on the share of employment in the non-tradable sector. The former effect is based on the relative price effects of the tradable to the non-tradable sector while the latter is based on the assertion that consumption grows faster than output (Piton, 2017:2). Following the Balassa-Samuelson effect, a faster growth in the tradable sector’s productivity than the non-tradable sector results in a relative price increase. Also, a decrease in capital costs induces a relative increase in price since it does not benefit the non-tradable labour-intensive sector (Acemoglu & Guerrieri, 2008). Under the Baumol’s effects, a low substitution

elasticity between tradable goods and non-tradable goods will therefore result in the expansion of the non-tradable sector's jobs. Moreover, the notion that non-tradable goods are produced domestically while tradable goods can be imported, can result in an increase in the non-tradable sector's jobs and lead to current account deficits (Piton, 2017:2).

## **2.5 THEORETICAL ANALYSIS**

Along the analysis of employment and trade theories, this section reviews the classical and the general theories of employment, as well as other employment and trade theories in understanding job and trade flows within the South African labour market.

### **2.5.1 General overview**

Prior to the discussion of the concerned theories, a general overview is provided.

#### ***2.5.1.1 Trade Openness, the Exchange Rate & FDI in tradable & non-tradable sectors***

In order to understand the employment implications of trade openness, the real effective exchange rate and FDI within tradable and non-tradable sectors, it is necessary to establish the implied insinuations amongst the considered regressors within the two sectors. In an economy with a free floating currency, frequent and large fluctuations in the real effective exchange rate presents heightened uncertainty and various effects on FDI and trade movements. A potential increase or decrease in trade and investment activities may therefore rely on factors such as the behaviour and assumptions of traders and investors, the share of forward hedging, and the currency contracts' denomination (Kosteletou & Liargovas, 2000:136-138).

Based on the "imperfect capital markets theory", an appreciation in the real effective exchange rate may lead to a decrease in FDI inflows as external financing becomes relatively more expensive than domestic financing. Relatively, a domestic currency depreciation evokes an increase in inward FDI or the acquisition of domestic assets by international entities (Froot & Stein, 1991; Goldberg & Klein, 1997:9). Moreover, other theories such as the "labour cost theory", focus on the effects of currency movements during periods of the floating exchange rate relative to the cost of labour within industrialised economies. Based on the assumption that inward FDI is driven by cheap labour, the labour cost theory also suggests that a depreciation (or appreciation) in the real exchange rate is associated with a rise (or decrease) in inward FDI (Kosteletou & Liargovas, 2000:139). Notwithstanding, the trade integrated model underlines that an exogenous inflow of foreign capital in the price taking small economy within the world market, may result in a real appreciation in the exchange rate and a decrease in foreign competitiveness.

Effects of FDI on the real effective exchange rate may depend on the manner in which FDI is utilised, simply, whether FDI is used to finance capital accumulation either in the tradable or the non-tradable sector, or it is used to finance domestic expenditure (Kosteletou & Liargovas, 2000:136-138). In the case where capital inflows are directed at financing domestic consumption, the host economy's spending power and demand for goods in both the tradable and non-tradable sector increases, thereby initiating an appreciation in the real exchange rate and a trade deficit. Simply, excess demand for goods may lead to an increase in prices of non-tradable commodities, whereas prices in the tradable sector are determined by the global economy. The decline in domestic trade terms, amidst a real exchange rate appreciation thereof, decreases the tradable sector's goods supply resulting to the reallocation of resources towards the non-tradable sector's goods production *i.e.* labour resources.

Conversely, in the case where capital inflows are instead used to finance the accumulation of capital, FDI inflows are anticipated to result in an increase in productivity in the future. In this case, further exchange rate outcomes or movements depends on whether FDI is used in either the tradable sector or the non-tradable sector. The concentration of FDI in the tradable sector will evoke an improvement in the trade account as well as increased tradable goods. All benefits may be absorbed and the positive effects of FDI may be maximised on the host country's external balance (Demertzis & Pontuch, 2013:19). Henceforth, a real currency appreciation can be sustained without bolstering further policy implications.

On the other hand, the concentration of FDI in the non-tradable sector has the potential to present either a direct or indirect effect. The direct effect would be the re-allocation of capital and labour inputs from the tradable sector to the non-tradable sector, which would present a weakening of the domestic country's trade account by reducing the tradable sector's export capacity, and a real depreciation in the real exchange rate following a drop in non-tradable prices. An increase in production due to FDI inflows affects the real exchange rate based on the domestic economy's capital stock increases or spending (Kosteletou & Liargovas, 2000:137). Moreover, Kosteletou and Liargovas (2000:137) cautions that capital to sustain the deficit in the current account, the economy's future FDI flows ought to be greater than the initial FDI inflows. Nevertheless, a potential depreciation of the nominal exchange rate due to a trade deficit would present unpredictable effects of FDI inflows on the real exchange rate.

In contrast, increased competition and overall efficiency in the non-tradable sector resulting from FDI inflows may result in lower prices in sectors which produce inputs and thus present an indirect positive effect on the tradable sector's exports. However, the indirect effect may likely be less than

the direct effect. Despite the minimal participation of the non-tradable sector towards a country's export capacity, most non-tradable sectors' output are inputs to the tradable sector and thus efficiency gains in the non-tradable sector may stimulate overall competitiveness (Demertzis & Pontuch, 2013:19-22).

Furthermore, the idea behind technical progress or simply technological progress, is associated with increased productivity in the tradable sector's traded goods. This is led by higher productivity which decreases costs of productivity and thus lowers the prices of the tradable sector's goods in international competition (Catão, 2007). However goods are not all tradable, non-tradable goods of the non-tradable sector face negligible foreign price competition thus, tradable goods prices may drop comparative to non-tradable goods. Considering that non-tradable goods present a larger share in the consumption basket of the country, increased consumption is associated with a relative rise in the consumer price index, therefore, the real effective exchange rate tends to appreciate. This process is introduced as the "Balassa Samuelson effect" (Catão, 2007).

Under the assumption that supply is neither perfectly inelastic nor elastic, an increase in domestic demand induces an increase in domestic employment and wages. As a result, the increase in domestic wages prompts the increase in demand for local non-tradable services and the expansion of the sector (Faggio & Overman, 2014:93). However a potential offset in the demand led job increases may result from general equilibrium effects in the form of increased labour costs which can offset the demand effects. Meanwhile, general equilibrium effects in the form of increased prices of the non-tradable goods and services such as housing, can offset supply effects (Faggio & Overman, 2014:93).

Nevertheless, a perfectly inelastic labour supply implies a partial offsetting of the mentioned factors and thus non-tradable jobs will continue to increase. A more elastic labour supply however prompts a larger multiplier effect on the local non-tradable sector. Comparatively, general equilibrium effects in the form of high labour costs or wages as well as increased prices of housing and non-tradables decreases jobs within the tradable sector (Faggio & Overman, 2014:93). In this regard offsetting supply and demand factors which affect the non-tradable sector pose the likely effect on the tradable sector which already faces mounting competition and effects posed by the global or external market.

Notably, the study by Krugman (1993:25) highlights that trade has no overall employment insinuations but it leads to the re-allocation of factors of production such as labour. However aspects of trade integration and/or globalisation have long been associated with labour market

dynamics. These uprisings resonate from discussions such as those of offshoring and outsourcing dynamics within global value chain processes (Levine, 2012:1-2; Olsen, 2006:5-6). The increased rate of structural unemployment is then said to stem from shifts in production and outsourcing to foreign nations based on lower costs of production (Mouhammed, 2011:107). The underlined presumptions are supported by the 2004 World Investment Report (UNCTAD, 2004) which alludes to the displacement of domestic jobs owing to the net effects of trade integration, particularly offshoring or outsourcing.

Nucci and Pozzolo (2010:113) identify the exchange rate as a major trade factor which affects the labour market based on channels of currency appreciation and depreciation. Seeing that the exchange rate is presumed to be a major price in the economy (Rose, 2011; Klein & Shambaugh, 2008), fluctuations in the latter may impose implications on domestic production costs (Ngandu, 2008). Likewise, exchange rate effects on tradable and non-tradable jobs can be perceived through the changes in production costs. The exchange rate thereby plays a crucial role in affecting the relative productivity of a country's tradable versus non-tradable sectors (Bhorat *et al.*, 2014:2). In such a manner that the former produces to export and makes use of imported inputs, while the latter produces for local consumption and primarily makes use of domestic inputs. Such changes or dynamics in relative production costs can potentially pose a likely impact on the allocation of labour across and within the two industries (Bhorat *et al.*, 2014:2).

Some suggestions maintain that a domestic currency appreciation induces lower demand for domestic exports and higher import absorption resulting to the loss of competitiveness and expensive exports within the global market, vice versa (Ribeiro *et al.*, 2004). Consequently, firms may be employing more workers, but due to extreme exchange rate volatility, job creation may be discouraged (Belke & Kaas, 2004:248). This is due to the high irreversibility of employment and investment decisions in the face of high costs of reversing decisions of hiring a worker as well as the rigid corporate structures (Erdal, 2001:28; Pindyck, 1990:1111). The size of the responsiveness of the market for labour towards movements within the exchange rate is also reliant on regulatory and market forces (Burgess & Knetter, 1998)

On the other hand, trade openness or liberalisation in terms of tariffs and/or non-tariffs exert direct implications on job displacements including the flow and rate of job creation (Klein *et al.*, 2002:7). Further displacements in the level of employment may result from changes in investment and trade activities including the variability in the exchange rate, as investment is a major component of the channels of supply and demand (Belke & Gros, 1998:3). Any uncertainty in the exchange rate

owing to extreme exchange rate volatility may interrupt investment flows causing delayed employment decisions by firms (Feldmann, 2011:268; Mpofu, 2013:3). Campa and Goldberg (2001:481) propose three channels in which exchange rate movements may affect employment or job flows. These include, firstly; an increase in demand shocks caused by enhanced local market competitiveness leading to an increase in import penetration. Secondly; shocks to competitiveness within export orientation resulting from an increase in export shares in sector output. Lastly; the utilization of imported inputs, in a manner that any changes in the costs of inputs may cause domestic price and cost changes, a depreciated currency will therefore raise the cost of inputs or factors of production.

### ***2.5.1.2 The Balassa-Samuelson effect***

The Balassa-Samuelson hypothesis, commonly referred to as the “Balassa-Samuelson effect” (BSE) follows the precepts of Balassa (1964) and Samuelson (1964). The latter hypothesis aims to explain countries’ price level differentials governed by the differences in the domestic economy’s productivity growth between non-tradable and tradable sectors. The BSE is based on the assumption of a single price of tradable goods prices (Dedu & Dumitrescu, 2010:44-45). Higher productivity in the tradable sector, implying reduced costs and prices of the tradable sector, and thus increased competitiveness, leads to a fall in tradable goods prices relative to the non-tradable sector’s goods prices (Catão, 2007:47). An increase in the tradable sector’s productivity leads to an increase in prices of the factors of production, *i.e.*, wages, which then results in increased prices of non-tradable goods and thereby the real exchange rate appreciation, *ceteris paribus* (Dedu & Dumitrescu, 2010:45).

Simply, as labour within the exporting sector becomes more productive, wages and profits increase in proportion to productivity growth such that prices in the sector stays the same. Competition within labour groups increases wages of the non-tradable sector, while productivity remains unchanged and prices increase (Balassa, 1964:393). Overall, the entire economy experiences a rise in wages based on “inter-sectoral labour mobility” (Dedu & Dumitrescu, 2010:45). Such that, since labour is mobile, the non-tradable sector experiences a rise in wages while its productivity remains unchanged, resulting in a rise in non-tradable prices along with the non-tradable sectors’ marginal costs (Lewis, 2004:2). The non-tradable sector is thus only able to cover the rise in wages by increasing the relative prices of the non-tradable sector. Overall, the resulting effect would be an increase in general prices. Productivity growth in the tradable sector exerts a decrease in export prices and import-competing goods as well as an increase in the non-tradable sector’s wages and

prices (Balassa, 1964:393). In contrast, a relative productivity increase of the non-tradable sector, implies lower price levels based on marginal cost cuts (Gubler & Sax, 2011:2).

### **2.5.1.3 The Dutch disease**

The Dutch disease originates as an economic hypothesis on the changes in the structure of production likely to take place in response to favourable shocks or a boom in a resource sector (Nchor *et al.*, 2015:2035). Simply, the hypothesis focuses on potential undesirable implications of capital inflows on open economies. Particularly, whether a great inflow of capital has the potential to cause an appreciation in the exchange rate, and subsequently depress the economy's tradable sector. Accordingly, the term "Dutch disease" refers to the real exchange rate effects, originally used to refer to the manufacturing sector's difficulties faced by Netherlands upon the large scale growth of natural gas which prompted a great appreciation in the country's real exchange rate. It is simply a mechanism which explains the adjustment of factors of production following a boom of natural resources which affects the endowments, and subsequently a country's natural comparative advantage.

The basic form of the Dutch disease is primarily based on a small open economy which comprises of three sectors underlined as the natural resource sector or the booming sector, the tradable sector (such as manufacturing and agriculture) and the non-tradable sector (such as construction and non-tradable services) (Corden & Neary, 1982). Under mechanisms of the Dutch disease, factors of production tend to shift away from certain sectors due to resource abundance (Matsen, & Torvik, 2005: 495). Prices of the tradable sector and the booming sector are presumed to be set by the global market, while the non-tradable sector prices are determined by the economy's domestic market. The price of goods within the tradable sector relative to those in the non-tradable sector thereby defines the real exchange rate (Brahmbhatt *et al.*, 2010:1-2).

The Dutch disease is thus governed by two principles, namely; the *resource movement effect*, as well as the *spending effect* within an open small economy following the tradable sector's technological advancement (Lartey, 2008:132). Following Corden and Neary (1982), an increase in income, *i.e.*, due to a resource discovery, promotes an increase in demand for all normal goods for both non-tradable and tradable commodities (spending effect). To preserve the domestic-based equilibrium, increased demand for both goods evokes an increase in the relative price of the non-tradable sector, while prices in the tradable sector are determined by the global market. Some of the excess demand for non-tradable commodities may be satisfied by the sectors' increased production, while the rest of the demand increase may be eliminated by the increased non-tradable

relative prices (Gasmi & Laourari, 2017:4-5). Output within the non-tradable sector weakens as the rise in relative prices hampers domestic production.

Relatively, the excess demand for tradable commodities may be achieved by increased imports which more than offsets the decrease in domestic production (Bruno & Sachs, 1982:486). Consequently, non-tradable goods prices relative to tradable goods rises leading to a real appreciation of goods within the non-tradable while prices in the tradable sector are determined by the global market, consequently shifting resources from the tradable sector towards the non-tradable sector and a contraction the tradable sector due to declining exports and exchange rate appreciation (resource movement effect) (Gasmi & Laourari, 2017:4-5). Also, exports of tradable sector become less competitive within the domestic market (Humphreys *et al.*, 2007). The cumulative implication of the two principles includes the distortion of a country's economy from the production of traditional goods within sectors such as manufacturing and agriculture, towards non-tradable sectors such as the construction sector (Dartey-Baah *et al.* 2012:187).

## **2.5.2 Employment theories**

### ***2.5.2.1 The classical theory of employment***

Contributions towards employment theory are amassed by different contextual references ranging from the classical school of thought, and John Maynard Keynes' *General Theory of Employment, Interest and Money*. The classical theory of employment is grounded on the premise that "supply creates its own demand" as advocated by Say's Law (Stirati, 2012:4). Simply implying that the labour market is flexible and all output produced is sold and resources are brought to employment. The classical thinking seeks to explain economic behaviour in the long-run based on labour demand and labour supply schedules (Galí, 2013:975). In principle, the labour demand schedule regulates the amount of labour which firms seek to employ at the prevailing real wage driven by motives of profit maximisation within a perfectly competitive market, provided the amount of available technology (Galí, 2013:975). The labour supply schedule on the one hand, constitutes the size of the labour force inclusive of people willing to work, provided the existing market conditions (Galí, 2013:975).

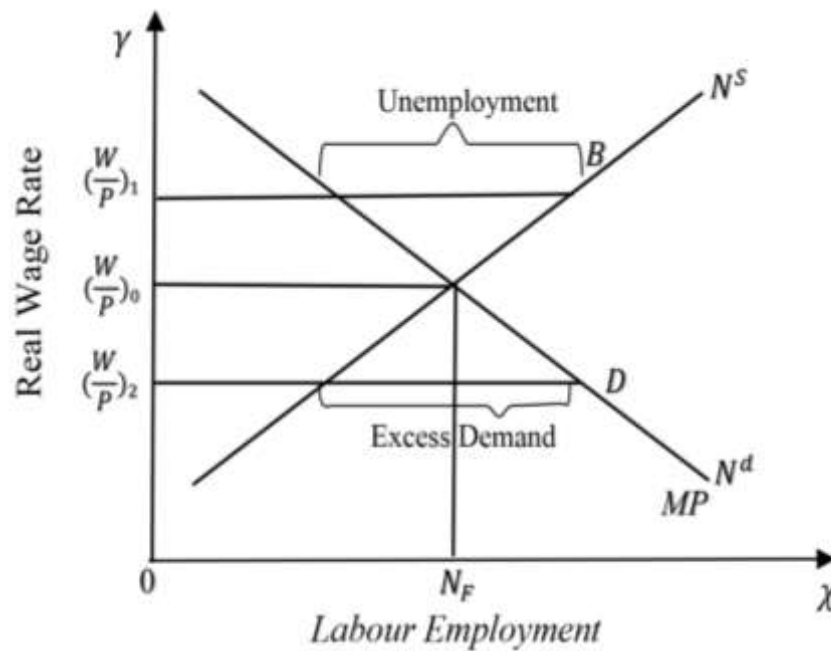
The classical model further upholds that the economy operates best without government intervention, it emphasises the need for government to follow the *laissez faire* policy, that is, "leave it alone" (Hall & Lieberman, 2012:29). On this note, unrestricted trade according to the classical theory of trade may capture enhanced efficiency and dynamic gains leading to increased economic

growth. Henceforth, full employment is achieved to the extent that under conditions of equilibrium within the long-run, the economy operates under full output and employment capacity, albeit if ever it deviates from such capacity in the form of i.e. business cycles, it does not take long to return to equilibrium (Hall & Lieberman, 2007:596). In so doing, the classical model postulates the principle of the market clearing assumption, upholding the assertion that market prices or wages will automatically adjust or clear until quantity demanded and quantity supplied are in equilibrium or equal (Galí, 2013:976). The notion of a self-clearing and self-interest seeking market is a ground-breaking assumption of the classical model, implying that the economy does not require interference from the government towards reaching equilibrium (Basu, 2008:81). Involuntary unemployment will thereby only exist when wages within markets are not permitted to clear (Hayes, 2008:14).

In practice, the market clearing assumption of the classical model asserts that excess market supply eventually drives market prices down and excess market demand eventually forces prices up. Therefore, demand and supply forces are simply well coordinated throughout the economy towards automatically reaching full employment or equilibrium. In the long-run, output produced with a fully employed labour force indicates the economy's potential output level, therefore, the economy achieves its potential output at full employment (Coen *et al.*, 1987:130). Consequently, the model propagates that aggregate employment could be negatively influenced by changes in technology, including structural changes in final output and consumption. However, it discredits Keynes' assertion that a lack of aggregate demand negatively affects aggregate employment (Stirati, 2012:2-4).

The classical model further determines the size of the labour force according to the total individuals prepared to work given the real wage rate. Based on this theory, lower wages may imply the re-allocation of labour from low productive units towards highly productive units.

**Figure 2-1: Labour market equilibrium: Wages and employment in the classical theory**



**Source:** Guru, (2016).

In Figure 2-1, each participant according to the classical model is on a quest to being well off. Henceforth, the supply of labour increases as wage rate increases, labour demand, on the one hand, increases as wage rate decreases. Workers are thereby willing to supply labour depending on whether the wage rate compensates for time given up on leisure. Contrary to the Keynesians theory of employment, the classical model's market clearing assumption prompts the adjustment of real wages until labour demand and labour supply are equal (Farmer & Platonov, 2016:1). In the long-run, labour is fully employed, and the number of workers willing to work is equal to the amount of workers that firms are willing to hire.

### **2.5.2.2 Keynes' General Theory of Employment, Interest and Money**

In his "General Theory of Employment, Interest and Money, John Maynard Keynes responds to the works of classical economics, focussing first and foremost on employment as an equilibrium model (Keynes, 1936). Contrary to the real wage-driven employment assumption as suggested within classical thinking, Keynes theory is grounded on the principle of effective aggregate demand where the latter is identified as the main determinant or driving force of employment level, coordinating the behaviour of consumers and producers along the short-run (Bortis, 2003:2, 6-7). In stark contrast to the classical model's focus on the production function, Keynes theory gives much attention to demand and expenditure. Being that during business cycles, recessions may be

led by increased production amid low demand. High demand then, may result to an increase in productivity and employment growth. Therefore, Keynes advocates efficient administration of fiscal policies for increased growth in output and aggregate demand in solving the unemployment problem (Tcherneva, 2008:2). Keynes further adds that employment, as determined by aggregate demand, determines real wage, contrary to the classical model's opposite assumption (Galí, 2013:977).

Accordingly, Keynes contends to the nonexistence of unemployment within the classical model's equilibrium, further acknowledging that unemployment may arise within the classical environment in circumstances where, for example, there is collective bargaining and/or restrictions in the form of institutional or legal constraints (Galí, 2013:977). Under such circumstances, Keynes considers employment as a cyclical condition where a shortage in effective demand results in unemployment, whereas unemployment is an involuntary condition driven by cyclical business cycles characterised by rigid wages (Davar, 2015:8; Fazzari, 1995:1; Mouhammed, 2011:104). Involuntary unemployment according to Keynes is a condition in which individuals demanded by the labour market is lower than those who are able and willing to work at the existing wage as a result of wage rigidity (Keynes, 1936:15). Dasgupta (2003:2919) adds that involuntary unemployment exists in the case where marginal utility of wage is higher than marginal disutility of labour. This means that despite people's willingness to work, a portion of these individuals will be unemployed indicative of the case of involuntary unemployment (Gali, 2013:977). Therefore, without any purposive direction, the economy cannot be self-adjusting in translating involuntary unemployment into equilibrium or full employment (Davidson, 1999:446).

Keynes assumes complete competition as an equilibrium propelling force, thereby making the assumption of full employment within general equilibrium (Hayes, 2008:5). In the general equilibrium, firms have no incentive to change their hiring decisions and labour does not possess the power to make firms do otherwise. Employment implies wage labour indicating the hiring of labour at a particular wage rate (Hayes, 2008:46). Based on the premise that through changes in price level, real wages seek to be equal to marginal labour of productivity, henceforth, effective demand determines both employment and real wage (Mouhammed, 2011:104; Stirati, 2012:9). For that reason, the Keynesian theory refutes the works of the classical model declaring that "employment is what determines the real wage, not the other way around like the classical model predicts" (Rodríguez & Sorolla, 2015:11). Keynes (2016:1) further contends that the classical postulates can only be applied to a special case and not in overall scenarios or the "general case".

It further contends the use of real wage as a determination of employment level, and therefore real wage cannot be regarded as an employment adjustment mechanism as projected in the classical economic model (Rodríguez & Sorolla, 2015:11). Keynes emphasises the central issue of aggregate demand as a driving force for the determination of unemployment, such that a lack of aggregate demand infuses unemployment. In this instance, unemployment indicates a disequilibrium, a diversion from the general equilibrium's full employment inherent of "sticky" wages, expectations and interest rates (Hayes, 2008:48). The New Keynesian further refutes that such disequilibrium may not be self-correcting as implied in the classical model (Dalziel & Lavoie, 2003:333; Filho, 1996:68).

### ***2.5.2.3 Relevance of the Classical and Keynesian employment theories to South Africa***

The onset of the dominance of "The General Theory of Employment, Interest and Money" at that time, underlined as the Keynesian theory, held a success story for its revolutionary impact on the prevalent high rates of unemployment and low growth (Tcherneva, 2011:23). The backbone of Keynes' theory primarily advocates expansionary policy actions (i.e. increasing money supply or spending to accentuate positive multiplier economic effects) during times of recessions, as well as contractionary actions (i.e. reducing money supply and raising taxes) to counteract exceptional inflationary upswings (Gauteng Provincial Treasury, 2012a). Henceforth, Krugman (2006:5) insists that the Keynesian theory's influential economic impact makes it a relevant and applicable guide to the modern age, albeit the various critics who might have misunderstood or misread the theory's actual discourse.

In today's age, South Africa's macro-economic sentiments and other economies have found Keynes' theory to be a forceful guideline in combating high rates of unemployment and substantially low economic growth. In its relevance, modern economies, particularly South Africa, have identified government intervention and its influence in affecting demand and supply, as a potent tool for economic acceleration, stabilisation and restoration. This is evidenced by the South African government's tax actions, its spending on goods and services, as well as areas of social development spending, upon offering state subsidies, social benefits, and the underlines of national economic policies as outlined by Harmse (2006:223).

In stark contrast to the Keynesian theory, scholars have often condemned the South African labour market based on the precepts of the classical employment theory. Amongst them, Kingdon and Knight (2006:471) argued that South Africa's unusually rigid market structure, is largely a composite of strong labour unions as well as the centralised collective bargaining system. These

structures suggest reduced flexibility of local wages to the country's unemployment. Kingdon and Knight (2006:472) also assert that South Africa's wage responsiveness or elasticity identified at that time to be -0.1, implied that an increase in unemployment was responsible for a 10 percent decrease in wages. In a similar fashion, Fedderke (2012:1) also notes that rigidities of the forces of the output market pricing, and those from the labour demand and labour supply side, have generated a fair share of South Africa's persistently high unemployment levels and its lack of capacity to create substantial jobs. Based on this assertion, Fedderke (2012:21-22) explains that the said rigidities have prompted the increase in the costs of real wages and low economic growth conditions, at the same time, has produced a "stagnant" labour market.

The success of the classical employment theory as previously underscored, lies in the automatic market clearing assumption, amid flexible wages and prices, owing to the lack of intervention by the authorities. On that note, it is the inept intervention by the government that causes major business cycle fluctuations. Following the analysis by the Gauteng Provincial Treasury (2012), it is however argued that the classical economic thinking fails to account for business cycle irregularities, particularly the narrative that business cycles are lagged, other than led by government intervention. On which the classical thinking counteracts with the assertion that; during the lag or the moment between government policy has impacted the economy, and the time of its implementation, the following cycle is necessarily caused by the response to the previous one. Once again implicating government intervention as a primary cause of disturbances to the natural adjustment, or clearing of the market, where the subject is considered a primary source of business cycles.

### **2.5.3 Foreign trade integration theories**

Foreign trade, or international economic integration has become a vibrant and crucial agenda within the borders of economic discussions and academic literature. The emergence of globalisation and trade liberalisation has seen an increase in the speed and ease in the exchange and transportation of goods and services. Lumina (2008:24) regards free trade or trade liberalisation as the smoothening of artificial barriers within foreign trade that hinders the movement of goods and services. It's essential and fundamental importance lies within its accelerating impact on economic growth and employment creation. For it is assumed to enhance efficient resource allocation through channels of relative price changes (Jiang, 2011:1). Mercantilists, classical economists, and Keynesians, amongst others, have long alluded to the

importance of international trade on the aforementioned aspects. The perceptions of trade theories, in light of the gains or benefits obtained from trade are further discussed below.

### **2.5.3.1 Mercantilists**

During the 16th to 18th century, the mercantilist economic thought emerged within Europe advocating the accumulation of national wealth and power by means of acquiring gold (Richman *et al.*, 2011:5). The premise of obtaining wealth and power were best served in the accumulation of reserves in the form of precious metals (bullion) such as gold and silver (Mill, 2009:57-58). The rationale for obtaining such commodities, in part, resonated from the importance they had during times of war as means of payment to mercenaries and navies (Islahi, 2006:138-139). The former was achieved by encouraging exports and metal discoveries, while inhibiting imports (Ali *et al.*, 2014:2). The assumption was that if the economy operates under conditions of less than full employment, increased wealth supply would be used to invigorate economic activity and promote output and employment (Appleyard & Field, 1995:20).

Emphasis was placed on increasing production and export supremacy within borders of foreign trade influenced by the notion of “one man’s gain at the cost of another man’s loss”. The theory thereof stressed the object of attaining and maintaining a favourable trade balance by promoting increased exports in the face of attained diminishing imports (Ali *et al.*, 2014:2). Imports were deemed as inferior towards national wealth accumulation in light of their distinctive “leakage” attribute, henceforth, an export surplus was most favourable (Rankin, 2011:1). In turn, the state intervened by placing restrictive policy action by means of *i.e.* tariff enforcements and quotas, while providing subsidies to domestic manufacturers in boosting production and exports (Ilegbinosa, 2012:714). The narrative is consequently pronounced by many (such as Fouda, 2012:352; Queralt, 2015:1; Reynolds, 2000:1) as an advocate of a protectionist system.

An excess of imports would consequently pose detrimental implications of a loss in national wealth to a foreign nation. The focus on consumption motives was offset by motives of production for export sake (Rankin, 2011:5-6). This was aimed at promoting competitiveness within foreign trade by means of producing at a low cost of labour. An increase in production in the face of reduced domestic consumption and imports would anchor increased exports amid low domestic wages. The focus was to achieve comparative advantage within spheres of foreign trade where a country benefits in export surpluses at the expense of other countries’ trade deficits (Rankin, 2011:1). Driven by a “national interest” motive, the theory necessitates maximum state intervention in neutralizing domestic conflicts and competition, in order to obtain a harmonised economic system

(Tame, 1998:2). Therefore, national power and wealth supersedes domestic individual wealth and consumption. The accumulation of state power is therefore an essential element within the growth process (Salvatore, 1983:16).

### ***2.5.3.2 Adam Smith's theory of absolute advantage***

The paradigm of absolute advantage adheres to the premise that nations are to specialise in the production of goods or services to which they possess an absolute advantage. The production of commodities owing to the highest productivity or lowest costs grants the nation an absolute advantage over others (Užik & Vokorokosová, 2007:59). Each country must therefore produce and export which it produces cheaper than other nations, and import commodities or services which it produces at a cost higher than others (Schumacher, 2012:62). Therefore, countries may gain from trade by specialising and allocating their resources towards the production of the commodity or services produced most efficiently. The specialisation and allocation of production resources must simply be allocated at producing according to each country's absolute advantage.

Theory places emphasis on productivity as a key component towards absolute advantage, the division of labour is portrayed as a prominent tool towards obtaining increased productivity and output (Morales, 2014:23). Enhanced division of labour thereof forms the basis of international trade within the absolute advantage theorem. With the same amount of labour, an advanced division of labour, where particular skills, dexterity and technology are applied to their intended activities will increase output (Marrewijk, 2008:1). This implies that division of labour accounts for increased worker skills amid enhanced technological developments which holistically promotes increased output (Schumacher, 2012:58). In essence, increased economic growth is a by-product of increased specialisation. Increased specialisation amid market expansion will thereby accommodate an increase in wealth and income leaving room for international trade.

Although the theory stresses the salient benefits of free trade to be acquired by all nations, it further advocates virtues towards which nations may be faced with restrictions in engaging in international or free trade. Amongst which, it excludes nations that do not possess an absolute advantage over others from engaging in free trade (Bouare, 2009:100). Secondly, nations may be further opposed to engage in trade where benefits are not mutually inclusive, for instance, two nations may obtain the same level of labour productivity leaving no incentive for trade to take place (Das, 2009:3).

### 2.5.3.3 *David Ricardo's law of comparative advantage*

Contrary to the absolute advantage framework, the theory of comparative advantage suggests that nations with seemingly no absolute advantage in the production of goods or services can still participate and obtain trade welfare gains. This is such that David Ricardo's comparative advantage framework is established on grounds of mutually beneficial trade, having met the latter prerequisite, engaging in trade voluntarily that befits a country (Krugman *et al.*, 2014:36). On the one hand, Adam Smith's theory of absolute advantage advocates free trade participation based on productivity and cost, on the other hand, the Ricardian framework owes the rationale of engaging in free trade primarily based on a nation's opportunity cost relative to other country's cost of opportunity (Užík & Vokorokosová, 2007:59). The Ricardian framework thus suggests that an open economy with a flexible labour market, experiences short-term labour re-allocations and thereby shifts from sectors which were previously protected, towards those with comparative advantage for induced growth and employment (Christev *et al.*, 2005:2). The Ricardian comparative advantage theory ascribes to search induced unemployment upon relative technological variances (Dutt *et al.*, 2009:32).

Under the comparative advantage framework, nations can obtain free trade welfare gains through specialisation and efficient resource allocation. For this reason, a nation should import goods or services to which it possesses a comparative disadvantage and export from the sector to which it has a comparative advantage. In turn, labour from the comparative disadvantaged industry is re-allocated towards the comparative advantaged industry (Borghi, 2010:3). This implies that the sector towards which a nation is induced to import due to its comparative disadvantage experiences job destruction, while the exporting sector promotes job creation due to its comparative advantage. Henceforth, a country must engage in producing goods or services with the lowest opportunity cost and export excess production across international trade borders (Thirlwall, 2000:6). Specialisation is thereby aimed at producing optimal output, relative to low opportunity cost for the attainment of welfare gains for all.

Ricardo's framework further assumes "full employment" of resources, such that during the process of specialisation and resource allocation, no jobs are lost, although there are some temporary adjustments (Felipe & Vernengo, 2002:54). Arguably, Thirlwall *et al.* (2002:182) contest that in the face of high unemployment, trade gains from specialisation and resource allocation may be offset by losses in resources as reflected by a nation's unemployment. In practice, during the process of specialisation and resource allocation, the aims of increasing the production of goods or services relative to the lowest opportunity cost may result in employing more capital intensive

resources for lower production costs. As a result, this will offset the “full employment” assumption and promote job destruction, further leading to the displacement of human labour. Additionally, Thirlwall *et al.* (2005:182) also argue that production activities which are liable to diminishing returns may cause restrictions to the labour absorption process and further offset David Ricardo’s assumption of full employment and constant production costs. Such that the marginal costs of labour increases and the marginal product of labour decreases, amid the incidence of minimum wage. The Solow-Growth model thereby emphasises the use of a sustained combination of capital and labour, inclusive of technological progress or innovation, as a means of resource allocation for long-run increased returns to scale (Antonioni & Flynn, 2011:352; Solow, 1956:67).

According to Schumacher (2013:88-89), comparative advantage proponents adhere to the belief that some factors of production such as capital and labour are “immobile” and “trapped” across international borders and does not adopt to principles advocated within domestic trade. Further assuming that the international trade environment only experiences free movements in produced goods. However, Boudreaux (2004:373) argues that movements in capital and labour tend to move according to where optimal gains in wages and profits could be obtained, as opposed to adhering solely to conditions of trade between nations. Likewise, Felipe and Vernengo (2002:16) also contest that the realism of “immobile” and “trapped” labour and capital is impractical, as the world economy is forever expanding, whereas labour is flexible and migrates in reality, while capital is transferred from low-to high income nations. On the other hand, specialisation gains may be offset by the loss in resources from unemployment (Thirlwall *et al.*, 2015:182).

According to Jansen and Lee (2007:19), the re-allocation of factors of production set at obtaining comparative advantage presents the likelihood of experiencing either job creation or job destruction. Where gains in job creation may be achieved by means of enhanced investment in production, and new firm developments. Consequently, jobs may be lost due to company closures and several forms of job losses in several economic parts.

#### ***2.5.3.4 The Heckscher-Ohlin model***

The Heckscher-Ohlin (H-O) model contributes to international trade theory based on the endowment (abundance) of bundles of factors of production and relative factor prices of capital and labour as determining patterns of trade. It explains international trade patterns based on the works of David Ricardo’s comparative advantage trade theory (Du Toit *et al.*, 2010:2; Leamer, 1995:1; Wood, 2009:2). Upon which, the H-O operates under the following assumptions: factor endowments and prices vary according to each country, commodities are internationally mobile,

factors of production are internationally immobile state and domestically mobile, there is a nonexistence of economies of scale upon the use of the same level of technology in production, there are zero costs of transportation, there exists full employment of resources and the same tastes and preferences within all nations, and all markets operate under perfect competition (Subasat, 2003:150). The H-O model therefore asserts that nations are to export commodities that make use of cheap and relatively abundant resources or factor inputs, and import commodities which require the intensive utilisation of scarce and expensive resources or factor inputs within their production process (Subasat, 2003:150).

In a nutshell, the H-O model simply implies that countries with relatively abundant and low labour cost may engage in producing and exporting labour intensive goods. Additionally, such countries should import capital-intensive commodities or goods which makes the production of capital-intensive commodities expensive due to the latter being relatively scarce within local borders. Under the premise of the H-O model based comparative advantage theorem, international trade solely contributes towards unemployment reduction or job creation when the country in question is endowed with labour or is labour abundant (Dutt *et al.*, 2009:33; Felbermayr, 2011:753a). Comparably, different countries have different labour and capital endowment, for that reason, determining whether the country in question is labour or capital abundant, capital-labour ratios reflect comparability availability (Subasat, 2003:150). In contrast, Deardorff (1982:683) argues that the H-O model is restricted to its generalisation of its assumptions as it may only apply in an abstract environment comprised of a “two-good, two-factor and two-country model”.

### ***2.5.3.5 The product life-cycle theory***

The theory was developed by Vernon in 1966 in the United States of America. Vernon (1966:190) addresses the comparative-advantage cost theory’s lack of realism in explaining the behaviour of trade patterns by highlighting the significance of product innovation, economies of scale, as well as the uncertainty of international trade patterns. During the process of choosing the location for foreign investment (internationalisation), firms aim to recognise their distinctive competitive advantages as well as identifying the location with the best sales or production conditions (Hermannsdottir, 2008:5). For that reason, the product cycle theory sought to explain firms’ choice of entry modes and international trade flows. The theory proposes four international trade cycles or phases by which multinational companies are exposed to in establishing their product/s in foreign markets. These phases include: introduction, growth, maturity, and the decline phases (Cao & Folan, 2012:643).

The theory assumes that a country initially tends to produce and sell its innovated products within its domestic markets then begins to export its product in nations with comparable needs as to obtain economies of scale. Along the process, foreign production intensifies and competition strengthens in the export markets, once the innovated product is saturated within the maturity stage, manufacturing relocates to the labour-abundant and cost-efficient country and begins to receive FDI (Morgan & Katsikeas, 1997:70; Wells, 1968:2). Simply, upon the saturation and standardisation of the product, the imitation of the product begins and as a result, the innovating country makes efforts to compete by means of cost cutting, leading to the reallocation of production to developing countries. Having developed production within developing nations with low production costs, the innovated product may therefore be exported to the product innovating country as well as the country in which the product was initially exported to (Ietto-Gillies, 2007:198). Subsequently, manufacturing and demand deteriorates within the home country as a result of increased import competition along the stage of decline.

In its application, Cao & Folan (2012:646) highlight that the theory was initiated on the grounds of Europe's increased demand for similar output produced in the United States (USA) during the Second World War. Thus, firms within the USA expanded exports to international counterparts while having a technologically advantaged production base over their foreign competitors. Meanwhile, European firms began copying these products forcing the USA to establish manufacturing facilities within local markets in order to possess market share. For that reason, the product life-cycle theory is based on the premise that the technologically advantaged multinational company experiences increased demand and market for its product. Nonetheless, once the products are standardised and saturated, international competitors may imitate these products. In essence, the theory stresses the interlinks between the market structure, the transition from the technologically-abundant monopolistic driven production to intense competition, standardisation and maturity, to the shifting of production to developing countries with low production costs i.e. labour costs.

#### **2.5.3.6 *Michael Porter's Five Forces Model***

The five forces model emerged as a potent industrial-structural analysis model in the early 1980s. The model was developed by Michael E. Porter and served as a contribution to the competitive advantage and general theory of competitiveness (Renko *et al.*, 2011:377). Porter's framework on the five forces of industrial competitiveness underlies the forces determining industrial intensity of attractiveness and competitiveness. The five forces include; the threat of new potential entrants,

buyers' bargaining power, the threat of substitute products, suppliers' bargaining power, as well as competition between existing industries (Michael, 2014:32; Porter, 1980:4). Porter (1980:3) maintains that the industry's definitive profit potential and differences in industrial profits are influenced by the strength of the joint five forces. Henceforth, the reason for Porter's industrial analysis is to establish the respective industry's optimal marketing strategy (Renko *et al.*, 2011:377). Notably, each industry's collective strength of the five forces is different from other industries.

Porter (1980) contends that the *threat of new potential entrants* oversees the entrance of new competitors having the capacity of driving competition and eventually affect industrial profitability. The threat of entry therefore depends on the intensity of the industry's reaction and the number of potential barriers to entry which are intended to limit or hinder new competitors from entry. The threat of entry is low where barriers and retaliation from existing competitors are high, however, price competition may intensify where barriers to entry are low. Barriers to entry may include, among others, economies of scale, patents, product differentiation, and brand identification (Indiatsy *et al.*, 2014:77). Under *buyers' bargaining power*, buyers can absorb value from the industry by definitively playing industry participants against each other, or by demanding for more services and enhanced quality and thereby compel costs to increase, as well as pressuring prices to drop (Kaiser *et al.*, 2011:5). Generally, buyers experience greater bargaining power over participants when they have power to negotiate and demand price reductions (Eskandari *et al.*, 2015:189).

*Suppliers' bargaining power* identifies the threat by suppliers of raw material to the industry in the form of increasing prices for goods and services. The industry considers it advantageous when it has a bargaining advantage over suppliers (Slater & Olson, 2002:19). Industries depend on suppliers to provide subcomponents used in the industrial process of galvanising an integrated system. For that reason, suppliers may decide to absorb more value for their supplies by means of shifting costs to the industry, restricting services or quality, or charging higher prices to the industry (Kaiser *et al.*, 2011:4). According to Porter (1979:140), influential suppliers can absorb industrial profitability irrecoverably to the industry's own price increases. Subsequently, suppliers' bargaining power may be determined by the availability of substitute customers and the size and number of the suppliers (Slater & Olson, 2002:19). Suppliers thereby have great bargaining power when they are less in number and big in size, and when goods and services can be easily sold to alternative customers.

Production bases with goods that can be used for the same purpose relative to the industry's manufacturer of an original product are identified to pose a threat to the industry, further identified by Porter (1980:4) as the *threat of alternative (substitute) products* to the industry, due to price ceilings of participants within the industry, the existence of alternative products and/or services may limit the industry's potential (Adi, 2015:27). Consumers may easily switch from established goods and services to substitute products which offer the best attractive prices and performance than the manufacturer of an original product (Marshall, 2013:218). An industry's survival may therefore depend on the availability of other manufacturers alternative products which can compel the firm to reduce its prices. For that reason, Khoja (2016:963) contends that product uniqueness, customisation, and value will ensure less competition from conventional goods and services. Likewise, this can be ensured by building up switching costs in order to maintain and develop profitability. Lastly, *competition between existing industries* can be minimised by decreasing price competition, establishing product differentiation from competitors, and establishing and forming customer trustworthiness or loyalty (Oraman, 2011:194). Rothaermel (2008:217) additionally maintains that rivalry amongst existing competitors engages the participants to fight for market share and absorb significant growth in the industry, and as a result determine the profitability of the industry. The higher the competition and rivalry, the less industrial profitability as increased competition stirs reduced prices and higher costs.

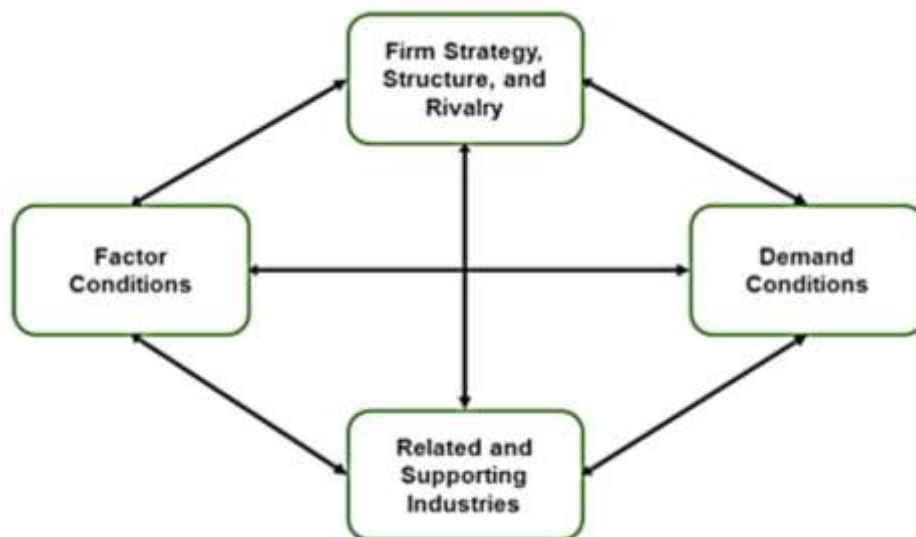
### ***2.5.3.7 Michael Porter's Diamond Model of Industrial Competitiveness***

Porter's diamond model is an analytical framework which clarifies the rationale behind the success of specific countries' industries and sectors relative to others (Jhamb, 2016:141). Contrary to the theory of comparative advantage theory and absolute advantage which postulate factor endowments as the main determinants of a country's competitiveness, the diamond model identifies productivity as the primary and essential source of international competitiveness. Increased productivity thereby serves as a driving force of the enhancement of standards of living (Barragan, 2005:3-4). The model establishes a framework, as illustrated in Figure 2.2, for determining the guidelines and preconditions that govern sectors and industries' competition which plays a crucial role in achieving long-term competitiveness.

Porter's diamond model is an advancement of the competitive advantage theory further underlining an interactive system of four determinants which propel industries to establish and sustain competitive advantage (Lau, 2009:182-183). These factors display cohesive agglomeration amongst each other to establish conditions in which competitiveness and innovation takes places

(Bakan & Doğan, 2012:441). Upon which, the model additionally includes two distinct factors which are “chance events and the government” as factors which can affect the four determinants of competitiveness. These separate factors are deliberated as essential tools in enabling a “fertile ground” beneficial to industries’ actions and competitiveness, or may create a harsh environment for firms (Cini & Nater, 2009:764). According to Pawar and Veer (2014:75), “chance events” refer to incidents that may occur beyond the industry’s control, while the “government” may influence the four factors upon state intervention or action on levels of local, regional, national or international frontiers.

**Figure 2-2: Porter's diamond model framework**



**Source:** Waldman, (2015).

- ***Factor conditions***

According to Porter (1990:71), factor conditions reflect the state of a country’s factors of production (*i.e.* labour and infrastructure). These factors avail the mechanism for value chain formation and various productive ventures. Under the subdivided factors of basic and advanced factors, the author further argued that capital and knowledge as advanced factors are more crucial relative to basic factors. According to Smit (2010:115), basic factors may include climate, raw materials, unskilled labour, and water resources which are hereditary and relatively need little to no new investment to be used within productive units. Advanced factors on the one hand require innovation and re-investment within specialised factors and thereby necessitates upgrades. The underlining value of skills within an industry provide the research production as factor conditions enabling the competitiveness of a unit (Bakan & Doğan, 2012:443).

- ***Demand conditions***

Demand conditions within Porter's diamond model illustrate consumers' demand dynamics and complexities within a country. According to Fainshmidt *et al.* (2016:84), conditions displaying relatively sophisticated demand conditions and a general demand for advanced goods and services may allure local firms to upgrade their production capacity and capability. Such a condition serves as a reinforcement for generating competitive goods and services. Henceforth, demand conditions thus form as consumers' driving "pressures" for the procurement of goods and services based on "quality, price and particular services" which make provision for an innovative and product development base (Bakan & Doğan, 2012:444). In essence, increased demand by consumers propels industries to develop a more sophisticated organisational base and competitiveness and thereby influences the formation of particular factor conditions.

- ***Related and supporting industries***

Related and supporting industries implies the lack of, or existing presence of home-based suppliers and related industries within domestic borders which are competitive within the global market (Helvik & Harnecker, 2005:16-17). Such industries may be input suppliers to industries within the downstream competitive base and also make provision for the establishment of cost-effective input conveyance, offer preferential accessibility to distinct inputs, as well as provide close relationships in downstream industries (Konsolas, 1999:18). Inputs provided by supporting or related industries can be crucial for internationalisation and innovation and thereby steer other industries towards innovation and competitiveness (Pawar & Veer, 2014:75).

- ***Firm strategy, structure and rivalry***

Firm strategy, structure and rivalry as the fourth determinant highlights industries' goals, their structural establishment, and the manner in which they are managed as crucial determinants of competitiveness. Nonetheless, rivalry arising from the presence of home-based intense competition necessitates the need for innovation which forms as a tool to upgrade competitiveness (Pawar & Veer, 2014:75).

## **2.6 REVIEW OF EMPIRICAL LITERATURE**

The previous sections of the current chapter allude to the highly amassed theoretical background projecting interrelations between job creation and aspects of trade/or international economic integration. Such discussions provide the study with a basis upon which empirical studies can be assessed, concerning the nature and behaviour of job creation relative to trade openness, exchange

rate fluctuations and FDI. As previously discussed in the chapter, international economic integration serves as a platform for job creation and/or destruction within economic sectors. Notwithstanding, attempts towards conveying the linkages between job creation along with trade openness, exchange rate fluctuations and FDI within empirical studies is yet to reach consensus. A key feature of such studies is that they convey a myriad of conclusions as projected within empirical findings. This section reviews such studies and their findings, conducted on the aforementioned trade factors relative to job creation within tradable and non-tradable sectors.

### **2.6.1 Job creation and trade openness**

Amongst the studies on job creation effects (otherwise referred to as employment effects) of trade openness or liberalisation, various studies (such as Ferreira *et al.*, 2010; Menezes-Filho & Muendler 2011; Wacziarg & Wallack, 2004) have conveyed a negative impact of greater trade openness on job creation, particularly towards low-skilled labour within the tradable sector such as manufacturing, and a transfer of highly-skilled labour to non-tradable sectors. Such findings include results by Gaddis and Pieters (2014:25) who investigated the impact of trade openness on gendered labour market in the case of Brazil. Results revealed a loss of employment in the tradable sector, albeit having no effect on total employment as a result of the re-allocation of highly-skilled labour from tradable to non-tradable sectors. However, low-skilled labour was negatively affected. In retrospect, trade openness plays a seemingly important role on the re-allocation of labour and other production factors.

On this accord, Haltiwanger *et al.* (2004:207) asserts that opening domestic boundaries to international trade in the form of lowering tariffs increases the pace and rate of job re-allocation as alluded to by the assumption that trade reform enhances allocative efficiency. Highly productive export firms, therefore, are likely to expand their establishment upon the opening of the domestic economy to the global market. Lower productive firms on the one hand, may shut down in due course while some on the other hand, may cut down labour and remain in operation (Itskhoki & Helpman, 2015). Furthermore, Haltiwanger *et al.* (2004:207) asserts that re-allocation induces costs, and a study conducted in Latin American economies by the former using harmonised measures on job creation and destruction, reveals that increased trade openness via tariff reduction is associated with a decrease in net employment growth. Amidst open and liberalised trade, Janiak (2006:33) asserts that job destruction or the loss of jobs within small firms, exceeds benefits obtained from job creation gains resulting from increased productivity, following the re-allocation of workers from the least to most productive establishments.

Similarly, the study by Menezes-Filho and Muendler (2011:33) suggested labour displacement effects of trade openness within Brazil's labour market, such that comparative advantage-driven sectors were unable to absorb displaced workers resulting in the loss of employment. Janiak (2006:33) further associates the failure to absorb labour by remaining firms being a result of the firm's incentive to profit from market power within the goods market, which permits them to absorb higher rent. A further analysis by Asghar *et al.* (2014:53) on countries within the South Asian Association for Regional Cooperation (SAARC), namely Sri Lanka, Pakistan, India and Bangladesh, revealed a loss of employment in the manufacturing sector for Pakistan, India, and Bangladesh due to greater trade openness. Whereas, the agricultural and informal sectors faced underemployment and low wages. Sri-Lanka, on the one hand, experienced export-led growth, and these results were substantiated by a lack of a competitive advantage in Pakistan, India and Bangladesh within the manufacturing sector as alluded to in the theory of comparative advantage. In stark contrast to the above findings, various scholars (such as Felbermayr *et al.*, 2011b; Hasan *et al.*, 2012) attribute employment generation as induced by greater trade openness. An empirical examination by Hasan *et al.* (2012:279) based on India's labour force survey data, revealed a reduction in unemployment resulting from trade openness within flexible labour market abundant states, including states with high export share sectors. Additionally, results revealed that existing jobs within industries exposed to increased trade liberalisation or openness were less likely to be lost primarily within net export industries and those with flexible labour regulations. The study further provides reinforcement for trade openness alongside domestic policy complementary reforms. Nevertheless, Shastri *et al.* (2010:33) acknowledge the existence of low wages amid employment induced trade openness. Consequently, Kim (2011:1) found that greater trade openness results in job destruction as trade interacts with rigid labour market institutions, however, job creation may occur in the case where the labour within the labour market is characterised by flexibility as formerly alluded to by Hasan *et al.* (2012:279).

Empirical evidence by Felbermayr *et al.* (2011:741b) by means of panel data based on 20 OECD countries suggests that a lower unemployment rate is associated with increased trade openness in the long-run, such that when aggregate trade openness increases by 10 percent, unemployment is reduced by three quarters of one percent. Similarly, a study on Sri-Lanka conducted by Herath *et al.* (2013:66) using ordinary least squares method, also suggests an increase in job creation by 0.614 percent following an increase in export intensity by one percent, however, import penetration had a significant negative offset in job creation, a one percent increase in import penetration resulted to a 0.524 percent decrease in employment.

A cross-sectional study by Dutt *et al.* (2009:32) was conducted on a model where unemployment was conveyed as being a result of search induced principles. On the other hand, trade was considered to be led by relative technological variations proposed by the Ricardian comparative advantage framework and international differences in the Heckscher-Ohlin's (H-O) comparative advantage factor endowments. For both countries, results revealed strong and significant findings of steady-state driven trade estimates led by David Ricardo's comparative advantage. Upon which, unemployment responsiveness to increased trade openness reflected an increase in short-run unemployment and a reversal to a decrease in unemployment in the long-run along a new steady-state. For that reason, Dutt *et al.* (2009:43) made the assertion that protectionist or low trade openness increases unemployment in both countries. Conversely, findings based on the prepositions of the H-O composition effects of a conditional impact of trade openness on unemployment based on whether a country is capital or labour abundant were revealed to be non-robust and weak. H-O's preposition of positive unemployment effects of trade openness in capital-intensive nations and negative unemployment effects in labour-intensive nations were said to be offset and dominated by David Ricardo's productivity effects as opposed to the lack of productivity (Dutt *et al.*, 2009:43).

Following the opening of the Uruguayan economy to foreign trade, Casacuberta *et al.* (2004:246) asserts that the country's manufacturing sector adopted more capital-intensive technological modifications, accounting for increased average labour and total factor productivity, while gaining exposure to cheaper and enhanced inputs and capital goods. Consequently, the general economy experienced increased net job destruction explained by the downsizing and exiting of firms, nevertheless, this effect was offset by unions as they attempted to mitigate the effects of trade exposure albeit having a negative effect on productivity. Casacuberta *et al.* (2004:246) further assert that larger firms tend to be more productive and have higher net job creation prospects with lower job destruction rates.

Another study by Chinembiri (2010:16) on the effects of South Africa's trade liberalisation on employment suggested a negative effect of imports on the country's labour demand within the primary and secondary sectors, however, the study was inconclusive in declaring a positive effect of export openness towards employment. Haouas *et al.* (2005) uses industry level data and panel data estimation techniques in assessing the responsiveness of the labour market to trade liberalisation in Tunisia. Results revealed an increase in the export sector's employment and wages within the short-run, however, there was a decrease within the long-run. The reason for the decrease was substantiated as resulting from "learn-by doing" and enhanced organisational and

productivity capacity. Following a literature analysis by Newfarmer and Sztajerowska (2012:7), the scholars reveal that trade is positively vital for job creation in developed and developing countries, however, policy reforms that complement trade openness are required in obtaining the complete welfare gains of employment and growth. Such reforms include the establishment of a stable macroeconomic environment, an investment friendly atmosphere, including reforms ensuring worker security and sustenance.

## **2.6.2 Job creation and exchange rate fluctuations**

Having analysed insinuations of the real exchange rate on South Africa's overall employment patterns, Chipeta *et al.* (2017:23-25) encourages the analysis of the real exchange rate on tradable and non-tradable sectors in accordance with South Africa's trade openness. According to the latter author, employment effects of the real exchange rate may differ according to the orientation of employment in either the tradable or non-tradable sector, while such effects rely on each country's degree of trade openness. The exchange rate affects firms within different economic sectors differently. For this reason, firms may create or destroy jobs. A concurrent occurrence of job creation and job destruction thus amount to the labour market's re-allocation of jobs where the costs of adjustment are borne by the different factors of production, such as labour (Banerjee & Veeramani, 2014:2-4). Klein *et al.* (2003:261) investigate labour re-allocation effects of the real exchange rates in the United States using firm heterogeneity and degree of trade openness. According to the study, a currency appreciation stimulates an increase in job destruction, further creating a slowdown in total employment growth, where the most impact is mostly felt within open industries. Notwithstanding, Klein *et al.* (2003:248-249) stresses the degree of openness as a major determinant of the extent of the effects of exchange rate fluctuations on the labour market. On the other hand, sectors with high openness to trade inclusive of low-technology, amid flexible labour markets, tend to be more sensitive to real exchange rate shocks (Alexandre *et al.*, 2010).

Furthermore, results by Chen and Dao (2011) revealed that an appreciation in China's real exchange rate resulted in the contraction of the country's employment in both tradable and non-tradable sectors. Likewise, Huang *et al.* (2014: 339) also found that an appreciation in the Canadian dollar held a significant negative effect on the country's manufacturing sector, while other industries and sectors were not affected. The impact on the manufacturing sector was largely associated with the country's export-weighted exchange rate. Findings by Chipeta *et al.* (2017) based on the Vector Autoregressive (VAR) model and multivariate co-integration techniques in a South African case established that the real exchange rate is negatively associated with overall

employment dynamics in both the long-run and the short-run. However, results by Huang (2014:339) assert that the real exchange rate does not have a significant impact on the country's overall employment, as the manufacturing sectors only contributes about ten percent towards the country's net employment.

In contrast to the above findings, a study by Kim (2005) investigates the effects of Korea's real exchange rate shocks on the country's employment. Results revealed that shocks in the real exchange rate positively affects the country's overall employment. Furthermore, industries with low import input ratio projected a positive relationship between the real exchange rate and employment. However, industries with moderate or low openness to trade showed a negative relationship. Kim (2005) further suggests that Korea, a developing nation, is influenced more by real exchange rate shocks than the United States. Ngandu (2009:125-128) investigated the effects of an appreciation of the Rand exchange rate in South Africa's using the computable general equilibrium model. Findings revealed that employment tends to re-allocate from the tradable to non-tradable sectors. Employment within tradable sectors was found to be negatively affected by an appreciation in the real exchange rate, whereas, the appreciation resulted in a boost in the country's non-tradable sector. As a result, demand and expenditure within non-tradable sectors increased, albeit experiencing a decrease in demand in the tradable sector due to high export price. Nevertheless, lost jobs in the tradable sector were absorbed in non-tradable sectors leading to the sustenance in the country's aggregate employment.

Mpofu (2013) investigated the effect of real exchange rate shocks on South Africa's manufacturing sector using Autoregressive Distributed Lag (ARDL) from the year 1995 to 2010. Results showed an increase in the manufacturing sector's employment growth due to a depreciation in the exchange rate. On the one hand, Bhorat *et al.* (2014) suggested a strong negative effect of the exchange rate appreciation on employment within South Africa's tradable sector with an insignificant effect on the non-tradable sector during the years 1975 to 2009 by means of stylised model.

### **2.6.3 Job creation and foreign direct investment**

Foreign direct investment (FDI) is noted by various scholars (such as Mwilima, 2003:31; Kurtishi-Kastrati, 2013:26; Joshi & Ghosal, 2009:34) as a vital source of economic development, economic growth, and poverty reduction. Notwithstanding, less empirical literature has been conducted on employment effects of FDI particularly within tradable and non-tradable sectors, or economic sectors. Most studies however, have largely focussed on net-employment effects of FDI.

According to Kurtishi-Kastrati (2013:28), job creation is amongst the most prominent effects of FDI within countries that are abundantly labour intensive with relatively scarce capital. The author further adds that employment effects of FDI, thereof, may be directly or indirectly induced. The direct effect is such that the host country's citizens may be directly employed by foreign multinational enterprises. Whereas, indirect effects may be achieved through domestic suppliers due to increased investment, and jobs created through increased domestic expenditure and demand by employees with multinational enterprises. However, empirical evidence presented in the study suggests that employment effects of FDI are not mutually accrued within economic sectors and across different countries, such as South Africa.

In reference to the former assumption, empirical evidence by Wei (2013:52) showed contrasting findings in assessing employment effects of FDI within Chinese primary, secondary and tertiary sectors between the years 1985 and 2011 by means of time series regression models. Results revealed a significant positive effect of FDI on employment within the primary sector. Notwithstanding, an insignificant effect of FDI on employment occurred in China's secondary sector. Lastly, results suggested a significant negative effect of FDI on employment within the tertiary sector. Similarly, Strat *et al.* (2015:642) investigated short term causal relationships within thirteen European Union (EU) member states. The study was conducted using T-Y procedure during the period 1991 to 2012. Results suggested causality from FDI to unemployment for four countries and causality from unemployment to FDI for three other countries, while no existing causality was in the remaining countries. Meanwhile, based on the Granger-causality test, Nyen Wong *et al.* (2011) revealed the presence of bidirectional causality between FDI inflows and employment in the manufacturing sector in Singapore. These results are consistent with findings by Inekwe (2013) who revealed a causal relationship from FDI to employment in manufacturing in Nigeria, although such a relationship was unidirectional.

A study conducted in India using a multiple regression model by Mehra (2013) showed a non-positive relationship between FDI and employment. Mehra (2013:36) attributes these findings based on the notion that India is primarily an agricultural economy with less FDI in the agricultural sector, while the service and industrial sectors are the major recipients of FDI. Therefore, the country's employment levels are barely responsive to FDI as FDI is seldom involved in the agricultural sector. These results correspond with findings by Nizamuddin (2013) who suggested negative effects of FDI on employment in the retail trade sector in India. The latter results were estimated based on ordinary least squares (OLS) OF time series data series.

Further findings provide positive effects of FDI on employment, amongst them, results by Karlsson *et al.* (2007:1) obtained a positive effect of FDI on employment growth, these results were substantiated under the assumption of the firm characteristics such as their accessibility to export markets. Furthermore, Karlsson *et al.* (2007:1) identified the presence of spill-overs as a likely source of indirect job creation effect of FDI. Finally, an empirical study of South Africa's employment effects of FDI done by Tshepo (2014:18) during the period 1990 to 2013 by means of the Johansen Cointegration test showed a positive long-run effect of FDI on employment and economic growth. Subsequently, Tshepo (2014:18) adds that corruption, human capital, labour strikes, labour cost, and return on investment, are the various plausible factors likely to influence the flow of FDI in South Africa. This study, however, assesses the presence of employment disparities within South Africa's economic sectors, particularly the country's tradable and non-tradable sectors.

## **2.7 SYNOPSIS**

This chapter explored the literature and theories of employment and foreign trade, relative to employment dynamics and differentials in trade openness, the real exchange rate and FDI. So far, literature has shown that foreign trade exposure to the foreign market, the exchange rate and FDI inflows and outflows, may potentially predict employment patterns. However, the manner in which employment is affected within the various economic sectors, such as South Africa's tradable and non-tradable sectors, is not clear. Different empirical methods were used in studies which attempted to assess the matter, although in isolation. Empirical studies have not presented a consensus on how tradable and non-tradable jobs are distinctively affected by long-run and short-run changes in trade factors, whereas most studies have been conducted based on overall employment patterns. The long-run and short-run relationships in this study will be analysed using panel ARDL and standard ARDL methods.

The dynamic nature of factors within the foreign trade environment may be led by changes in features such as demand and supply structures surrounding the trade environment. Authorities may consequently have no direct influence on these factors. Nevertheless, authorities hope for better employment and economic trajectories such that economic policy, particularly monetary policy measures, may be put in place to indirectly affect economic activities or outcomes through indirect policy channels. Measures of fiscal policy, such as trade policies (i.e. import and export tariffs), play a significant role in establishing the transactions of import and export commodities which affects the degree of a country's openness to the global market. The manner in which employment

responds to foreign trade dynamics and policy measures directed at influencing trade factors may differ based on the orientation of employment in either tradable or non-tradable sectors. Theoretical frameworks such as the Balassa Samuelson effect have thus sought to explain the movements and cross-tradable and non-tradable sector activities. Prior to establishing the methodological framework and empirical estimations, the study analyses and explains the trends and policies of South Africa's employment and the foreign trade environment in the next chapter.

## **CHAPTER 3:**

### **REVIEW OF VARIABLE TRENDS AND POLICIES**

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#### **3.1 INTRODUCTION**

This chapter presents a historic and trend analysis of South Africa's selected macro-economic variables with the aid of graphical presentations, tables and figures. The chapter additionally provides an assessment of South Africa's employment and trade policies. In so doing, the study reviews pertinent variable trends and policies to the fulfilment of the study objectives. Selected macro-economic variables include: employment growth, real exchange rate movements, FDI, as well as trade openness estimated as a share of actual trade flows in South Africa's Gross Domestic Product (GDP).

#### **3.2 SOUTH AFRICA'S GENERAL ECONOMIC CLIMATE**

The premise of sustainable and inclusive growth for broad-based growth within economic sectors has anchored its way as a viable solution towards the country's high rates of poverty, inequality, and unemployment. National policies such as the New Growth Path (NGP) have thereby identified the latter to be a key economic driver and thus envisaged a GDP target of seven percent set to bolster faster and greater inclusive growth (World Bank, 2011:15). Notwithstanding, sustainable and befitting exchange rate patterns, pertinent trade policies and the level of trade openness (liberalisation), as well as increased FDI within an enabling environment are crucial for stimulating GDP and employment growth. South Africa's general economic and social outlook has however been surrounded by multi-faceted contentions amid weak economic activity as well as concerns of a contingent economic recession, particularly in the year 2017 (Bisseker, 2017:1; Focus Economics, 2017:1).

As of the first quarter of 2017, the country's unemployment rate increased by a daunting 1.2 percent, further bolstering an increase in the official unemployment rate to 27.7 percent – considered to be the highest since the year 2003 (Bateman, 2017:1; Omarjee, 2017:1). Peyper (2017:1) asserts that the country's growth in employment is offset by the increased number of job seekers into the labour market. Forecasts of favourable economic growth relative to 2016 however remain suspect to social and political upheavals as well as the much recent credit ratings downgrades (Fin24, 2017:1; Laing, 2017:1). The successively dismal growth rates raise concern for job creation targets envisaged within state programmes such as the National Development Plan (NDP) in fear of not being met (Phakathi, 2017:1).

Moreover the current account or trade balance reflection of the inflow and outflow of South Africa's cash balances has shown staggering performance along the years. This has however been offset by a tightening of the deficit to 3.3 percent of GDP in the last quarter of 2016 due to a decline in domestic import demand considered to be the country's best performance in six years (Le Roux, 2017:1). Likewise, the Rand also experienced a recovery at the end of 2016 despite having recorded substantial plummeting levels in December 2015 and January 2016. Improvements in the Rand continued thereof along the onset of 2017 albeit having faced mounting pressure driven by the downgrading of the country's credit ratings (IDC, 2017:17).

In stark contrast to the aforementioned economic patterns, the country has seen notable improvements in its inflation rate which eased to a 5.3 percent margin, slightly below the 6 percent upper target band in April 2017 despite having reached the lowest level since December 2015 (Omarjee, 2017a:1). South Africa's inflation rate consequently lies in wake of its labour costs, interest rates, effective exchange rate, and its broad money supply (Akinboade *et al.*, 2004:41-43). Economic imbalances amidst factor dynamics may further imply the stipulation and maintenance of conservative high interest rates in efforts to maintain price stability based on the inflation targeting objective of monetary policy (Fin24, 2017:1; Omarjee, 2017b:1). Nonetheless, the Rand exchange rate has however proved to be extensively volatile over the past years, particularly along the year 2016, having faced pressure from government action such as the "NeneGate" incidence (Money Transfer South Africa, 2017:1). The weak performance in the Rand was characterised by rising living costs, high interest rates, as well as rising petrol and bond prices.

### **3.3 TREND ANALYSIS OF SOUTH AFRICA'S MACROECONOMIC VARIABLES**

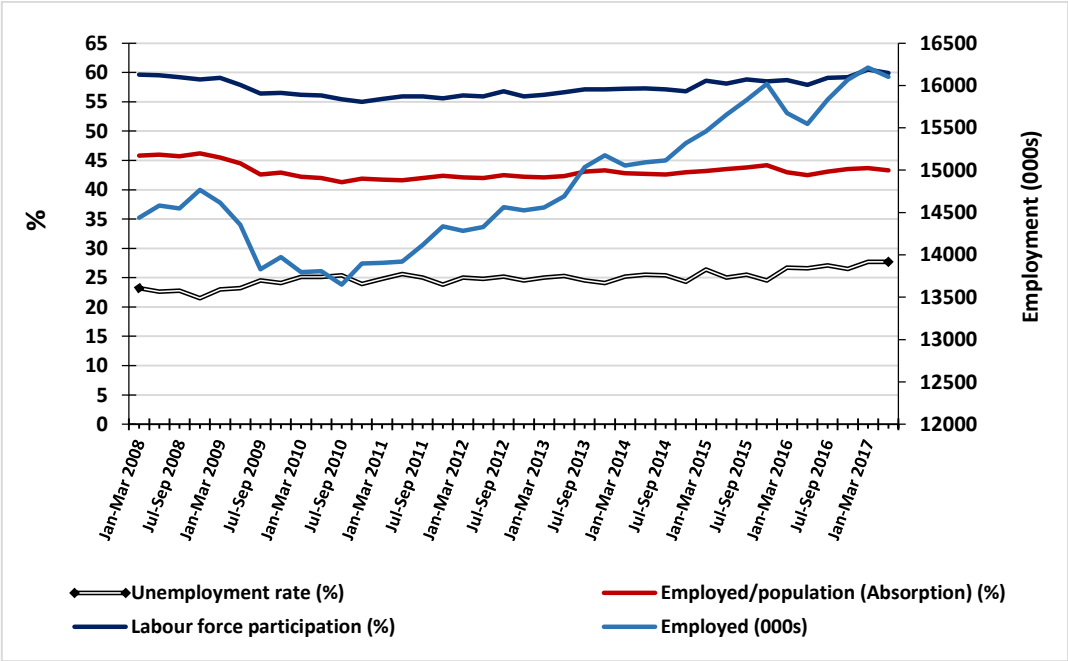
#### **3.3.1 Employment trends**

Job creation goes a long way towards the improvement of standards of living and the reduction of the various effects of unemployment such as inequality and poverty (Lewis, 2001:1; Wray, 2009:3). However South Africa's noteworthy transition from the apartheid regime has not spared the country from experiencing daunting growth and employment trajectories (Lewis, 2001:1). The task of capturing and measuring employment data in the Republic is conventionally undertaken by means of national household-based surveys conducted by Statistics South Africa (StatsSA) (Casale *et al.*, 2004:2). Therefore the Quarterly Labour Force Survey (QLFS) acts as a tool to employment data collection and thereby accounts for all employment activities of individuals living in South Africa aged 15 years and above, particularly those between the ages 15 to 64 years (StatsSA, 2017:1).

In a country formerly held under pressure by various constraints surrounding the apartheid regime, South Africa’s post-apartheid economy is still impaired by various social and economic imbalances along the lines of inequality, poverty, and unemployment (Leibbrandt *et al.*, 2010:4). Job creation on the one hand remains a major challenge. Arora and Ricci (2006:23) highlight that the increase in South Africa’s employment and economic growth have fallen short of the growth in the labour force entry. Between 1995 and 2003, the labour force increased at a four percent growth rate annually, whilst employment was largely a composite of informal employment and only grew by an annual growth rate of 1.25 percent (Arora & Ricci, 2006:23).

Based on Figure 3-1 below, South Africa encountered a decrease in the labour absorption rate as well as the labour force participation rate since 2008 albeit having slightly recovered from 2013 onwards. The country’s underlined labour force underperformance corresponds with the daunting unemployment trends where the latter is shown to have been increasing along the period in as far as securing an unemployment rate of 26.7 percent in the first quarter of 2016 and 27.7 percent in the first quarter of 2017 ( StatsSA, 2017; StatsSA, 2016). Despite acquiring a relatively positive trend in the number of people employed and/or jobs created, such efforts have however been offset by the much greater increase in the labour force population denoted by the country’s low labour absorption rate.

**Figure 3-1: Employment (in thousands – 2008-2017 Quarterly)**



**Source:** Own compilation, (Data obtained from Statistics South Africa).

Notwithstanding, the South African government has undertaken notable job creation initiatives in efforts to eradicate unemployment, poverty, and inequality following the country's transition from the apartheid regime. State programmes such as IPAP, GEAR and ASGISA initiatives were further established on the aims to bolster South Africa's growth for unemployment and poverty reduction. Amongst the underlined objectives of the ASGISA initiative, was a call to establish a competitive base and a fast-growing economy in hopes of creating opportunities for the poor, as well as to promote income redistribution and sustainable job creation (Maree, 2007:3). The policy was intended to attain an annual economic growth rate of six percent as well as to generate 400 000 jobs by the year 2000. Koma (2013:145-146) however argues that the country has made limited progress in accelerating growth while income distribution has been stagnant.

Illustrated in Table 3-1 to Table 3-3 are South Africa's employment patterns within the country's key industries along the period 2010 to 2016. As per average jobs created over the period indicated in Table 3-1, the public sector's community and social services sector is observed to have outperformed other sectors having created approximately 3 358 000 jobs on average. Nevertheless, others have argued that some of the jobs created in this sector through national employment initiatives such as the EPWP are largely informal and temporary jobs with limited impact on the high unemployment (Meyer, 2014:72). Nevertheless, despite falling second to the community and social services sector, the wholesale and retail trade sector has shown relative success in generating jobs compared to the other sectors. The sector provided some 3 201 000 average jobs along the period followed by the finance, construction and private household sectors which produced 2 025 000, 1 259 000 and 1 240 000 average jobs, respectively.

Following the sectoral classification discussed in Chapter 2, it can be said that most of the jobs created by South Africa's industries over the mentioned period has been largely sourced from the country's non-tradable sector industries. The mining industry within the tradable sector has relatively underperformed together with the agricultural industry, whereas these industries are recorded to have respectively contributed about 401 000 and 753 000 jobs on average. Such underperformance resonates with the large decline in the mining industry's export value per capita (Hausmann, 2014). Khapayi and Celliers (2016:26) highlight that poor infrastructure, low levels of education, lack of access to credit, the lack of innovation, and inadequate property rights, *inter alia*, are amongst the various challenges and limitations facing the agricultural industry. Moreover, the manufacturing industry as well as other tradable sectors have failed to capitalise on the country's relatively weak currency which should otherwise play a major role in attracting foreign importers of South Africa's export products (Siyenza, 2015).

**Table 3-1: Total and Average Employment by industry on quarterly basis (in thousands)**

Industry	2010 Q4	2011 Q4	2012 Q4	2013 Q4	2014 Q4	2015 Q4	2016 Q4	Average
1. Agriculture	649	671	718	713	742	860	919	753
2. Mining	321	352	380	426	427	483	421	401
3. Manufacturing	1889	1909	1814	1766	1749	1738	1727	1799
4. Utilities	96	86	102	127	104	123	131	110
5. Construction	1115	1105	1132	1204	1334	1438	1483	1259
6. Trade	3126	3198	3108	3224	3247	3280	3222	3201
7. Transport	805	839	877	961	952	900	961	899
8. Finance	1700	1846	1950	2037	2039	2273	2329	2025
9. Community and social services	2985	3100	3251	3470	3501	3624	3571	3358
10. Private households	1212	1224	1189	1244	1219	1294	1299	1240
11. Other	1	6	2	3	7	4	5	4
<b>Total employment</b>	13898	14336	14524	15177	15320	16018	16069	15049

**Source:** Own compilation, (Data obtained from Statistics South Africa).

Table 3-2 depicts the growth rate of South Africa's key industries from 2010 to 2016. It is crucial to note that although the country is displayed to have increased its real employment figures on average over the period, the percentage increase in employment, particularly in 2012, 2014 and 2016 experienced diminishing returns relative to the preceding periods as indicated in Table 3-2. The latter highlights the dynamic nature of South Africa's industries. Despite having contributed less towards the country's real average employment, the agriculture and mining industries are depicted to have made the most improvements from one period to the next. Such that the number of people employed has been increasing at a growth rate of 5.3 percent and 4.3 percent on average, respectively. Meanwhile, a negative average employment growth in manufacturing indicates the industry's diminishing employment contribution at most.

**Table 3-2: Quarterly Employment Growth as Per Industry ( $\Delta$  %)**

Employment growth (as a percentage %) relative to the preceding 4th quarter								
Industry	2010 Q4	2011 Q4	2012 Q4	2013 Q4	2014 Q4	2015 Q4	2016 Q4	Average growth for the period
1. Agriculture	0.3	3.3	7.1	-0.7	4.1	15.9	6.9	5.3
2. Mining	-0.4	9.9	7.9	12.1	0.2	13.1	-12.8	4.3
3. Manufacturing	0.1	1.1	-5.0	-2.7	-1.0	-0.6	-0.6	-1.2
4. Utilities	-	-10.8	19.0	24.3	-18.1	18.3	6.5	3.9
5. Construction	-5.3	-0.9	2.4	6.4	10.8	7.8	3.1	3.5
6. Trade	1.5	2.3	-2.8	3.7	0.7	1.0	-1.8	0.7
7. Transport	0.4	4.3	4.6	9.5	-0.9	-5.5	6.8	2.7
8. Finance	-	8.6	5.6	4.5	0.1	11.5	2.5	3.1
9. Community and social services	6.4	3.8	4.9	6.7	0.9	3.5	-1.5	3.5
10. Private households	-1.6	1.0	-2.8	4.6	-2.0	6.2	0.4	0.8
11. Other	-	936.4	-70.4	56.3	133.3	-42.9	25.0	136.4
<b>Total employment</b>	-0.5	3.2	1.3	4.5	0.9	4.6	0.3	2.0

**Source:** Own compilation, (Data obtained from Statistics South Africa).

Table 3-3 further illustrates the percentage contribution of key industries towards South Africa's total employment. It is therefore evident that industries such as the trade industry, community and social services, manufacturing, finance, private households, as well as the construction industry, relatively made the largest contribution towards South Africa's overall employment. The community and social services industry, as well as the finance, wholesale and retail trade industries were the biggest contributors. The latter industries respectively contributed about 22.3 percent, 21.3 percent and 13.5 percent jobs towards South Africa's total employment. Once again, non-tradable industries are indicated to have made the most contribution towards the number of jobs created. Nevertheless, the manufacturing industry is indicated to have been the only tradable sector with significant average employment contribution.

**Table 3-3: Industrial contribution to South Africa's total employment (%)**

Percentage contribution towards total employment (%)								
Industry	2010 Q4	2011 Q4	2012 Q4	2013 Q4	2014 Q4	2015 Q4	2016 Q4	Average
1. Agriculture	4.7	4.7	4.9	4.7	4.8	5.4	5.7	5.0
2. Mining	2.3	2.5	2.6	2.8	2.8	3.0	2.6	2.7
3. Manufacturing	13.6	13.3	12.5	11.6	11.4	10.9	10.7	12.0
4. Utilities	0.7	0.6	0.7	0.8	0.7	0.8	0.8	0.7
5. Construction	8.0	7.7	7.8	7.9	8.7	9.0	9.2	8.4
6. Trade	22.5	22.3	21.4	21.2	21.2	20.5	20.1	21.3
7. Transport	5.8	5.9	6.0	6.3	6.2	5.6	6.0	6.0
8. Finance	12.2	12.9	13.4	13.4	13.3	14.2	14.5	13.5
9. Community and social services	21.5	21.6	22.4	22.9	22.9	22.6	22.2	22.3
10. Private households	8.7	8.5	8.2	8.2	8.0	8.1	8.1	8.2
11. Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total</b>	100	100	100	100	100	100	100	100

**Source:** Own compilation, (Data obtained from Statistics South Africa).

Figure 3-2 indicates South Africa's non-agricultural formal employment from 2008 to 2016 based on the change in the number of jobs relative to each preceding quarter. The IDC (2016:8) extends that in the year 2015, South Africa's overall employment surged by 6 000, relative to 22 500 lost jobs in 2014. Moreover, South Africa further generated an increase in employment of about 36 400 from the retail, wholesale, catering and accommodation sectors, as well as 22 600 jobs produced in the business and service sector. However, these efforts were offset by the lost jobs in the mining, construction, and manufacturing sectors which lost about 28 900, 19 000 and 5 000 jobs respectively. The discussed job patterns revealed in Figure 3-2 highlight the extremely dynamic nature of South Africa's job creation as well as the inadequacies in meeting expectations of downsizing the consistently rising high unemployment rate.

**Figure 3-2: Non-agricultural formal employment**



Source: Own compilation, (Data obtained from Statistics South Africa).

**3.3.2 The foreign exchange rate**

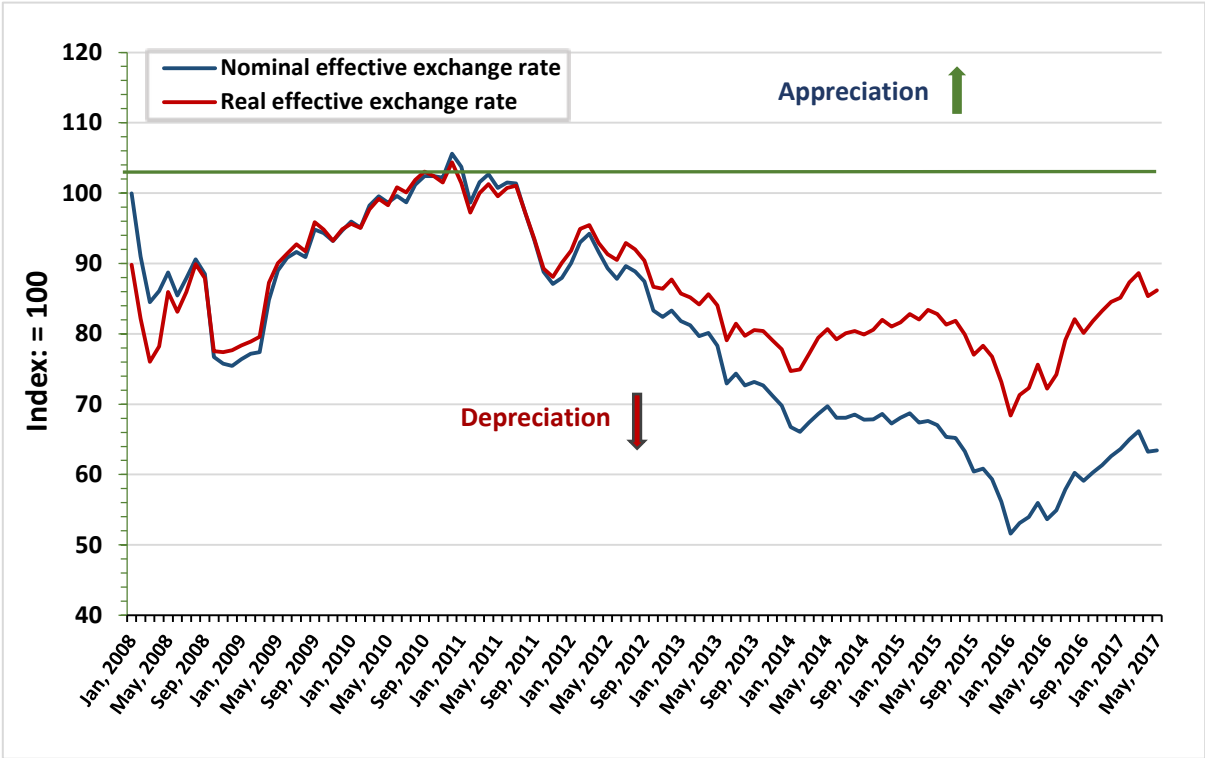
Considering the current unprecedented increase in globalisation, the role of the exchange rate in configuring imports and exports is remarkably vital (Ramasamy & Abar, 2015:276). Its role within foreign trade as well as economic development is thereby of salient importance, whereas appreciation and depreciation exchange rate dynamics hold an apparent effect on the general economic outlook (Sibanda, 2012:3). The exchange rate thereof stands as an important price in the economy considering its influence on all other prices (Frieden, 2014:1). Van der Merwe (2004:8) asserts that the impact of exchange rate movements within small open economies is relatively more significant than in industrialised nations. For that reason, the author adds that such influence is significantly higher on these economies’ allocation of resources and output, as well as prices and price competitiveness.

Ngandu (2009:113) maintains that sound macroeconomic policy, coupled with a stable and competitive exchange rate are needed to ensure competitiveness of South Africa’s exports and increased market penetration. Based on this premise, the NGP and the National Development Plan (NDP) recognise the need to enhance exports within the global market by means of increasing the country’s competitiveness in efforts to stimulate South Africa’s employment and economic growth (Hendriks, 2013:11; Zarenda, 2013:9).

Upon emphasising the aforementioned, the exchange rate evidently plays a potent role towards the management and sustenance of a country's economy. Unprecedented exchange rate dynamic impacts on a country's inflation and this makes the former a major concern for monetary policy determination (Van der Merwe, 2004:8). In furtherance, Hsing (2016:1) asserts that a strong exchange rate of a nation's domestic currency induces imports and discourages exports, whereas a weaker currency stimulates exports and discourages imports. Additionally, an extreme depreciation in domestic currency is anticipated to induce high inflation, destabilise the economy, increase capital outflows as well as reduce foreign investment.

Following South Africa's establishment of an inflation targeting framework in 2001, the presentation of a free-floating exchange rate system left South Africa's exchange rate determination to forces of demand and supply (Khomo & Aziakpono, 2016:2; Mpofu, 2015:20). Figure 3-3 suggests a consistent real value decline in South Africa's real effective exchange rates over the period. The Rand however recovered from the rapid depreciation despite having experienced a sharp decline at the end of 2015 and the beginning of 2016. In 2008 and 2009, South Africa was exposed to the world financial crisis which contributed to a further unprecedented weakening in the currency. From 2012 to 2015, the real effective exchange rate was relatively stronger than the nominal effective exchange rate as explained by the discounting of inflation in the real effective exchange rate (Motsumi *et al.*, 2008:87; Opoku-Afari, 2004). The depreciating trend in the country's nominal effective exchange rate corresponds with the increase in South Africa's price levels (IDC, 2016:13; Twala & Mncube, 2016:2). However, the weakening Rand value can be sustained by maintaining low levels of inflation as well as supporting investments and the competitiveness of the country's exports.

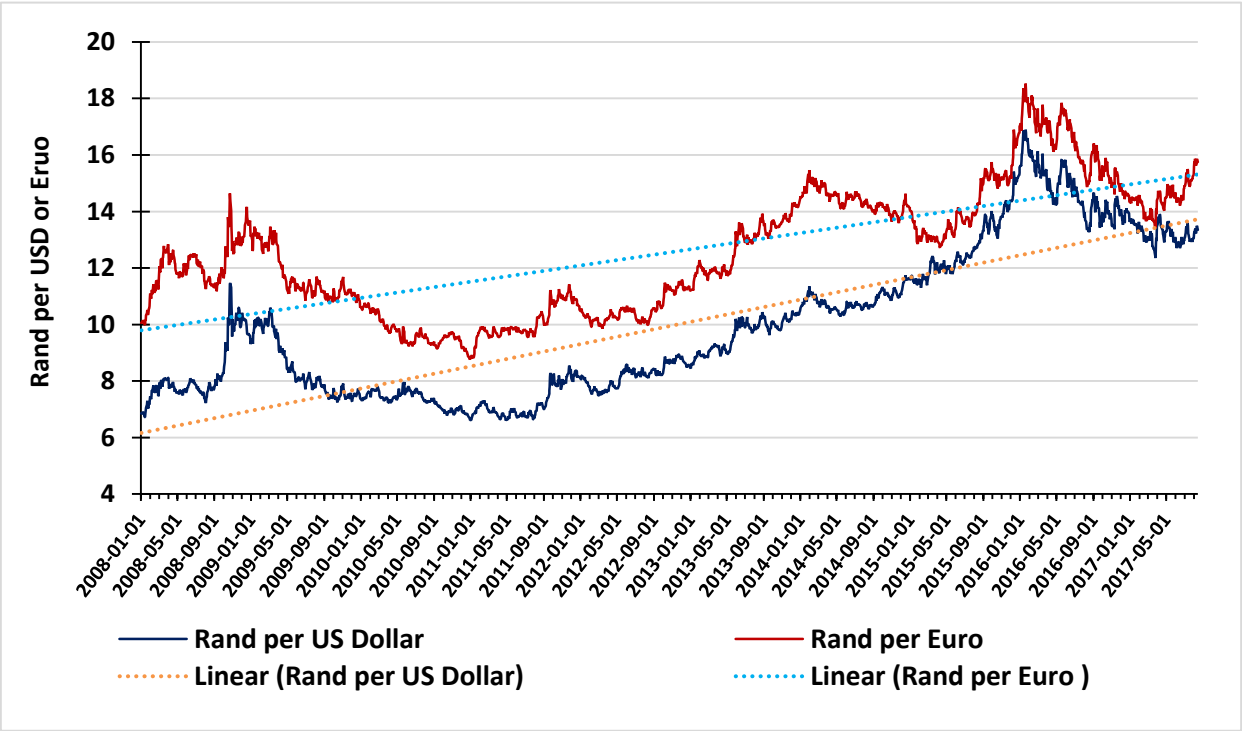
**Figure 3-3: Real and nominal effective exchange rates**



**Source:** Own compilation, (Data obtained from Statistics South Africa).

A graphical representation of the performance of the Rand against major currencies (the US dollar and the Euro) in Figure 3-4 shows a depreciation of the Rand against the two currencies from 2008 to 2015. The Rand’s underperformance is indicated by the positive slope of the linear trend-line series plotted across the Rand/Dollar and Rand/Euro timelines since 2008. Rapid depreciations in the Rand were experienced in 2008 to 2009, as well as from 2013 to 2014, and 2016 against both currencies. The onset of the 2008 global financial crisis was followed by the collapse of commodity prices leading to a depreciation in the Rand in 2008 along with other currencies (Farhi, 2008:7). Nevertheless, the reduction in interest rates globally accompanied the Rand’s recovery along the period 2010 and 2011, during that period, and key central banks engaged in monetary policy stimulus prompting the strengthening of currencies within emerging markets (IDC, 2016:17).

**Figure 3-4: The Rand vs. the US Dollar and the Euro**



Source: Own compilation, (Data obtained from Statistics South Africa).

**3.3.3 Foreign direct investment**

Expectations of high FDI inflows overflowed South Africa’s newly established post-apartheid era, this was motivated by the growing consumer base as well as the narrative of being considered a gateway into Sub-Saharan Africa (Wocke & Sing, 2013:2). The onset of South Africa’s first democratic election and the attenuation of impediments of a once sanctioned economy thereby oversaw the adoption of the country’s more liberalised FDI regulatory regime. This followed suit with the global trends for more relaxed FDI regimes (Vickers, 2002:1a). Considering South Africa’s distraught general economic climate together with its inadequate amount of savings to finance its investment decisions, the need to compete in the international pool of FDI in the global market is unprecedented (National Treasury, 2011:1; World Bank, 2011:11-12).

Despite the country’s very accommodating attitude towards outward FDI relative to the pre-democratic era, the OECD maintains that South Africa’s FDI regulation remains relatively high. For instance, there exists heightened levels of public ownership and public intervention in business operations (*via* price controls), including various impediments in establishing start-ups, as well as sophisticated licencing and permit rules (OECD, 2015:1). The OECD also adds that other factors include electricity shortages, crime, and corruption, as well as statutory restrictions (*i.e.* approval

requirements, screening and equity investment ceilings) within services sectors. Nevertheless, the country holds large unexploited potential to attract FDI. Sharp (2015:5) proposes that South Africa needs to address relevant structural flaws while ensuring the alleviation of discrimination between foreign and domestic investors in order to address FDI weaknesses in the country.

FDI has played a vital role in developing South Africa's economy, however Arvanitis (2005:64) highlights that FDI in the country has been consistently low relative to other emerging nations. Table 3-5 indicates South Africa's inflow of FDI capital flows between the years 2008 to 2016 relative to upper-middle income countries. Along the period, South Africa's average annual FDI inflow as a share of its GDP was two percent, whereas FDI in upper-middle income countries had an average GDP percentage share of three percent. Individually, all countries under consideration achieved higher inflows of FDI on average, whereas India managed to stay just slightly ahead of South Africa. The remaining countries obtained an incomparable margin in their average annual FDI inflow over the period with Brazil obtaining the best performance followed by China and Russia. Chile's economy, depicted as amongst the two resource-based economies together with Australia, suggests that FDI inflows in Chile had been significantly high over the period with an FDI annual inflow of 8.6 percent while Australia secured about 3.5 percent. It is therefore evident that South Africa has had a weak FDI performance compared to the discussed counterparts when it comes to attracting FDI.

**Figure 3-5: Foreign Direct Investment (FDI) (as a % of GDP)**

	FLOWS									Average Growth For The Period
	2008	2009	2010	2011	2012	2013	2014	2015	2016	
South africa	3,4	2,6	1,0	1,0	1,2	2,2	1,7	0,5	0,8	1,6
Upper middle income	3,6	2,5	3,3	3,2	2,7	2,9	2,5	2,4	2,1	2,8
Brazil	3,0	1,9	4,0	3,9	3,5	2,8	3,9	4,1	4,4	3,5
China	3,7	2,6	4,0	3,7	2,8	3,0	2,6	2,2	1,5	2,9
India	3,7	2,7	1,7	2,0	1,3	1,5	1,7	2,1	1,7	2,0
Russia	4,5	3,0	2,8	2,7	2,3	3,1	1,1	0,5	2,6	2,5
Australia	4,3	3,1	3,1	4,7	3,7	3,4	3,2	2,7	3,5	3,5
Chile	10,4	8,1	7,4	9,7	11,4	7,6	9,2	8,4	4,9	8,6

**Source:** Own compilation, (Data obtained from World Bank).

### 3.3.4 Trade openness and its measures

Trade openness (liberalisation) has shaped and aligned the manner in which world trade is conducted. It has set the tone for international competition, the flow of goods and services, as well as the manner in which the exchange rate may affect the economy (Di Mauro *et al.*, 2008:5). Having established a more liberalised economy post the apartheid era, Mabugu (2007) argues that South Africa's macro-economic performance has been unimpressive amid low GDP, high unemployment and poverty levels. The coexistence of high unemployment rate and low GDP amid the considerably substantial trade liberalisation stirs concerns that the country's trade policies have not met development and growth expectations, further raising concerns for greater trade openness.

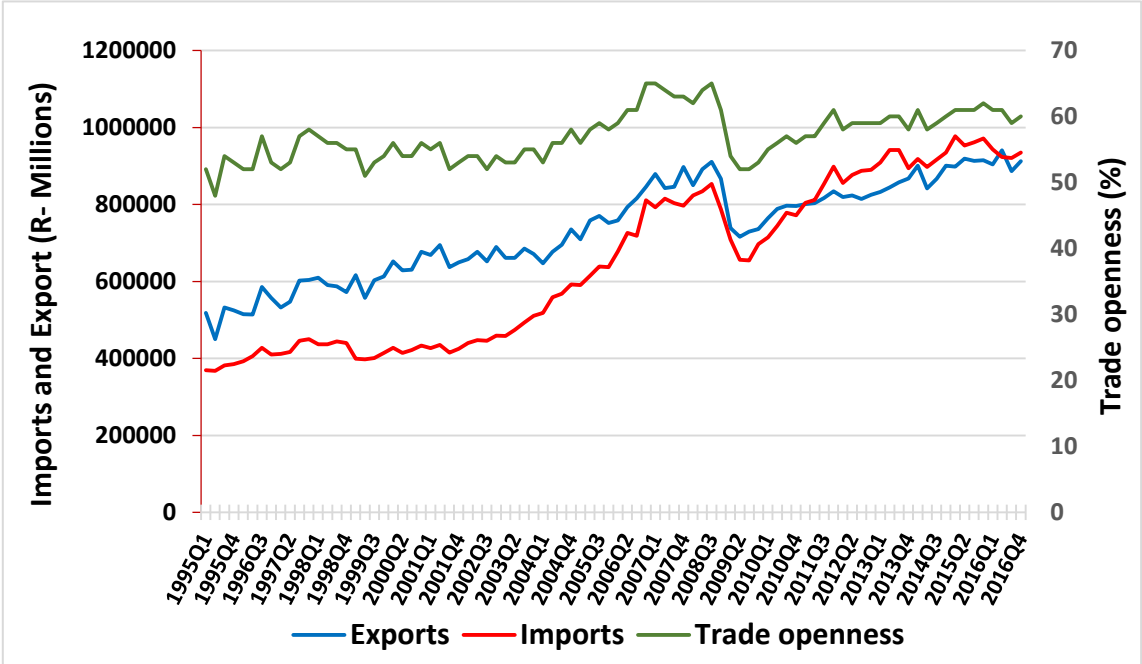
The use of trade share in measuring a country's trade liberalisation stands as a common measure of trade openness. This method makes use of actual trade flows in the form of imports and exports as a share of a country's Gross Domestic Product (GDP), expressed as  $X+M/GDP$  (Fenira, 2015:470; Squalli & Wilson, 2011:1745). Moreover, trade openness is associated with the reduction or the increase in trade barriers such as tariff and non-tariff barriers (Gaalya, 2017:691). Figure 3-6 presents the performance and trends of South Africa's trade openness as well as its measures particularly imports and exports from 1995 to 2016, while Figure 3-7 shows the trends in the country's Gross Domestic Product (GDP).

Based on Figure 3-6 below, South Africa's imports and exports have increased along the period following the post-apartheid's relatively accommodating trade policy. The increase in import and export activities corresponds with the indicated percentage increase in the country's level of trade openness. Having adopted a relatively good export performance which is shown to have slightly managed to stay above import activities prior to the year 2011, the country's exports as well as its imports, however experienced a sharp decline following the 2008 Global Financial Crisis. The decline in trade prompted the rapid contractions in labour retrenchments and output (Kganyago, 2012).

The decrease in demand for South Africa's export products was accompanied by the contraction of commodity prices and the level of FDI inflows (Chitiga *et al.*, 2010:5). This plunged the onset of the country's economic recession characterised by declining economic growth, investments, incomes, and employment. Despite having set strong policy anchors, the impact of the crisis was however felt by the South African economy (Kganyago, 2012). The rapid drop in South Africa's GDP was however followed by a slight recovery upon the stabilisation of its economic factors during mid-2009. Nonetheless, the later period was coupled with an extreme

increase in the rate of imports relative to export trends in 2011. The contraction of the export sector's output and competitiveness amid decreased savings and investment, employment levels and global demand oversaw South Africa's negative trade balance with increased imports over exports.

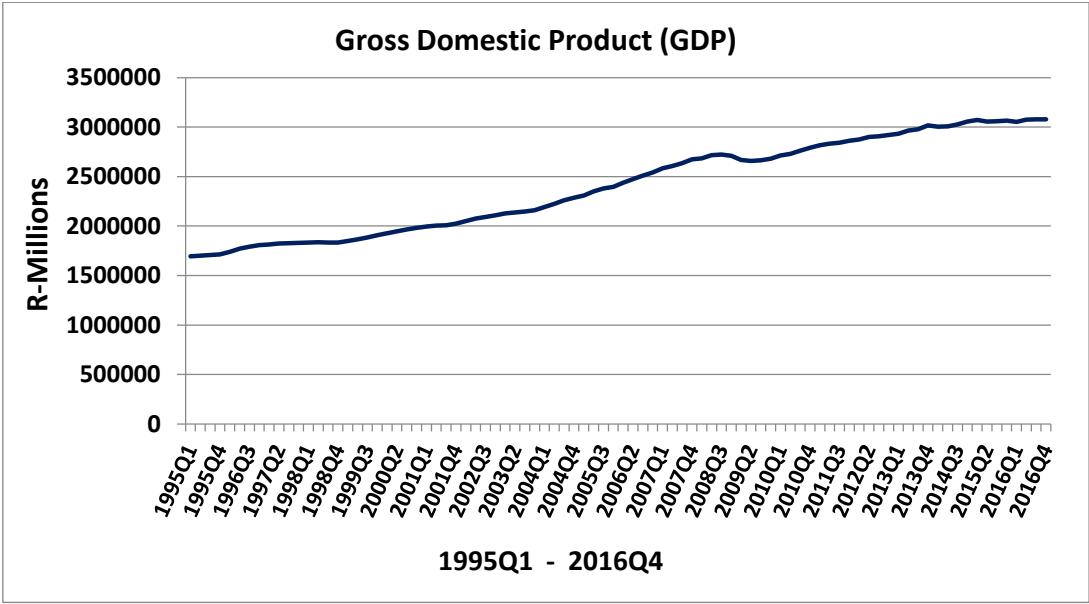
**Figure 3-6: South Africa's trade openness, imports and exports (1995 to 2016)**



**Source:** Own compilation (Data obtained from the SARB)

South Africa's Gross Domestic Product (GDP) indicated in Figure 3-7 below is shown to have made relative increases since the beginning of the post-apartheid regime from as far as 1995 to 2007. Nevertheless, this increase is argued to have been accompanied by a slower growth rate relative to the apartheid era (Lehohla, 2015; Makgetla, 2004:263). Moreover, the slower rate of increase in the country's post-apartheid GDP is further presented to have exacerbated along the post-2008 financial crisis period compared to the pre-crisis period. This is shown by the flattening of GDP trends along the latter period indicative of diminishing rates of increase. The dismal outlook of the country's weakening output potential resonates with the export and import decline as shown in Figure 3-6 above.

**Figure 3-7: South Africa's Gross Domestic Product**



**Source:** Own compilation (Data obtained from the SARB)

Literature discussions on the effects of trade openness on employment and economic growth are identified to rely heavily on the narrative of the positive or negative differential impacts of import substitution and export penetration on jobs and economic growth. According to Sikwila *et al.* (2014:2), low GDP attributes to developing countries efforts, i.e. South Africa, to advance local industries and GDP via inward-oriented trade policies by means of import substitution through relatively high tariffs, subsidies, and quantitative restrictions. An analysis by Thurlow (2007:164) however suggests that South Africa’s trade openness during the 1990s had a substantial influence on economic growth, largely as a result of the increase in import and export competition, as well as the newly accessible advanced foreign technology. The growth in exports was potentially explained by policy advancements and a depreciated exchange rate at that time. Whereas capital goods imports and increased import competition resulted in the improvement of South Africa’s productivity advancing technological modifications.

Moreover, a widely expressed view is that trade liberalisation leads to job losses based on the premise that low cost imports may offset local market products. Flatters and Stern (2007:3-4) argue that the latter assertion overlooks the potential of the positive impacts of trade liberalisation on competitiveness and job growth. Such that trade liberalisation may lead to increased activities which can compete in the global and domestic markets leading to an increase in competitiveness and jobs. Additionally, downstream service sectors may also benefit from declining consumer prices and income growth due to trade liberalisation.

However, Flatters and Stern (2007:3-4) identify trade openness to be a plausible cause of job losses based on patterns of greater import penetration. This is evidenced by South Africa's tradable goods sectors from 1990 to 2002, whereby these sectors shed over 700 000 jobs in mining, agriculture and resource-based and non-resource based manufacturing sectors. The authors however assert that jobs lost from greater import penetration were offset by employment gains from greater export orientation. Nevertheless, the net increase in employment displayed disproportional gains in employment, such that skilled jobs increased more than unskilled jobs, accompanied by a higher demand for capital usage other than labour.

Various empirical studies, such as Fenira (2015), Gries and Redlin (2012) and Sakyi *et al.* (2012), suggest an increase in economic growth as a result of greater trade openness. Andersen and Babula (2008:44) however contend that the lack of knowledge and capital, complementary resources, and sound institutions may result in the failure of developing countries in accommodating high economic growth amidst greater trade openness. On the one hand, the smoothening of a country's trade borders in the form of increased trade openness is associated and characterised by an increase in export volume (Atif *et al.*, 2012:98). On the other hand, Atif *et al.* (2012:98) additionally recall the need to promote public policies to best utilise the economy's production in order to expand export capacity for trade liberalisation to undertake its intended purpose.

Further contentions based on outward vs. inward policy (exports vs. imports) for growth and employment proliferation suggest that exports may drive growth in various ways. To begin with, Awokuse (2008:162), and Helpman and Krugman (1985) explain that increased domestic exports in the midst of increased foreign demand may promote output expansion as well as growth, employment and income in the export industry. Secondly, exports may promote growth through indirect mechanisms by means of exploiting economies of scale, efficient allocation of resources and technological improvement stimulation amid competition in the global market. In stark contrast to export-led growth, Grossman and Helpman (1991), as well as Coe and Helpman (1995), assert that growth led by imports may result from the importation of resources and required factors of production utilised in the export sector. Likewise, developing countries may observe growth benefits through the importation of capital resources such as technology and knowledge from advanced economies to be employed in growth and employment enhancing activities.

### **3.4 ANALYSIS OF SOUTH AFRICA'S EMPLOYMENT AND TRADE POLICIES**

The nullification of the apartheid regime's regulatory and political impediments stirred South Africa's economic policy on the drive for transformation. The government has since established

various national policies in an attempt to establish a more encompassing labour market via job and employment creation, and policies aimed at establishing South Africa onto the global market as well as other national objectives (Beukes *et al.*, 2017:33-34). Amongst the country's post-apartheid policy objectives was a call for job creation as means of securing the once disadvantaged population (Levinsohn, 2007:1). Other objectives involved the redirection of South Africa's international policy for a more liberalised and accommodating trade policy (Lewis, 2001:42). Below is a brief synopsis of South Africa's pertinent employment and trade policies as well as instruments and agreements relevant to the discussion. A synopsis of the various underlines and concerns of South Africa's national development policies and strategies is also provided.

### **3.4.1 South Africa's employment policies**

South Africa's 1994 democratic turn-around raised hopes for economic transformation and development. These expectations led to the proliferation of various policy instruments aimed to facilitate and direct the country towards achieving the set development goals. Such policies includes the Reconstruction Development Programme (RDP), the Growth, Employment and Redistribution Programme (GEAR), the Accelerated Shared Growth Initiative for South Africa (ASGISA), the New Growth Path (NGP), as well as the National Development Plan (NDP). Amongst the key objectives envisaged in South Africa's development policies is the call for accelerated and sustained job growth in efforts to combat the country's high unemployment rate and inequality. However, the successes of the country's various development policies have brought little to no progression considering the prevalence of the country's high unemployment rates, poverty and inequality. This has led to the heightening critique and arguments on the basis of the lack of implementation, functionality, capacity building, and service delivery within the various policies.

#### ***3.4.1.1 Reconstruction Development Programme (RDP) (1994)***

The Reconstruction Development Programme (RDP) was constructed as a guiding policy of the post-apartheid's social and economic replenishment agenda. Based on the analysis by Steenkamp (2015:52-53) the RDP emphasised the inter-connectivity of South Africa's then struggles, particularly: the inadequacy of healthcare and education systems, job shortages, the shortage of housing, as well as the failing country. Because of this, a holistic transformation of South Africa was held as a primary vision for the new government. This implied galvanising efficiency, transparency, co-ordination and a consultative national state through the RDP (Government of South Africa, 1994:12). Job creation, amongst other objectives, paved the way for the elimination

of all forms of discrimination and the protection of workers' rights, as well as establishing a more equal society (Steenkamp, 2015:53).

The programme thus sought to mobilise South Africa's resources as well as its people in efforts to eradicate political, social and economic sentiments of the pre-existing economic agenda (Koma, 2013:146). However, hopes of the RDP transitioned onto the GEAR policy having faced a lack of efficiency and adequacy (Dollery and Snowball, 2003:329). The policy is said to have faced various challenges ranging from insufficient funding as well as the shortage of human resource capacity which led to development of the GEAR strategy (Jahed, 2011:7). Others have argued that the RDP's notion of creating jobs by means of creating demand for factory appliances, through the need to build and electrify houses, was unrealistic since the appliances were imported from abroad and not locally manufactured (Steenkamp, 2015:53). Steenkamp (2015:53) also contends that considering the policy required considerable resources as well as other policy initiatives which were not established at that time, the country's then government thereby lacked sufficient capacity to materialise the claims within RDP.

#### ***3.4.1.2 Growth, Employment and Redistribution (GEAR) (1996)***

Upon the implementation of the RDP, South Africa's inadequate state capacity and government inefficiency prompted the inception of the 1996 Growth, Employment and Redistribution (GEAR) policy (Dollery & Snowball, 2003:329). The country's then economy was confronted by heightened external pressure and currency instability, the GEAR strategy thus sought to address the economic imbalances to rejuvenate South Africa's credibility and confidence (Heintz, 2003:1; Lewis, 2001:4). The policy realised the need to meet social investment needs by accelerating South Africa's growth prospects as well as establishing a re-assuring macro-economic environment for tax rates, inflation and interest rates in furtherance of the RDP's noble social objectives (Reitzes, 2009:10).

Consequently, the GEAR highlighted the need for a more competitive South African economy for increased employment creation with an envisaged six percent economic growth rate by the year 2000, as well as creating 400 000 jobs per annum (Weeks, 1999:5). Moreover, it set to reduce the country's fiscal deficit during the period 1993-94 from over 9 percent (Kearney & Odusola, 2011:7). The policy was determined to attract new investments to bolster its growth targets for rapid job creation in efforts to raise incomes of the minority, improve infrastructure, destabilise the country's then inequality, and provide social services (Heintz, 2003:2). The GEAR policy was a mix of successes and failures. Amongst its successes, the strategy managed to drop the national

deficit below three percent and reduced South Africa's inflation, liberalised capital flows, reduced barriers to trade, and made provision for company profit tax cuts (Ncube *et al.*, 2012:9). The policy is said to have generally enabled the creation of a stable economic environment (Fourie, 2006). However, the GEAR strategy failed to meet its highly anticipated growth targets while failing to materialise increased formal employment and FDI expectations (Maree, 2007:3; Kearney & Odusola, 2011:7). Accordingly, the tightening of the budget deficit by means of expenditure cuts was identified as a failure to address the RDP's social backlogs and thus hampered economic growth (Morabe, 2008:29).

#### ***3.4.1.3 Expanded Public Works Programme (EPWP) (2004)***

In 2004, the South African government developed the Extended Public Works Programme (EPWP) as a short-to-medium term programme for job creation and poverty alleviation. The programme was committed to reduce unemployment by creating employment opportunities within infrastructural, social, economic and environmental sectors (McCutcheon & Parkins, 2012:34). Consequently, it strived to create one million jobs in the country in participating towards the achievement of the Millennium Development Goals, particularly to halve poverty and unemployment by 2014 (Nzimakwe, 2008:207).

The EPWP was dedicated to provide additional job opportunities and training, as well as continuous efforts in targeting the inexperienced and unskilled society. Under such capacity, the state committed to making provision for training and skills to workers while they work, as well as providing short-term job opportunities and training to specific groups (such as women, the youth, and the disabled) facing exclusion from the labour market (Dicks *et al.*, 2011:39). According to McCord (2004:7) the former premise was based on a prerequisite that interventions from the supply-side respond pertinently and effectively to transitional joblessness. However, the author further highlights the contention that South Africa's labour market and structural problems are not transitional while intervention from the supply side have inadequate capacity to address the nations' unemployment problem. Further analysis by McCord (2004) however contends that the programme has not actively made a significant impact on reducing the country's unemployment, albeit its apparent contribution towards skills development and creating temporary employment opportunities.

#### ***3.4.1.4 Accelerated and Shared Growth Initiative for South Africa (ASGISA) (2006)***

The Accelerated and Shared Growth Initiative for South Africa (ASGISA) was formally established in 2006 as a framework for coordinating government's job creation and poverty reduction legislatives. The ASGISA framework was constructed based on the precepts of fulfilling South Africa's state objective to halve unemployment and poverty by 2014. This implied accelerating the country's average growth rate to 4.5 percent during the 2005-09 period as well as a six percent average yearly rate during the 2010-14 period (Kearney & Odusola, 2011:8; The Presidency, 2006:2). In furtherance to the RDP and GEAR policies, ASGISA highlights key components towards achieving growth, in its inclusion, infrastructural projects, a much descriptive industrial policy, and a more genuine underlining of growth constraints were emphasised (Naidoo & Maré, 2015:412). Backlogs within the country's infrastructure were identified as the country's key growth constraints. For that reason, state maintenance and the provision of infrastructure were set out as key policy components of accelerating growth (Fourie, 2006; Naidoo & Maré, 2015:413).

Other identified growth constraints included factors such as; the country's logistics system's capacity, efficiency and cost structures, the level and volatility of the Rand, high labour costs and the lack of skilled labour, constrained investments, structural deficiencies in the states leadership and capacity, and the constrained small and medium businesses (Kearney & Odusola, 2011:8). Consequently, heightening capital inflows and consumer demand, as well as resilient commodity prices were identified to have bolstered growth, but also increased the value of the Rand which further affected domestic exporters (Naidoo & Maré, 2015:412). The ASGISA policy displayed success in creating a platform for diagnosing institutional challenges which impedes employment creation and growth, particularly within the local sphere. However the policy was argued to have set unrealistic goals (Madumo, 2012:48).

#### ***3.4.1.5 Industrial Policy Action Plan (IPAP) (2007)***

The modified Industrial Policy Action Plan (IPAP) framework focussed on the diversification, intensification as well as the enhancement of South Africa's industrial sector's foreign and domestic competitiveness (Zarenda, 2013:1). According to Szewczuk and Clausen (2012:1), IPAP was anchored on advancing South Africa's efforts to encourage long-term industrial diversity and industrialisation ahead of the country's existing dependence on conservative commodities and non-tradable services. It thus centred its objectives on economic diversification, infrastructural

development, labour absorbing industrialisation and the transitioning of the country towards a knowledge-based economy.

The policy emphasised the expansion of output in value-added sectors characterised by intense employment and growth multipliers with high potential for export-and-domestic market absorption. It further identified sectors such as, the textile, plastics, forestry, automotive products, creative industries, agro-processing and metals fabrication (DTI, 2013). However, the programme devised to realise the policy's objectives has been criticised as being flawed. Additionally, the programme considers the use of tariffs as well as other import barriers as a means of downsizing competition within the domestic market, which is unfavourable to consumers. The policy's attempts to accelerate export growth while concurrently strengthening trade barriers against other country's exports is also amongst many of the policy's contradictions as this will in turn results in retaliation by other countries (Hazelhurst, 2013). Moreover, the report by Hazelhurst (2013) highlights that IPAP would be more efficient in generating jobs by encouraging the country's tourism as well as agriculture within rural areas which are both closely linked to the country's skills and would provide more success, other than focussing on heavy industry and big projects.

#### ***3.4.1.6 The New Growth Path (NGP) (2010)***

After the inception of IPAP, the New Growth Path (NGP) was established at a later stage in December 2010, and focused on job creation as its priority initiative to address the country's persistently high levels of unemployment. The NGP forms an integral part of IPAP where both policies identify poverty and inequality as major social and economic challenges, they however highlight job creation and unemployment as key objectives (Rennkamp, 2012:8). The NGP identifies significant investment in public infrastructure for job creation, and the targeting of labour-intensive sectors as key drivers towards accelerating the country's economic growth to create five million jobs by 2020 (Borel-Saladin & Turok, 2013:1; Emwanu, 2014:4). Further considerations involve the mobilisation of domestic investments within sustainable activities, maintaining social fairness and competitiveness, as well as promoting a social dialogue amongst all stakeholders towards establishing growth in job creating projects (Hendriks, 2013:6).

The NGP was anchored at establishing a more inclusive, efficient and labour absorbing economy through implicit governmental job creation initiatives, as well as socially-democratic industrial, macroeconomic and labour policies (Nattrass, 2011:1). Envisaged within the NGP was a target to generate five million jobs over ten years, whilst shedding unemployment to 15 percent from 25 percent as done previously via accelerated growth (Kearney & Odusola, 2011:8). Unemployment

was to be reduced by 10 percentage points by the year 2020 through six economic sectors identified as potential job creating sectors. These included manufacturing, mining, infrastructural development, a “green” economy, agriculture, as well as the tourism sector (Zarenda, 2013:1; Hendriks, 2013:7).

Nevertheless, the NGP as a national development policy has received some criticism. It has been contended that the policy is contradictory and provides insufficient information on the execution of the policy framework, whereas the policy has been considered to be a vision rather than an actual executable plan as it does have practical steps. It is arguably considered to be a mechanism for redistributing wealth other than generate new wealth (Prinsloo, 2011:1; Laubscher, 2010:6; Duvenhage, 2011:15). Gumede (2012) also argues that the NGP policy framework’s agenda on infrastructural development is unclear. The policy does not state the sources of financing to fund these projects considering the weak global economy as well as South Africa’s deteriorating economic performance.

#### ***3.4.1.7 The National Development Plan (NDP) (2012)***

The 2012 National Development Plan (NDP) took over IPAP and NGP in efforts to reduce inequality and eliminate poverty (Zarenda, 2013:1). It articulated the promotion of decent living standards for all by creating job opportunities and providing access to quality education (Hendriks, 201:7). According to the National Treasury (2015:3), the NDP rallied towards the establishment of structural change for a more sustainable and inclusive economy geared towards establishing long-term social benefits. The provision of decent standards of living thus underscored the provision of skills development and quality education, quality health services, reliable and safe public transport, housing, a clean environment, water, adequate nutrition, sanitation and electricity (Hendriks, 2013:5-6).

Consequently, the NDP was constructed on a diagnostic report by the NPC (2011) which identified the main challenges to be faced by the NDP. These include: corruption, division within society, intensive unsustainability of resources, the low quality and struggling public health system, poor infrastructural location and maintenance, exclusion of the poor from development benefits, and a low number of working people. The NDP framework has been criticised where some have argued that the policy does not consider people who are discouraged from seeking employment considering that unemployment is defined on the basis of the narrow definition. Moreover the policy target of creating 11 million jobs is characterised by unsustainable and low quality jobs as opposed to creating decent jobs. The policy also has an extreme dependence on SMME and service

sectors as well as exports, opposite to IPAP and the NGP which emphasises the focus on economic reindustrialisation. Also, the NDP finds the notion of continuing high inequality levels as far as the year 2030 to be admissible (COSATU, 2013).

### **3.4.2 South Africa's trade policy reform**

Centrally driven towards achieving substantive international competitiveness, South Africa's post-apartheid era coupled with inductive employment policies, embraced export penetration and investment stimulation as key precepts of achieving employment and growth objectives (Edwards & Lawrence, 2008:606). The onset of South Africa's economic liberalisation in the mid-1990s therefore witnessed the introduction of substantial tariff and trade policy reforms. According to Vickers (2002a), the country's commitments towards economic transformation engineered South Africa's signing of the Marrakesh Agreement steered towards the inception of the World Trade Organisation (WTO). The onset of the WTO witnessed South Africa's freeing of its tariff barriers in the country's most extremely protected sectors further exhibiting the lowest weighted average protection rate in the SADC area.

Vickers (2002b) also adds that South Africa's aims to diversify and proliferate investment and trade flows led to its development of strategic bilateral and regional trade relationships as facilitated by the "butterfly strategy" of the Development of Trade and Industry (DTI). The latter strategy oversaw the country's diversification of economic relations via the extension of new "trade wings". According to Rodrik (2008:770), and Abdi and Edwards (2002:4), the post-apartheid South African economy has established itself as a relatively open economy which is more receptive to foreign trade and capital flows. In 2006, the country's trade ratio to GDP (Openness) rose to over 60% from below 1993's 40% ratio, with an increase in manufactured exports' value-added, as well as overall exports (ITED, 2010:13).

Accompanying the newly established economic reform was the removal of import surcharges and quotas, the inclusion of the World Trade Organisation's (WTO) multilateral liberalisation and bilateral agreements with the Southern African Development Community (SADC) and the European Union (EU), as well as the substitution of mixed and specific tariffs with *ad valorem* duties (Flatters & Stern, 2007:5). Essential features of the policy reform attributed an average of one-third of a decrease in industrial tariffs by 2000, the downsizing tariff lines, and the extermination of export tariffs (Kalima-Phiri, 2005:12). Consequently, South Africa has further aligned itself with various trade agreements inclusive of the South Africa-EU TDCA,

MERCOSUR, and SADC trade agreements, as well as the 2008 SACU-EFTA FTA, which have brought about reduced tariff protection protocol in the country (ITED, 2010:15).

Table 3-4 presents patterns of South Africa's trade flows, detailing the dynamics of the country's total imports, total exports, total trade, trade balances, as well as the growth rates (%) of imports, exports and total trade during the years 2012 and 2016. It further illustrates the share percentage (%) contribution of imports and exports towards the country's total trade in each respective year. As detailed in Table 3-4 below, South Africa's patterns of trade have been somewhat distraught considering the country's export underperformance which is signalled by the consistently widening negative trade balances, despite the narrowing of the latter in 2016. Moreover, South Africa's export growth has not been enough to compensate for the rapid increase in imports. From the years 2012 to 2014, imports had been growing at a much faster rate than exports despite having registered a decline in both trade flows in 2015. Nevertheless, exports signalled a recovery in the year 2016 further recording a growth rate of 23.3 percent relative to 8.5 percentage increase in imports. Albeit imports still contributed more towards South Africa's total trade in 2016 as well as during all other periods under consideration.

**Table 3-4: South Africa's trade flow patterns (2012-2016)**

YEAR	2012	2013	2014	2015	2016
<b>1. Real Values (Rands)</b>					
<b>Total Imports</b>	851764830	993334756	1081493306	1009515162	1095418785
<b>Total Exports</b>	808646057	913345095	981016097	883186322	1086138958
<b>Total Trade</b>	1660410887	1906679851	2062509403	1892701484	2181557743
<b>Trade balance</b>	-43118773	-79989660	-100477209	-126328839	-9279827
<b>2. End of Year Growth Rates (%)</b>					
<b>Imports</b>	15,3	16,6	8,9	-6,7	8,5
<b>Exports</b>	4,2	12,9	7,4	-10,0	23,0
<b>Total Trade</b>	9,6	14,8	8,2	-8,2	15,3
<b>3. Percentage Contribution to Total Trade</b>					
<b>Imports</b>	51,3	52,1	52,4	53,3	50,2
<b>Exports</b>	48,7	47,9	47,6	46,7	49,8

**Source:** Own compilation (Data retrieved from TradeMap)

South Africa's trade with the global economy is characterised by increasing trade dynamics, as illustrated in Table 3-5 below. During this period, China, Germany and the United States of America (USA) have secured their place as South Africa's top three trading partners. Whereas China is indicated to be South Africa's primary trading partner having contributed at least 12.3 percent each year towards South Africa's total trade activities. Consequently, Asian trade partners approximately received some 30.1% of South Africa's total exports in 2016, with China being South Africa's top export recipient, whereas African and European countries respectively obtained 28% and 24.4% of South Africa's total value exports (Workman, 2017:1). Also, Germany, which is second to China, has predominantly been South Africa's second top trading partner in as far as contributing about 7.3 percent to 9.5 percent from 2013 to 2016. The country's affiliation with the SACU trade policy has paved way for increased trade with Botswana and Namibia during this period, whereas Mozambique, Nigeria, and Zambia have been amongst the common African trade affiliates.

**Table 3-5: South Africa's top 15 trading partners and their share contribution to SA's total trade flows (2012-2016)**

Yr	2012		2013		2014		2015		2016	
Rank	Country	Cont. (%)	Country	Cont. (%)	Country	Cont. (%)	Country	Cont. (%)	Country	Cont. (%)
1	China	12,3	China	14,1	China	12,7	China	13,7	China	13,7
2	USA	7,5	Germany	7,3	Germany	7,5	Germany	9,2	Germany	9,5
3	Germany	7,0	USA	6,8	USA	6,8	USA	7,1	USA	7,0
4	Japan	5,1	Japan	4,9	Japan	4,5	India	4,7	India	4,2
5	India	4,1	India	4,2	India	4,4	Japan	4,5	Japan	4,0
6	Saudi Arabia	4,1	Saudi Arabia	4,2	Saudi Arabia	4,0	UK	3,7	UK	3,6
7	UK	3,4	UK	3,3	UK	3,5	Nigeria	3,5	Botswana	2,8
8	Botswana	2,7	Botswana	2,6	Nigeria	3,2	Namibia	2,9	Namibia	2,7
9	Namibia	2,3	Namibia	2,5	Botswana	2,8	Botswana	2,8	Netherlands	2,2
10	Netherlands	2,3	Netherlands	2,4	Namibia	2,7	Belgium	2,1	Saudi Arabia	2,2
11	Nigeria	2,2	Nigeria	2,2	Netherlands	2,3	Italy	2,1	Belgium	2,1
12	Italy	1,9	Mozambique	2,1	Mozambique	2,1	Mozambique	2,1	Mozambique	2,0
Yr	2012		2013		2014		2015		2016	

<b>Rank</b>	<b>Country</b>	Cont. (%)	<b>Country</b>	Cont. (%)	<b>Country</b>	Cont. (%)	<b>Country</b>	Cont. (%)	<b>Country</b>	Cont. (%)
<b>13</b>	Angola	1,9	Italy	1,9	Italy	1,9	Netherlands	2,0	Italy	2,0
<b>14</b>	Korea Republic	1,9	Thailand	1,6	Belgium	1,9	Saudi Arabia	1,7	Thailand	1,8
<b>15</b>	Mozambique	1,8	Korea Republic	1,6	Angola	1,6	Zambia	1,6	Nigeria	1,7

\*Note: Cont. (%) indicates each country's percentage contribution towards South Africa's total trade flows

**Source:** Own compilation (Data retrieved from TradeMap)

### **3.4.3 South Africa's trade policy instruments**

Prior to South Africa's social and economic liberalisation, trade policy under the apartheid-regime was historically led and classified by three intertwined approaches. Lewis (2001:42) outlines these approaches: import-substitution, the intended proliferation of mineral-based exports via upstream mineral beneficiation, and the advancement of "strategic" industries (such as arms, coal and oil industries) amidst increased international seclusion and condemnation. For that reason, South Africa's trade regime during the apartheid era was guided by increased tariffs and isolation, as well as quantitative restrictions and other various forms of protection. Upon undertaking the post-apartheid economic and trade policy, the country witnessed a more outward orientated trade policy. Notwithstanding, South Africa, together with other members of the Southern African Customs Union (SACU) were bound to comply with policy instruments within SACU (Viljoen, 2013:35; Mastara, 2015:20). Below is a discussion of the underlined trade policy instruments within SACU in the context of South Africa's trade policy.

#### **3.4.3.1 Refunds, duty rebates, and drawbacks**

According to Reichel (2002:20), refunds, duty rebates and drawbacks are associated with the general repayment of funds. Accordingly, refunds are concerned with the repayment of overpaid duties as well as refunds made when imported goods are exported at a later stage and that they are in the same condition as they were originally imported (Gouws, 2004:192). Rebates on the one hand refer to circumstances in which inputs used in manufacturing are imported for the purpose of being used in the manufacturing and processing of a product intended to be exported. Such goods are declared duty free imports. Entities or persons are therefore required to register their imported inputs which are pre-listed and published in the customs rebate book (Mbendi, 2002:1). Finally, drawbacks are trade instruments used in the repayment of duty paid on specified import materials

which are utilised in the packaging, processing, and manufacturing of goods and eventually exported (Reichel, 2002:20). The South African Revenue Service (2015:3-5) further asserts that during situations where the aforementioned trade instruments are to be used, all applications for a refund are to be considered by the commissioner, being that payments not liable to be made on duty or charges were however made by the applicant. Additionally, applicants of a refund who are not the original payers of the respective taxes and duties may obtain a letter from the original importer granting authority for a refund.

### ***3.4.3.2 Customs and Excise Duties***

According to Kock (2006:4), the use of customs and excise duties facilitates the South African Customs Administration's role in the management and configuration of goods and services across the borders of the country. By using excise and customs duties, South Africa's Customs Administration thus administers the enforcement of customs and other trade regulations, collects taxes and duties, facilitates and monitors the transitioning of travellers through the Republic, and facilitates restricted import and export goods. In terms of South Africa's customs and excise act, the South African Revenue Service (2016:8) recommends that these duties may be imposed on imported goods entering the country in order to safeguard domestic markets and to raise revenue. As such, excise and customs duties are often calculated as a share percentage of good's value. Types of customs and excise duties includes the customs duties coupled with ad valorem duties, which may be levied on luxury goods. Secondly, countervailing and anti-dumping duties may be imposed on goods dumped in the Republic, as well as import goods subsidised by foreign exporter's originating government. Such duties may thus be applied in the form of ad valorem or specific duties.

### ***3.4.3.3 Customs valuation***

Trade policy on customs valuation deals with the post and the preclearance of the calculation and certification of the value of imported merchandise for the purposes of customs duty (Lombard, 2012:1). South Africa's customs and excise act considers the customs value as the value of transaction considered to be the paid or payable amount for imported merchandise into the country. As a result, imported goods' transfer price is modified based on a group transfer pricing policy once the merchandise is imported into the Republic (SAICA, 2013:1).

#### **3.4.3.4 Trade remedy measures**

The 2002 drafting of South Africa's trade remedy regulations paved the way for the country's revising and implementation of the 2003 anti-dumping regulations, the 2004 safeguard and 2005 countervailing trade measures (Brink, 2005:1). The three trade remedies are discussed below.

- ***Anti-dumping duties***

According to Brink (2015:325), anti-dumping duties in South Africa had long been established in the country, with its first anti-dumping introductory legislation dating back to as early as 1914. Since then, the country has actively utilised its anti-dumping measures, predominantly since the dawn of the 1990's tariffs and liberalisation (Viljoen, 2013:34). Nonetheless, the 1914 legislation was revised in 2003 (Mastara, 2015:19). Further regulation of the country's anti-dumping measures is coordinated by the Anti-Dumping Regulations board, consisting of South Africa's International Trade Administration Commission (ITAC) and the International Trade Administration Act (ITA Act), while submissions and recommendations are primarily considered by the SACU body (Viljoen, 2013:34-35). Likewise, South Africa's incorporation into the World Trade Organisation (WTO) body necessitates the stream-lining of its anti-dumping measures in accordance to the WTO's guidelines. Upon which, the member state is thus obliged to choose to levy duties as well as the margin by which the duty may be imposed considering that it operates within the limits of dumping (Mastara, 2015:21). South Africa's anti-dumping trade legislation thus commends that any imposed anti-dumping measures are set to be terminated or led to continuation upon posing a re-occurring threat within a period of five years (Vint, 2016:1).

- ***Countervailing and anti-subsidy measures***

Countervailing measures are additional tariffs geared towards counteracting unfair advantages which international exporters possess through subsidies provided to them by their government. Henceforth, countervailing measures are levied on such goods which pose a threat to local competing industries (Illy, 2012:2). South Africa's countervailing measures, as well as anti-dumping measures, are thus imposed on goods which may be considered as being dumped in the Republic, and goods which are subsidised imports. The duties imposed may be levied in the form of a specified duty or an *ad valorem* (as a share of the goods value), whereas the form of duty and the amount levied on the good is subject to the goods' value, the classification of the goods' tariff, and also the quantity of the goods (SARS, 2017:1). In as much, South Africa's countervailing actions function under the lenses of SACU's guidelines in reference to all its other members. According to Bagchi *et al.* (2014:32), countervailing measures assist the domestic country in

overcoming international firms' export subsidy advantages which are made and provided by their home countries.

- ***Safeguard measures***

Safeguard measures are considered to be provisional trade defence measures which restrict the importation of a product in efforts to safeguard domestic or local industries from threats posed by imports which may harm the particular industry (Van Lill *et al.*, 2017:3). Safeguard measures thus cater for competing domestic producers amidst import surges which may be a result of trade concessions, posing viable threats to the local industry (Illy, 2012:2). Such threats may be considered as predominantly resulting from unforeseen competition to the reporting country (ITAC, 2011:1). Additionally, the SACU (2013:7-21) highlights that safeguard measures can be appealed and subsequently be levied as a defence measure for rapid and huge surges in imports resulting from sudden and unanticipated developments, further causing viable threats to industries within SACU. Likewise, the severity or the riskiness of potential concerns is subject to the quantity and rate of the surge in imports of the specific goods, the implied consequential effect on sales volume, productivity and profitability, as well as the wellbeing of jobs within SACU's industries.

#### **3.4.4 South Africa's investment policy**

According to Huchet-Bourdon *et al.* (2011:3), the nature of a country's openness to trade is configured and aligned by its trade policy. Whereas trade policy constitutes a country's trade openness driven to encourage the flow of goods and services (Kalu & Joy, 2015:6). The latter includes the facilitation of the flow of FDI between the borders of a country. South Africa's economic transformation agenda upon mitigating the apartheid regime's policy impediments has taken shape through trade and investment policy reforms. This section thereby provides an outline of the various features of South Africa's investment policy, underlined in Table 3-6 as discussed by Vickers (2003:41-50).

**Table 3-6: Investment Policy Audit**

<b>Investment policy audits</b>	
1. Registration	Apart from the SARB's required approval under exchange controls regulations, foreign investors are not required to obtain any government approval to establish new ventures in the Republic
2. Entry and establishment rights	Foreign investors are not restricted on any form or extent of available investments in the South African economy. Restrictions, if any, are normally associated to a specific industry and applicable to both residents and non-residents.
3. Investor protection, guarantees and provisions of insurance	There exists vital exceptions to most favourable nation (MFN) and national treatment (NT) standards. Such as; advantages or special privileges provided by the contracting body's membership of a future or prevailing common market, monetary union, customs union, economic union, free trade area, or similar institutions.
4. Dispute settlement mechanisms	Preferences provided by a contracting body towards finance development institutions cannot be extended to the investors or the other party's development finance institutions.
5. Outward Capital flows restrictions	Capital invested can only be transferred upon entering a party's territory after one year, with the exception that legislation grants for more favourable treatment, however, free payment transfers are thus not entirely unconditional.
6. Promotion treaties and bilateral investment protection	The Republic's investment treaty negotiations have mostly been developed by other parties, implying that investment treaties have been reactive rather than proactive. Although to drive economic development, domestic and FDI investments need to be stimulated by the state regulation.
7. Transfer Pricing	There are no specific laws in South Africa on regulating transfer pricing. This practice is only dealt with by the government in big companies upon a case by case basis.
8. Avoidance of Double Taxation Treaties	South Africa has contracted the avoidance of double taxation agreements with the majority of Europe (As well as certain eastern European nations), and certain Asian and African nations.
9. Investment Facilitation Institutions and Initiatives	Trade and investment negotiations are overseen by the International Trade and Economic Development divisions of the Department of Trade and Industry. The division operates under its mandate of increasing and diversifying exports in South Africa's and proliferate investment levels.
10. Industrial Support Measures and Investment Incentives	Industrial Support Measures and Investment Incentives

**Source:** Vickers, (2003).

### 3.5 SYNOPSIS

Under the post-apartheid regime, South Africa's economy has undergone various social and economic transitions following the eradication of impediments to the apartheid system. Since the beginning of the democratic era, a promise for better employment and overall economic performance has been held. Notwithstanding, the country's efforts to create jobs within the various economic sectors has been offset by the consistently rising unemployment rates, despite the myriad job creation initiatives presented by fiscal authorities. Having analysed South Africa's employment patterns, chapter 3 highlighted dire and unsatisfactory labour market patterns in terms of the labour market's labour absorption rate and labour participation rate. Chapter 3 highlighted that South Africa's overall non-tradable sector contributes most towards the number of people employed in the country. This may be due to the non-tradable sector's larger share of sector composition, since the majority of South African sectors or industries are classified as being non-tradable. Meanwhile, tradable sectors, such as the mining sector, have lost their export value per capita while failing to capitalise on the weak exchange rate of the Rand. The country's economic transitioning has consequently experienced intensified patterns of international economic integration in the form of increased trade openness based on a more outward and accommodating policy. However, tradable sectors have witnessed a decline in their competitiveness in wake of the rise of international competitors such as China, as well as the heightening production costs in the form of increased cost of labour and electricity.

Time series patterns of South Africa's trade openness highlight an increase in South Africa's trade exposure or international economic integration since the onset of the democratic era. Periods such as 2007 to 2009 however displayed declining trade openness as well as a decline in employment growth following the world financial crisis. South Africa's exchange rate in all its measurements (nominal exchange rate, real exchange rate and real effective exchange rate) has been accompanied by a depreciating Rand value relative to other countries over the years and has proven to be highly volatile in wake of economic, social and political imbalances. In a similar fashion, FDI capital flows have displayed deteriorating and daunting performance amid the country's high unemployment rates, labour strikes, political concerns, and low growth. In furtherance of the study objectives, Chapter 4 outlines the methodological framework on which the empirical objectives may be estimated.

## **CHAPTER 4: RESEARCH DESIGN AND METHODOLOGY**

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### **4.1 INTRODUCTION**

The preceding chapter made an attempt at establishing a platform for evaluating trends and policy dynamics specific to South Africa's employment and trade patterns. Additionally, notable observations were identified in Chapter 2 relating to the myriad pre-existing contributions made to employment and trade theory. These include the Classical and Keynesian employment theories, as well as Adam Smith, David Ricardo, and the Mercantilist's trade theories, amongst others. Nevertheless, further advancements established in early empirical literature pertaining to the current subject have mostly been identified to have been analysed in isolation. Contributions to economic theory, particularly employment and trade theories however, provide a necessary benchmark for the evaluation and assessment of the current study's set objectives and analytical framework.

Past research as identified in Chapter 2 shows evidence of contrasting empirical findings. Some studies suggested an increase in employment as caused by increased trade openness, exchange rate fluctuations and FDI, while others revealed a negative relationship underlined in literature as job destruction. Upon examining the latter narratives, various techniques and analytical methods were used such as harmonised measures, data surveys, industry level and panel data estimations, as well as ordinary least squares (OLS) methods in conducting employment effects of trade openness in targeted economies.

Furthermore, the Autoregressive Distributed Lag (ARDL) model, the stylised model, and computed general equilibrium techniques were employed to establish the nexus implications of exchange rate movements on employment. Lastly, techniques such as the Toda-Yamamoto (1995) procedure, and Johansen Co-integration methods were used to analyse the effects of FDI on employment. This study made use of the ARDL model based on its reputation for providing robust results as well as its inherent flexibility component as motivated in section 4.3 of the current chapter. The model has also been used by various scholars such as Adamu (2014), Aljandali (2014) and Sakyi (2011), amongst others.

This study builds on existing findings of various literature regarding the tradable and non-tradable employment effects of trade openness, the real exchange rate and net-FDI in the short-run and the long-run. Results established thereof, may be relevant to the construction of employment and trade

policies, as well as to make provision for pertinent and recent literature contribution. For that reason, the panel-ARDL and standard ARDL models are employed in the present study. These models are anchored towards the fulfilment of the outlined empirical objectives which include the determination of the long-run and short-run relationships between trade openness, exchange rate movements and FDI, versus South Africa's sectoral employment in the tradable and non-tradable sectoral groups. Further objectives include the determination of the short-run and long-run individual sectors' employment effects of trade openness, the real effective exchange rate and net-FDI. Additionally, the study seeks to obtain a comparative assessment of findings between the individual employment sectors and their tradable and non-tradable grouped classifications. Lastly, the study aims to attain a comparative understanding of the causal effects of the set explanatory variables and employment within South African sectors.

The current chapter therefore outlines and describes the theoretical methodologies and techniques observed in the study. Firstly, the chapter presents respective data sources, the sample period, the sector selection processes, as well as the variable measurements and data transformations as employed in section 4.2. Secondly, section 4.3 outlines and discusses the specification of the models employed in the study, particularly the standard ARDL and panel-ARDL methods. It is important to highlight that the use of the ARDL approach in this study is primarily influenced and motivated by the theoretic and empirical literature standpoint of the model. Section 4.3 also provides a brief discussion of factors relating to stationarity tests, the modelling of employment in the tradable and non-tradable sectors, the error correction model (ECM), the Toda-Yamamoto (1995) Granger-causality model, as well as the underlying diagnostic testing tools.

## **4.2 DATA SELECTION, SAMPLE PERIOD AND VARIABLE DESCRIPTION**

### **4.2.1 Data Selection and sample period**

This study is based on a quantitative research design and employs a time-series quarterly dataset comprising of employment ( $EMP_t$ ) in South Africa as the dependent variable, and trade openness ( $TOPEN_t$ ), the real effective exchange rate ( $REXR_t$ ) and net-FDI inflows ( $NFDI_t$ ) as the independent variables. Accordingly, employment ( $EMP_t$ ) data was based on selected economic sectors as obtained from the South African Reserve Bank (SARB). Also, the seasonally adjusted observations of the real effective exchange rate ( $REXR_t$ ) and net-FDI ( $NFDI_t$ ) were also obtained from the South African Reserve Bank (SARB). Accordingly, the dataset used to estimate trade openness was inclusive of exports, imports and GDP and obtained from the SARB.

The study covers a sample period of 88 quarterly observations starting from 1995Q1 to 2016Q4. The rationale behind the selected sample period was led by the change of South Africa's political and economic structures as well as the exclusion of economic embargo's which characterised South Africa's apartheid era.

The SARB's employment indexes were chosen based on the inconsistencies and unavailability of actual and longer employment observations within Stats SA's labour statistical databases prior to 2008. This follows after Stats SA's replacement of its Labour Force Survey (LFS) report. The time-frame following the period before 2008 was observed to have had inconsistent or missing employment datasets of Stats SA's biannual Labour Force Survey (LFS). Whereas the little to less available data within the LFS report during the mentioned period was captured based on different methods contrary to the QLFS.

The LFS report was criticised having lacked in primary areas such as the coverage, scope, frequency and timelines (Stats SA, 2008:1). Thus the inception of the QLFS oversaw the revision of the survey methodology, data collection frequency and releases, survey questionnaire, as well as the survey processing systems and data capture (Stats SA, 2008:1). The above underscored factors thereby led to the selection of the SARB's available employment indexes thus estimating the study's empirical analysis based on a wider scope of employment datasets.

#### **4.2.2 Selection and classification of sectors**

In order to highlight employment responses within tradable and non-tradable sectors following the effects of trade openness, the real effective exchange rate and net-FDI, this study focussed on five key private sectors, namely: manufacturing, mining, wholesale and retail trade, as well as finance and construction. For the purpose of this study, the aforementioned sectors thus served as a representation of South Africa's employment or jobs in tradable (TS) and non-tradable (NTS) sectors upon the use of ARDL modelling.

The chosen sectors were selected based on the mentioned employment data availability, as well as their indispensable role in configuring South Africa's employment activities as discussed below. The study's underlying classification of the selected sectors as either tradable and non-tradable sectors, was consistent with that of empirical literature specific to South Africa (such as Flatters & Stern, 2007; Hausmann, 2008; Mano & Castillo, 2015:22; Ngandu, 2009; Ojeda *et al.*, 2014:2; Rodrik, 2008:778; Spence & Hlatshwayo, 2012:9; Spence & Hlatshwayo, 2014:273)

The sector classification procedure thereby involved classifying sectors according to their export intensities and their level of import penetration following their positioning on the tradability continuum. It thereby follows that tradable sectors are thus governed by high export intensities and import penetration, if not, sectors exhibiting low export penetration and import penetration are considered to be non-tradable (Ngandu, 2009:118). Based on this narrative, South Africa's manufacturing and mining sectors were identified as being characterised by high export intensities while services sectors such as the wholesale and retail trade sector, and the finance and construction sectors were classified as low import-penetration sectors (Ngandu, 2009:119-120).

As indicated in section 3.3.1 of Chapter 2. Historic trends following the last seven years according to data provided by Stats SA, suggest that manufacturing made a sizeable share towards South Africa's total employment having contributed approximately 12.7 percent on average during the period 2010 to 2016. Although the mining sector was identified to have made limited employment contribution, it had an average employment growth of 4.3 percent over the seven-year period (perhaps indicating that the sector is gradually growing). Agriculture on the one hand, being amongst South Africa's small-scaled tradable sectors, contributed approximately 5 percent on average towards total employment with an average quarterly growth rate of 5.3 percent. On the other hand, the latter sector was not examined due to the lack of data availability as previously alluded to.

Furthermore, although the construction sector had been outperformed by the manufacturing sector, South Africa's non-tradable sectors such as the wholesale and retail trade, finance and the construction sectors, have had the most crucial impact on the country's overall employment activities relative to tradable sectors during the 2010 to 2016 period. These sectors contributed approximately 21.3 percent, 13.5 percent and 8.4 percent, respectively. Henceforth, due to their active participation in employment activities, the discussed sectors were found befitting of being analysed.

### **4.2.3 Variable description**

Employment within the aforementioned sectors is expressed in thousands of the number of people employed in South African sectors. The measurement of explanatory or independent variables, such as the degree of South Africa's trade openness was measured as a ratio of the country's total imports (M) and exports (X) to GDP and thus expressed as follows:

$$\text{TOPEN} = \frac{X+M}{\text{GDP}} \quad (4.1)$$

The preceding measure of trade openness is consistent with empirical measures used by various scholars (such as Adamu, 2014; Adhikary, 2011; Gries *et al.*, 2009; Yanikkaya, 2003; and others). Considering the associated decrease in trade barriers (Gaalya, 2017:691), increased trade openness is anticipated to have a negative effect on South Africa's internationally less competitive tradable sectors, seeing that globally exposed sectors face mounting external competition. Such risks underline the rationale behind safeguard measures or increased tariff rates that are aimed at protecting domestic producers amid potential external threats to the local industry (Illy, 2012:2; ITAC, 2011:1).

Furthermore, net-FDI is defined as the total inflow of FDI in South Africa's domestic economy expressed in millions (ZAR). South Africa's low FDI inflows underlying the country's failure to attract FDI (Arvanitis, 2005:64) thus present a potential of little to no impact on the country's employment sectors. Notwithstanding, South African sectors in shortage of investment amid low to negative FDI levels, may be negatively affected as anticipated with the country's tradable sectors, such as the manufacturing sector, which are in need of financing (IDC, 2017:3).

Moreover, the real effective exchange rate is established as a proxy for South Africa's real effective exchange rate of the Rand (ZAR) (2010=100) against the country's 20 major trading partners' currencies. The latter exchange rate estimation was considered to be a broader reflection of South Africa's overall trade dynamics seeing that it serves as a barometer of South Africa's overall competitiveness in international trade with its major trade partners (Motsumi *et al.*, 2008:61).

Employing a bilateral exchange rate such as the conventionally used Rand exchange rate (ZAR) against the United States Dollar (USD), presents constraints based on its limitations in solely measuring South Africa's currency comparative to one other country (the United States of America), and thus not fully presenting the Rand's overall value against major trading partners' currencies (Ng'ambi, 2015:21). Nevertheless, considering that competing global prices are inherent of a country's depreciating exchange rate (Madura, 2009:32), a positive potential effect of a weak exchange rate of the Rand is anticipated to affect employment in the country's globally active and/or competing tradable sectors.

#### **4.2.4 Data transformation & adjustments**

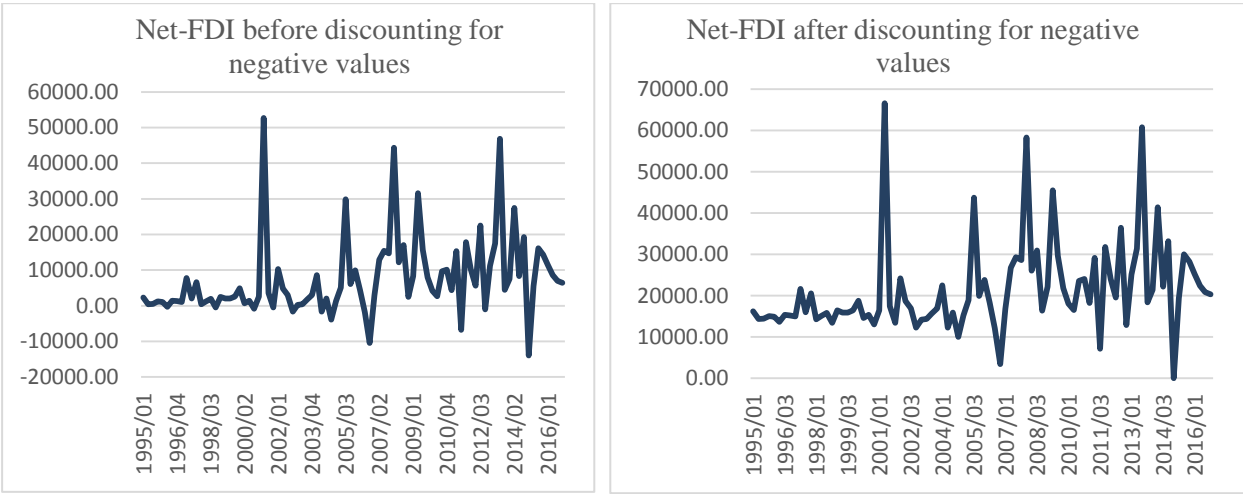
Accordingly, pre-seasonally adjusted imports, exports and real GDP at constant 2010 ZAR prices, were used to obtain South Africa's extent of trade participation or openness along the procedure

of capturing the variable trade openness for the considered period by means of Equation (4.1) above. Likewise, employment within the selected sectors was obtained as a pre-seasonally adjusted index by the SARB. Nonetheless, the real effective-exchange rate and net-FDI were obtained in actual real values.

In order to maintain a uniform and consistent dataset, all variables were transformed into their natural logarithmic forms in an effort to reduce size residuals and make adjustments for any likelihood of scale effects, as well as to allow for the estimation of elasticity or growth. Nevertheless, net-FDI was found to contain both positive and negative real values which cannot be contained in logarithms. To solve this, the study therefore applied the stated recommendations by Osborne (2002:3) and Osborne (2010:3), in reflecting such a transformation the author asserts that a constant may be added to the distribution as to anchor the minimum at the value of 1.00. Along the process of transforming such a dataset based on the prescribed method, Osborne (2002:3) further cautions that the mentioned transformation process needs to be anchored at 1.00 as the values within 0.00 and 1.00 may have different effects.

Based on the latter narrative, a constant value of 13911.00 was identified and added to the net-FDI distribution which further brought the minimum value from 13910.00 to 1.00. The resulting effect led to a shift in the distribution other than a change in the trend as displayed in Figure 4-1 below. This procedure was observed on the basis of enabling net-FDI towards undergoing the logarithmic transformation procedure, and thus obtain a uniform measurement of the entire dataset.

**Figure 4-1: Discounting for Net-FDI negative values**



**4.3 MODEL SPECIFICATION & ECONOMETRIC MODELLING**

Considering the vast economic landscapes and changing global economy, the use of the much acclaimed robust and advanced econometric methods in economic analysis is unprecedented. Based on the underlying literature surrounding the current topic, this study presents a noble contribution on the short-run and long-run effects of trade openness, the real effective exchange rate and net-FDI on South Africa’s employment sectors, particularly the tradable and non-tradable sectors. Specifically, the study employed Pesaran *et al.*’s (1999) panel-Autoregressive Distributed Lag (ARDL) model, using the pooled mean group (PMG) estimator relative to the mean group (MG) technique. The panel-ARDL was conducted to investigate the effects of trade openness, the real effective exchange rate and net-FDI on South Africa’s employment within pooled tradable and non-tradable sector groups driven by the underscored objectives of the study.

Additionally, the standard ARDL model was estimated to test for the short-run and long-run cointegration between the aforementioned regressors, and the individual employment sectors underlining South Africa’s tradable and non-tradable sectors, following the established panel-ARDL results. Pesaran *et al.*’s (1999)’s panel-ARDL and the standard ARDL models were employed based on the rationale of analysing how the pooled tradable and non-tradable employment groups compare with each of the selected individual employment sectors. The ARDL approach is a useful method for evaluating the existence of long-run and short-run relationships within time-series analysis. This approach is based on a single cointegration equation and was initially presented by Pesaran and Shin (1999) and oversaw its extension by Pesaran *et al.* (2001).

Furthermore, models such as the Ordinary Least Squares (OLS) method have often been criticised for frequently producing spurious results which are believed to be imbedded in such models (Ogbokor, 2015:110). Relative to other cointegration methods, the ARDL approach has been commended for its various advantages such as its underlining capacity to conduct concurrent estimations for long-run and short-run effects by means of the bounds testing technique allowing for the error correction model (ECM) to be estimated (Dritsakis, 2011; Sezgin & Yildirim, 2003). This is because the ECM within the ARDL model integrates estimations for short-run adjustments towards reaching the long-run equilibrium without dropping the long-run results (Pesaran & Shin, 1999).

Unlike conventional cointegration procedures, the ARDL approach can be a useful means of econometric testing where all variables are considered as endogenous variables and as explanatory variables (Dritsakis, 2011). Also, the bounds testing of the ARDL method is not sensitive to small data samples due to its stable and robust estimations making the model a pertinent and statistically significant approach in conducting tests comprising of such samples (Dritsakis, 2011:12; Pattichis, 1999). This is contrary to the Johansen cointegration technique which necessitates the use of large data sample sizes to ascertain the reliability of results (Guan *et al.*, 2015:393). In as much, the bounds testing equation makes use of a single equation which impedes first stage errors from translating onto the second stage, unlike the system of equations or the two-stage regression intrinsic of the Johansen (1988), Johansen and Juselius (1990), and Engle & Granger (1987) procedures (Akinci *et al.*, 2015:6; Guan *et al.*, 2015:393; Ozturk & Acaravci, 2010).

The ARDL model is a flexible test to cointegration which accommodates different optimal lags to be allocated to each variable (Harvey, 1981). It is a valid approach which can be employed in conducting econometric estimations irrespective of whether the variables are of a mixed order of integration underlining I(0) and I(1) variables, or purely integrated. Nevertheless, this is in contrast to other methods to cointegration which exclusively allow for variables to be integrated at the same order of integration (Dube & Zhou, 2013:203). Notwithstanding, the ARDL approach does not allow for non-stationary variables which are integrated at I(2) order of integration. The inclusion of I(2) variables may lead to obtaining unreliable estimations (Ouattara, 2004). The latter thus necessitates the need to conduct tests for unit root or stationarity prior to conducting co-integration tests in order to ensure that none of the variables are integrated at order I(2).

The study therefore employed tests for stationarity prior to conducting the bounds test to co-integration. Further additional tests involved the Toda and Yamamoto (1995) Granger non-causality tests, as well as diagnostic and stability tests. Diagnostic and stability tests involved the test for normality, autocorrelation, heteroscedasticity and parameter stability.

### **4.3.1 Stationarity and unit root tests**

The test for stationarity or unit root is a crucial component in time-series models, as it reveals whether the data is either stationary or non-stationary (Perron, 1989). Accordingly, stationarity tests serve as an essential prerequisite in estimating long-run equilibrium relationships amongst variables that make use of cointegration techniques (Gujarati & Porter, 2008:762). However, it is often contended upon that traditional tests for unit root such as the Augmented Dickey Fuller (ADF) and the Phillips-Perron (PP) tests, tend to lead to poor unit root estimations in small data samples (Brooks, 2008:330-331). Wisz *et al.* (2008:763) commend that small sample sizes are characterised by samples consisting of less than 30 observations. The use of the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) method as an alternative test for stationarity therefore serves as a means of dealing with the short-comings of the ADF and PP unit root tests.

To ensure the provision of sound unit root or stationarity estimations, results in the aforementioned stationarity tests thereof, should be compared in order to establish the parameter consistency and whether they produce the same conclusions (Brooks, 2008). For that reason, this study therefore employed both the ADF and PP tests, as well as the KPSS to ensure that the same conclusion was reached and variables were within the restrictions of being either  $I(0)$  or  $I(1)$ , or mixed, as required when ARDL methods are employed.

#### **4.3.1.1 The Augmented Dickey-Fuller (ADF) and the Phillips-Perron tests (PP)**

The Augmented Dickey-Fuller (ADF) test is an improved extension of the basic Dickey-Fuller (DF) test or autoregressive unit root test. Developments in the ADF test as improved by Said and Dickey (1984), prompt the accommodation of autoregressive moving averages (ARMA) ordered at  $p, q$  in situations where orders are unknown. Consequently, the ADF test is often known to produce similar results as the Phillips and Perron (1988) (PP) unit root test. These tests however vary according to the manner in which serial correlation in the errors is handled. The PP test, unlike the ADF unit root test, does not add lagged difference terms while serial correlation is controlled for by employing the Newey-West (1987) estimator (Gujarati & Porter, 2008:758). By comparison, the PP test is considered to be a better test for unit root as it accommodates variables

reflecting the presence of structural changes and prompts the use of nonparametric statistical methods by estimating a non-augmented Dickey-Fuller (Phillips & Perron, 1988).

Although the two tests present notable differences, they however provide similar results as previously mentioned. Abdalla and Murinde (1997:28) present a standard regression equation with a constant for the DF, ADF and PP tests expressed in the current study as follows:

$$\Delta Y_t = \alpha_0 + \beta_1 + \lambda_3 Y_{t-1} + \sum_{i=1}^n \alpha_i \Delta Y_{t-i} + \varepsilon_{3t} \quad (4.2)$$

Where:  $\Delta$  represents the first difference operator,  $X$  denotes the natural log of each variable considered in the study, such that  $\Delta Y_t = X_t - X_{t-1}$ ;  $t$  is the time trend; and  $\varepsilon_1, \varepsilon_2, \varepsilon_3$  and,  $\varepsilon_4$  are white noise errors.

Lastly; the DF, ADF and PP tests for unit root carry the following hypothesis:

- $H_0: \lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = 1$   
Then  $Y_t$  consists of a unit root,  $I(1)$ ;
- $H_1: \lambda_1; \lambda_2; \lambda_3$  and  $\lambda_4 < 1$   
Then  $Y_t$  are stationary,  $I(0)$ .

The null hypothesis,  $H_0: (\lambda = 1)$ , advocates that the variable consists of a unit root  $I(1)$  and is non-stationary. Whereas the alternative hypothesis ( $\lambda < 1$ ) advocates that the variable does not possess a unit root  $I(0)$  and is therefore stationary. The ADF and PP stationarity tests have however been criticised based on the argument that the two tests tend to often over-reject the null hypothesis upon having misled sample sizes, particularly in cases where the series have a large negative moving average root (Schwert, 1989). The two tests have also been argued to have low power against the alternative hypothesis of a stationary series (DeJong *et al.*, 1992). For that reason, the current study was therefore motivated to additionally employ the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) (1992) stationarity test to validate results of the ADF and PP tests.

#### **4.3.1.2 The Kwiatkowski-Phillips-Schmidt-Shin (KPSS) Stationarity Test**

In order to ascertain the soundness of the ADF and PP unit root test results, the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) (1992) was conducted as an alternative or confirmatory test which is known to resolve the short-comings of the ADF and PP tests, such as the sample size and power issues. Henceforth, KPSS unit root results were then compared to those of the ADF and PP tests

to examine whether the results were consistent. In contrast to the ADF and PP tests, the KPSS stationarity test carries the following hypotheses:

- $H_0$ :  $Y_t$  is stationary,  $I(0)$ ;
- $H_1$ :  $Y_t$  has a unit root,  $I(1)$ .

Under the null hypothesis  $H_0$ , if the variable does not consist of a unit root, then the respective variable is stationary. Therefore, the null hypothesis cannot be rejected. However, in the case where the variable consists of a unit root or is  $I(1)$ , then the variable is considered not stationary, the null hypothesis can thus be rejected in favour of the alternative hypothesis  $H_1$ . The variable with the non-stationary series possessing a unit root may however be transformed or first differenced to be deemed stationary and fit for co-integration tests (Gujarati, 2003:820).

According to Deb (2004:210) the KPSS test, introduced by Kwiatkowski, Phillips, Schmidt and Shin (KPSS) (1992), is a useful confirmatory test which can be used to supplement the ADF provided the low power of the ADF test. The decision to employ the KPSS test is guided by the evidence that tests configured on the premise where the null hypothesis advocates that a series is  $I(1)$ , exhibits low power towards the rejection of the null. Traditional unit root tests of a non-stationary null hypothesis are often led by the conclusion of the presence of a unit root within the series as exacerbated by their low power (Libanio, 2005:149). Kwiatkowski *et al.* (1992) therefore asserts that the reversal of the alternative and null hypothesis, as is the case with the KPSS test, is helpful towards solving this problem. The estimation of the reversed null hypothesis of a stationary series thus decreases the inherent biases of concluding that a series is non-stationary (Dhliwayo, 1996:13).

#### **4.3.1.1 The Break-Point Unit Root Test**

Data series exhibiting a trend stationary series with the potential structural breaks may result in the failure for conventional unit root tests to reject the null hypothesis due to their low power issues (Altinay & Karagol, 2004:987). Henceforth, Perron (1989) cautions that the interrelated closeness of unit roots and structural breaks can lead to a biased false unit root null hypothesis in traditional unit root tests when dealing with data series which are trend stationary with a structural break. An alternative unit root test was thereby proposed by Perron (1989) allowing for possible structural breaks. The test was based on three alternative models inherent of a shift in the intercept, a change in the slope, as well as a change in both the slope and the intercept.

To avoid the distorting effects of traditional unit root tests under likely structural breaks in the data series, the study employed the Breakpoint unit root test based on the formalised ordinary least squares (OLS) regression and as expressed as follows:

$$y_t = \alpha_0 + \alpha_1 y_{t-1} + \alpha_2 t + \mu_2 D_l \sum_{i=1}^k \delta \Delta y_{t-1} + \varepsilon_t \quad (4.3)$$

Where:  $y_t$  denotes the considered series,  $D$  is the dummy variable,  $\alpha$  and  $\delta$  are the changes in the parameters considering the potential period of the break such that  $t = T_b + 1$ . The test is conducted based on a unit root null hypothesis against a trend stationary process of the alternative hypothesis which confirms the presence of a structural break in both the intercept and the slope.

### 4.3.2 ARDL Cointegration Test: Modelling South Africa's individual employment sectors

The study employed the ARDL bounds test method to further analyse the long-run and short-run cointegration (Pesaran *et al.*, 2001) of the respective individual variables represented within the above pooled tradable and non-tradable sectors. This was done in order to verify the consistency of results between individual sectors, compared to results established in testing for cointegration in the pooled tradable and non-tradable grouped sectors.

The procedure of the bounds test to co-integration comprises of the following precepts: (1) the determination of the incidence of co-integration or the presence of a long-run relationship amongst the variables, (2) the selection of optimal lags of the dependent and explanatory variables as to obtain the “*conditional (restricted)*” ARDL model, and (3) the transcription of the long-run equilibrium equation expressed in the form of an ARDL model (Pesaran and Pesaran, 1997). The study proceeded with the lag selection procedure in order to select the optimal number of lags by means of Akaike (AIC), Schwarz Bayesian (SBIC), and Hannan Quinn (HQIC) information criteria (Brooks, 2014). That is, each variable is estimated by means of a number of regressions to obtain the optimal lag length which is expressed as  $(p + 1)^k$ . Where  $k$  and  $p$  respectively indicates the number of variables and the maximum number of lags.

Conducting the ARDL model prompts the test for co-integration based on the bounds testing approach as developed by Pesaran and Shin (1999) and Pesaran *et al.* (2001). Concurrent results for the long-run and short-run relationships may be revealed upon conducting estimations for co-integration tests and the error correction model (ECM), respectively. To establish the bounds

testing method, the study employed the ARDL model for the five individual private sectors and thereby expressed in Equation (4.4) as follows:

$$\begin{aligned} \Delta LY_t = & \alpha_0 + \sum_{i=1}^k \beta_i \Delta LY_{t-i} + \sum_{i=0}^k \delta_i \Delta LTOPEN_{t-i} + \sum_{i=0}^k \sigma_i \Delta LREXR_{t-i} + \sum_{i=0}^k \gamma_i \Delta LNFDI_{t-i} \\ & + \eta_1 LNEMP_{t-1} + \eta_2 LTOPEN_{t-1} + \eta_3 LREXR_{t-1} + \eta_4 LNFDI_{t-1} + \varepsilon_t \end{aligned} \quad (4.4)$$

Where:  $\Delta$  denotes the first difference operator of the variables,  $\Delta LY_t$  indicates the natural log of employment in each individual private sector and expressed separately as the dependent variable. Such that  $\Delta LY_t$  is repeatedly expressed as employment in the manufacturing sector and employment in the mining sector (tradable sectors), and employment in the wholesale and retail trade, employment in finance and employment in the construction sectors (non-tradable sectors). Moreover,  $LTOPEN$  denotes the natural log of trade openness,  $LREXR$  denotes the natural log of the real effective exchange rate, and  $LNFDI$  indicates the natural log of net-FDI. Notwithstanding, the latter variables ( $LTOPEN$ ,  $LREXR$  and  $LNFDI$ ) stay the same in each of the repeated employment equations. Also,  $\varepsilon_t$  indicates the white noise error term, the series  $\beta_i, \delta_i, \sigma_i, \gamma_i$  denotes the coefficients for the measurement of the short-run relationships amongst the dependent and explanatory variables, while  $\eta_1 \dots \eta_4$  denotes the measurement of the long-run relationships amongst the dependent and explanatory variables.

For each of the dependent employment variables of individual sectors, Equation (4.4) is repeatedly estimated to conduct the test for co-integration amongst the variables based on the following hypotheses:

- $H_0: \eta_1 = \eta_2 = \eta_3 = \eta_4 = 0$  (Null; co-integration or long-run relationship does not exist)
- $H_1: \eta_1 \neq \eta_2 \neq \eta_3 \neq \eta_4 \neq 0$  (Alternative; co-integration or long-run relationship exists)

The null hypothesis ( $H_0$ ) indicates the non-existence of co-integration or long-run relationship amongst the variables. This is estimated by means of conducting the bounds test where the F-statistic value (coefficient restriction test) is compared to the critical values of the lower and upper bound as established by Pesaran *et al* (2001). If the F-statistic is greater than the critical values of the upper bound, co-integration is present, therefore the null hypothesis of no co-integration is rejected in favour of the alternative hypothesis. On the contrary, the incidence of a lower F-statistic value than the critical values of both the upper and lower bound suggests the absence of co-integration amongst the underlying variables, the null hypothesis of no co-integration is therefore

not rejected. Nevertheless, having an F-statistic value that lies between the upper and lower bound critical values suggests inconclusive estimations (Dube & Zhou, 2013:203).

#### 4.3.2.1 Error Correction Model (ECM)

Upon conducting estimations of the bounds test for co-integration, the error correction model (ECM) can be estimated using the error correction term (ECT) in order to examine the speed of adjustment of the short-run dynamics or disequilibrium towards long-run equilibrium (Alimi, 2014:106-107). Therefore, in order to confirm the convergence of short-run dynamics towards long-run equilibrium, the error correction term (ECT) must be significant and have a negative sign (Paul, 2014:3). Equation (4.4) of the ARDL model can thereby be derived in terms of the ECM as follows:

$$\Delta LY_t = \alpha_0 + \sum_{i=1}^k \beta_i \Delta LY_{t-i} + \sum_{i=0}^k \delta_i \Delta LTOPEN_{t-i} + \sum_{i=0}^k \sigma_i \Delta LREXR_{t-i} + \sum_{i=0}^k \gamma_i \Delta LNFDI_{t-i} + ECT_{t-i} + \varepsilon_t \quad (4.5)$$

Where: ECT denotes the error correction term which captures the short-run adjustment towards long-run equilibrium,  $\Delta LY_t$  denotes the natural log of employment repeatedly expressed as a separate equation of the individual employment industries.

#### 4.3.3 Toda Yamamoto (T-Y) approach to Granger-Causality Test

Furthermore, the study employed the Toda-Yamamoto (T-Y) procedure to uncover the causal relationship between South Africa's employment within selected individual private sectors, against the country's trade openness, the real effective exchange rate and net-FDI. The T-Y procedure was developed by Toda and Yamamoto (1995) as an approach to Granger non-causality testing in level augmented vector autoregressives (VARs). The preceding standard Granger (1969) causality test oversaw the modified T-Y (1995) causality model which encompassed the addition of extra lags led by likely order of integration.

The primary distinction of the T-Y procedure to the standard Granger non-causality test is the application of the Block Exogeneity Wald test in an augmented VAR model, which can be estimated irrespective of the variables' order of integration, and whether or not they are cointegrated of an arbitrary order (Hacker & Hatemi, 2006; Lach, 2010:171; Mehrara, 2014:5). According to Lach (2010:168), empirical applications of the standard Wald test found the test rather complicated and improper. This was due to its underlying nonstandard asymptotic properties

when dealing with cointegrated or order one ( $I(1)$ ) integrated variables, which made it an improper method of testing for causal effects. Also, its pre-testing process was characterised by a complicated procedure which involved analysing the unit roots and cointegration properties, as well as the sensitivity of the establishment of improper lags.

The T-Y approach to granger non-causality therefore fits the standard VAR model in the variables' levels, (as opposed to the first differences approach of the standard Granger causality test) thereby reducing the risks accompanied by the possibility of wrongfully identifying the series' order of integration (Mavrotas & Kelly, 2001). Also, the T-Y approach incapacitates problems associated with invalid asymptotic critical values along the procedure for conducting causality tests in the midst of cointegrated or non-stationary series (Ahmed, 2015:41). The method is therefore robust to cointegrated and integration property processes as it ascertains the validity of the asymptotic distribution theory in VAR systems (Lach, 2010:168).

According to Zachariadis (2006:12-13), the T-Y approach estimates a VAR with the lag order of  $(k + d_{max})$ , such that the variables' maximal potential order of integration is indicated by  $d$ , whereas, the "true" lag order  $k$  is excluded. Then, the test for Granger causality is conducted by means of employing hypothesis tests within the VAR overlooking the extra lags  $k+1, \dots, k+d$ . In such a case, Toda and Yamamoto (1995) further proved that the standard asymptotic theory can be used to test the restrictions underlining the linear and nonlinear properties.

Conducting the T-Y method firstly involves the determination of lag length ( $k$ ), and identifying the variables' maximum order of integration ( $d$ ) within the system which can be done by employing measures such as the Akaike Information Criterion, and Hannan-Quinn (HQ) Information Criterion (Awokuse, 2003:130). Based on its role to guarantee or validate the use of the asymptotic theory, additional lag of the parameter  $d$  is an unrestricted variable (Lach, 2010:171; Oladipo, 2009:8). Therefore, this approach, like the ARDL method, avoids pre-tests underlying cointegration tests and low-power unit roots (Zachariadis, 2006:12-13).

Similar to Anguibi (2015), Jebli and Youssef (2015), and Vaona (2012), the study employed the Toda and Yamamoto (1995) augmented Granger non-causality test based on a VAR model expressed as follows:

$$\begin{aligned} \Delta LY_t = & \alpha_0 + \sum_{i=1}^K \beta_i \Delta LY_{t-i} + \sum_{j=K+1}^{K+d_{max}} \beta_j \Delta LY_{t-j} + \sum_{i=1}^K \delta_i \Delta LTOPEN_{t-i} + \sum_{j=K+1}^{K+d_{max}} \delta_j \Delta LTOPEN_{t-j} + \sum_{i=1}^K \sigma_i \Delta LREXR_{1-i} \\ & + \sum_{j=K+1}^{k+d_{max}} \sigma_j \Delta LREXR_{1-j} + \sum_{i=1}^K \gamma_i \Delta LNFDI_{t-i} + \sum_{j=K+1}^{k+d_{max}} \gamma_j \Delta LNFDI_{t-j} + \varepsilon_t \end{aligned} \quad (4.6)$$

Where:  $LY$  equals employment in the stated individual sectors and expressed separately. Also, equation (4.6) was estimated respectively with each of the variables in turn ( $LY$ ,  $LTOEPN$ ,  $LREXR$  and  $LNFDI$ ) were estimated as the dependent variable. Moreover,  $\alpha_0$ ,  $\beta_i$ ,  $\delta_i$ ,  $\sigma_i$  and  $\gamma_i$  denotes the parameters and residuals to be estimated;  $d_{max}$  is the maximum potential order of integration for the series within the system;  $k$  represents the optimal lag order and  $e_t$  is the white noise error term. The test was estimated based on the null hypothesis of no causal relationship from  $LY$  to  $LTOEPN$ ; from  $TOEPN$  to  $LY$ ; from  $LY$  to  $LREXR$ ; from  $LREXR$  to  $LY$ ; from  $LY$  to  $LNFDI$  and from  $LNFDI$  to  $LY$ .

#### 4.3.4 Diagnostic testing

A diagnostic test series follows as the final stage for establishing the performance of the model by means of testing for normality, serial correlation, heteroscedasticity and parameter stability tests with recursive estimates and function form (Takaendesa, 2006:100). These tests assess whether or not the model's stochastic properties are met as to prevent common problems in econometric analysis which may violate regression models. For that reason, the model's validity therefore relies on diagnostic test results (Sibanda, 2012:57). To ensure whether residuals are normally distributed, the test for normality is conducted by employing the Jarque Bera test, while the Breusch-Godfrey's Lagranges Multiplier (LM) test is employed to check the series for auto-correlation in order to determine whether error terms are uncorrelated amongst each other along the period. Furthermore, the Breusch Pagan Godfrey heteroscedasticity test is used to test for homoscedasticity as to establish whether or not residuals possess a common variance. Lastly, to establish whether the time-series model used in the study is stable, stability tests such as the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares residuals (CUSUMSQ) are employed to analyse the recursive estimates of residuals.

#### 4.3.5 Panel ARDL: modelling employment in tradable and non-tradable sectors

Considering the primary purpose of the study as well as it aim to address employment dynamics in tradable and non-tradable grouped sectors, the study employed the panel-ARDL by means of the pooled mean group (PMG) estimator. The PMG estimator was chosen relative to the mean group (MG) estimator provided that results of the Hausman test showed slope homogeneity within the cointegrating vector. The PMG estimator was employed to test for the long-run and short-run cointegration of employment within South Africa's tradable and non-tradable grouped sectors as the dependent variables. The said dependent variables were measured against the regressors

underlined as trade openness, the real effective exchange rate and net-FDI. The PMG estimator was introduced by Pesaran *et al.* (1999) under the assumption of consistent homogeneity of the long-run slope, where the long-run parameters are constrained or held the same, but permits the error variances, intercepts and the short-run coefficients to differ across cross-sectional groups. The error terms under Pesaran *et al.*'s (1999) PMG estimation are assumed to be independently distributed against the regressors and thus serially uncorrelated.

The PMG is known to intermediate Pesaran and Smith's (1995) mean group (MG) method in which the intercepts and slope vary across cross section groups. The validation of the long-run homogeneity restrictions thereof, holds the estimations of the mean group estimator to be inefficient (Al Mamun *et al.*, 2013:570). The PMG estimator thus yields a more efficient estimator (Baek, 2016:24; Demirgünescedil, 2015:422). Notwithstanding, estimates of both the MG and PMG estimators are consistent in a dynamic panel analysis irrespective of the existence regressors which are potentially non-stationary. Whereas the panel-ARDL method also allows for the analysis of both short-and long-run estimations provided within the same framework (Lanzafame, 2013:8).

#### **4.3.5.1 Panel Unit Root Tests**

Preconditions in estimating panel-ARDL cointegration tests require defining the integrational properties of the considered variables as either purely  $I(0)$  or  $I(1)$ , or a mixed integration of both  $I(0)$  and  $I(1)$  in order to avoid spurious regressions (Samargandi *et al.*, 2013:). Tests for unit root may thus be conducted to further ensure that none of the variables are of  $I(2)$  order of integration. For that reason, the study made use of panel unit root tests underlying two groups as: first-generation unit root tests and the second-generation unit root tests. Contrary to the second-generation unit root tests, the first-generation unit root tests do not account for cross-sectional dependence (Barbieri, 2009:119-120).

Therefore, the study employed first-generation unit root tests and additionally estimated the second-generation unit root tests as a complementary unit root analysis. In so doing, the former tests are under the null hypothesis of cross-sectional independence and thus includes the Breitung test (2000) test, Im *et al.*'s (2003) Im-Pesaran-Shin (IPS) test, the Levin-Lin-Chu (LLC) test by Levin *et al.* (2002), Maddala and Wu's (1999) Fisher Augmented Dicky-Fuller (ADF) test and the Phillips-Perron (1988) (PP) test to determine the properties of the panel unit root series. Similar to unit root tests employed in time series data, the null hypothesis suggests the existence of a unit

root, against the stationary series alternative hypothesis. Nonetheless, unlike the basic time series unit root tests, panel unit root tests are conducted for joint pooled datasets.

Accordingly,  $P$  values of the unit root test are combined in the Fisher-ADF test for each cross section considered to be a non-parametric test, with  $2n$  degrees of freedom in the Chi-square distribution, such that  $n$  denotes the number of variables in the panel. The Fisher-ADF test statistic is therefore expressed as follows:

$$\lambda = -2 \sum_{i=1}^n \log_e(\rho_i) \quad (4.7)$$

Where:  $\rho_i$  denotes the ADF unit root P-value for unit  $i$ .

The basic LLC and IPS unit root test regression model is given by:

$$\Delta y_{it} = \mu_i + \rho y_{it-1} + \sum_{j=1}^m \alpha_j \Delta y_{it-j} + \delta_{it} + \theta_t + \varepsilon_{it} \quad (4.8)$$

Where:  $\Delta$  denotes the first difference operator;  $\theta_t$  and  $\mu_i$  respectively denotes the time and unit specific fixed effects;  $m$  denotes the lag length. Accordingly, for all  $i$ , the null hypothesis holds that  $\rho_i = 0$  such that the time series are independent random walks in both the LLC and IPS tests, and estimated against  $\rho_i < 0$  for all  $i$  of the alternative hypothesis.

#### **4.3.5.2 Test for Cross-Sectional Dependence**

Lombardi *et al.* (2017) highlight the importance of testing for cross-sectional dependence to avoid incorrect inference and biased estimates presented in standard panel estimators. The presence of cross-dependence thus gives rise to correlation among panel dataset cross-sectional error (Bonizzi, 2017:54). ARDL estimates produced in the mean group (MG) and pooled mean group (PMG) methods which are based on the assumption of cross-section independence are therefore inefficient and may thus lead to biased results (Banerjee *et al.*, 2004; Pesaran, 2006).

#### **4.3.5.3 Estimation of the Panel-ARDL model**

Furthermore, upon establishing unit root tests, the study employed the panel-ARDL econometric model specification of the two grouped employment variables, i.e. tradable and non-tradable employment sectors, based on the following formalised model:

$$Y_t = \sum_{j=1}^p \phi_{ij} y_{i,t-j} + \sum_{j=0}^q \delta_{ij} X_{i,t-j} + \mu_i + \varepsilon_{it} \quad (4.9)$$

Where:  $Y_t$  is the dependent variable;  $i$  denotes the number of sectors underlining the tradable and non-tradable cross sections (groups) such that  $i = 1, 2, \dots, N$ ;  $t$  is the time period;  $X_{it}$  denotes a  $k \times 1$  vector of the explanatory variables; the coefficient vectors  $k \times 1$  are indicated by  $\delta_{ij}$ ; while  $\phi_{ij}$  denotes the dependent variables scalars;  $\mu_i$  denotes the fixed (group-specific) effect of each sector. If the variables are cointegrated and  $I(1)$ , then all error terms for all  $i$  are  $I(0)$  processes. Accordingly, the estimation of cointegrated  $I(1)$  variables follows after the deviations from equilibrium of the short-run dynamics, for that reason, Equation (4.9) can be expressed based on the following error correction equation as follows:

$$\Delta y_{it} = \phi_i (y_{i,t-1} - \beta_i' X_{it}) + \sum_{j=1}^{p-1} \lambda_{ij}^* \Delta y_{i,t-j} + \sum_{j=0}^{q-1} \delta_{ij} X_{i,t-j} + \mu_i + \varepsilon_{it} \quad (4.10)$$

Where:  $\phi_i = -(1 - \sum_{j=1}^p \lambda_{ij})$ ,  $\beta_i = \sum_{j=0}^n \delta_{ij} / (1 - \sum_k \lambda_{ik})$ ,  $\phi_i = -\sum_{m=i+1}^p \lambda_{im}$

With  $j = 1, 2, \dots, p-1$ ,  $\delta_{ij}^* = -\sum_{m=j+1}^q \delta_{im}$  with  $j = 1, 2, \dots, q-1$ .

Where:  $\phi_i$  indicates the error correction speed of adjustment process, which is negative and significant if the variables exhibit reversion towards the long-run equilibrium. The vectors  $\delta_{ij}^*$  and  $\beta_i'$  are short-run and long-run parameters, respectively. The lag specification may be conducted based on the estimation of the single-equation for each of the panel units.

Additionally, a Hausman (1978) type test can be employed to analyse the long-run restriction of the parameters. The Hausman test thus operates under the null hypothesis of long-run slope homogeneity, accordingly, the PMG and MG estimators are both consistent, nevertheless, the PMG is the only efficient estimator. Henceforth, the non-rejection of the null hypothesis suggests that the PMG estimator is the suitable and accurate estimator. The Hausman test is basically employed to compare the MG and PMG (Ozcan & Ari, 2015:276-277). The study therefore provided results of the MG estimator on the basis of verifying the most appropriate estimator with the help of the Hausman test results (Pesaran *et al.*, 1999).

Consequently, the MG estimator allows for region-specific elements and parameter heterogeneity and measures variances in asymptotic biases in the case of measurement error among and within group estimators (O'Brien & Patacchini, 2003). Under the null hypothesis of an insignificant difference between the MG and PMG estimators, a non-rejection of the null enforces the use of the PMG estimator recommended as the efficient method relative to the MG technique. The rejection of the null hypothesis however leads to the acceptance of the alternative hypothesis of a significant difference between the estimators (Samargandi *et al.*, 2015:72). The existence of outliers may result in an average estimator having a large variance and in such a case the Hausman test can have less power (Samargandi *et al.*, 2015:72).

#### **4.4 SYNOPSIS**

This chapter was aimed at establishing and providing a discussion on the data selection procedures and statistical methods employed in chapter 5. The methodological discussion provided the steps undertaken in establishing models and techniques to be employed for the estimation of the long-run and short-run relationships and the causal linkages between South Africa's employment in tradable and non-tradable sectors, with trade openness, the real exchange rate and FDI. The data selection process involved time series quarterly observations. Data employed in the study was sourced from the South African Reserve Bank. The period encompassing the study was selected based on data availability as well as the focus on the post-apartheid era to discount for social and economic embargoes of the apartheid system.

The chapter described the sample period and reviewed the various tests employed. It justified the used modelling methods and techniques. The various tests conducted in the study were discussed, such tests include tests for unit root and stationarity tests, the panel ARDL, the standard ARDL bounds test to cointegration, the Error Correction Model (ECM), the Toda-Yamamoto Granger non-causality test, as well as the various diagnostic tests. The analysis and justification of the ARDL model for the analysis of the study's empirical objectives was provided and the selection of the ARDL model was based on its flexibility components relative to traditional cointegration methods. The next chapter estimates the empirical tests employed in the study.

## **CHAPTER 5:**

### **EMPIRICAL ESTIMATION AND DISCUSSION OF RESULTS**

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#### **5.1 INTRODUCTION**

The present chapter presents estimations and results established from the ARDL cointegration model. The empirical analysis within the chapter firstly provides graphical and descriptive representations of the movements in the observed dependent and independent variables under consideration across the sampled period. In so doing, the chapter provides a graphical, descriptive and correlation analysis to provide a brief estimation of the variable interactions as well as the direction in which the observed variables tend to fluctuate. Variables are then tested for their order of integration and stationarity based on the various methods of unit root and stationarity testing as establishing tests for unit root and stationarity are crucial for conducting cointegration estimations.

When estimating the cointegration analysis, the panel ARDL approach is employed to estimate empirical findings of the pooled tradable and non-tradable employment sector groups, against trade openness, the real effective exchange rate and net-FDI. Findings established in the mentioned sector groups are then followed by tests for cointegration of employment in individual sectors of the tradable and non-tradable groups based on the traditional ARDL bounds test approach. The foregoing estimations are conducted to provide a comparative assessment of projected individual employment industry findings against established results of tradable and non-tradable employment groups. Lastly, diagnostics tests are conducted for each of the ARDL models to assess the reliability of the models, followed by a discussion of the findings, the recommendations and finally, the concluding remarks.

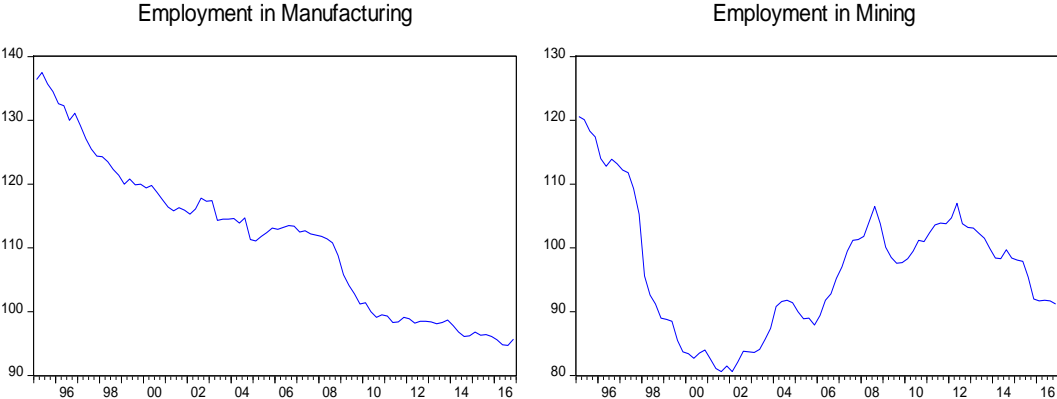
#### **5.2 GRAPHICAL ESTIMATIONS**

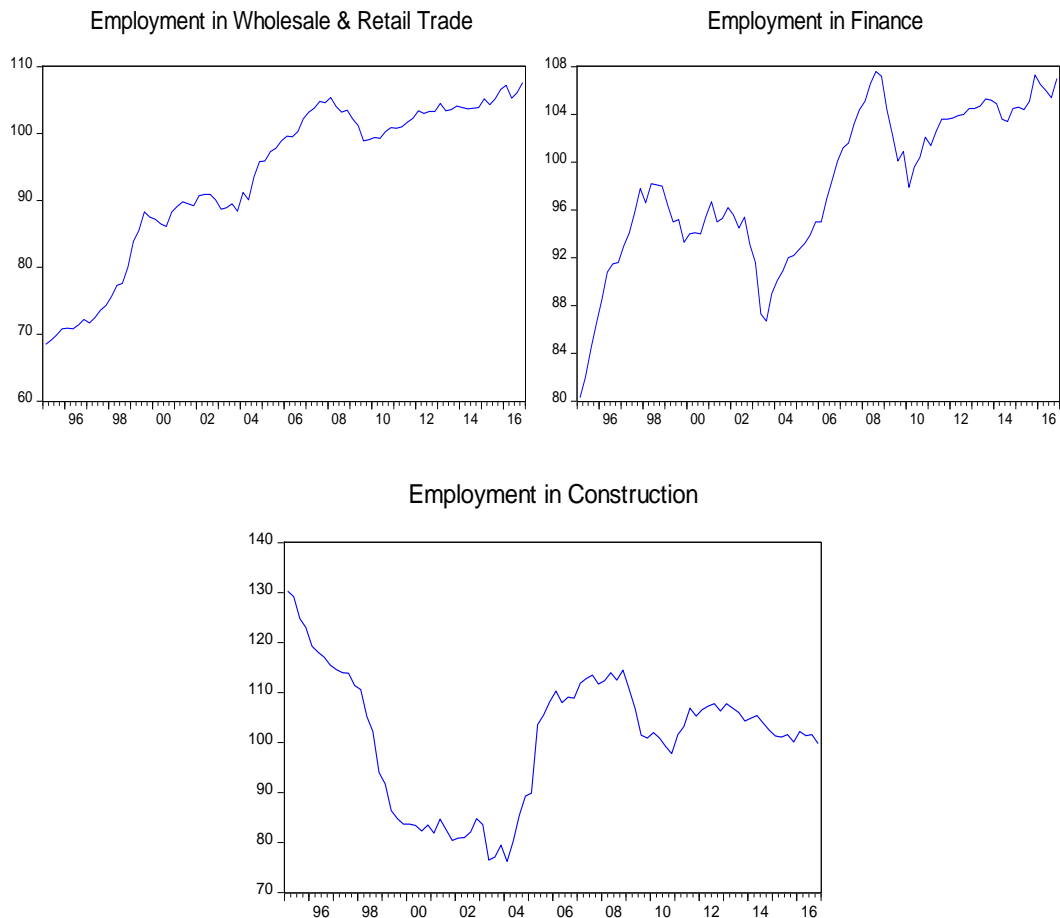
During the procedure for conducting econometric testing, the process of plotting residual or graphical series is key to understanding time series movements as well as spotting any possible model deficiencies within the series. Unusual residuals or deficiencies may be observed in the form of outliers, structural breaks, or inhomogeneous variances and the like (Lütkepohl & Krätzig, 2004:40). The mentioned deficiencies within a series can have a major influence on the model findings and likely impede the accuracy of results. Therefore, identifying possible distortions within each series is crucial to econometric modeling and analysis. The study therefore established graphical representations demonstrated by Figure 5-1 and Figure 5-2, illustrating the descriptive representation of the variable series in order to diagnose any likely deficiencies.

Figure 5-1 plots the graphical interpretations of employment series within selected private sectors consisting of manufacturing, mining, wholesale and retail trade, as well as the finance and construction sectors of the tradable and non-tradable groups. The series in each respective employment variable commences in 1995, following the onset of South Africa’s 1994 democratic regime, and ends in 2016. South Africa’s tradable sectors’ underlying employment series of the manufacturing and mining sectors, exhibit a clear negative slope predominantly in the manufacturing series, whereas employment in the mining sector exhibits a fluctuating and cyclical series. The manufacturing sector suggests a decrease in employment patterns over the period, it is however characterised by a much steadier distribution relative to the mining sector which shows patterns of employment fluctuations and swings over the considered period. Notwithstanding, South Africa’s employment within the manufacturing tradable sector displays a trend within the series following the onset of 1995 to 2016.

Moreover, the country’s employment within individual private sectors of the non-tradable sector, with the inclusion of the wholesale and retail trade sector, and the finance and construction sectors, notably display a rising and positive employment series within the wholesale and retail trade sector. The latter sector is however characterised by a trend whereas the series displays a relatively less dynamic distribution within its residuals. Nevertheless, employment series within the finance and construction sectors exhibit cyclical residuals underlining a sensitive and dynamic employment series, contrary to the wholesale and retail trade sector which reveals a more stable employment distribution.

**Figure 5-1: Series of Employment Sectors**





**Source:** Compiled by author.

Furthermore, the observed sectors display a common occurrence of breaking events primarily along the periods 1998-1999, 2002, 2008 and 2009 indicated by the deviations from the critical bounds. The periods 1998-1999 are familiar with the 1997 Asian financial crisis which had a negative impact on various Asian economies. The crisis become an international financial concern having rapidly spread to other countries, particularly their trading partners, such as South Africa (Harris, 1999).

According to the South African Reserve Bank (SARB) (2012), the crisis caused profound pressure on the South African economy which led to a reduction in the country's growth rate during the period. Although having experienced a recovery in overall economic activity during the end of 1999, South Africa's economy failed to generate meaningful formal sectoral employment until the end of 2001. This was accompanied by the pressure from local producers to enhance their competitiveness in global trade thereby resulting to the drive in becoming more capital intensive within the domestic economy (Venter, 2009:66). As depicted in various sectors, the slowdown in

South Africa's employment performance is depicted to have stretched as far as the year 2002 amongst the affected sectors.

Moreover, the slowdown in employment along the periods underlying 2008-2009 can be explained by the negative effects of the global economic crisis of 2007-2009. Based on the report by IMF (2013), the period 2008-2009 encountered a decrease in global output from 2.8 percent to negative 0.6 percent from 2008 to 2009. Meanwhile, South Africa experienced a 1.5 percent decline in its GDP from R1 814.5 billion in 2008 to R1 786.6 billion in 2009, despite having recorded a recovery in 2010 of 2.9 percent (IDC, 2017:3; Provincial Treasury, 2012a). South Africa's unemployment also increased to 25 percent, whereas the country lost approximately 3/4 million jobs from 2009 to 2010 which was equivalent to the lost jobs in 2008 of roughly 5 percent in both the formal and informal sectors albeit aggressive counter-cyclical fiscal policy measure (Klein, 2012:4). Likewise, the drop in the country's employment patterns during the considered periods may also be explained by the country's labor strikes, and political upheavals.

Table 5-1 presents descriptive statistics of employment within selected sectors. With an average of 111.52 jobs, the manufacturing sector is suggested to have had the highest quarterly number of people employed on average across the sample period (1995 to 2016). The wholesale and retail trade sector is further indicated to be the sector with the lowest average number of people employed over the considered time frame, having secured 93.50 employed positions. The average jobs captured in other sectors was such that mining (96.57), finance (98.02) and construction (101.04), respectively. Moreover, the manufacturing sector accounted for the highest (137.5) number of jobs over the sample period, followed by construction (130.3), mining (120.6), wholesale and retail trade (107.6) and finance (107.6), respectively. The lowest jobs were recorded to have been captured in the wholesale and retail trade (68.5), with construction having recorded (76.2), and finance (80.3), mining (80.6) and manufacturing (94.7). Interestingly, all the country's non-tradable sectors are indicated to be negatively skewed, whereas all the tradable sectors are positively skewed.

**Table 5-1: Descriptive statistics**

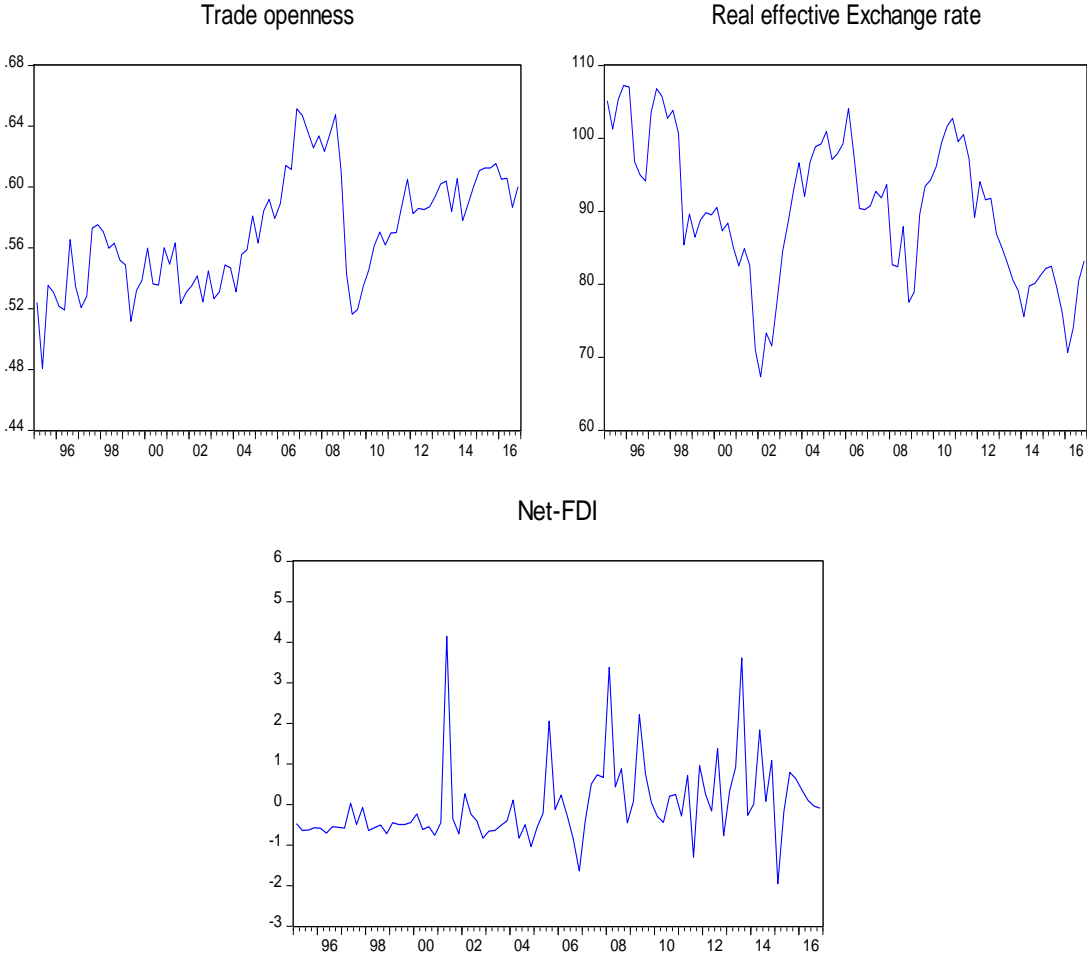
	EMPLOYMENT SECTORS				
	Manufacturing	Mining	W&R Trade	Finance	Construction
Mean	111.5170	96.56591	93.50341	98.02159	101.0398
Maximum	137.5000	120.6000	107.6000	107.6000	130.3000
Minimum	94.70000	80.60000	68.50000	80.30000	76.20000
Std. Dev.	11.71879	10.08661	11.65794	6.368988	13.13775
Skewness	0.274378	0.375287	-0.797476	-0.472348	-0.241057
Observations	88	88	88	88	88

**Source:** Compiled by author.

On the other hand, Figure 5-2 reports graphical illustrations of the considered employment determinants underlining South Africa's trade openness, the real effective exchange rate and net-FDI. Similar to the preceding illustrations, Figure 5-2 reports evidence of reoccurring cyclical shifts and swings within the series. The series however present a more sensitive and dynamic behaviour of South Africa's trade openness, the real effective exchange rate and net-FDI evidenced by the critical bounds outliers. Likewise, notable common outbursts are identified during the years 1998-1999, and the period following the global economic crisis along the years 2007, 2008 and 2009.

The series of net-FDI indicate a sharp decline in the country's FDI inflows. According to Jeffrey and Jordaan (2016), South Africa's decline in FDI inflows could be explained by the low confidence in the country's economy amid sluggish economic performance. The sharp decline in South Africa's net-FDI along the period 2014-15 was characterised by increased outward FDI by domestic companies resulting in a negative net-FDI balance of -0.8 percent of GDP (IMF, 2016:12). Lütkepohl & Krätzig (2004:64) highlight that the observed patterns and features underlining random residual deviations may be a sign of existing structural breaks. On this accord, the observed breaking points as well as the residual trends present familiar discrepancies which were further accounted for within econometric and model estimations.

**Figure 5-2: Series of Trade Openness, the Real Effective Exchange Rate & Net-FDI**



**Source:** Compiled by author

Table 5-2 reports descriptive statistics which underline some of the features presented in the study regressors. Based on the GDP, imports and exports openness approach, South Africa is indicated to have been relatively open to the global market over the time frame of 1995 to 2016, such that 56.98 percent of its economy is said to have been exposed to foreign trade or the global market on average. It also follows that the country’s highest degree of its openness to trade has been roughly 65.13 percent, relative to its lowest trade exposure of 48.08 percent. Moreover, a depreciation in the country’s real effective exchange rate of the Rand is indicated to have been roughly 67.32 against its major export partners, further accounting for an appreciation of the real effective exchange rate of about 107.25 with an average movement of 90.16. On the one hand, South Africa’s net-FDI account has recorded about R7 418.98 million average FDI inflows from 1995 to 2016. Meanwhile, the highest amount of FDI received has been roughly R52 712 million, contrast to a negative balance of approximately -R13 910 which is highlighted as the lowest

amount of FDI inflow. The negative net-FDI balance resonates with the country’s FDI outflows which can be explained by the loss of investor confidence as well as the challenges surrounding the country in the form of political (e.g. corruption, and structural concerns), social (e.g. crime) and economic (e.g. low growth, high inequality and unemployment rate) challenges.

**Table 5-2: Descriptive statistics**

	<b>STUDY REGRESSORS</b>		
	<b>Trade Openness</b>	<b>Real Effective Exchange Rate</b>	<b>Net-FDI</b>
Mean	0.569844	90.16386	7418.977
Maximum	0.651337	107.2500	52712.00
Minimum	0.480834	67.32000	-13910.00
Std. Dev.	0.036953	9.761313	10916.10
Skewness	0.201238	-0.178962	1.952435
Observations	88	88	88

**Source:** Compiled by author.

**5.3 CORRELATION ANALYSIS**

Table 5-3 reports the correlation analysis of employment in the selected sectors and the considered regressors. Results indicate that trade openness is associated with a significant and relatively strong positive relationship with the wholesale and retail trade sector, as well as the finance sector. Also, a significant yet weak positive relationship is identified between trade openness and employment within the construction non-tradable sector. Notwithstanding, employment within the manufacturing sector, as a tradable sector, is displayed to have a moderately negative and significant relationship with trade openness, while employment within the mining sector exhibits a weak positive and insignificant relationship.

**Table 5-3: Correlation analysis**

Variable	Manufacturing	Mining	W&R trade	Finance	Construction
Trade	(-0.5357)	(0.0618)	(0.6879)	(0.7034)	(0.2870)
Openness	[0.0000]**	[0.5675]	[0.0000]**	[0.0000]**	[0.0067]**
Real Effective Exchange Rate	(0.4406)	(0.4735)	(-0.4719)	(-0.4875)	(0.3851)
	[0.0000]**	[0.0000]**	[0.0000]**	[0.0000]**	[0.0002]**
Net-FDI	(-0.3177)	0.0276	(0.3532)	(0.3604)	(0.1089)
	[0.0026]**	[0.7987]	[0.0007]**	[0.0006]**	[0.3127]

*Notes:* ( ) denotes correlation coefficient, [ ] denotes P-value, & \*\* denotes significant at 1 percent.

Moreover, results indicate that there is a positive yet weak relationship between the real effective exchange rate and employment within the manufacturing and mining tradable sectors, as well as the construction non-tradable sector. In as much, a weak yet significant and negative relationship exists between the real effective exchange rate and employment within the wholesale and retail trade, and the finance non-tradable sectors. Lastly, there is a suggested significant and weak positive relationship between net FDI and employment within the wholesale and retail trade sector, as well as the finance sector. Employment within the manufacturing sector is however associated with a significant and weak negative relationship, while the relationships established in the mining and construction sectors were positive but not-significant.

#### **5.4 PANEL DATA ANALYSIS OF GROUPED TRADABLE & NON-TRADABLE SECTORS**

Upon achieving the central objectives of the current study, the ARDL model's pooled mean group (PMG) estimator of Pesaran *et al.* (1999) is employed to examine the pooled tradable and non-tradable employment effects of trade openness, the real effective exchange rate and net FDI within the set groups. Before establishing the empirical findings, the study conducted tests for the existence of a unit root within the panel data. Like the traditional time series ARDL modelling, the Panel ARDL approach produces consistent estimators regardless of whether the variables under consideration are of  $I(0)$  or  $I(1)$  order of integration. However, both procedures are not applicable to variables integrated at  $I(2)$  or higher series. Henceforth, due to such limitations, a test for the presence of a unit root within the series *LETS*, *LENTS*, *LTOPEN*, *LREXR* and *LNFDI* was conducted using LLC, Breitung, IPS, as well as Fisher ADF and Fisher PP methods.

**Table 5-4: Summary of variable representation**

<b>Logged Variables</b>	<b>Representation</b>
Log of employment in the tradable sector	LETS
Log of employment in the non-tradable sector	LENTS
Log of trade openness	LTOPEN
Log of the real effective exchange rate	LREXR
Log of net FDI	LNFDI

The null hypothesis of the abovementioned methods to panel unit root tests is based on the assumption of the presence of a unit root or non-stationarity, against the alternative hypothesis of a stationary series. Therefore, to conduct the panel unit root tests, the Schwarz information criterion is employed based on automatic lag specification.

#### **5.4.1 Panel unit root test**

Table 5-5 presents unit root test results of each of the mentioned series. All tests are undertaken at level and at first differences with intercept, as well as with both intercept and trend. Results reveal the presence of a unit root in the series *LETS* in three cases at level with intercept, with the exception of the LLC test which rejects the null hypothesis at 0.01 significance level. The inclusion of an intercept and trend at level shows a strong presence of a unit root in all five tests, however, there is a clear rejection of the null hypothesis at level in first differences, indicating that the series *LETS* is stationary at  $I(1)$ . Moreover, results exhibit a strong rejection of the null hypothesis at level with intercept for the series *LENTS*, *LTOPEN*, *LREXR* and *LNFDI*, further indicating that these variables are a stationary series of  $I(0)$ . Hence, results confirm that the series of the considered five variables in this model are either  $I(0)$ , or  $I(1)$  processes.

**Table 5-5: Panel unit root test results**

Variables	Deterministic Terms	LLC	Breitung	IPS	ADF	PP
<b>LEVELS</b>						
<b>LETS</b>	Intercept	0.004***		0.083	0.108	0.144
<b>LENTS</b>	Intercept	0.000***		0.013**	0.021**	0.049**
<b>LTOPEN</b>	Intercept	0.005***		0.007***	0.014**	0.026**
<b>LREXR</b>	Intercept	0.000***		0.000***	0.000***	0.000***
<b>LNFDI</b>	Intercept	0.000***		0.000***	0.000***	0.000***
<b>LETS</b>	Intercept & Trend	0.071	0.483	0.402	0.462	0.556
<b>LENTS</b>	Intercept & Trend	0.201	0.459	0.400	0.403	0.322
<b>LTOPEN</b>	Intercept & Trend	0.001	0.000***	0.002	0.006	0.006
<b>LREXR</b>	Intercept & Trend	0.679	0.009***	0.207	0.315	0.211
<b>LNFDI</b>	Intercept & Trend	0.000	0.000***	0.000	0.000	0.000
<b>FIRST DIFFERENCES</b>						
<b>ΔLETS</b>	Intercept	0.000		0.000***	0.000***	0.000***
<b>ΔLENTS</b>	Intercept	0.000		0.000	0.000	0.000
<b>ΔLTOPEN</b>	Intercept	0.000		0.000	0.000	0.000
<b>ΔLREXR</b>	Intercept	0.000		0.000	0.000	0.000
<b>ΔLNFDI</b>	Intercept	0.000		0.000	0.000	0.000

*Note: \*\* and \*\*\* denotes significant at 5 % and 1%, respectively.*

#### **5.4.2 Panel ARDL cointegration results (tradable & non-tradable sectors)**

Having confirmed a mixed order of integration in the panel dataset as either  $I(0)$  and  $I(1)$  variables, the panel-ARDL test for cointegration is conducted to estimate whether there is cointegration between the variables. Traditionally, the PMG is considered a more efficient estimator than the MG estimator. Nevertheless, the study conducted cointegration tests based on both estimators. To select among the PMG and the MG, the Hausman test was employed to establish the existence of a significant difference between the estimators. Table 5-6 reports panel cointegration results of the mean group (MG) estimator and the pooled mean group (PMG) technique. The estimated results of the MG and PMG estimators were conducted by means of the STATA 14.2 statistical package. The cointegration tests are accompanied by corresponding results of the cross-sectional dependency and Hausman test of the underlining regressions.

Accordingly, findings of employment in the tradable sector are found to be similar in both the MG and PMG estimates. Also, both the MG and PMG estimators provide similar findings of employment in the non-tradable sector. Nevertheless, the PMG estimator is indicated to have outperformed the MG approach in both the tradable and non-tradable employment results. This is supported by the P-value of the Hausman test which is above the 5 percent and 10 percent significance levels. Following Samargandi *et al.* (2015:72), the Hausman test operates under the null hypothesis of an insignificant difference between the PMG and MG estimator, against the alternative hypothesis of a significant difference. An insignificant P-value thus suggests the use of the PMG estimator as the appropriate estimator. Accordingly, any possible outliers thus incapacitates the average estimator as large variances enforce the Hausman test to be less powerful tool. In this study, the Hausman test therefore shows that the long-run assumption of coefficient homogeneity cannot be rejected, henceforth, the PMG method is favourable to the MG estimator. The selection of the PMG estimator thus reduces likely concerns on the established estimates following the Hausman test results. Accordingly, the estimated regressions of the PMG, as well as the MG estimator passed the cross-sectional dependency tests based on Pesaran (2004) and thereby makes the estimated results robust for statistical analysis. The cross-sectional dependence results are represented by the statistically insignificant P-values upon accounting for the FE model. Henceforth, the null hypothesis of cross-sectional independence is accepted in the following regressions.

Firstly, the PMG estimated long-run results of the log of employment in the tradable sector and the log of trade openness report a significant P-value at 0.05 significance level. The positive coefficient of the log of trade openness thus suggests that employment in the tradable sector has a positive relationship with South Africa's trade openness in the long-run. Therefore, a one percent increase in South Africa's trade openness induces an increase employment in the tradable sector by 0.366 percent. These results are contrary to findings by Ferreira *et al.* (2010), Wacziarg and Wallack (2004) who suggested a significant negative relationship between tradable employment and trade openness. Findings of the current study also suggest that the log of tradable employment has a negative long-run relationship with the log of real effective exchange rate and the log of FDI, these findings were however not statistically significant in both cases. Nevertheless, the latter results of tradable employment and the real effective exchange rate correspond with findings by Borat *et al.* (2014:16) who suggested a negative long-run relationship, opposite to the findings of the current study, results by Borat *et al.* (2014) were significant. Also, the negative long-run

tradable employment and trade openness relationship corresponds with findings by Haouas *et al.* (2005) who explained that the decrease in employment was induced by the concept of “learn-by doing” and enhanced organisational and productivity capacity.

Furthermore, the error correction term (ECT) of the log of employment in the tradable sector is negative and statistically significant at 5 percent. The statistically significant coefficient of the ECT provides evidence of the existence of cointegrating vectors that explains the long-run relationship between employment in the tradable sector and the model. Therefore, the ECT coefficient of -0.0826837 suggests that approximately 8.3 percent of departures from the long-run equilibrium are corrected in each quarter, therefore it takes approximately 12 quarters ( $1/0.0826837$ ) for short-run deviations in the model to be adjusted towards long-run equilibrium. Further short-run results of the present study however present insignificant short-run parameters. This is indicated by P-values that are above 5 and 10 percent for each of the estimated short-run relationships between the log of employment in the tradable sector and the log of trade openness, the log of the real effective exchange rate and the log of net FDI. Nevertheless, tradable employment exhibited positive relationships with the log of trade openness and the log of real effective exchange rate, as well as a negative relationship with the log of net FDI. Despite having displayed insignificant short-run parameters for each estimate, only the relationship between trade openness and tradable employment converges into the long-run.

**Table 5-6: Panel Cointegration Results (Tradable & Non-tradable sector groups)**

Dependent Variable	$\Delta$ LETS		$\Delta$ LENTS	
	MG	PMG	MG	PMG
<b>Long-run Coefficient</b>				
$\Delta$ LTOPEN	0.359 (0.000)***	0.366 (0.019)**	1.483 (0.000)***	1.330 (0.000)***
$\Delta$ REXR	0.242 (0.360)	-0.0095 (0.896)	0.433 (0.026)**	0.524 (0.003)***
$\Delta$ LNFDI	-0.001 (0.558)	-0.003 (0.705)	0.005 (0.689)	0.008 (0.591)
<b>Short-Run Coefficient</b>				
$E_c$	-0.090 (0.004)***	-0.083 (0.030)**	-0.084 (0.000)***	-0.074 (0.001)***
$\Delta$ LTOPEN	0.007 (0.912)	0.015 (0.826)	0.004 (0.741)	0.020 (0.426)
$\Delta$ REXR	0.001 (0.926)	0.008 (0.579)	-0.047 (0.000)***	-0.053 (0.000)***
$\Delta$ LNFDI	-0.0003 (0.115)	-0.0002 (0.394)	-0.001 (0.000)***	-0.001 (0.102)
$\Delta$ TREND	-0.0002 (0.609)	-0.0002 (0.532)		
Constant	0.376 (0.139)	0.409 (0.054)*	0.269 (3.17)	0.215 (0.000)***
<b>Pesaran's CD test: statistic</b>				
<b>P-value</b>				
<b>Hausman test: statistic</b>				
<b>P-value</b>				

*Note: \*, \*\* and \*\*\* denotes significant at 10%, 5% and 1%, respectively.*

Secondly, based on non-tradable employment estimates, PMG results in Table 5-6 exhibit strong evidence of a significant and positive long-run relationship between employment in the non-tradable sector and the log of trade openness, as well as employment in the non-tradable sector and the log of the real effective exchange rate. The respective P-values of the mentioned relationships are both statistically significant at 0.01 significance level. Nevertheless, the log of

net FDI is indicated to have displayed a negative relationship with non-tradable employment, notwithstanding, such a relationship was statistically insignificant. Consequently, a one percent increase in South Africa's trade openness induces an increase in employment in the non-tradable sector by 1.33 percent in the long-run. A one percent appreciation in the real effective exchange rate of the Rand in the long-run also leads to an increase in employment in the non-tradable sector by 0.524 percent. Long-run results of a positive relationship between employment and the real effective exchange rate in the non-tradable sector correspond with findings by Borat *et al.* (2014:16). Nevertheless, findings by the latter author were insignificant. Accordingly, the underlined non-tradable employment and trade openness results also correspond with Piton (2017) who indicated an employment expansion in the non-tradable sector led by trade openness.

PMG short-run results also indicated in Table 5-6 of employment in the non-tradable sector reveals evidence of short-run correction towards long-run equilibrium supported by a desired negative and statistically significant ECT. This is supported by a statistically significant P-value at 0.01 significance level. The coefficient (-0.0735525) of the ECT thus implies that approximately 7.4 percent of the short-run deviations from long-run equilibrium are adjusted in each quarter. Therefore, it takes roughly 14 quarters ( $1/0.0735525$ ) for short-run deviations to be adjusted towards long-run equilibrium.

Nonetheless, further short-run results indicate that the real effective exchange rate is the only significant variable. This is supported by the statistically significant negative coefficient of -0.053 which is significant at 0.01 significance level. The coefficients of the log of trade openness and net-FDI are insignificant. Henceforth, in the short-run, a one percent appreciation in the real effective exchange rate induces a decrease in employment in the non-tradable sector by roughly 0.053 percent. Similarly, Borat *et al.* (2014) also found a short-run negative relationship, albeit insignificant.

## **5.5 ARDL ANALYSIS OF INDIVIDUAL TRADABLE & NON-TRADABLE SECTORS**

The study additionally employed the standard ARDL bounds test to cointegration as a complementary cointegration test of the time series individual employment sectors or industries within the previously estimated pooled tradable and non-tradable sector groups. The ARDL bounds test was estimated on the basis of analysing the long-run and short-run parameters of the individual employment sectors using the Eviews 9 statistical software package. The analysis of time series estimates by the latter test is conducted based on the Ordinary Least Squares (OLS)

method. Therefore, tests for cointegration were employed for each individual employment sector against the study regressors.

## **5.5.1 UNIT ROOT AND STATIONARITY TESTS (INDIVIDUAL SECTORS)**

### ***5.5.1.1 ADF and PP Unit Root tests***

Table 5-7 showcases a summary of the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root test results for each of the individual dependent variables within tradable and non-tradable employment categories, as well as explanatory variables with the inclusion of trade openness, the real effective exchange rate and net FDI. Results of the PP unit root test are additionally presented for each of the variables to supplement for the ADF unit root test. The PP unit root test is based on the Newey-West procedure. Accordingly, the null hypothesis in both tests advocates the presence of a unit root against the alternative hypothesis of a stationary series.

In both the ADF and PP tests for unit root, results reveal a clear rejection of the null hypothesis ( $H_0$ ) of a unit root at first differences with intercept for the series *LEMAN*, *LEMIN*, *LETRAD*, *LECONS* and *LREXR*, further suggesting that these variables are of  $I(1)$  order of integration processes. While both tests indicate that *LNFDI* is a stationary series integrated of order  $I(0)$  at level with intercept. Nevertheless, results also present conflicting unit root findings between the ADF and PP tests in the series *LEFIN* and *LTOPEN*. The ADF tests find the mentioned variables to be of integration order of  $I(0)$ , thus rejecting the null hypothesis of unit root at level with intercept, and with intercept and a trend, respectively. The PP test found the mentioned variables to be stationary upon being first differenced with intercept. The established results present a mixed set of variables where all variables are found to be stationary and integrated at either  $I(0)$  or  $I(1)$ , thus rejecting the null hypothesis of a unit root in both cases.

**Table 5-7: Results of the ADF and PP unit root tests**

<b>(a) RESULTS OF THE AUGUMENTED DICKY FULLER TEST</b>							
<b>Variables</b>	<b>Level</b>				<b>First Difference</b>		<b>Order of Integration</b>
	<b>With intercept &amp; without trend</b>		<b>With intercept &amp; trend</b>		<b>Without trend</b>		
	<b>t-stat</b>	<b>P-value</b>	<b>t-stat</b>	<b>P-value</b>	<b>t-stat</b>	<b>P-value</b>	
<b>LEMAN</b>	-1.703	0.426	-1.8707	0.6611	-8.344	0.000***	I(1)
<b>LEMIN</b>	-2.375	0.152	-2.4598	0.3470	-5.107	0.000***	I(1)
<b>LETRAD</b>	-2.880	0.052	-1.5384	0.8087	-7.569	0.000***	I(1)
<b>LEFIN</b>	-2.933	0.046**	-3.0556	0.1237	-6.529	0.000	I(0)
<b>LECONS</b>	-2.096	0.247	-2.2548	0.4534	-7.143	0.000***	I(1)
<b>LTOPEN</b>	-2.754	0.069	-3.4779	0.0482**	-11.19	0.0001	I(0)
<b>LREXR</b>	-2.442	0.134	-2.5414	0.3080	-8.598	0.000***	I(1)
<b>LNFDI</b>	-9.399	0.000***	-9.3443	0.0000	-8.982	0.000	I(0)
<b>(b) RESULTS OF THE PHILLIPS PERRON TEST</b>							
<b>LEMANU</b>	-1.664	0.446	-2.0393	0.5716	-8.163	0.000***	I(1)
<b>LEMININ</b>	-2.218	0.202	-2.2289	0.4676	-5.041	0.000***	I(1)
<b>LETRADE</b>	-2.534	0.111	-1.6643	0.7587	-7.772	0.000***	I(1)
<b>LEFINAN</b>	-2.737	0.072	-3.2266	0.0861	-6.517	0.000***	I(1)
<b>LECONST</b>	-2.159	0.223	-2.2347	0.4644	-7.543	0.000***	I(1)
<b>LTOPEN</b>	-2.626	0.092	-3.4602	0.0503	-11.525	0.001***	I(1)
<b>LREXR</b>	-2.547	0.108	-2.6805	0.2473	-8.598	0.000***	I(1)
<b>LNFDI</b>	-9.450	0.000***	-9.3898	0.0000	-61.726	0.0001	I(0)

**5.5.1.2 Kwiatkowski-Phillips-Schmidt-Shin (KPSS) Stationarity Test Results**

According to Cheung *et al.* (1994:1-2), the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) and ADF tests provide further informative inferences when implemented together than they can alone. Opposite to the ADF and PP unit root tests, the KPSS procedure however examines the stationary null hypothesis, against the presence of a unit root (non-stationary) of the alternative hypothesis. The implementation of the KPSS and traditional tests to unit root may yield further beneficial

information about the persistency of the data when results in both tests are interpreted alongside each other (Maddala & Kim, 1998:126-8). Cheung *et al.* (1994:1) assert that failure to reject either of the null in both tests' results may indicate that the series may not be adequately informative on the absence or presence of a unit root. While the rejection of the ADF unit root null alongside the acceptance of the KPSS stationarity null exhibits robust indication for a unit root process.

Notwithstanding, Canarella *et al.* (2012:763) contend that the ADF and PP traditional tests to unit root tend to lose power against low-order stationary alternatives. Thus, based on the discussed narratives, the study therefore employed the KPSS stationarity test as a further examination of the persistency of results, especially having found conflicting findings between the ADF and PP unit root tests. Rummel (2015:15) refers to such a procedure as a “confirmatory approach”. In practice, a stationary series within the KPSS test is established once the t-statistic falls below the set critical values, whereas a non-stationary series has a t-statistic above the considered critical bounds. Table 5-9 thus presents a summary of the KPSS stationarity test results of the considered variables.

Results revealed strong evidence of a stationary series in the variables: *LEMIN*, *LECONS*, *LREXR* and *LNFDI*. This led to the acceptance of the null hypothesis at 0.05 significance level, implying that the underlying variables are integrated at order  $I(0)$ . Moreover, the variables *LEMAN*, *LEFIN* and *LTOPEN* exhibited strong evidence of the presence of a stationary series upon the inclusion of an intercept and a trend in each of their equations, meaning that the variables are integrated at  $I(0)$  integration processes. Therefore, the null hypothesis cannot be rejected in the mentioned cases. Lastly, the variable *LETRAD* only becomes stationary after being first differenced at intercept, thus implying that the variable is of  $I(1)$  integration order.

**Table 5-8: Results of the KPSS stationarity test**

KPSS TEST							
Variables	Level				First Difference		Order of Integration
	With intercept & without trend		With intercept & trend		Without trend		
	LM-Statistic	Critical value	LM-Statistic	Critical value	LM-Statistic	Critical value	
<b>LEMAN</b>	1.167	0.463	0.083**	0.146	0.186	0.463	I(0)
<b>LEMIN</b>	0.179**	0.463	0.178	0.146	0.312	0.463	I(0)
<b>LETRAD</b>	1.054	0.463	0.257	0.146	0.385**	0.463	I(1)
<b>LEFIN</b>	1.043	0.463	0.068**	0.146	0.153	0.463	I(0)
<b>LECONS</b>	0.176**	0.463	0.156	0.146	0.257	0.463	I(0)
<b>LTOPEN</b>	0.746	0.463	0.069**	0.146	0.069	0.463	I(0)
<b>LREXR</b>	0.326**	0.463	0.103	0.146	0.052	0.463	I(0)
<b>LNFDI</b>	0.077**	0.463	0.075	0.146	0.222	0.463	I(0)

Comparatively, the KPSS and ADF tests exhibit similar projections in the order of integration within the series of the variables *LETRAD*, *LTOPEN* and *LNFDI*. Both tests suggest the existence of a stationary series at first differences with intercept for the variable *LETRAD*. Likewise, the variables *LTOPEN* and *LNFDI* are both stationary at level when an intercept and a trend are included in each of the equations. Whereas *LEFIN* is stationary at level however with intercept only in the ADF test, and stationary upon the inclusion of an intercept and a trend in the KPSS test. The remaining series display inconsistent orders of integration, while all variables in both tests are shown to have eventually rejected the unit root assumption at some stage. Accordingly, none of the variables are shown to be of  $I(2)$  orders of integration, then again, findings of a mixed dataset involving the integration of variables at either  $I(0)$  or  $I(1)$  makes the ARDL approach the suitable model for the current study.

### 5.5.1.3 Break-point unit root tests

Unit root testing calls for special attention upon suspecting the presence of structural changes in the series. In cases where structural breaks are present, traditional tests to unit root such as the ADF and PP test statistics are known to be biased towards not rejecting the null hypothesis of a

unit root (Enders, 2015). Consequently, these tests often omit the likelihood of a unit root with a structural break within a trend process (Ling *et al.*, 2013:231-232). If ever a break exists under a unit root null, size distortions may be exhibited and therefore the rejection of the unit root may appear more too often. Having “spurious rejections” of the null may thereby occur more frequently as the size of the structural break increases, and as such, an otherwise stationary series may in fact be non-stationary with a break (Lee & Strazicich, 2004:1).

Nevertheless, Perron (1989) therefore designed a procedure which estimates likely structural changes within macroeconomic time series. The process allows for a trend process with a structural break, as well as a complete sample of two-sub samples. Accordingly, Perron (1989) contends that unit root tests which do not make exception for likely structural changes may often be biased against not rejecting the null hypothesis of a unit root. The break-point unit root test was thereby designed to execute the modified Dickey-Fuller test, making exception of varying trends and levels across a single break period, with the innovative outlier break assumption which allows for variations within the series to gradually occur (IHS, 2017; Pahlavani & Wilson, 2005:136).

To obtain more or less robust stationarity estimations, the study employed the break-point unit root test as a confirmatory test to unit root analysis as well as to identify any likely breaks in the series. Considering the flow of events amidst the period underlying 1994 to 2016, the current study’s sampled period presents likely periods of possible structural changes. The said periods pose the likelihood to lie in wake to South Africa’s major policy changes having transitioned from apartheid regime, as well as the major global economic shifts and disturbances such as the 2008 financial crisis. To identify possible breaks within the unit root, the Break-point test is conducted at level and at first difference based on the Dickey-Fuller min-t, with intercept and with trend and intercept in both equations.

Table 5-10 and Table 5-11 present the Break-point unit root test results accompanied by the suggested break dates if any. Alongside, the Dickey Fuller t-statistics graph has been provided in Appendix A with the suggested break dates for the macroeconomic variables under consideration. The break-point unit root test examines the null hypothesis of a unit root, against a trending stationary series and therefore non-stationary around a deterministic trend of the alternative hypothesis. The application of unit root tests which allow for likely structural breaks is crucial in providing appropriate results which may assist in estimating the right model. As such, any likely structural break is confirmed at level with intercept or trend specification of the test (IHS, 2017).

Moreover, results demonstrated in Table 5-10 exhibit evidence of a trend stationary series of the variables *LEFIN* and *LNFDI* at level with intercept, thus the null hypothesis of a unit root is rejected at 0.05 significance level for both series. These results therefore suggest that the variables *LEFIN* and *LNFDI* are both integrated at  $I(0)$  order of integration. The variables *LEMAN*, *LEMIN*, *LETRAD*, *LECONS*, *LTOPEN* and *LREXR* also fail to reject the null hypothesis of a unit root at level with intercept, and with trend and intercept included in each equation. Regardless, these variables become trend stationary upon being first differenced with the inclusion of an intercept in each of their equations. This implies that the variables *LEMAN*, *LEMIN*, *LETRAD*, *LECONS*, *LTOPEN* and *LREXR* are integrated of order  $I(1)$  as seen by their statistically significant P-values, which are significant at 0.05 significance levels.

**Table 5-9: Break-point Unit Root Results (a)**

Variable	At Level with Intercept					First Difference with intercept				
	Time of Break	Lags	T-stat	P-value	Outcome	Time of Break	Lags	T-stat	P-value	Outcome
<b>LEMAN</b>	2008Q3	0	4.259	0.083	Unit Root	2009Q1	0	8.801	<0.01	Stationary
<b>LEMIN</b>	2005Q4	1	3.049	0.657	Unit Root	1999Q4	0	5.910	<0.01	Stationary
<b>LETRAD</b>	1998Q3	0	3.277	0.518	Unit Root	1999Q3	0	8.789	<0.01	Stationary
<b>LEFIN</b>	2005Q3	0	4.753	0.020	Stationary	2003Q2	0	7.405	<0.01	Stationary
<b>LECONS</b>	2003Q2	3	3.737	0.264	Unit Root	2005Q2	0	8.631	<0.01	Stationary
<b>LTOPEN</b>	2004Q1	0	4.116	0.121	Unit Root	2009Q1	0	12.758	<0.01	Stationary
<b>LREXR</b>	2012Q3	0	2.978	0.698	Unit Root	2001Q4	0	9.140	<0.01	Stationary
<b>LNFDI</b>	2015Q1	0	22.035	<0.01	Stationary	2015Q1	5	17.811	<0.01	Stationary

**Source:** Own compilation

**Table 5-10: Break-point Unit Root Results (b)**

Variable	At Level with Trend & Intercept					First Difference with Trend & Intercept				
	Time of Break	Lags	T-stat	P-value	Outcome	Time of Break	Lags	T-stat	P-value	Outcome
<b>LEMAN</b>	2008Q3	0	3.441	0.840	Unit Root	2008Q3	0	9.458	<0.01	Stationary
<b>LEMIN</b>	2015Q2	1	2.609	>0.99	Unit Root	2008Q3	0	6.254	<0.01	Stationary
<b>LETRAD</b>	1998Q3	0	3.142	0.866	Unit Root	1999Q3	0	9.420	<0.01	Unit Root
<b>LEFIN</b>	2006Q1	2	4.430	0.270	Stationary	2003Q2	0	8.717	<0.01	Stationary
<b>LECONS</b>	2004Q2	0	4.134	0.436	Unit Root	2005Q2	0	9.332	<0.01	Stationary
<b>LTOPEN</b>	2008Q3	0	4.979	0.082	Unit Root	2009Q1	0	12.542	<0.01	Stationary
<b>LREXR</b>	2003Q3	0	4.402	0.284	Unit Root	2001Q4	0	9.171	<0.01	Stationary
<b>LNFDI</b>	2015Q1	0	19.247	<0.01	Stationary	2015Q3	0	17.601	<0.01	Stationary

**Source:** Own compilation

Results of the break point unit root test further identified possible break dates during commonly suspicious periods particularly along the periods 1998-1999, 2001-2003, 2008-2009. The identified break dates correspond with the graphical representation provided for each variable in Figure 5-3 as well as the discussed graphical breaks in section 5.2 of the current chapter. As previously stated, the period underlining 1998-1999 follows after the Asian financial crisis presenting likely longstanding effects within the identified periods of 2001-2002. The break dates underlying the period 2008-2009 can be explained by the global financial crisis.

The analysis of unit root tests is crucial in establishing whether the considered variables are cointegrated. Therefore, results obtained of a suggested mixed order of  $I(0)$  and  $I(1)$  variables suggest that the variables may be cointegrated, this allows for cointegration tests to be analysed in estimating the long-run movements in each of the series of the respective variables. However, conducting tests for cointegration in models with possible structural breaks raises concerns of obtaining spurious model estimations. Based on this discourse, Pahlavani and Wilson (2005:138) assert that the inability to include an appropriate trend within series consisting of trending data may result in estimating results which omit pertinent detail. In as much, the failure to allow for a

break within series of data which consist of a break may decrease the capacity of rejecting the assumption of no break within the null hypothesis, such that including a trend may lead to an increase in the critical values. Results of the breakpoint unit root test therefore provides the study with an informative platform in estimating the right model. Consequently, these results also assist in including appropriate dummy variables while allowing for suitable breaks and/or a trend within the employed ARDL model.

### **5.5.2 ESTIMATION OF ARDL RESULTS (INDIVIDUAL SECTORS)**

Empirical studies contend that F-test results are sensitive to the choice of lags specified on first differenced variables (Bahmani-Oskooee & Ardani, 2006; Bahmani-Oskooee & Brooks, 2003). Information criteria are therefore considered to produce a yardstick of information which provides an equilibrium between the parsimonious specification and measurement of goodness of fit of the model. In practice, an optimally specified model would therefore be one that produces a minimised value of the information criterion, such that a model having larger lags may be chosen solely if the minimised log-likelihood value outweighs the penalty term value (Javed & Mantalos, 2013:1921).

Furthermore, Pesaran *et al.* (2001) contend that the procedure for selecting the optimal number of lags needs to ensure that the selected model adjusts for possible biases, such as heteroscedasticity and serial correlation. Nevertheless, the traditionally used Akaike Information Criterion (AIC) is argued to produce biased results as it is prejudiced towards selecting larger order models and thus inconsistent when dealing with small sample sizes (Javed & Mantalos, 2013:1925). On the contrary, due to its power and higher degree of consistency, empirical studies have identified the Schwarz Information criterion (SIC) to be the best criterion when dealing with either small or larger sample sizes compared to other information criteria (Asghar & Abid, 2007; Ismail *et al.*, 2015:208; Javed & Mantalos, 2013:1925).

The study employed the Schwarz Information criterion (SIC) in testing for cointegration of the models based on its advantageous properties relative to other criteria. The study also made use of the ARDL approach in estimating the cointegration of the long-run and short-run of the mixed series of  $I(0)$  and  $I(1)$  variables based on the ARDL model's superiority over traditional cointegration methods. The prior selection of an optimal model using a suitable information criterion is crucial when testing for cointegration of the long and short-run relationships of ARDL modelling. For that reason, the study was governed by selecting a model which was homoscedastic and free from serial correlation.

### *5.5.2.1 Lag length and model specification*

Narayan (2004), Pesaran and Pesaran (1997) assert that the maximum specification of a suitable order of lags within ARDL modelling in quarterly data is four lags, and two for annual data. Considering that the current analysis employs quarterly data, a maximum of four lags were specified for both the dependent and independent variables in estimating ARDL (p, q, r, s). Whereas the estimated total regressions are:  $(N+1)k$ , where “N” is a representation of the maximum number of lags, while “k” is the amount of variables within the equation such that  $N=4$  and  $k=4$ .

The study therefore tested each model by means of the ARDL approach based on the SIC method. Also, an optimal lag specification was considered in the analysis taking into account the underlying diagnostics. Employment in each of the individual sectors of the tradable and non-tradable groups was tested for. This involved testing for employment in manufacturing and mining as tradable sectors, as well as employment within the wholesale and retail sector, the finance and construction sectors, as non-tradable sectors. Notwithstanding, the study pays attention to selected dynamic regressors or independent variables which includes trade openness, the real effective exchange rate and net-FDI.

As suggested in Table 21, the SIC-based ARDL suggested the model (1, 2, 0, 0) in testing for the cointegration of the log of employment in manufacturing as a tradable sector, against trade openness, the real effective exchange rate and net-FDI. The latter model was also suggested by the AIC and HQ criteria. Also, the model (2, 0, 0, 0) was selected as the optimal lag structure in testing for the log of employment in mining as a tradable sector, against the selected regressors. The selected model in testing for employment in the mining sector was also suggested to be the optimal model by the Hannan-Quinn criterion (HQ).

In testing for cointegration of employment in non-tradable individual sectors, the model (1, 0, 0, 0) was specified by the SIC as the optimal model in testing for employment in the wholesale and retail sector against the specified regressors, whereas this model was also suggested by the AIC and the HQ methods. Similarly, the model (1, 0, 1, 0) was selected by the SIC method and reinforced by the AIC and HQ in testing for cointegration in employment in the finance sector against the regressors. Lastly, the SIC suggested the model (1, 0, 0, 0) in estimating the cointegration between employment in the construction sector and its regressors, likewise, this model was also suggested by AIC and HQ methods to be the best model.

The high R-Square estimations for each of the SIC based ARDL models denotes that the specified models are able to explain the extreme variability between South Africa's employment in the individual sectors of the tradable and non-tradable sectors, against trade openness, the real effective exchange rate and net FDI. The study thereby proceeded with the ARDL model estimation, governed by the SIC based lag specification models.

**Table 5-11: Model selection**

<b>Schwarz Bayesian Information Criterion (SBIC)</b>			
<b>1. TRADABLES</b>			
<b>Variable</b>	<b>Selected Model</b>	<b>Trend Specification</b>	<b>R-Squared</b>
<b>LEMAN<sub>t</sub> (Eq.1)</b>	(1, 2, 0, 0)	Rest. constant	99.43%
<b>LEMIN<sub>t</sub> (Eq.2)</b>	(2, 0, 0, 0)	Rest. linear trend	97.49%
<b>2. NON-TRADABLES</b>			
<b>Variable</b>	<b>Selected Model</b>	<b>Trend Specification</b>	<b>R-Squared</b>
<b>LETRAD<sub>t</sub> (Eq.1)</b>	(1, 0, 0, 0)	Rest. constant	99.25%
<b>LEFIN<sub>t</sub> (Eq.2)</b>	(1, 0, 1, 0)	Unrest. Constant	99.41%
<b>LECONS<sub>t</sub> (Eq.3)</b>	(1, 0, 0, 0)	Rest. constant	96.11%

### **5.5.2.2 Bound Test to Cointegration Results: Long-Run Relationship**

Table 5-13 provides results of the bounds test to cointegration of the ARDL long-run estimations, together with the corresponding lower and upper bounds critical values presented in each test. Henceforth, employment within the manufacturing sector is shown to have estimated an F-statistic value of 4.874778, and this value exceeds the lower and upper bounds critical values. An estimated F-statistic value which lies above the lower and upper bounds critical values leads to the rejection of the null hypothesis of no cointegration. Therefore, the results established in testing for employment in the manufacturing sector presents evidence of the rejection of the null hypothesis at 5 percent significance level, thus suggesting the presence of co-movement or long-run relationships between employment in the manufacturing sector and the variables trade openness, the real effective exchange rate and net-FDI. Accordingly, findings of existing relationships between the study regressors and tradable employment in the manufacturing sector correspond

with economic theory of a change in tradable employment resulting from a change in trade openness, the real effective exchange rate and FDI (Alexandre *et al.*, 2011:4; Hua, 2007:7; Pinn *et al.*, 2011:78).

Also, upon testing for cointegration of employment in the mining sector with the independent variables, the estimated F-statistic value was 1.768689. This value was found to be less than the upper and lower bounds critical values at both 5 percent and 10 percent significance levels. Thus, the null hypothesis of no cointegration could not be rejected. Therefore, these results present evidence of cointegration for individual tradable sectors only for employment within South Africa's manufacturing sector, whereas results of employment in the mining sector indicate the absence of co-movement with the considered study regressors. Alexandre *et al.* (2011) contends that underlying economic foreign trade factors such as the exchange rate are known to present idiosyncratic effects on each industry based on the manner in which resources are re-allocated. Nonetheless, this is contrast to employment in the mining sector which did not present any evidence of cointegration with the study regressors.

**Table 5-12: Results of the Bounds Test and F-Statistic estimation**

Estimated models	F-Stat	10 Bound	10 Bound	Outcome
<b>(a) Tradable Sectors</b>				
<b>(Eq.1)</b> $F_{LEMAN}(LEMAN/LTOPEN, LREXR, LNFDI)$	4.875**	2.79	3.67	Cointegration
<b>(Eq.2)</b> $F_{LEMIN}(LEMIN/LTOPEN, LREXR, LNFDI)$	1.769	3.38	4.23	No cointegration
<b>(b) Non-Tradable sectors</b>				
<b>(Eq.3)</b> $F_{LETRAD}(LETRAD/LTOPEN, LREXR, LNFDI)$	6.077**	2.79	3.67	Cointegration
<b>(Eq.4)</b> $F_{LEFIN}(LEFIN/LTOPEN, LREXR, LNFDI)$	8.706**	3.23	4.35	Cointegration
<b>(Eq.5)</b> $F_{LECONS}(LECONS/LTOPEN, LREXR, LNFDI)$	3.723**	2.79	3.67	Cointegration

*Note: \*\* denotes significant at 5 percent.*

Furthermore, upon testing for cointegration between the study regressors and the individual non-tradable private sectors, further results revealed evidence of the existence of a long-run relationship or cointegration for each of the individual employment sectors within South Africa's non-tradable sector. These results are respectively supported by F-statistic values of 6.076604, 8.841131 and 3.722798 for employment in the wholesale and retail trade, employment in finance and

employment in the construction sector. The F-statistic for each of the individual tradable employment sectors exceeds their respective critical values. Therefore, the null hypothesis in each case is rejected at 5 percent significance level. As a result, the suggested cointegrated variables insist that further short-run tests should be conducted by estimating the Error Correction Model (ECM) as discussed in section 5.5.2.3 of the current chapter.

Prior to estimating the ECM, the long-run equations with corresponding coefficients are presented in Equations (5.1) – (5.2) of the observed cointegrated variables. In furtherance of the implied long-run relationship between the respective variables, the long-run parameter findings further provide further information on the likely positive or negative relationships amongst the variables.

Equation (5.1) indicates that the log of trade openness (the independent variable) has a long-run negative effect on the log of employment in the manufacturing sector (the dependent variable). In the long-run, a one percent increase in South Africa's trade openness will lead to a decrease in employment in the manufacturing sector by 0.2662 percent. The latter is result of a loss in manufacturing employment corresponds with findings by Casacuberta *et al.* (2004:246) who established a loss in manufacturing employment in Uruguay due to increased trade openness. Also, Asghar *et al.* (2014:53) suggested similar results in Pakistan, India, and Bangladesh. The latter authors explain that the loss of manufacturing employment based on greater trade openness was due to a lack of comparative advantage in the mentioned countries. Consequently, based on the findings of the present study, a one percent appreciation in the real effective exchange rate of the Rand will induce a decrease in employment by 0.2609 percent, vice versa. These findings however resonate with the assumed negative trade openness effects based on the implied vulnerability of domestic industries exposed to the foreign market as explained by Cavallo and Frankel (2008:1431). These results also corresponds with findings by Chipeta *et al.* (2017) who established that the real exchange rate is negatively associated South Africa's overall employment patterns.

Similarly, a negative coefficient of the log of net FDI suggests that a one percent increase in the net inflow of FDI induces a 0.0274 percent decrease in South Africa's manufacturing employment. These results are in conflict with the suggested boom in the tradable sector's FDI implied employment increase as anticipated by economic theory (Kosteletou & Liargovas, 2000:137). A further explanation for such an occurrence can thereby be explained by the negative effects of FDI in the form of costs to the FDI host economies as outlined by Kurtishi-Kastrati (2013:31-32) and Sauvart (2013:15). The study further elaborates on the matter in section 5.6.3 of the current chapter. Lastly, the included dummy following any likely instantaneous positive change in the

manufacturing sector will induce a 0.0799 percent increase in employment within the manufacturing sector.

$$\text{LEMAN} = 5.7653 - 0.266234*\text{LTOPEN} - 0.260954*\text{LREXR} - 0.027360*\text{LNFDI} + 0.079942*\text{DUMMY01} \quad (5.1)$$

Equation (5.2) demonstrates the corresponding long-run equation for employment in the wholesale and retail trade sector. The stated long-run equation suggests that there is a positive relationship between the log of trade openness and the log of employment in the wholesale and retail trade sector. This implies that a one percent increase in trade openness leads to an increase in employment in the wholesale and retail trade sector by 1.3446 percent in the long-run. Contrast to the results of employment in the manufacturing sector, these results correspond with Flatters and Stern's (2007:1) suggested trade gains presented by the global market in the form of increased output and lower prices. Moreover, the log of the real effective rate is indicated to have a positive effect on South Africa's employment formation within the wholesale and retail trade sector. A one percent appreciation in the real effective exchange rate of the Rand will therefore induce a 0.0701 percent increase in employment in the wholesale and retail trade sector. Lastly, as established in the manufacturing sector, the negative coefficient of the log of net FDI suggests a negative long-run relationship with the log of employment in the wholesale and retail trade sector. As such, a one percent increase in the net inflow of FDI enforces a decrease in employment by 0.0231 percent. These results correspond with findings by Nizamuddin (2013) of a negative association between FDI and employment in the retail trade sector in India.

$$\text{LETRAD} = 5.3121 + 1.344596*\text{LTOPEN} + 0.070141*\text{LREXR} - 0.023122*\text{LNFDI} \quad (5.2)$$

Equation (5.3) is the long-run equation of employment in the finance sector. The long-run equation suggests the existence of a positive relationship between the log of trade openness and employment in the finance sector. Thus, a one percent increase in trade openness leads to an increase in employment in the finance sector by 1.0091 percent. Equation (5.3) also indicates that there is a positive long-run relationship between the log of real effective exchange rate and employment in the finance sector. Henceforth, a one percent appreciation in the real effective exchange rate results in an increase in employment in the finance sector by 0.3149 percent. Similarly, the log of net FDI is shown to have a positive long-run effect on the log of employment in the finance sector, thus a one percent increase in net-FDI inflow will lead to an increase in employment by 0.0002 percent. The instantaneous change within Equation (5.3) represented by the Dummy02 suggests that a one

percent increase in instantaneous changes is associated with a decrease in employment within the finance sector by 0.003204 percent.

$$\text{LEFIN} = 3.7635 + 1.009048*\text{LTOPEN} + 0.314960*\text{LREXR} + 0.0002*\text{LNFDI} - 0.003204*\text{DUMMY02} \quad (5.3)$$

The long-run co-movement of the underlying independent variables and employment within the construction sector is indicated by Equation (5.4) below. Equation (5.4) indicates that there is a positive long-run relationship between the log of employment in the construction sector and the log of trade openness. Therefore, a one percent increase in trade openness is associated with a long-run increase in manufacturing employment of 2.2541 percent. As a further matter, the suggested positive long-run relationship between the log of the real effective exchange rate and employment in the construction sector indicates that a one percent appreciation in the real effective exchange rate induces an increase in employment within the construction sector by 0.8028 percent. Lastly, the log of net FDI is indicated to have a positive relationship with employment within the construction sector, henceforth, a one percent increase in net FDI is associated with an increase in employment within the construction sector by 0.0161 percent.

$$\text{LECONS} = 2.0806 + 2.2541*\text{LTOPEN} + 0.8028*\text{LREXR} + 0.0161*\text{LNFDI} \quad (5.4)$$

### **5.5.2.3 Error Correction Model: Short-run Test Results**

The suggested long-run relationships of the cointegrated individual non-tradable variables enforces the estimation of further short-run relationships by means of the Error Correction Model (ECM). The established evidence for cointegrating vectors reveals that there exists some short-run adjustment process that prevents the long-run relationship errors from becoming larger. Henceforth, the ECM is thereby a convenient method used to measure the correction from disequilibrium of the earlier period, towards the suggested long-run equilibrium (Asteriou & Hall, 2007:310-311; Brooks, 2014:376). Nevertheless, in order for the suggested adjustments to materialise, the error correction term must be negative and significant (Mukhtar & Rasheed, 2010:54). The error term of the ECM thus acts as the “equilibrating” error term which rectifies deviations of the present study’s employed models from their equilibrium value, provided the above cointegrated Equations (5.1) – (5.4) (Gujarati, 2011:231-232).

Table 5-14 to Table 5-17 provide results of the captured estimations of the ECM. The ECM is employed to measure the short-run effects of trade openness, the real effective exchange rate and net-FDI on South Africa’s employment within the various individual sectors. These results thereby

show the speed at which the considered variables converge into the suggested long-run equilibrium. The suggested long-run relationships and/or cointegration of employment within the manufacturing sector, the wholesale and retail trade sector, as well as the finance and construction sectors present strong evidence of short-run convergence towards long-run equilibrium. This implies that these models have the ability to converge back into the suggested long-run equilibrium of the cointegrated variables after a short-term shock. Bannerjee *et al.* (1998) further maintains that the incidence of a highly significant error correction term (ECT) further approves the suggested steady long-run cointegration or relationship.

Respectively, Table 5-14 shows results of the ECM for employment within the manufacturing sector, and results reveal a negative ECT of -0.020391 which is highly significant at 0.01 significance level. The established results indicate that it takes approximately 49 quarters ( $1/0.020391$ ) to reach full equilibrium, such that approximately 0.02 percent of the deviations from the long-run equilibrium in trade openness, the real effective exchange rate and net-FDI are corrected/adjusted in each quarter.

**Table 5-13: Results of the ECM of employment in the Manufacturing Sector**

Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LTOPEN)	-0.008062	0.025745	-0.313138	0.7550
D(LTOPEN(-1))	0.073276	0.024950	2.936924	0.0044***
D(LREXR)	-0.010197	0.016341	-0.623990	0.5345
D(LNFDI)	-0.000879	0.000514	-1.707850	0.0916*
D(DUMMANU)	0.003464	0.002977	1.163500	0.2482
CointEq(-1)	-0.020391	0.003645	-5.594209	0.0000***

*Note:* \* and \*\* denotes significant at 10% and 1%, respectively.

Table 5-15 reports results of the short-run dynamics of employment within the wholesale and retail trade sector. The ECT has a coefficient of -0.043476 which is statistically highly significant at 0.01 significance level. This implies that it takes approximately 23 quarters ( $1/0.043476$ ) for the short-run disequilibrium to be corrected. Henceforth, nearly 4.34 percent of the disequilibrium is adjusted in each quarter in achieving the long-run equilibrium. Nevertheless, none of the short-run coefficients were found to be significant within the short-run. However, trade openness was depicted to have a positive relationship within employment in the wholesale and retail trade sector,

while the real effective exchange rate and net-FDI were shown to have a negative relationship with the regressand.

**Table 5-14: Results of the ECM of employment in the Wholesale & Retail Trade Sector**

Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LTOPEN)	0.056364	0.034069	1.654414	0.1019
D(LREXR)	-0.023785	0.023615	-1.007206	0.3168
D(LNFDI)	-0.001226	0.000753	-1.628790	0.1072
CointEq(-1)	-0.043476	0.007962	-5.460080	0.0000**

*Note: \*\* denotes significant at 1%.*

Table 5-16 reports the ECM results of employment in the finance sector. The coefficient of the ECT is -0.107772 and is shown to be statistically significant at 0.01 significance level. This indicates that roughly 10.8 percent of the short-run disequilibrium is corrected in each quarter and thus takes about 9 quarters for the short-run disequilibrium to be corrected. The ECM also reveals that a change in trade openness is associated with a positive change in employment within the finance sector in the short-run, such that a one percent increase in the trade openness leads to a 0.1019 increase in employment within the finance sector. Moreover, the real effective exchange rate coefficient is shown to be statistically significant at 10 percent, thus a change in the real effective exchange rate is associated with a negative change in employment within the finance sector. Therefore, a one percent appreciation in the real effective exchange rate of the Rand induces a decrease in employment by roughly 4 percent in the short-run.

**Table 5-15: Results of the ECM of employment in the Finance Sector**

Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LTOPEN)	0.101948	0.034120	2.987953	0.0037**
D(LREXR)	-0.040352	0.023489	-1.717917	0.0897*
D(LNFDI)	-0.000137	0.000800	-0.171463	0.8643
D(DUMFINAN)	0.002507	0.003361	0.745954	0.4579
C	0.405560	0.064253	6.311888	0.0000
CointEq(-1)	-0.107772	0.017197	-6.267025	0.0000**

*Note: \* and \*\*\* denotes significant at 10% and 1%, respectively.*

Lastly, Table 5-17 presents results of the ECM of employment within the construction sector. The ECT of the ECM is reported to have a highly statistically significant coefficient of -0.095585 and significant at 0.01 significance level. This implies that approximately 9.6 percent of the short-run disequilibrium is adjusted in each quarter. Moreover, it thus takes about 11 quarters ( $1/0.095585$ ) for the disequilibrium in the short-run to be adjusted towards reaching the long-run equilibrium. The ECM also suggests that trade openness, which is significant at 0.01 significance level, has a positive relationship with employment within the construction sector in the short-run. Therefore, a one percent increase in trade openness results in an increase in employment within the construction sector by 0.0241 percent.

**Table 5-16: Results of the ECM of employment in the Construction Sector**

Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LTOPEN)	0.240856	0.079973	3.011719	0.0035***
D(LREXR)	0.038326	0.055704	0.688025	0.4934
D(LNFDI)	0.001190	0.001740	0.684152	0.4958
CointEq(-1)	-0.095585	0.019764	-4.836411	0.0000***

*Note: \*\*\* denotes significant at 1 percent.*

#### 5.5.2.4 Toda-Yamamoto Granger Non-Causality Test

The Autoregressive Distributed lag model (ARDL) provides estimates for the presence or absence of long-run cointegration between the considered regressands and their regressors. Nevertheless, the approach provides estimates of the direction of causality. The study employed the Toda-Yamamoto causality test to analyse the causal relationship between employment in the various individual sectors and the independent variables trade openness, the real effective exchange rate and net-FDI. Results indicated in Tables 5-18 and Table 5-19 provide the estimates of the Toda-Yamamoto non-causality results. Particularly, Table 5-18 provides causality estimates of employment in the tradable sector, while results of employment in the non-tradable sector are represented in Table 5-19.

**Table 5-17: Toda-Yamamoto Results (Tradable Sectors)**

<b>Employment in Manufacturing (Tradable sector)</b>		
<b>Direction of causality</b>	<b>P-value</b>	<b>Decision</b>
LTOPEN → LEMANU	<b>0.0107*</b>	<b>Causal relationship exists</b>
LREXR → LEMANU	0.6751	Causal relationship does not exist
LNFDI → LEMANU	0.7108	Causal relationship does not exist
LEMANU → LTOPEN	<b>0.0002***</b>	<b>Causal relationship exists</b>
LEMANU → LREXR	0.5670	Causal relationship does not exist
LEMANU → LNFDI	0.8314	Causal relationship does not exist
<b>Employment in Mining (Tradable Sector)</b>		
<b>Direction of causality</b>	<b>P-value</b>	<b>Decision</b>
LTOPEN → LEMIN	0.8188	Causal relationship does not exist
LREXR → LEMIN	0.1582	Causal relationship does not exist
LNFDI → LEMIN	0.7106	Causal relationship does not exist
LEMIN → LTOPEN	0.2340	Causal relationship does not exist
LEMIN → LREXR	0.3761	Causal relationship does not exist
LEMIN → LNFDI	0.8057	Causal relationship does not exist

*Note: \*\* and \*\*\* indicates significant at 5% and 1%, respectively.*

Accordingly, the Toda-Yamamoto Granger non-causality method tests the null hypothesis of non-causality against the alternative hypothesis of the existence of causality. Based on Table 5-18, results indicate the existence of causality from the log of trade openness to the log of employment in the manufacturing sector based on the significant P-value. Also, there exists a causal relationship from the log of employment to the log of trade openness. These findings suggest that there is a bidirectional relationship between employment in the manufacturing sector and trade openness, meaning that short-run changes in trade openness cause changes in employment levels, and vice versa. Therefore, the null hypothesis of no causal relationship is rejected. However, further causality test results of employment in the manufacturing sector against the real effective exchange rate and net-FDI are not significant at both 5 percent and 10 percent, suggesting the absence of a causal relationship between the variables in the short-run. Meanwhile, results established by Inekwe (2013) revealed evidence of the existence of a unidirectional relationship from FDI to manufacturing employment in Nigeria. Whereas findings by Nyen Wong *et al.* (2011) suggested the existence of a bidirectional causal relationship between manufacturing employment and FDI in Singapore. Further causality tests of employment in the mining sector reveal no existing causal relationship between mining employment with the real effective exchange rate and with net-FDI. This is indicated by the P-values which are not significant at both 5 percent and 10 percent. Therefore, these results suggest no short-run causal relationships between employment in the mining sector and its regressors, thus the null hypothesis of no causal relationship cannot be rejected.

**Table 5-18: Toda-Yamamoto Results (Non-Tradable Sectors)**

<b>Employment in Wholesale &amp; Retail Trade (Non-Tradable sector)</b>			
<b>Direction of causality</b>		<b>P-value</b>	<b>Decision</b>
LTOPEN	————> LETRAD	0.8888	Causal relationship does not exist
LREXR	————> LETRAD	0.4077	Causal relationship does not exist
LNFDI	————> LETRAD	0.7553	Causal relationship does not exist
LETRAD	————> LTOPEN	0.1823	Causal relationship does not exist
LETRAD	————> LREXR	0.7724	Causal relationship does not exist
LETRAD	————> LNFDI	0.5561	Causal relationship does not exist
<b>Employment in Finance (Non-Tradable sector)</b>			
<b>Direction of causality</b>		<b>P-value</b>	<b>Decision</b>
LTOPEN	————> LEFIN	0.2946	Causal relationship does not exist
LREXR	————> LEFIN	0.0330**	Causal relationship exists
LNFDI	————> LEFIN	0.3334	Causal relationship does not exist
LEFIN	————> LTOPEN	0.1775	Causal relationship does not exist
LEFIN	————> LREXR	0.2212	Causal relationship does not exist
LEFIN	————> LNFDI	0.4707	Causal relationship does not exist
<b>Employment in Construction (Non-Tradable sector)</b>			
<b>Direction of causality</b>		<b>P-value</b>	<b>Decision</b>
LTOPEN	————> LECONS	0.6379	Causal relationship does not exist
LREXR	————> LECONS	0.3782	Causal relationship does not exist
LNFDI	————> LECONS	0.7880	Causal relationship does not exist
LECONS	————> LTOPEN	0.8122	Causal relationship does not exist
LECONS	————> LREXR	0.1560	Causal relationship does not exist
LECONS	————> LNFDI	0.8174	Causal relationship does not exist

*Note: \* and \*\* indicates significant at 5% and 10%.*

Furthermore, Table 5-19 (a) and Table 5-20 (a) indicates that none of the variables for employment in the wholesale and retail trade sector are significant. This is supported by the P-values which are above 5 percent and 10 percent significance levels, meaning that no short-run causality exists between the considered variables in the wholesale and retail trade sector exists. Also, results of employment in the finance sector suggests that the five causality tests are not significant, suggesting the absence of short-run causality between employment in the finance sector against trade openness and net-FDI. Nevertheless, exception is made between the real effective exchange

rate and employment in the finance sector. This is indicated by a one-way causality from the real effective exchange rate towards employment in the finance sector, indicated by a significant P-value at 5 percent. Therefore, the identified unidirectional relationship suggests that short-run changes in the real effective exchange rate cause change in employment within the finance sector. Lastly, results indicate the absence of causality relationships between employment in the construction sector against trade openness, the real effective exchange rate and net-FDI. The P-values in these tests are not significant at both 5 percent and 10 percent. Therefore, short-run changes in the respective independent variables do not cause short-run changes in employment in the construction sector, and vice versa.

#### **5.5.2.5 Residual diagnostic tests**

Residual diagnostic tests examine whether the model meets the stochastic properties as a prerequisite towards the avoidance of conventional econometric problems which oversee the violation of classical linear model assumptions. The said model's stochastic properties include autocorrelation, heteroscedasticity and parameter stability, *inter alia* (Takaendesa, 2006:100). Based on Table 5-21, it is noted that the underlying models passed diagnostic tests of autocorrelation and heteroscedasticity as shown by the P-values which are above 5 percent significance level. Nevertheless, all models failed normality testing of the Jarque-Bera test at 5 percent significance level. However, Frain (2007:3-15) argues that large data samples are not inherent of an " $\alpha$ -stable" distribution and therefore it is natural for the null hypothesis of a normally distributed distribution to be rejected for large samples. Accordingly, this accentuates that some regressions may not be constant over time, whereas the test for normality is sensitive in large sample sizes (Kundu *et al.*, 2011:2-3; Ruxanda & Botezatu, 2008:59). For that reason, the null hypothesis test for normality may be rejected more frequently than it should be (Chen & Kuan, 2003:7-8).

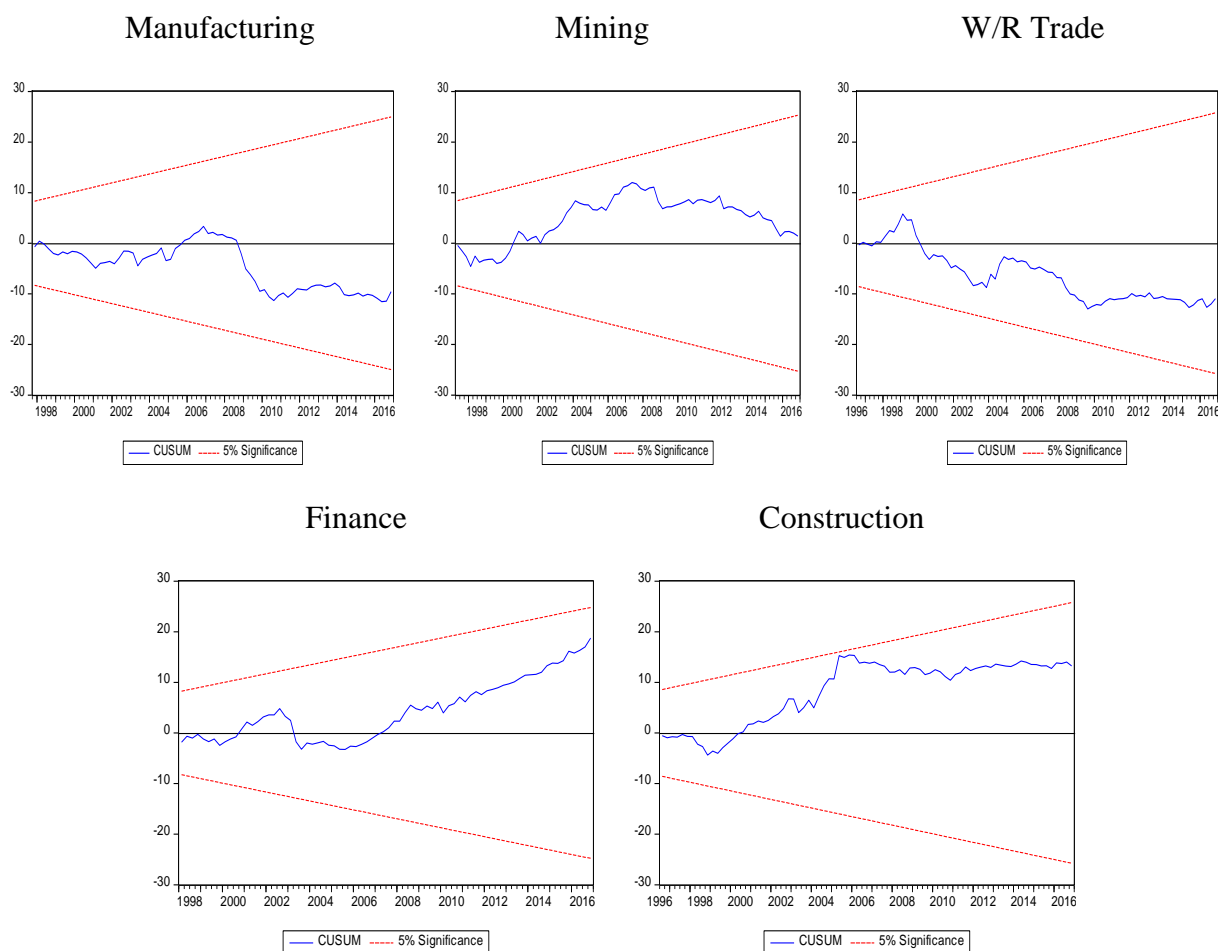
**Table 5-19: Diagnostic Test Results**

	LM Test	White (CT)	Normality Test (Jarque-Bera)
	H0= No serial correlation	H0= No heteroscedasticity	H0= Normally distributed
<b>(Eq.1) LEMAN</b>	(0.4444)	(0.0589)	(0.0137)*
<b>(Eq.2) LEMIN</b>	(0.4329)	(0.1889)	(0.0000)**
<b>(Eq.3) LETRAD</b>	(0.2379)	(0.1940)	(0.0000)**
<b>(Eq.4) LEFIN</b>	(0.5866)	(0.9688)	(0.0000)**
<b>(Eq.5) LECONS</b>	(0.2280)	(0.6648)	(0.0000)**

*Note: ( ) indicates the P-value, \* and \*\*denotes significant at 5% and 1% respectively.*

Notwithstanding, a failed test for normality necessitates the need to conduct further stability tests, accordingly, a parameter stability test is required upon the avoidance of the misspecifications led by time series volatility (Pesaran & Pesaran, 1997; Zanini *et al.*, 2000). The study therefore employed the Cumulative sum of Recursive Residuals (CUSUM) as enforced by Lee and Strazicich (2004:132) as a means of model stability testing to verify the parameter stability of the models employed in the study. Indicated in Figure 5-3, the plots of the CUSUM test reveal that the models employed in the study do not give rise to model instabilities. The plots in Figure 5-3 remain within the uncritical region or the critical bounds at 5 percent significance level thus confirming the models' parameter stability. This means that the parameters of the models employed are stable over time and thereby present robust estimations of the short- and long-run estimations between employment in the various selected private sectors and the model regressors.

**Figure 5-3: CUSUM Test Results**



## 5.6 DISCUSSION OF RESULTS

### 5.6.1 Trade openness and tradable vs. non-tradable employment sectors

#### 5.6.1.1 *South Africa's tradable employment sector and trade openness*

Based on the estimated findings, results revealed that the pooled tradable employment sector exhibits evidence of a positive cointegrating long-run relationship with trade openness. These results however translate to a negative cointegrating long-run relationship when employment in the manufacturing industry is estimated individually. Nevertheless, employment in the mining sector displayed no evidence of a short-run or long-run relationship with trade openness.

Many have stressed the overwhelming employment benefits extracted from foreign trade integration by tradable industries. In the long-run, such employment benefits within South Africa's manufacturing tradable sector are suggested to potentially materialise solely amidst a decrease in South Africa's trade exposure. Conversely, an increase in trade openness implies a decrease in

employment in the latter sector. Meanwhile, the short-run is indicated to be associated with a positive and significant relationship between employment in the manufacturing sector and trade openness. Unlike the long-run period, an increase in trade openness in the short-run corresponds with an increase in employment in the manufacturing sector, and vice versa. The positive short-run and negative long-run cointegrating relationships between manufacturing employment and trade openness suggests that in the short-run, South Africa's manufacturing sector is able to absorb the employment benefits presented by trade exposure within the foreign market based on either the likely comparative advantage or absolute advantage. Nevertheless, potential trade advantages are lost to the foreign trade market within the long-run due to either the loss of competitiveness or the shift in labour utilisation to capital inputs.

Considering South Africa's relatively open economy, tradable sectors such as the manufacturing sector are forever in the quest of establishing ways of improving their competitiveness in the foreign market. South Africa's failure to compete in intense competition amongst the globalised economies implies a decrease in demand for its manufacturing output and thereby a drop in its production and labour within the respective sector. Contrary to non-tradable sector activities which face competition primarily within the domestic market, a small open economy is considered to be a price-taker in terms of its tradable sector (Piton, 2017:4). Simply, less productive and competitive industries may not compete in international trade and are thus forced to abide by prevailing prices within the foreign market.

Steenkamp (2015:43-44) further highlights that South Africa's liberalisation of trade has witnessed a shift in traditional production techniques from labour-intensive sectors towards increased capital-intensive sectors. The shortage of skilled labour has accordingly observed the heightening of skill intensity of labour-intensive sectors, the country's shortage of skills however destabilises the development and growth of labour-intensive sectors. For that reason, the country's heightened unemployment has partly been led by the rising capital intensity. The quest to becoming more competitive by various industries may involve the adoption of cheaper technology and capital equipment which are readily available in the global economy, as opposed to employing the presumed costly and inefficient labour resources. The resulting effect would consequently be a decline in employment within the manufacturing sector.

The negative long-run relationship between employment in the manufacturing sector and trade openness resonates with findings by various scholars (such as Ferreira *et al.*, 2010; Menezes-Filho & Muendler 2011; Wacziarg & Wallack, 2004) who identified a decline in low-skilled

manufacturing employment due to increased external competition. Based on Michael Porter's five forces model, price competition is increasingly high in the face of low barriers to entry as is the case with increased trade openness or free trade. Consequently, the least competitive tradable sectors may thus face intensified competition.

Considering South Africa's relatively intense exposure to the global market, the observed long-run findings between trade openness and employment in the manufacturing sector also correspond with the observed employment decline within South Africa's exporting industries during the periods 1999 to 2001. According to Venter (2009:66), this was led by the export industry's pressure and focus on more capital-intensive inputs rather than formal-labour inputs in efforts to achieve a more competitive base in the foreign market. This follows suit with the classical theory's argument which asserts that changes in technology and structural changes in final output and consumption act as offsetting factors in the theory's long-run full employment assumption of the labour market equilibrium model. Keynes (1936) however associates the drop-in employment conditions with institutional or legal market constraints as well as the decrease in demand or consumption (Galí, 2013:977).

For example, amidst South Africa's increasing trade openness or exposure to the global market has been a loss of jobs and potential threats of job cuts within South Africa's Arcelor Mittal, a steel producing company. According to Arcelor Mittal (2017), the industry's dire job patterns are accompanied by lower demand for its steel production and deterred demand in the local market due to ongoing imports, as well as weak and competitive international prices. According to Faku (2016), South Africa's metal and engineering industries presented job losses of more than 11 000 between the first and fourth quarter of the year 2015. With the country's already existing high unemployment rate, potential job cuts and job restructuring continue to lurk through the industry's labour force based on underlying cost saving measures amidst a challenging international steel market and the domestic recession (EWN, 2017).

The opening of South Africa's trade borders has accordingly witnessed a decline in the country's manufacturing industry's output following the rise in the demand for China's cheaper export products. Likewise, the strengthening of South Africa's labour unions and increased labour strikes, particularly in the primary and secondary sectors, also pose viable constraints to the country's export production while these industries face continued trade exposure and competition in the foreign market. Kingdom and Knight (2006:471) assert that South Africa's unusually rigid market structures mostly consist of strong labour unions and a centralised collective bargaining system

which Fedderke (2012:21-22) recalls as the reason for increased real wages, which have consequently led to a stagnant labour market. These factors according to Keynes (1936), impose major restrictions to the labour market.

#### ***5.6.1.2 South Africa's non-tradable employment sector and trade openness***

Empirical estimations of the current study further revealed a long-run cointegrating relationship between South Africa's trade openness and employment within the grouped non-tradable sector, as well as all the individual non-tradable sectors. Accordingly, a positive long-run cointegrating relationship was exhibited between trade openness and employment in the grouped non-tradable sector. Also, the estimation of employment in the individual underlying non-tradable sectors consisting of the wholesale and retail trade, finance and construction sectors, revealed evidence of a positive long-run cointegrating relationship with South Africa's trade openness. Similar to the grouped tradable sector, no short-run relationship was revealed between employment in the grouped non-tradable sector and trade openness. Nevertheless, employment in the finance and construction sectors revealed evidence of a significant and positive short-run cointegrating relationship with trade openness, with exception to the wholesale and retail trade sector.

The above estimated long-run results revealed contrasting findings between trade openness and its insinuations with employment in the manufacturing tradable sector, and employment in the individual non-tradable sectors such as the wholesale and retail trade, finance and construction sectors. Accordingly, a long-run negative relationship was established in manufacturing employment relative to the positive long-run relationship in all the individual non-tradable sectors. Nevertheless, both employment in the grouped tradable sector and the grouped non-tradable sector revealed a positive long-run relationship with trade openness. These findings suggest that an increase in South Africa's trade openness is associated with a corresponding increase in employment within the wholesale and retail trade, finance and construction sectors, and vice versa.

It is therefore interesting to note that a potential long-run increase in employment within the individual non-tradable sectors amidst an increase in trade openness, implies a decrease in employment within the manufacturing tradable sector, and vice versa. In a similar fashion, the following other authors (Ferreira *et al.*, 2010; Menezes-Filho & Muendler 2011; Wacziarg & Wallack, 2004) further expounded that lost jobs in the manufacturing sector were characterised by the transfer of highly skilled labour towards the non-tradable sector. This assertion corresponds with the study's identified significant positive long-run relationship between South Africa's trade openness and employment in the underlying individual non-tradable sectors, and the negative

manufacturing employment long-run relationship. Additionally, Gaddis and Pieters (2014:25) also explored the matter and found similar results in Brazil.

Findings by Gaddis and Pieters (2014:25) suggested a decrease in Brazil's tradable employment with no overall effect on total employment seeing that highly-skilled labour was re-allocated towards the non-tradable sector. Notwithstanding, low-skilled jobs were negatively affected. These results thus point to Krugman's (1993:25) assertion of a lack of trade implication on overall employment activities rather than the re-allocation of labour across and within sectors. Bhorat *et al.* (2014:2) and Masso *et al.* (2005:2) also highlight that resource re-allocation may involve the re-allocation of labour or factors of production from low to highly productive units for the most efficient use which satisfies the classical theory's long-run general equilibrium or full employment assumption (Hall & Lieberman, 2007:596). Perhaps this could be explained by the "employment and wage" theory of the classical employment as alluded to in chapter 2. In this case, the loss of international competitiveness by the manufacturing sector due intense global market competition may imply the movement of South Africa's highly skilled labour towards the non-tradable sector which generally portrays a positive relationship with trade openness.

Since South Africa's extenuation of its political and economic impediments led by the apartheid era, South Africa's extent and degree of its exposure to trade has increased over the years. Accordingly, South Africa's increased external exposure has also witnessed a larger increase in the number of employed people within non-tradable sectors relative to tradable industries such as the mining and manufacturing industry as presented in the current study's section 3.3 of Chapter 3. For instance, the period 2010-2016 revealed that manufacturing employment patterns experienced a negative growth of -1.2 percent while the wholesale and retail trade, finance and construction sectors exhibited positive employment growth of 0.7 percent, 3.1 percent and 3.5 percent, respectively.

## **5.6.2 The exchange rate and tradable vs. non-tradable employment sectors**

### ***5.6.2.1 South Africa's tradable employment sector and the exchange rate***

Furthermore, the study established no long-run and short-run cointegrating relationships between the real effective exchange rate and employment in the grouped tradable sector, as well as the individual mining sector. The grouped tradable employment sector and the individual tradable mining sector thus do not compare well with the Rand exchange rate movements. Nevertheless, employment in the manufacturing tradable sector revealed strong evidence of a significant

negative cointegrating relationship with the real effective exchange rate of the Rand only in the long-run. An appreciation in the real effective exchange rate of the Rand is thus suggested to be associated with a decrease in employment in the tradable sector's employment in the long-run. Conversely, a real depreciation in the Rand exchange rate therefore suggests an increase in tradable employment.

These results correspond with the findings by Borat *et al.* (2014) who suggested a negative effect of an appreciation in the exchange rate against South Africa's tradable employment. Further findings by Borat *et al.* (2014) suggested an insignificant negative relationship between the exchange rate and employment in the non-tradable sector. The latter results are contrary to the findings of the present study which revealed a clear significant and positive relationship between South Africa's non-tradable employment and the real effective exchange rate of the Rand. Borat *et al.* (2014) further added that the associated effects of the changes in the exchange rate are accompanied by larger insinuations on skilled labour as opposed to low skilled workers.

In a similar fashion, Alexandre *et al.* (2011:4) and Klein *et al.* (2003) also assert that fluctuations in the exchange rate largely affect sectors which are most exposed to foreign competition or trade openness, particularly the tradable sector. However, results in the current study revealed that South Africa's employment in the construction and finance individual non-tradable sectors presented the most resulting long-run implications associated with the real effective exchange rate. The former and the latter sectors respectively accounted for a 0.8 percent and a 0.32 percent long-run increase (or decrease) in employment following a real appreciation (or depreciation) in the real effective exchange rate. The country's overall non-tradable sector also revealed an increase (or decrease) in employment of approximately 0.52 percent amid an appreciation (or depreciation) in the Rand exchange rate in the long-run. The associated long-run effects of the real effective exchange rate and employment in the manufacturing sector only accounted for a 0.26 percent decrease (increase) in employment following a real appreciation (depreciation) in the effective exchange rate. Notwithstanding, the observed effects of the real effective exchange rate and manufacturing employment were greater than those established in the Wholesale and Retail trade sector (0.07 percent).

The negative patterns of the real effective exchange rate versus manufacturing employment levels correspond with the general exchange rate and employment theory for the tradable sector. Most scholars (Borat *et al.*, 2014; Huang & Tang, 2015) reveal that a real depreciation in the exchange rate is the most suitable mechanism for employment growth especially in the export driven

economy's tradable sector. The analysis by Chipeta *et al.* (2017:22) ascertains that a real domestic currency appreciation makes the domestic economy's exports more expensive relative to exports from the foreign global market. Foreign demand for such export commodities thus decreases, whereas a real depreciation holds opposite effects. Kohler *et al.* (2014:47) extend that the domestic economy's export competitiveness in the global market tends to heighten amid a depreciation in the real exchange rate, while imports may be less competitive and thereby lead to an increase in demand and consumption of domestic goods and services. Notwithstanding, Hodge (2005) cautions that a significant Rand weakening can potentially cause inflationary pressures to the detriment of the long-run growth prospects.

Furthermore, Alexandre *et al.* (2011:4) assert that a potential Rand appreciation implies the reduction in foreign prices relative to the domestic currency and may therefore lead to a decrease in the competitiveness of domestic exporters. Competitiveness in the tradable sector can be lost either externally relative to the foreign market's tradable output, or internally relative to the non-tradable sector, or in terms of both circumstances. Internal competitiveness can thereby be lost when prices in the domestic tradable market declines relative to non-tradable prices, while external competitiveness can be lost when prices in the domestic tradable sector rises relative to the foreign market's tradable goods prices, and these may consequently lead to the appreciation in the real effective exchange rate (Bose, 2014:5).

The loss of competitiveness and the drop in exports may hamper investment decisions concerning the firing and hiring of workers as well as impede profit margins (Alexandre *et al.*, 2011:4). Although a real depreciation is assumed to be most favourable for the tradable sector's export competitiveness, Onselen (2016:4) however argues that the dangers of a weak currency may arise in the form of expensive imports, potential interest rate hikes, rising and faster domestic prices, business cost pressures, overall labour market insecurity, and retrenchments. Even so, South Africa's tradable sectors, such as the manufacturing industry, have however failed to capitalise on the country's prolonged weak Rand. Moreover, the limited reaction of South Africa's exporting tradable sectors to increased trade openness and the weak Rand can be explained by the country's structural constraints. Anand *et al.* (2016) argue that South Africa's critical production factors, such as market rigidities, labour supply and electricity, correspond with the slow response of the tradable sector's exports to the Rand depreciation. These factors may have likely prevented the exporting tradable sector from stimulating domestic exports and absorbing the comparative advantage presented by the weak Rand.

### *5.6.2.2 South Africa's non-tradable employment sector and the exchange rate*

Furthermore, a significant but positive long-run cointegrating relationship was also identified for employment in the pooled non-tradable sector, as well as all the underlying individual non-tradable sectors. These results suggest that a real appreciation in the real effective exchange rate of the Rand is associated with an increase in employing within the grouped non-tradable sector and its underlying individual sectors in the long-run. Conversely, a real depreciation in the Rand effective exchange rate therefore suggests an increase in tradable employment and a decrease in non-tradable employment. Whereas, a real appreciation in the real effective exchange rate implies an increase in non-tradable employment.

The rise in employment in the general and individual non-tradable sectors and the drop in manufacturing employment due to a real effective exchange rate appreciation can be explained by the presumptions of the “Balassa Samuelson effect”. Considering that the non-tradable sector holds a larger share in the domestic consumption basket relative to the tradable sector, the “Balassa Samuelson effect” explains that a rise in domestic demand of the domestic consumption basket presents a relative rise in employment and eventually the value of the consumer price index. Consequently, this leads to an appreciation in the real effective exchange rate, an increase in imports and a further weakening of the export sector, thereby leading to the transfer of labour from the tradable export sector towards the non-tradable sector, similar to the earlier discussed re-allocation effects caused by trade openness (Catão, 2007:46-47).

In essence, the state of the country's currency either in the form of an appreciation or a depreciation thus revolves around the destruction or loss of jobs in one sector over the creation of jobs in the other sector. In a similar fashion, these results are consistent with the findings by Ngandu (2009:128) who emphasised the re-allocation of employment from the tradable to the non-tradable sector in the presence of a strong currency and vice versa. The existence of high export prices in South Africa's export goods or products thereby envisage a decrease in the demand for such goods within the global market. Consequently, this is inversely accompanied by a boost in the country's non-tradable sector. With a lot of emphasis on patterns of job re-allocation, Ngandu (2009) further maintained that the lost jobs in the tradable sector are further absorbed in the non-tradable sector and thereby maintaining the country's aggregate employment level through channels of relative price changes as highlighted by Jiang (2011:1). Also, the country's inactive or dormant labour can further be explained as an outcome of increased entrants into the labour force against the lower amount of newly created job positions.

According to Williams *et al.* (2014:3), South Africa's manufacturing sector has experienced plummeting employment patterns over the past decades having lost its competitive edge and productivity. Such low performance has been characterised by the sector's heightened prices and wages as well as its high cost base amid exposure to increased international economic integration and cheaper imports. As mentioned in the earlier chapters, small open economies tend to be price takers in terms of such economies' tradable sector. Consequently, the less productive and competitive tradable sector cannot compete in international trade, henceforth, transactions in such sectors cannot affect market prices. The tradable sector is therefore compelled to accept prevailing external market prices while activities in the non-tradable sector largely and solely face competition domestically (Piton, 2017:4). Furthermore, some industries may be left destitute and may experience job losses amid intensified competition, while others may gain from higher output and lower prices when exposed to the foreign market (Flatters & Stern, 2007:1).

### **5.6.3 Foreign Direct Investment and tradable vs. non-tradable employment sectors**

#### ***5.6.3.1 Tradable employment and Foreign Direct Investment***

Findings on South Africa's sectoral employment patterns and net-FDI provide evidence of no long-run or short-run cointegrating relationships in the grouped tradable sector and the individual mining employment sector. Further results however indicated the presence of a significant short- and long-run negative cointegrating relationship in the manufacturing sector and FDI. The above findings of a negative relationship between employment in the manufacturing tradable sector and FDI suggest that an increase in FDI in the manufacturing sector induces a decrease in South Africa's manufacturing employment opportunities. Accordingly, the loss of jobs in the manufacturing sector due to increased FDI corresponds with earlier established results of the implied negative implications of an increase trade openness on manufacturing employment. Subsequently, the increase in trade openness or intensified international economic integration presents a further increase in FDI which are both suggested to hold negative implications on manufacturing employment in the long-run.

As earlier established in Chapter 2, general economic theory upholds that FDI has the potential to promote the formation of human capital, as well as the creation of employment opportunities and training (Sauvant, 2013:15). Nevertheless, positive employment effects of FDI however rely on the manner in which FDI is utilised. Consequently, this depends on whether the financing of investment decisions is accompanied by the utilisation of either capital inputs or labour inputs in

production processes provided sufficient infrastructure (Kosteletou & Liargovas, 2000:136-138). In order to capture the comparative cost advantages, for most entities, the quest to reducing production costs and increasing efficiency and productivity implies the hiring of more capital equipment other than labour inputs within the production processes. In such a case, this evokes a negative implication on job creation patterns as indicated in the above findings of the manufacturing sector.

The above negative manufacturing employment and FDI insinuations can be exemplified by the current study's observed declining employment growth of -1.2 percent as indicated in section 3.3.1 in Chapter 3. Likewise, the period 1999 to 2001 as underscored in section 5.2 of the current chapter highlighted a decline within South Africa's exporting industries along the specified period. As discussed by Venter (2009:66), the offset to employment benefits in South Africa's exporting sectors during the latter period were driven by the pressure by such industries to become more competitive in the global market by means of employing capital intensive equipment rather human labour resources in order to cut costs.

The increase in South Africa's trade openness has witnessed high levels of unemployment since the onset of the post-apartheid regime. As opposed to alleviating South Africa's employment crisis, the country's manufacturing sector has however heightened the problem. According to Jenkins & Edwards (2012), the latter sector has experienced a drop in employment opportunities of over 350 000 following the year 1990. Meanwhile, the year 2010 encountered a decline in manufacturing jobs from 1.5 million to less than 1.2 million. The manufacturing sector's declining share in employment and GDP and the sector's output composition partly resonates with increased import competition, such as the rise in China's highly competitive and increased import penetration (Jenkins & Edwards, 2012).

Based on the suggested results of FDI and employment implications in the manufacturing sector, the suggested nexus effects are larger for the manufacturing employment sector relative to all other sectors. As indicted in the results of the current study, FDI affects employment in the manufacturing sector by 0.0274 percent. Henceforth this implies that FDI in South Africa largely affects employment in the manufacturing employment sector more than any other sector, thus a positive utilisation of FDI by means of employing more labour-intensive inputs relative to the non-tradable sector corresponds with higher employment benefits or increases. Similarly, an analysis by Demertzis and Pontuch (2013:21-22) suggests that FDI in the tradable sector likely presents more potential benefits to the trade balance and current account of the host economy.

Demertzis and Pontuch (2013:21-22) further assert that countries, such as South Africa, which consider addressing current account balances to be an essential concern must therefore develop policies triggered to attract FDI to facilitate the current account rebalancing process. However, Kosteletou and Liargovas (2000:137) argue that the sustenance of current account deficits is only significant when future capital inflows are larger than initial inward capital flows.

### ***5.6.3.2 Non-tradable employment and Foreign Direct Investment***

Similar to the grouped tradable employment sector, the grouped non-tradable employment sector revealed no short- or long-run cointegrating relationships with FDI. Individual empirical estimations of the non-tradable sectors however showcased a positive long-run cointegrating relationship between FDI and employment in the finance and construction sectors. Contrast to other individual non-tradable sectors, employment in the wholesale and retail trade sector revealed a significant but negative long-run cointegrating relationship with FDI. Nevertheless, no short-run relationship was showcased between employment in all individual non-tradable sectors and FDI.

Considering the potential long-run effects of FDI on employment within the finance and construction sectors, the positive effects of FDI on employment in the two sectors only present about 0.0002 percent and 0.0161 percent, whereas the potential effects in the wholesale and retail trade indicate a 0.023122 percent negative effect on South Africa's employment dynamics. The suggested positive effects in the finance and construction sectors however present a considerably minute effect on employment growth relative to the wholesale and retail trade sector. Meanwhile, South Africa's potential FDI effects are larger for manufacturing employment as earlier established.

Moreover, the identified positive long-run relationships between FDI and employment in the finance and the constructions sectors reveal the potential absorption of the suggested FDI benefits by host economies following an inflow of foreign investment. Therefore, a rise (or decrease) in foreign investment implies a corresponding increase (or decrease) in South Africa's non-tradable employment particularly within the finance and construction sectors. Potential displacements in employment levels may be partly led by changes in investment and trade activities as well as the changes in the exchange rate since investment is an essential component of supply and demand channels (Belke & Gros, 1998:3). Therefore, any uncertainty in the earlier established positive long-run relationship between employment in the non-tradable sectors and the real effective exchange rate owing to exchange rate volatility may impede investment flows and thus cause delayed employment decisions by firms (Feldmann, 2011:258; Mpofu, 2013:3).

The positive long-run implications of FDI on employment in the finance and construction non-tradable sectors, and the negative FDI effects on manufacturing employment correspond with the precepts of the “Dutch disease effect”. Based on the mechanism of the Dutch disease effect, a boom in the non-tradable sector implies a cumulative distortion of the tradable economy such that exports of the tradable sector tend to be less competitive while imports increase, coupled with a real exchange rate appreciation (Dartey-Baah *et al.* 2012:187; Humphreys *et al.*, 2007). According to Demertzis & Pontuch (2013:19), FDI inflows towards the non-tradable sector may present indirect negative influences on domestic exports of the tradable sector by diverting resources away from tradables. Such a transition may be used as a possible explanation of the identified negative relationship of FDI and the tradable sector’s manufacturing employment patterns considering the growing market scale of South Africa’s non-tradable sectors, such as the finance sector.

Furthermore, long-run results of the positive effects of the real effective exchange rate and the negative effects of FDI on employment in the wholesale and retail trade sector satisfy the assumptions of the imperfect capital market theory. Through channels of the latter theory (Goldberg & Klein, 1997:9), exchange rate movements may affect FDI into the wholesale and retail trade sector where a depreciation in the real effective exchange rate of the Rand makes it cheaper for foreign investors to invest and thereby increases FDI into the sector. An appreciation in the real exchange rate would thus mean otherwise. Notwithstanding, long-run results of a negative long-run employment and FDI relationship in South Africa’s wholesale and retail trade sector suggest that an increase in FDI corresponds with a decrease in South Africa’s employment within the wholesale and retail trade sector in the long-run. These results correspond with empirical examinations of FDI and job market patterns in the case of the United States. According to Hill (2000), jobs created in the United States by auto companies from Japan were argued to have been offset by the lost jobs in the United States’ owned auto companies which had lost their market share to foreign Japanese rivals. Due to such consequential substitution effects, the suggested net amount of employment created through FDI may not be as highly influential as proclaimed by multinational corporations. Accordingly, the Provincial Treasury (2012:25b) cautions that the imminent entry of much bigger international retailers, such as Wal-Mart, may compete against domestic retailers which struggle to compete within the market and are not modernised.

South Africa’s established negative employment and FDI long-run effects in the wholesale and retail trade corresponds with the high intensity of multinational retail corporations (MNEs) or transnational corporations (TNCs) within South Africa’s retail and business environment. Albeit

the increased effects of a boost in domestic competition presented by FDI inflows, MNEs or TNCs may create a sense of uneasiness to host economies such that subsidiaries of multinational retailers can implicate increased economic power relative to domestic competitors (Kurtishi-Kastrati, 2013:32-33). With the country's high levels of unemployment rate, small and medium enterprises (SMEs) are perceived by many (such as Maas & Herrington, 2006) as a vehicle and solution to job creation challenges, economic development, equitable distribution of income and sustained growth. However, South Africa has witnessed a high concentration of large MNEs amid a stagnant number of small businesses and the rise in the failure rate concerning the creation of SMEs (Fatoki, 2014:923). Kurtishi-Kastrati (2013:31-32) cautions that large foreign entities may often exploit small economies due to their dominant market positions, as a result, FDI may not always be in favour of the host country and should therefore be controlled.

Some of the challenges encountered in South Africa's retail sector includes the logistical challenges amid a large consumer base, shortage of skills, particularly management skills, and high operational costs such as the rising electricity and transport costs (Provincial Treasury, 2012b). In a developing country with few large businesses of its own, MNE's part of large enterprises may be able to subsidise their costs within domestic FDI host markets by galvanising funds created elsewhere and thus likely to drive domestic competitors out of business by means of market monopolisation (Kurtishi-Kastrati, 2013:32-33). Upon offering the same or similar retail goods, South Africa's domestic retail companies may face extreme competition on an international and national level based on factors such as price, the speed to the market, and quality. Commonly so, most competing retailers may have more resources than domestic retailers (KPMG, 2017). Amongst them, prominent international retailers within South Africa include Walmart, Topshop, the Spanish retailer Zara, Australia's Cotton On, the Swedish retailer H&M, and the American retailer Forever 21 (Farfan, 2017; IOL, 2017; Ndweni, 2015).

Additionally, the influx of competitive retailers in South Africa's domestic markets is coupled with increased Chinese retailers following the ending of the apartheid regime. Consequently, FDI led initial capital inflows are accompanied by subsequent outflows of earnings by foreign subsidiaries towards their parent company in foreign economies. As a result, this affects the balance of payments of the host economy (Kurtishi-Kastrati, 2013:32-33).

## **5.7 SYNOPSIS**

This chapter conducted and established the empirical results aimed at identifying the long-run and short-run relationships and the causal linkages between employment in the tradable and non-

tradable sectors, with trade openness, the real exchange rate and FDI. The chapter began with an analysis of time series components or features based on various assessments. Moreover, the analysis identified a mixed order of integration of the datasets at either  $I(0)$  or  $I(1)$  orders of integration. Having identified the variables' order of integration, the Panel ARDL and the standard ARDL methods were used to examine the long-run and short-run cointegrating relationships. The panel cointegration results only revealed existing cointegration for employment in the tradable sector with trade openness, solely in the long-run. For employment in the non-tradable sector, results revealed evidence of cointegration with trade openness and the real effective exchange rate in the long-run, whereas, the short-run only revealed evidence of cointegration between employment in the non-tradable sector with the real effective exchange rate. The established long-run cointegration thus implied the analysis of short-run relationships based on the ECM.

For employment in the individual tradable private sectors, the analysis of cointegration based on the ARDL bounds test revealed evidence of cointegration for employment in the manufacturing tradable sector in the long-run with trade openness, the real effective exchange rate and net-FDI. In the short-run, only cointegration between employment in the manufacturing tradable sector with trade openness and with net-FDI. No long-run and short-run cointegration was revealed for employment in the mining tradable sector. For employment in the individual non-tradable sectors, cointegration was revealed for employment in the wholesale and retail trade, employment in the finance sector, and employment in the construction sector with trade openness, the real effective exchange rate and net-FDI in the long-run. In the short-run, cointegration was revealed for employment in the finance sector with trade openness and with the real effective exchange rate only. Employment in the construction sector revealed evidence of cointegration with trade openness only. No short-run cointegration was revealed for the whole sale and retail trade sector.

A comparison between employment in the pooled non-tradable sector revealed somewhat similar findings with employment in the individual non-tradable private sector for trade openness and the real effective exchange rate in the long-run. In the short-run, the exchange rate was only significant for employment in the finance sector and the pooled non-tradable sector with similar signs. For employment in the pooled tradable sector and employment in the individual tradable sector, long-run results were only consistent for the exchange rate and net-FDI, although these findings were not significant for the pooled tradable sector. Although trade openness was significant in the long-run for both employment in the pooled tradable sector and employment in the individual private sector, the nature of the relationship was different, having been negative in the former sector and

positive in the latter sector. Also, short-run cointegration estimates were similar for trade openness and net-FDI, although having been insignificant in the pooled tradable sector. As earlier discussed, no cointegration was found for employment in the mining sector. Overall, regressors were most significant for the non-tradable sector than the tradable sector.

## **CHAPTER 6:**

### **SUMMARY, RECOMMENDATIONS AND CONCLUSION**

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#### **6.1 INTRODUCTION**

This study examined the effects of trade openness, the real exchange rate and FDI on South Africa's employment dynamics, based on the primary aim of analysing the implied effects of the study regressors on sectoral employment, particularly within tradable and non-tradable sectors. Estimations of the study were governed by the primary objective as well as secondary objectives underlined in the theoretical and empirical objectives. The study encompassed a study period based on a timeframe of 86 quarterly observations from January 1995 to December 2016. Upon achieving the set objectives, the study made use of various tests and econometric models consisting of graphical representations, descriptive and correlation analyses, the panel ARDL test to cointegration, the standard or traditional ARDL bounds test to cointegration and the Toda-Yamamoto Granger non-causality test. Accordingly, empirical datasets used in the study consisted of South Africa's trade openness, the real effective exchange rate of the Rand, net-FDI and sectoral employment within manufacturing, mining, wholesale and retail trade, finance and construction sectors. The variables used were estimated based on transformed logarithms of each variable according to its natural logarithmic form.

#### **6.2 SUMMARY OF THE STUDY**

The study was centred on establishing sectoral employment effects of South Africa's trade factors such as trade openness, exchange rate movements and FDI within tradable and non-tradable sectors. The main empirical objectives of the study consisted of: 1) the determination of trends and growth of employment, exchange rate fluctuations and FDI; 2) determining the long- and short-run relationships between South Africa's trade openness, exchange rate movements and FDI within sectoral employment in the tradable and non-tradable sectors; 3) the determination of the long-run and short-run effects of trade openness, exchange rate movements and FDI on sectoral employment in South Africa's individual private sectors; 4) comparing the effects of trade openness, exchange rate movements and FDI on employment within South Africa's tradable and non-tradable sectors; and 5) examining the causal effects of the set explanatory variables (trade openness, exchange rate movements and FDI) and employment within South African sectors. The study was structured as follows: Chapter one provided a background on the study subject. Chapter two gave further insight on existing literature by providing a review of literature related to

dynamics of employment, trade openness, the real effective exchange rate and FDI. A further examination of employment trends and policies in Chapter three assessed the trends of the considered and associated variables, as well as the implied policies on employment and foreign trade. Chapter four outlined the methodological framework which reviewed and justified the use of panel ARDL and the standard ARDL methods to cointegration as presented by Pesaran *et al.* (2001). Preliminary tests of the series gave way to assessing the features of each variable to make provision for any deficiencies within the distribution of the series. Unit root results emphasised the use of the panel ARDL and the standard ARDL approach to cointegration. Methods used to estimate the set objectives were justified by theoretic and empirical research and the considered sample period was selected based on data availability as obtained from the disclosed sources. The selected dataset *also* made exclusion of the apartheid regime's economic embargos by focusing on the post-apartheid period.

### **6.3 REALISATION OF OBJECTIVES**

This section gives a synopsis of how the study's objectives were achieved.

#### **6.3.1 Primary objective**

The primary objective of the study was to analyse the effects of openness to trade, exchange rate fluctuations and FDI on job creation in South Africa's economic sectors, particularly within tradable and non-tradable sectors. In order to fulfil this objective, the study undertook steps in fulfilling the relevant theoretic and empirical objectives.

#### **6.3.2 Theoretical objectives**

A useful literature and theoretic background was established to provide an understanding of the concepts and knowledge surrounding the research problem and the primary objective. The analysis within the study was set to accomplish pertinent theoretical objectives towards the fulfilment of the set primary objective. Theoretic objectives were achieved in respective chapters following the application of a structured theoretic outline and discussion as underscored.

- *To provide definitions and concepts relating to job creation and employment rate, trade openness, exchange rate fluctuations and foreign direct investment.*

To achieve this objective, section 2.2.1 of Chapter two established a distinction between employment dynamics underlying job creation and job destruction as well as the theoretical

definitions and patterns involving employment and the reallocation of the latter between and amongst sectors. The movement of labour between and amongst sectors may be witnessed by a change in either wages, as postulated by the theory of “wages and employment” of the classical theory as discussed in chapter 2. Also, the study provided an explanation of the function of a job as well as the disposal of idle jobs owing to patterns of job destruction. In doing so, approaches to job creation were further discussed in section 2.2.2 of Chapter two. Conceptual discussions and definitions were provided in section 2.3 of Chapter two concerning the considered concepts underlining the trade environment, such as trade openness, the real effective exchange rate and FDI. Relative differences amongst the various forms of capital flows and exchange rate measures such as the real effective exchange rate and the conventionally used real and nominal exchange rates were established. The study provided extended research on aspects of globalisation, international economic integration and/or trade liberalisation upon elaborating on the theoretic background surrounding ideas of trade openness as well as its measurements. FDI presented with it capital in the form of financing towards domestic investment decisions and the associated multinational enterprises (MNEs) which may be accompanied by potential benefits and/or setbacks towards the host economy.

- ***To establish a theoretic understanding of tradable and non-tradable sector classifications.***

Seeing that the study focused on sectoral employment, particularly within tradable and non-tradable economic sectors, section 2.4 of Chapter two provided a discourse on the former and the latter sector differentials in relation to export and import intensities. Such distinctions could not be highlighted without providing an understanding of the sectors pertaining to the mentioned sector classifications, in doing so, individual sectors or industries were categorised as either tradable or non-tradable sectors following the tradability continuum approach, or their import and export ratio's as explained by the various authors (such as Flatters & Stern, 2007; Hausmann, 2008; Mano & Castillo, 2015:22; Ngandu, 2009; Ojeda *et al.*, 2014:2; Rodrik, 2008:778; Spence & Hlatshwayo, 2014:273; Spence & Hlatshwayo, 2012:9). The study also made a further distinction between the main economic sectors underlining the primary sector, the secondary sector and the tertiary sector which constitute the tradable and non-tradable sectors.

- ***To discuss employment theories.***

To provide a conceptual understanding of South Africa's employment dynamics, section 2.5.2 provided the study with theories on employment such as the classical employment theory, and

Keynes “General Theory of Employment, Interest and Money”, *inter alia*, as well as a conceptual application of these theories to a South African contextual background.

- *To discuss foreign trade theories relating to the relationships between job creation and aspects of foreign trade inclusive of trade openness, exchange rate fluctuations and foreign direct investment.*

Theories and literature on trade openness, the exchange rate and FDI within tradable and non-tradable economic sectors were discussed in detail in Chapter two following the trade and sectoral theories comprising of the Dutch disease effect, the Balassa-Samuelson Effect, Adam Smith’s theory of absolute advantage, and David Ricardo’s law of comparative advantage, *inter alia*. The established theories and literature provided an understanding of the spill-over effects and sector or cross-sector movements led by the changes in the mentioned factors on employment, productivity, output and price. Also, employment theories and trade theories established a platform for understanding the behaviour, patterns and determinants of employment and trade. A noted highlight was the vast associations and interdependences of the considered factors within the tradable and non-tradable economic sectors and how employment is affected. Through spill-over mechanism effects, theory and literature suggested that these factors present existing insinuations amongst each other.

- *To provide a review of South Africa’s employment and trade policies.*

Moreover, the study outlined and discussed pertinent employment and trade policies in section 3.4 of Chapter three. Discussion on the selected employment and trade policies focussed on South Africa’s policies established within the post-apartheid era. Employment policies included the plans and measures enforced by the Republic towards the reduction of the country’s high unemployment levels and establishment of a labour absorbing environment. Trade policies further involved policies meant to facilitate the exchange of goods and services as well as the inflow and outflow of FDI. This encompassed a discourse on South Africa’s applied floating exchange rates as well as its policies on investment and FDI which constitute South Africa’s law and general attitude towards potential and actual investors.

### **6.3.3 Empirical objectives**

In order to fulfil the research’s primary objective, the study was also set to accomplish the various empirical objectives as underlined.

- *To determine the growth and trends of South Africa's employment rate, exchange rate fluctuations and foreign direct investment.*

This objective was achieved by establishing graphical and tabulated representations of the trends and patterns of South Africa's employment dynamics, as well as the country's macro-economic trade factors. The analysis of South Africa's employment features and trends involved an exploration of sectoral employment patterns as well as the trends in the country's overall job measures such as the trends in labour force participation rate, unemployment rate, the labour absorption rate, and the number of people employed, as discussed in section 3.3.1 of Chapter three. Moreover, a trend analysis of South Africa's macroeconomic trade factors such as trade openness, the real effective exchange rate and FDI were analysed in section 3.3.1 to section 3.3.4 of Chapter three. South Africa's trade openness was identified to have intensified following the country's extenuation of political and economic impediments led by the apartheid regime and the onset of the post-apartheid era, albeit having relatively shown a decrease in the latter during the financial crisis period. Meanwhile, the country's real exchange rate is indicated to have depreciated over the period.

- *To determine the long-run and short-run interrelations between South Africa's trade openness, exchange rate movements and foreign direct investment with employment in South Africa's tradable and non-tradable sector classifications.*

To achieve this objective, section 5.4.1 to 5.4.2 of Chapter five established results of employment in the tradable and non-tradable grouped sectors against trade openness, the real effective exchange rate and FDI. The study made use of the panel ARDL method to cointegration based on the pooled mean group estimator (PMG) which presented the long-run and short-run parameters concerning the dependent variables and the independent variables. Accordingly, both results of the mean group estimator and the PMG estimator were presented, however only results of the PMG estimator were considered as it was deemed more superior than the former due to results presented by the Hausman test. These results were further interpreted in the foregoing sections and compared to the relevant literature presented in Chapter two. A further discussion was also established in section 5.6 of Chapter five. Long-run results of employment in the grouped non-tradable sector and all the individual non-tradable sectors provided corresponding significant and positive relationships for trade openness and the real effective exchange rate. FDI was however not significant for the tradable sector, but was significant and positive for the finance sector and

the construction sectors. On the other hand, the wholesale and retail trade sector exhibited a negative relationship.

- ***To determine the long-run and short-run effects of trade openness, exchange rate movements and foreign direct investment on sectoral employment in South Africa's individual private sectors.***

The review of existing empirical findings on the matter in section 2.6 of Chapter two presented mixed results, nevertheless, the established empirical literature and the underlined economic theories provided a theoretic and empirical framework on which the empirical study objectives were estimated in section 5.5.2 of Chapter five. In achieving the above stated objective, the study estimated the short-run and long-run effects of the considered regressors on employment by means of the standard ARDL bounds test approach to cointegration. Results established thereof, where further discussed in section 5.6 of Chapter five. Amongst all the sectors, only the mining sector did not present any employment insinuations for the long-run and the short-run. The latter can be explained by idiosyncratic factors underlying the mining industry. For the tradable sector, only manufacturing employment displayed significant long-run relationships with trade openness, the real effective exchange rate and FDI, while trade openness and FDI were the only significant short-run parameters. Despite presenting insignificant long-run tradable results in the grouped tradable sector, the real effective exchange rate and FDI mirrored those of the manufacturing sector upon exhibiting negative signs. Notwithstanding, trade openness was the only significant and positive relationship for the grouped tradable sector, but negative for the manufacturing sector.

In establishing long-run results, the study estimated the short-run results of the individual employment sectors in order to establish the convergence of short-run parameters towards long-run equilibrium. The occurrence of long-run relationships presented a platform on which short-run parameters could be examined. Similar to the long-run estimates, short-run results were also estimated by the standard or traditional ARDL approach to cointegration and presented in section 5.5.2. These results were estimated by the ECM of the ARDL model.

- ***To provide a comparative analysis between South Africa's employment in individual sectors with tradable and non-tradable sectoral employment effects of trade openness, exchange rate movements and foreign direct investment.***

Findings of employment in the tradable and non-tradable sectors presented a pattern of results in most cases depending on whether employment and the considered regressors was held in the tradable or the non-tradable sector. Most results revealed strong evidence of the reallocation of

labour across sectors. Accordingly, comparison was made in section 5.6 of Chapter five based on reported findings of each sector. Results were consistent with some of the literature and findings formerly provided in Chapter two. Assumptions of the Dutch disease effect, the Balassa-Samuelson effect, and others, were used to explain the findings of the present research concerning the relative employment effects in tradable and non-tradable sectors presented by the study regressors.

- *To examine the causal effects of the set explanatory variables (trade openness, exchange rate movements and FDI) and employment within South African sectors.*

In doing so, the study analysed the causal-movements amongst employment and the study regressors by means of the Toda-Yamamoto Granger non-causality test. The findings only exhibited evidence of a bidirectional causal relationship between trade openness and employment in the manufacturing sector for the tradable sector, whereas the non-tradable sector only displayed a unidirectional relationship from the real effective exchange towards the employment in the finance sector.

#### **6.4 STUDY CONTRIBUTION**

The current research elaborated on the patterns of employment and trade factors within tradable and non-tradable sectors. Discussions and results highlighted in the study are crucial in scrutinising and monitoring the country's high levels of unemployment, depreciating currency and fluctuating exchange rate amidst the growing international economic integration with the global market. Based on the study, trade openness, the real effective exchange rate and FDI appear to be prominent factors within the trade environment affecting employment in most tradable and non-tradable industries/and or sectors. Movements in South Africa's trade openness and the exchange rate can thus be used to determine the potential employment dynamics in the short-run and the long-run. Accordingly, authorities can be able to affect the former based on the use of convenient trade policies, such as export and import tariffs (Aron & Muellbauer, 2007), while the latter may be influenced by monetary and fiscal policies through mechanisms of money supply via interest rates, and government spending (Chatterjee & Mursagulov, 2016; Kearns & Manners, 2006). Although insignificant in both the grouped tradable and non-tradable employment sectors, significant long-run and/or short-run FDI relationships were also reflected in employment sectors within all the individual employment sectors.

Moreover, the research findings of the study uncovered meaningful estimations central to economic literature, market participants and state authorities. With reference to discussed results in Chapter five, findings of trade openness, the real effective exchange rate and FDI emphasised the re-allocation of employment within and across economic sectors based on sector competitiveness, as well as labour over capital resource usage, and the dominance of multinational enterprises (MNEs) in offsetting non-tradable employment. The monitoring of MNEs by the authorities to avoid the exploitation of these enterprises could be crucial for the sustenance of the country's small and medium-sized enterprise (SMEs). The monitoring of processes involving the reallocation of labour within and across tradable and non-tradable sectors can be useful in ensuring that labour is not destroyed in the process to avoid further unemployment rises.

## **6.5 LIMITATIONS OF THE STUDY & FUTURE RESEARCH**

Limitations of the study may arise from the employed measure of trade openness (Exports+ imports)/GDP) which is based on actual trade flows. Harrison (1996:421-425) argues that such a measurement may present potential limitations since trade flows may be an imperfect proxy for a country's trade policies such as trade barriers, which play a crucial role in determining the degree of exported and imported commodities. In the case where the authenticity of the current study's measurement of trade orientation is questionable, alternative measures of trade openness may be used such as the direct measures of trade barriers which are inclusive of administrative statistics i.e. non-tariff barrier's coverage ratios. Such a measurement may thus present different results. Nonetheless, Harrison (1996) also contends that the latter measures of trade orientation are highly sophisticated and may present likely complications encountered when aggregating figures pertaining to coverage ratios or average tariff rates into a general index. Henceforth, the way forward would be the estimation of both measures of trade openness to see how the two measurements compare for future research purposes.

Further research may also consider using actual employment figures as opposed to employment indexes as the former may potentially present different results. Moreover, literature (such as Ferreira *et al.*, 2010; Menezes-Filho & Muendler 2011; Wacziarg & Wallack, 2004) suggests that the highlighted reallocation of employment across South Africa's tradable and non-tradable sectors may be accompanied by the loss of unskilled jobs, and the transfer of skilled jobs towards highly productive units. Further studies may be conducted on the mechanisms by which unskilled lost jobs may be re-absorbed by the labour market without translating to dormant and idle jobs.

Further recommendations on potential future research concerning the discourse of the present study would be the analysis of South Africa's employment in the mining tradable industry, which exhibited no evidence of short-run and long-run relationships with trade openness, the real effective exchange rate and FDI. The application of alternative methodologies of examining the dynamics of employment in the mining tradable sector and the mentioned regressors is recommended. Also, conducting further research concerning the current subject within developed and developing countries may exhibit varying results. Lastly, the analysis of South Africa's relatively closed economy which characterised the apartheid era and the country's previous exchange rate systems amassed by the managed, fixed and flexible exchange rate systems may present comparative findings to the current study.

## **6.6 RECOMMENDATIONS**

The execution of empirical and theoretical findings recognised notable recommendations for boosting employment trajectories within the country's tradable and non-tradable sectors. In order to curb the country's low growth, high unemployment rate and continued trade deficits, policies centred on stimulating the competitiveness of South Africa's tradable industries are required in securing increased domestic and foreign demand for the country's export commodities.

- ***Encouraging the localisation of activities within the domestic economy***

Considering South Africa's failing tradable sectors such as the mining sector, the country's focus on globalisation has been unable to address the growing unemployment challenges. To absorb the poor and unemployed community, strategies to uplift localisation may be addressed to support the underprivileged society to participate in economic activities. This may be overseen by strengthening and supporting the unemployed and poor communities to engage in the production of goods or services most required by the local communities. This may also be done by localising public works initiatives and social welfare as well as other government transfers.

- ***Acknowledging Michael Porter's diamond model through the provision of cost incentives***

Based on Michael Porter's diamond model, productivity is crucial for establishing and sustaining competitiveness, amongst which, the government is a major determining participant which can affect the primary determinants of industry competitiveness, such as factor endowments. Given the rising labour costs in the country's production sector, as well as increasing cost of electricity, cost relief measures in the form of multifaceted state support (i.e. industrial subsidies, infrastructure

support, affordable electricity, land and water) may be provided to tradable industries to encourage increased productivity particularly in tradable industries such as the manufacturing industry, as to increase the competitiveness of such industries. This may also prevent the tradable industry from exercising labour retrenchments by means of cost-cutting measures. In the long-run, increased exports resulting from higher productivity may also increase workers' living standards. Provision for infrastructural development may also be made to sustain the operations of both the tradable and non-tradable sectors.

- ***Intensifying export promotion measures***

The expansion of exports is seen as an important tool for sustained growth and development. Increased investment in the export or tradable sector carries with it an increase in internal demand and a rise in productivity as well as foreign competitiveness. This may be achieved by providing more subsidies to the tradable sector, encouraging more realistic trade agreements, as well as maintaining a favourable-export exchange rate. Already, South Africa's depreciating exchange rate serves as a major advantage towards the sale of the tradable sector's export commodities, thus the expansion of South Africa's production capacity and productivity amid the already depreciated currency relative to e.g. the USD, may work in favour of the country's export industries and thus labour market absorption.

- ***Monitoring large Multinational Enterprises (MNEs) to bolster domestic SMMEs***

Considering the established results of a decrease in employment in the wholesale and retail trade sector in the face of increased FDI, further monitoring of large Multinational Enterprises (MNEs) within non-tradable sectors, such as the retail industry, may be required to avoid MNEs from exploiting domestic market positions. This can be done to sustain the country's inexperienced and less-funded small and medium-sized enterprises (SMEs), as well as potential new domestic entrants, while providing them with necessary training and support (Kurtishi-Kastrati, 2013). Considering that South Africa is in need of business developments and establishments due to the heightened unemployment rate, established and dominant large MNEs may prevent small businesses from entering the market. As asserted by Porter (1980), the threat of market entry is low where dominant enterprises present high barriers to entry. These may occur in the form of the potential by large MNEs to subsidise their costs in the host economy as well as their potential to exercise economies of scale.

- ***Boosting Local Economic Development (LED) initiatives for a more sustainable economic environment***

The sustenance of local economic development through LED initiatives is crucial for local economic sustainability and growth of jobs. LED solutions may be sought to oversee the enforcement of support and strengthening of the manufacturing sector, making provision for optimal support and linkages towards the mining, agricultural, and tourism sector in order to stimulate job growth. Also, the strengthening of South Africa's SMMEs which are largely in the country's non-tradable sector, may be undertaken by providing them with skills, training and financing amid large MNEs that pose potential threats to local and small businesses. LED calls for the need to strengthen the engagement and cohesiveness between local stakeholders such as the local government or municipalities, community leaders and South Africa's businesses which may largely form part of the non-tradable sector.

- ***Creating an FDI enabling environment in the tradable sector***

This implies establishing an investment enabling environment through the establishment of a sound economic, social and political atmosphere. As stated in the study literature, the concentration of FDI in the tradable sector has the potential to improve the trade account by means of increasing the productivity and tradable goods production. Increased investment in the tradable sector may likewise enable its industries to absorb the comparative advantage presented by the South Africa's depreciating currency. As opposed to the concentration of FDI in the non-tradable sector, a higher concentration of FDI in the tradable industry may also increase the potential to absorption of all economic benefits as well as maximise the positive FDI effects. In this case, a potential real exchange rate appreciation can be sustained without encouraging further policy implications (Demertzis & Pontuch, 2013:19).

- ***Promoting the ratio of labour/capital intensity***

Caution should be taken in ensuring that the financing of investment decisions by tradable industries does not imply the enforcement of more capital and less labour resources within production processes. Incentives in the form of cost cutting measures, such as tax relief, may be provided to encourage more labour intensification within these industries while allowing for more flexible labour structures.

- ***Encouraging competition in the domestic non-tradable sector***

The manufacturing tradable sector as displayed in the findings has the potential to generate employment with a corresponding real exchange rate depreciation. Notwithstanding, a depreciating real exchange rate is argued to eventually drive up wages and prices in the domestic

market or non-tradable sector and thus lead to rising overall prices (Bishop, 2013). Monopolistic industries are able to exploit the market by charging higher prices to minimise costs pressures of a depreciating currency. To avoid this, prices may be maintained by encouraging competition in the industry as alluded to by Porter (1980). In the long-run, the domestic market may thereby benefit from the rise in productivity of the tradable sector industries led by increased export demand, as well as the competition-induced lower domestic prices.

## **6.7 KEY CONCLUDING REMARKS**

Conclusively, this research has established that South Africa's employment patterns show similar movements based on whether employment is orientated in either the tradable or the non-tradable sector in the face of the factors within the foreign environment. Relatively common employment patterns responsive to trade openness, the real exchange rate and FDI were identified within each tradable or non-tradable sector, whilst disparities were revealed when the two sector classifications were compared. Consequently, an increase in employment on one sector due to changes in trade openness, the real exchange rate and FDI may imply a decrease in employment in the other sector.

Short-run and long-run movements in the real effective exchange rate were identified to increase employment in economic sectors with respect to increased competitiveness due to a depreciating currency, as is the case for manufacturing employment. Moreover, a real appreciation constituted a rise in employment for all non-tradable sectors due to the transfer or re-allocation of jobs from the tradable sector. Considering the varying FDI effects on employment, underlining effects of FDI may be led by idiosyncratic industry decisions such as the use of FDI to finance capital or labour resources/inputs, as well as the likely presence of dominant MNEs in accordance. Also, its low impact on employment trajectories relative to trade openness and the real exchange rate could possibly be explained by South Africa's underperforming FDI inflows relative to other emerging countries.

The real effective exchange rate was identified to affect sectoral employment based on the re-allocation of labour from low productive units towards highly productive ones (from tradable towards non-tradable sectors, and vice versa), as well as the potential destruction of unskilled labour. The offset of employment benefits of a depreciating currency to export industries by the loss of jobs in the tradable industry may be due to structural inadequacies, labour rigidities, and reduced global market competitiveness, despite South Africa's depreciated currency. Nonetheless, non-tradable employment benefits from a likely Rand appreciation as formerly established in the current research. Generally, patterns of tradable and non-tradable sectors are crucial in

understanding South Africa's employment dynamics. The Dutch disease effect, the Balassa-Samuelson effect, as well as other trade and employment theories established in the literature proved to be valuable guidelines for the analysis and interpretation of the current study's topic.

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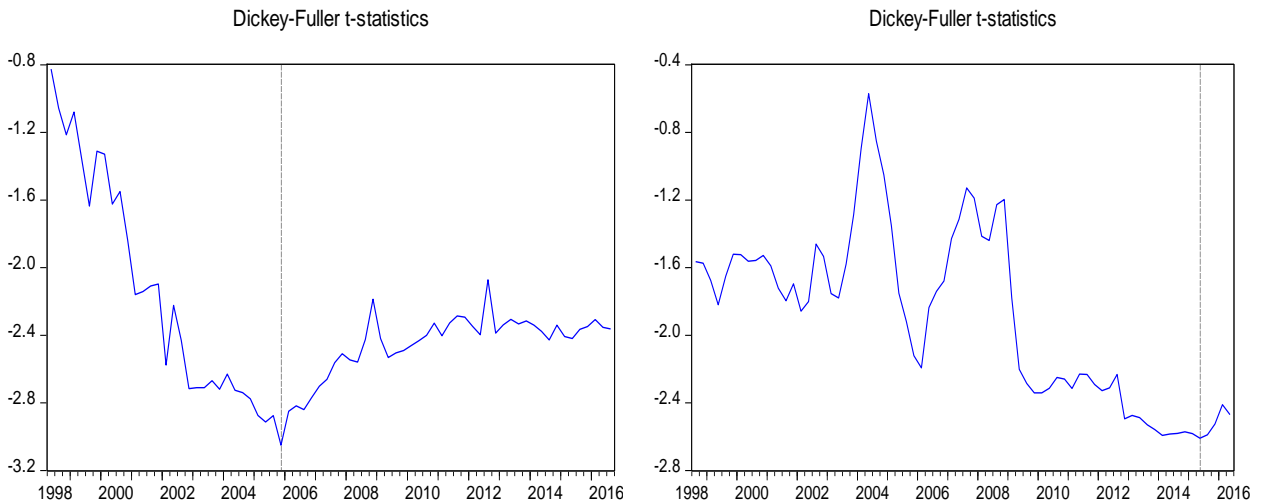
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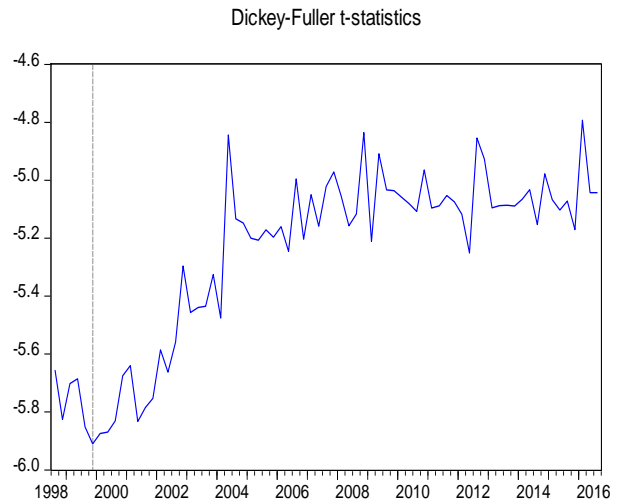
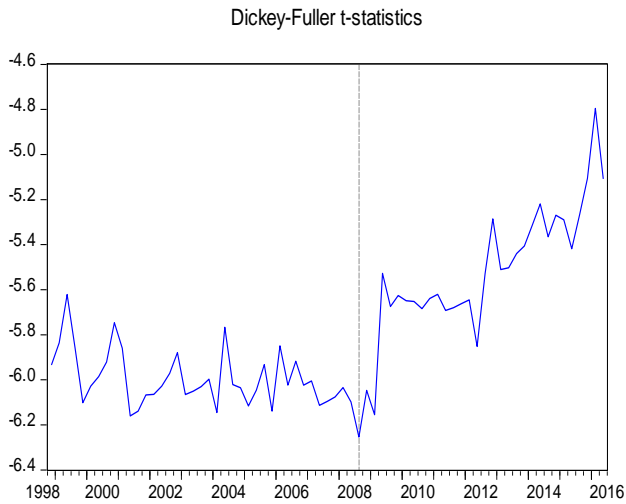
# APPENDIX A: BREAKPOINT UNIT ROOT ESTIMATED BREAK DATE

## 1. LEMAN

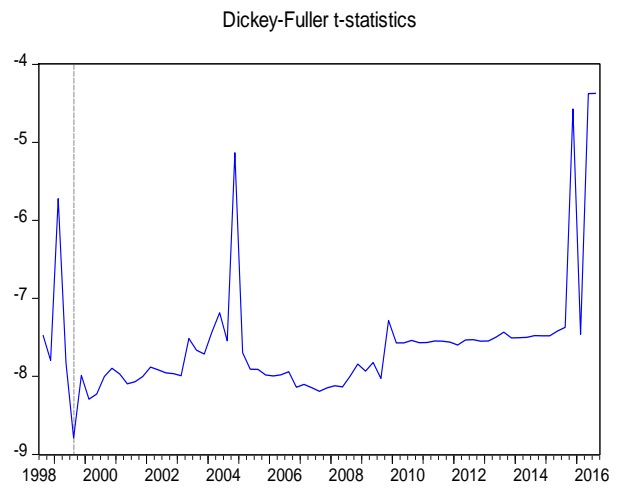
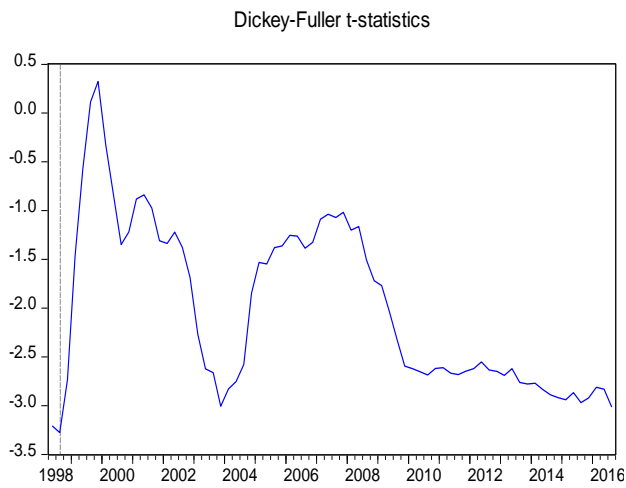


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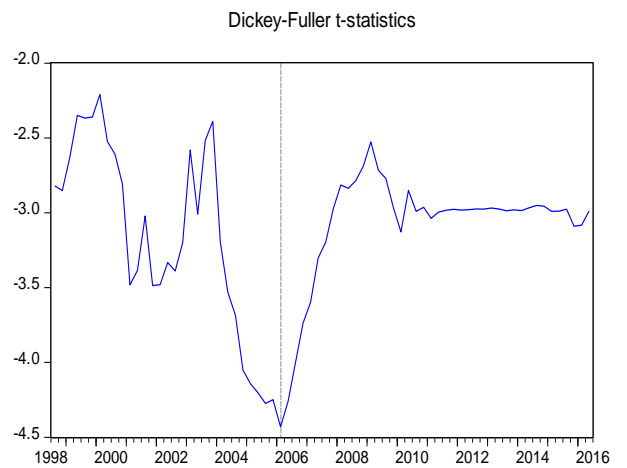
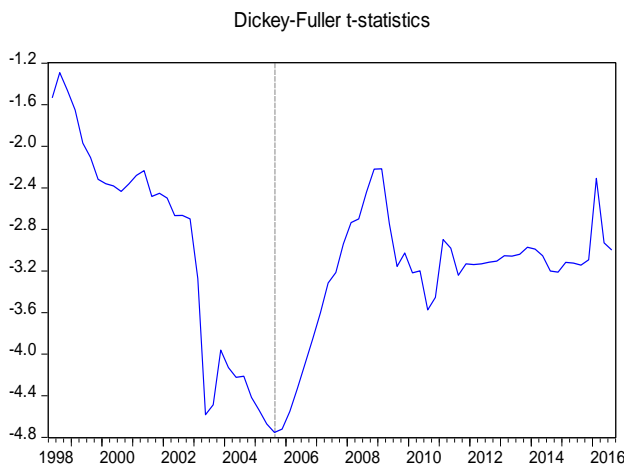


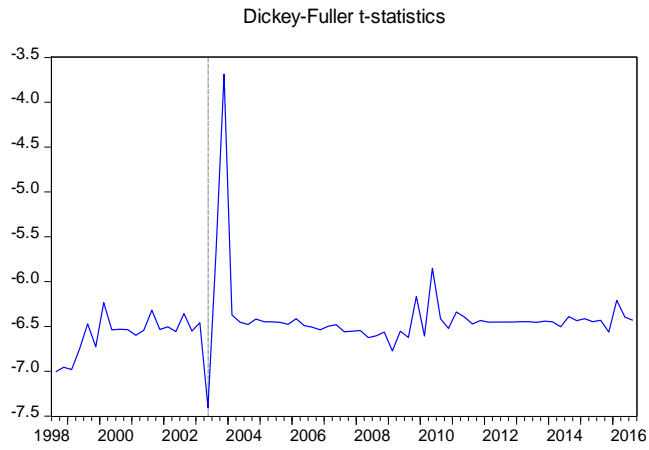


### 3. LETRAD

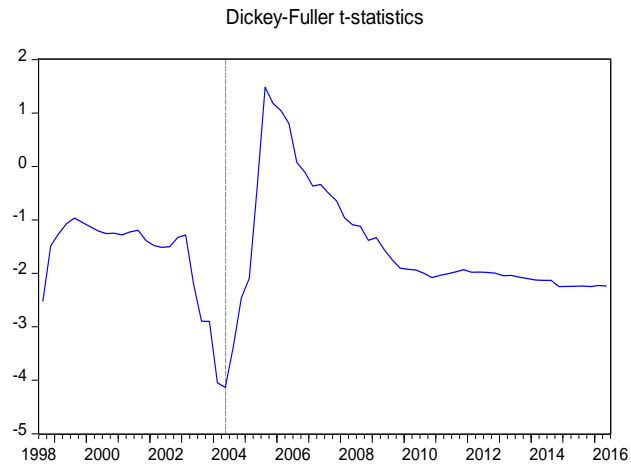
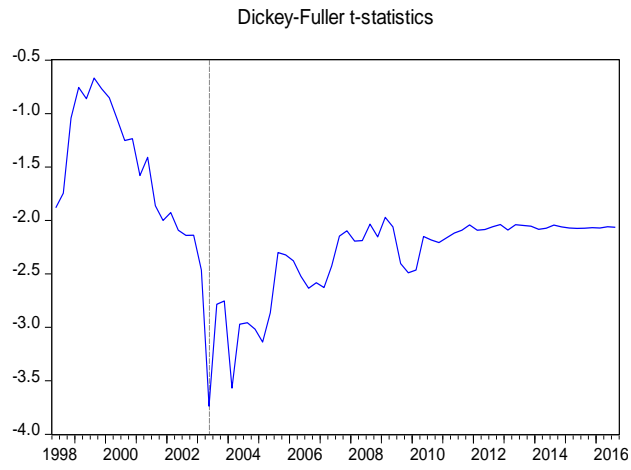


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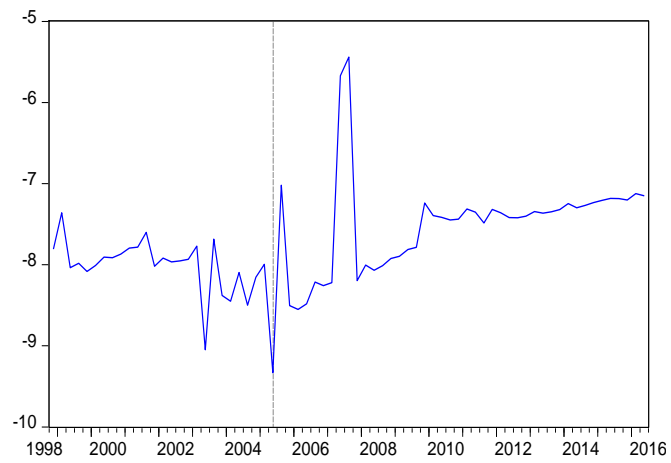




## 5. LECONST

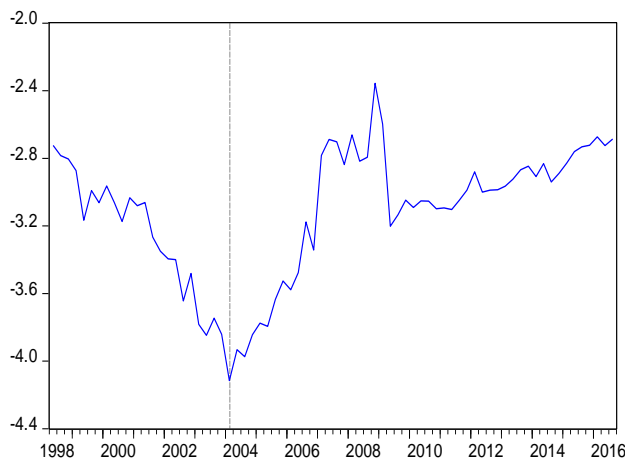


Dickey-Fuller t-statistics



## 6. LTOPEN

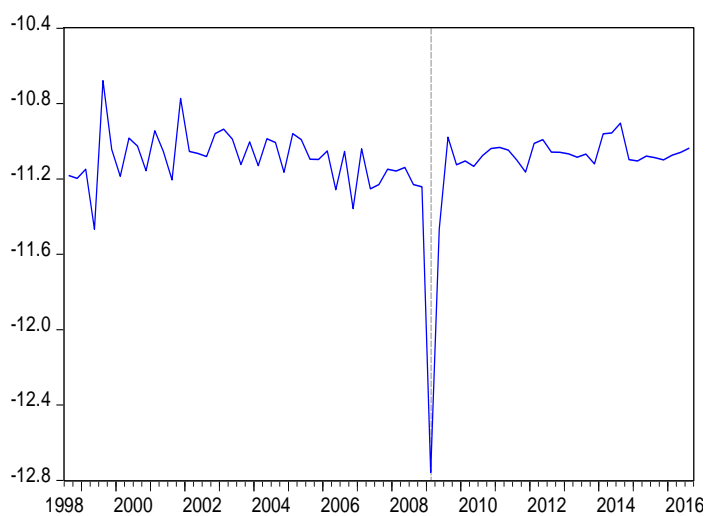
Dickey-Fuller t-statistics



Dickey-Fuller t-statistics

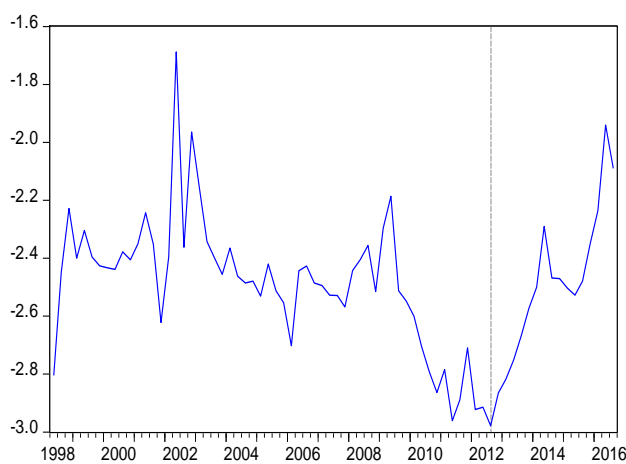


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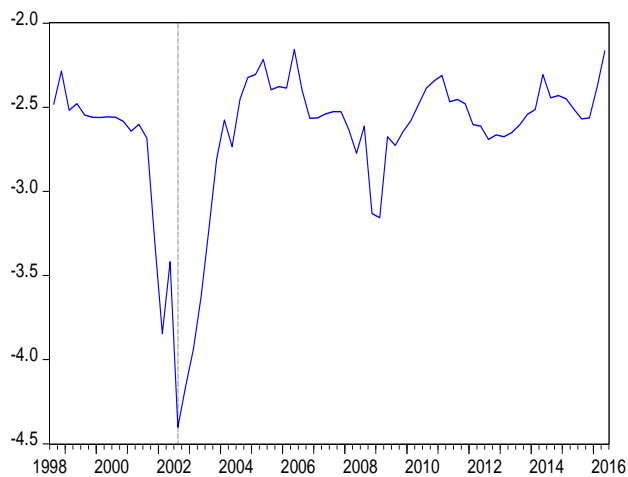


## 7. LREXR

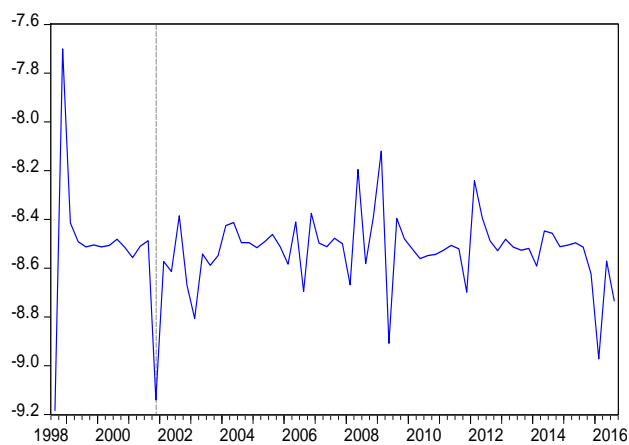
Dickey-Fuller t-statistics



Dickey-Fuller t-statistics



Dickey-Fuller t-statistics



## 8. LNFDI

