STUDIA UBB NEGOTIA, LXVII, 2, 2022, pp. 41-70
(RECOMMENDED CITATION)
DOI:10.24193/subbnegotia.2022.2.03

ANALYSING THE EMPLOYMENT EFFECTS OF THE EXCHANGE RATE, FOREIGN DIRECT INVESTMENT AND TRADE OPENNESS ON SOUTH AFRICA'S NON-TRADABLE SECTORS

Article history: Received 8 Ferbruary 2022; Revised 3 May 2022; Accepted 15 May 2022; Available online 30 June 2022; Available print 30 August 2022.

CHAMA CHIPETA[1]

ABSTRACT. Mounting assertions of the increased benefits of foreign trade integration, in terms of increased wages and labour, as well as factor productivity and resource reallocations, are accompanied by subsequent concerns of coexisting job destruction, particularly for countries with evidently rising unemployment and poverty levels. Such is the case for a post-apartheid South African economy, ravaged by persistently high unemployment rates amid increased trade liberalisation. In drawing meaningful inherences, this study examined the effects of South Africa's trade openness, the real effective exchange rate and foreign direct investment (FDI) on job creation or employment in selected non-tradable sectors. A quantitative approach was used, with the aforementioned trade-related factors as explanatory variables. Employment in the non-tradable sector's construction, finance, and the wholesale and retail trade sector served as dependent variables. A quarterly dataset from 1995Q1 to 2021Q1 was employed. While the standard Autoregressive Distributed Lag (ARDL) model was used to gauge short-run and long-run relationships. Further econometric methods such as the correlations analysis were conducted to obtain additional understanding of the nature of the set variables. Findings showed that trade liberalisation effects induce varying implications on employment in the considered non-tradable sectors, perhaps due to

[1] Post-doctoral researcher, University of Johannesburg, South Africa, e-mails: 201315830@student.uj.ac.za, chamachpt103@gmail.com

idiosyncratic characteristics in the nature and operational structure of each sector. Trade openness was shown to have exhibited significant long-run implications on job creation in all the sectors, whereas the parameters of the rest of the explanatory series were not significant in the long-run. Results further showcased mixed short-run effects of trade factors on employment in all sectors, with significant parameters for the real effective exchange rate and trade openness with employment in the construction sector. Including significant short-run relationships for the real effective exchange rate with employment in the finance sector. Significant parameters for employment in the wholesale and retail trade sector with FDI and the real effective exchange rate were established. Further inferences were made in expounding on the established dynamics.

Keywords: job creation, employment, non-tradable sector, real exchange rate, and trade openness.

JEL Classification: E24, F16, F31, O49

Recommended citation: Chipeta, C., ***Analysing the employment effects of the exchange rate, foreign direct investment and trade openness on South Africa's non-tradable sectors***, Studia UBB Negotia, vol. 67, issue 2 (June) 2022, pp. 41-70, doi: 10.24193/subbnegotia.2022.2.03.

Introduction

Over the years, nations across the world have pursued freer trade through relatively relaxed trade barriers via an array of agreements and institutions, while many countries have obtained substantial gains in trade benefits due to increased internationalisation and economic integration (Thompson, 2007; IMF, 2001). The integration of countries' economies onto the global market system has been a dominant global movement for growth and resilience under the globalisation agenda (Usman & Landry, 2021:1; Ortiz-Ospina & Beltekian, 2018). Karunaratne (2012:5) notes that foreign trade provides the capacity to maximise domestic and global welfare from its analytical advantages. Much of the stylized beliefs on international trade upholds that internationalisation facilitates domestic market integration to global markets and systems, and thereof stimulates

cultural exchange, improved governance, the rallying of cross-border capital movements, and secures funds for the transfer of knowledge and information (Altiner et al., 2018:1764). However, alongside such positive sentiments on trade is the existing reality of higher rates of unemployment in various countries worldwide which continue to exhibit negatively offsetting labour market impacts, especially in low and middle-income countries amid their openness to global markets (ILO, 2016). This study contributes to the body of research on international trade studies by assessing the non-tradable sector's employment effects of increased foreign integration. It considers trade openness, the real effective exchange rate and foreign direct investment (FDI) as key globalisation factors within the South African context.

Calls for robust trade reforms to stimulate economic growth and resilience continue to override market sentiments on foreign trade. Such assertions include those made by the World Bank (2018) which insists that economic growth for all is enabled by stronger open trade policies. Accompanied by the premise that firms exposed to the foreign trade market possess a higher likelihood of surviving economic downturns. However, the World Trade Organisation (WTO) (2021:98) posits that differential impacts of foreign trade can be observed between exporting and non-exporting sectors. Likewise, the impacts of globalisation are uncertain and tend to be country-specific, requiring targeted country trade policies, idiosyncratic to each country's capabilities, and extent of its economic and social development (Jansen et al., 2011:23-24). Nonetheless, the presiding objective calls for the attainment of desirable net effects in wages and employment through effective trade reforms.

As of South Africa's post-apartheid and relatively open economy (Padayachee, 2010:2), the integration of its economy onto global markets has had some importance in stimulating growth and the employment of unskilled and semi-skilled workers, specifically in its tradable sectors (Edwards & Lawrence, 2012:5). Notwithstanding, scholars such as Breitenbach & Slabbert (2008) showcase that South Africa's exposure to globalisation has not had a satisfactory impact in assisting towards alleviating its dire poverty and unemployment challenges. In fact, as of the 3rd quarter of 2021, South Africa recorded an official unemployment rate of 34,9 per cent, quoted by StatsSa (2021) as the "highest since 2008", with industries such as the "wholesale and retail trade", the "community and social services", having respectively incurred the largest

decrease in employment of 309 000 and 210 000 jobs. Arvanitis (2005:67), the Industrial Development Corporation (IDC) (2013:29) and The Presidency (2014:1) also highlight that the country's increase in FDI cashflows in funding its investment and savings gap has also been accompanied by heightened exposure to currency shocks. Despite the social and economic transformations brought about since 1994, South Africa's labour market has been largely constrained by unsettling unemployment levels, and daunting economic performances (Mahadea & Simson, 2010:391; Steyn, 2014). Its export-driven manufacturing tradable sector alone has been vulnerable to low growth and induced unemployment, due to its relative weakness in competing against other foreign trade counterparts who may have capitalized on the global market's growth opportunities (Rodrik, 2008:772).

Review of theory and literature

Foreign integration vs. tradable and non-tradable sector classifications

This study specifically focused on the employment dynamics of South Africa's non-tradable sector in light of the country's trade openness, the real effective exchange rate and FDI. Various scholars (i.e., Betts & Kehoe 2001:1; Bliss, 2004:3) purport that economic sector goods can be classified as tradable and non-tradable industries. Depending on their level of tradability and positioning along the tradability continuum as either perfectly tradable or perfectly non-tradable, based on their export intensity and import penetration (Ngandu, 2009:118). Sectors with high export intensities and import penetration are known to be tradable sectors, whereas, those with low trade characteristics are considered to be non-tradable, as considered for most service sectors (Ngandu, 2009:118). Tradable goods exposed to global markets satisfy the single price law, while non-tradable sector goods' prices are administered by domestic market conditions (Betts & Kehoe, 2001:1). Popular literature on economic sectors suggests that South Africa's non-tradable sectors make up roughly 80 per cent of its total economic sectors (Bhorat et al., 2014:3), comprising of real estate, electricity and water, wholesale and retail trade, transport, finance, construction, including other services. Meanwhile, tradable activities constitute the mining, fishing and energy,

hunting, agriculture, manufacturing, and forestry industries (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, 2012:715).

Scholars such as Adamu (2014), Adhikary (2011), Faini (2004), Gries et al. (2009), and Yanikkaya (2003), amongst others, consider the sum of imports and exports divided by gross domestic product (GDP) as the traditional barometer for national economies' extent of trade openness or liberalisation. In concept, trade openness speaks to the reduction or removal of quotas and tariffs including other forms of trade restrictions to international trade (Ulasan, 2012:3; Mushtaq et al., 2014:56). Such exposure is accompanied by increased competition and may lead to the creation and/or destruction of jobs within national economic sectors (Jansen & Lee, 2007:19). Whereas, trade induced job destruction is a country's labour market's risk-side of foreign trade. Another feature of exposure to foreign trade is the extensive adjustment and reallocation of production factors such as labour and capital across or within firms or sectors, which are particularly sector or firm idiosyncratic and may differ relative to productivity levels of each firm or sector (Itskhoki & Helpman, 2015:1). Firms are continually forced to adapt and adjust to dynamic economic conditions. The new trade theory posits that uncompetitive firms tend to liberate factors of production which are later absorbed by competitive firms across or within sectors (Melitz, 2003). However, smoother adaptivity and adjustments tend to be mostly in developed nations, which are theoretically considered to have full employment, where competitive markets survive and uncompetitive ones shrink or exit (Jansen et al., 2011:5-6).

Islam & Majeres (2001:280), Squalli & Wilson (2006:2), assert that firms may shift their production techniques towards the labour-intensive inputs for employment-led growth and thus increase job creation, or defer to equipment-based growth. Serrano (2008:2) highlights that increased demand for labour and production may be met by reducing the marginal production costs through relaxed trade tariffs which lower imported material costs, in support of Smith (1776) and Ricardo's (1817) assertions on trade benefits. The endogenous technological change theory also emphasizes developing economies' ability to obtain long-term growth benefits through increased trade openness projected

in the increasing returns to scale principle, based on output and employment increases (Pigka-Balanika, 2006:7). Contrastingly, an opposing view holds that increased trade openness induces increased vulnerability of national economies to external shocks or crises (Cavallo & Frankel, 2008:1431).

Employment vs. trade openness, the exchange rate & FDI

An open economy with a free-floating exchange rate is vulnerable to heightened uncertainty from changing trade movements and FDI effects, including increased variations in the real effective exchange rate. For instance, the likely decrease or increase in investment and trade activities may be due to either the share of forward hedging, investors and traders' behaviour and assumptions, and the denomination of currency contracts (Kosteletou & Liargovas, 2000). Froot & Stein (1991), Goldberg & Klein (1997:9), showcase that FDI inflows may decrease following a real effective exchange rate appreciation due to the increase in the cost of external financing than domestic financing, as indicated in the "imperfect capital markets" theory. Whereas, the purchasing of domestic assets by international entities or the increase in FDI inflows may be induced by a domestic currency appreciation. Alternatively, the labour cost theory proposes that an exchange rate appreciation (depreciation) evokes a decrease (increase) in FDI inflows under the assumption that cheap labour determines inward FDI (Kosteletou & Liargovas, 2000:139).

The "Balassa Samuelson effect" explains that the real effective exchange rate inclines to appreciate with the rise in the consumer price index (CPI) as a larger share of a nation's consumption basket is associated with the non-tradable sector's goods (Catão, 2007). Accordingly, domestic wages and employment tend to increase with an increase in domestic demand, assuming that supply is not perfectly inelastic or elastic. Whereas, the increase in wages stimulates the demand for non-tradable sector services, leading to the sector's expansion (Faggio & Overman, 2014:93). However, under the "general equilibrium effects", an increase in non-tradable sector services and goods' prices would offset the demand-led employment benefits due to increased costs such as housing costs, which may counteract supply effects (Faggio & Overman, 2014:93). Nevertheless, when labour supply is perfectly inelastic, the non-tradable sector's employment may increase due to the partially offsetting factors, while a

more elastic labour supply would induce a larger multiplier effect in the non-tradable sector. On the other hand, the tradable sector may not only be affected by the mounting foreign market competition, but may additionally be affected and offset by supply and demand factors, such as increased housing prices and high labour costs affecting the non-tradable sector (Faggio & Overman, 2014:93).

Non-tradable sector goods tend to experience minimal competition from foreign prices compared to tradable goods. However, negative or positive shocks to prices in the tradable sector also induce indirect effects on employment in the non-tradable sector (Moretti, 2010) Marchand, 2017:6-7). Where an increase in the tradable sector's supply and labour wages caused by positive foreign market shocks would stimulate the non-tradable sector's factor demand and employment from a boost in local budget constraints (Marchand, 2017:6-7). Notwithstanding, the level of technology and extent of consumer preferences for non-tradable and tradable goods also determines the magnitude of the multiplier effect (Moretti, 2010). A larger multiplier effect would imply a high-income elasticity of non-tradable goods and services. A high level of skilled jobs with increased earnings in the tradable sector also promotes a higher demand in local services, where the extent of these effects depends on the elasticities of housing supply and domestic labour. According to Marchand (2017:6-7), higher prices and increased wages induced by trade liberalisation in a tradable sector consisting of unskilled labour-intensiveness also corresponds with an increase in prices for an unskilled labour-intensive non-tradable sector. Whereas a non-tradable sector characterised by skilled labour-intensiveness experiences reduced prices. Nevertheless, the extent of these spill-overs is much smaller, likely due to changes in market conditions resulting from high market regulation, relative to inefficient price adjustments.

Various studies have sought to investigate the employment implications of trade openness, the real effective exchange rate and FDI. Empirical research by Gaddis & Pieters (2014:25) revealed a decrease in Brazil's tradable sector employment from increased trade openness, yet with no impact on aggregate employment due to the reallocation of highly-skilled labour towards the non-tradable sector, aside from low-skilled labour which was negatively affected. Also, Haltiwanger et al. (2004:207) showed a net employment growth decrease in Latin American

economies due to higher trade openness established through reduced tariffs. Janiak (2006:33) posits that the loss of employment in small firms tends to supersede job gains resulting from increased productivity, where there's a reshuffling of labour from low to highly productive firms. However, Casacuberta et al. (2004:246) argues that larger establishments are inclined to have higher prospects for net employment growth and increased productivity, with reduced rates of job destruction. Menezes-Filho & Muendler's (2011:33) study on Brazil suggested that displaced labour caused by trade openness could not be absorbed by comparative advantage driven sectors, leading to job losses. Trade openness induced job losses were also observed in the study by Asghar et al. (2014:53) regarding countries within the South Asian Association for Regional Cooperation (SAARC). The study also observed low wages and underemployment in agriculture and informal sectors. Goldberg & Pavnik (2003) revealed a failure of trade liberalisation benefits in spreading towards the non-tradable sector in a statistically significant manner. Contrasting results to the above findings were observed in the study by Hasan et al. (2012:279), who showed a decrease in India's unemployment from increased trade openness within states with high export share per sector, and for flexibly labour abundant states. Kim (2011:1) also asserted that in the face of labour market flexibility, job creation may be realised.

Moreover, Klein et al. (2003:261) examined the effects of the real effective exchange rate on the United States' labour reallocation. Findings revealed that currency appreciation results in job destruction and a further total employment growth slowdown, with open sectors being the most affected. Also, Chen & Dao (2011) established that China's real exchange rate appreciation led to a decline in both tradable and non-tradable sector jobs. Huang et al. (2014: 339) however showed that the Canadian dollar's appreciation significantly induced negative effects on its manufacturing sector due to the export-weighted exchange rate, whereas the rest of the sectors had not been affected. Moreover, Kim (2005) revealed that Korea's real exchange rate had a positive relationship with employment for industries with a low import-input ratio. In the South African case, Ngandu (2009) established that the Rand exchange rate appreciation led to the reallocation and absorption of jobs towards non-tradable sectors from tradable sectors due to high-export price in the latter.

Furthermore, FDI is considered by many to be a crucial source of poverty reduction, economic growth and development (Mwilima, 2003:31; Kurtishi-Kastrati, 2013:26; Joshi & Ghosal, 2009:34). However, there are fewer studies tailored towards establishing FDI effects specifically on either tradable or non-tradable sectors. Focus largely goes to examining net-employment effects. Kurtishi-Kastrati (2013:28) underscores that FDI tends to directly or indirectly induce job creation within countries with high labour intensity and relatively less capital. Indirect effects may be realized via increased local demand and expenditure. In terms of empirical research, Wei (2013:52) established contrasting results of FDI effects on China's employment in the primary, secondary and tertiary sectors. Such that, the primary sector was positively and significantly affected, while a non-significant employment effect was observed in the secondary sector, and lastly, the tertiary sector encountered significant negative employment effects of FDI. Moreover, Mehra (2013) purports that India's industrial and services sectors tend to be the key FDI recipients, as a result, a negative relationship was established between India's agricultural sector and FDI. These findings were supported by Nizamuddin (2013) who found negative employment effects of FDI within India's retail trade sector. Contrastingly, positive FDI long-run effects on employment growth were observed in South Africa by Tshepo (2014:18), who went on to add that increased corruption may be an inhibiting factor towards the country's flow of FDI. Karlsson et al. (2007:1) also revealed positive effects of FDI on employment growth, likely due to firm characteristics such as the firms' accessibility to export markets.

Methodology

To meet the focus objective, empirical estimations were conducted using a quantitative analysis involving quarterly figures of South Africa's non-agricultural employment data from various non-tradable sectors. Particularly, employment in the construction sector and finance sector, including the wholesale and retail trade sectors. Employment (EMP_t) series from the various sectors were considered as the dependent variables and regressed against the explanatory variables; trade openness ($TOPEN_t$), the real effective exchange rate ($REER_t$) and FDI (FDI_t). All datasets were obtained from the South African Reserve Bank (SARB).

Additionally, all employment data in non-tradable sectors was captured in index form as the unit of measurement, while figures of FDI were captured in millions. Subsequently, all the variables were transformed into their natural logarithmic forms for the study's econometric analyses. To establish South Africa's trade openness series, datasets of the country's real GDP, real exports and real imports were utilised based on the formula; (exports + imports)/GDP, following Adamu (2014), Adhikary (2011), Faini (2004), Gries et al. (2009), and Yanikkaya (2003). Figures of GDP, real imports and real exports were all at constant 2015 prices. Accordingly, about 105 quarterly observations across the sample period 1995Q1 to 2021Q1 were employed as input variables.

To establish estimations of the short-and-long-run relationships, the Autoregressive Distributed Lag (ARDL) model was employed as a means of showcasing the potential for cointegrating vectors between the dependent variables and explanatory variables or regressors. The ARDL model, by Pesaran et al. (1999) and Pesaran et al. (2001), is a vigorous econometric approach sufficient in dealing with the dynamic series of a changing economy. This model is superior to other conventional models to cointegrating procedures despite the supposed order of integration of variables as it relates to $I(0)$ or $I(1)$ orders (Dube & Zhou, 2013). To ascertain the robustness of the considered models' output estimations, diagnostic tests for heteroscedasticity, normality and autocorrelations were conducted. Accordingly, Equation (1) was employed in executing the ARDL model's bounds test to cointegration for non-agricultural employment in the construction, finance, and wholesale and retail trade sectors.

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

Such that: the variables' first difference operator was represented by Δ, while ΔLY_t denoted employment in each sector expressed in its natural logarithm as dependent variables. Whereby, ΔLY_t was recurrently

expressed to cater sector, employment in the finance sector, and employment in the wholesale and retail trade sectors, as the non-tradable sectors. Furthermore, the study regressands were represented as $LTOPEN$, indicating the natural log of trade openness, while $LREXR$ as the real effective exchange rate's natural log, and finally, $LNFDI$ as the net-foreign direct investments' natural log. Explanatory variables were consecutively held for employment in the construction the same in each of the employment equations. The white noise error term was depicted by e_t, while the series $\beta_i, \delta_i, \sigma_i, \gamma_i$ represented the short-run coefficients of the dependent and independent series, and the relationships in long-run coefficients were denoted by $\eta_1 \ldots . \eta_4$.

Moreover, Equation 1 was subsequently estimated in estimating co-integration tests for employment in each sector according to the hypotheses below:

- $H_0: \eta_1 = \eta_2 = \eta_3 = \eta_4 = 0$ (As the null; long-run co-integration does not exist)
- $H_1: \eta_1 \neq \eta_2 \neq \eta_3 \neq \eta_4 \neq 0$ (As the alternative; long-run cointegration exists)

Based on the null hypothesis), no co-integration exists between the series. Pesaran's et al. (2001) bounds test is executed by comparing the F-statistic value to the lower bounds and upper bounds critical values. A greater F-statistic than the upper bound critical value suggests existing co-integration, thus favouring the alternative hypothesis while rejecting the null, while a lower value suggests an absence of co-integration and the null is accepted. Inconclusive estimations are suggested by an F-statistic value that lies between the lower and upper bounds (Dube & Zhou, 2013).

Empirical estimations

For respective empirical estimations, the study incorporated time series variables as summarized in Appendix 1. As can be seen from the descriptive statistics in Appendix 2, South Africa's trade openness is shown to have increased immensely over the quarterly sample period 1995Q1 to 2021Q1. Having shown an average of about 53.26 per cent of the share in export and import activities in the country's gross domestic product (GDP). The maximum and lowest share of trade activities in GDP

were estimated to be 60.86 per cent and 44.99 per cent, respectively. The increase in trade exposure is also supported by increased foreign direct investment having shown an average of about R8405.17 million for the sample period, and a maximum of about R52712 million, however, having accounted for liabilities of -R13910 million. Further characteristics of the descriptive nature of the dataset are shown in Appendix 2.

Preliminary estimations involved the analysis of correlation relationships between employment in each non-tradable sector and the considered trade environment's independent variables. Table 1 of the output of the pairwise correlation revealed statistically significant p-values for employment in the construction sector with trade openness at 1 per cent, while the correlation with foreign direct investment and the real effective exchange rate was non-significant in light of their respective p-values. For employment in financial institutions, the series was found to have had a statistically significant correlation with foreign direct investment and trade openness, being positive for the former and negative for the latter. This was also the case for employment in the wholesale and retail trade sector, having shown a statistically significant positive correlation with foreign direct investment and a negative correlation with trade openness.

Table 1. Pairwise correlation analysis

	Employment in construction	**Employment in financial institutions**	**Employment in wholesale & retail trade**
Foreign direct investment	(0.0726) [0.4615]	(0.3897) [0.0000] **	(0.3764) [0.0001] **
Real effective exchange rate	(-0.0879) [0.3721]	-0.0824) [0.4036]	(0.0199) [0.8405]
Trade openness	(-0.3234) [0.0008]**	(-0.6546) [0.0000] **	(-0.6197) [0.0000] **

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

Indicated in Table 2 is a summary of the variable representations upon transforming the considered explanatory and dependent variables in their natural logarithmic form. From here on, all series were discussed in reference to their respective representations.

Table 2. Representation of variables

Variables in their natural logs	**Representation**
Dependent variables	
Log of employment in the construction sector	LECONS
Log of employment in the finance sector	LEFIN
Log of employment in wholesale & retail trade sector	LEWRT
Explanatory variables	
Log of net foreign direct investment (FDI)	LFDI
Log of the real effective exchange rate	LREXR
Log of trade openness	LTOPEN

Source: author compilation

Before estimating the ARDL model for each non-tradable sector, the study employed the Augmented Dickey-Fuller (ADF) test by Dickey & Fuller (1979) to ensure the stationarity of all data series or the absence of unit root to circumvent the likelihood of producing spurious results. Thereof, results of the ADF test are shown in Table 3. Accordingly, there was a clear rejection of the null hypothesis of the presence of unit root in favor of the alternative hypothesis of stationary series in all the dependent and independent variables. The variables LECONS and LEFIN were stationary at first difference, while the series LEWRT, LFDI, LREER and LTOPEN were all stationary at level, presenting a mixed order of integration. As such, the ARDL model was justified as a sufficient model in testing for co-integrating relationships between the dependent and independent variables.

Table 3. Augmented Dickey-Fuller (ADF) test results

Variables	**Level**				**First Difference**		**Order of integration**
	Includes intercept		Includes trend & intercept		Includes intercept		
	t-stat	*P-value*	*t-stat*	*P-value*	*t-stat*	*P-value*	
LECONS	-2.121	0.2371	-2.099	0.5396	-3.593	0.0075***	I(1)
LEFIN	-2.856	0.0541	-3.036	0.1277	-7.399	0.0000***	I(1)
LEWRT	-3.225	0.0213**	-1.237	0.8970	-5.342	0.0000	I(0)
LFDI	-10.459	0.0000***	-10.458	0.0000	-8.969	0.0000	I(0)
LREER	-10.027	0.0000***	-10.041	0.0000	-12.973	0.0000	I(0)
LTOPEN	-3.0307	0.0353**	-3.1526	0.1000	-11.039	0.0000	I(0)

Note: *** and ** indicates significance levels at 0.01 and 0.05, respectively
Source: author compilation

According to Pesaran et al. (1999), optimal lag selection corrects the errors and issues of serial correlation and endogeneity in the ARDL model. To project co-integrating relationships between variables, the following models specified in Table 4 were executed for the three employment equations in the non-tradable sectors using STATA. Estimations of the R-Squared for each of the three models confirmed that South Africa's trade factors such as trade openness, FDI and the real effective exchange rate could explain extreme variations in employment for the considered non-tradable sectors. The chosen lags were identified according to the optimal lag specifications concerning model stability and robustness in testing for short-run and long-run co-integration. This meant selecting homoscedastic models which were free from heteroscedasticity and serial correlation. Values of R-squared reinforced that FDI, trade openness, and the real effective exchange rate were key explanatory variables that elucidated the variabilities in non-tradable sector employment levels. In estimating the ARDL output for employment in the construction sector, the model $LECONS_{eq.1}$ included a trend variable (Date) from the study's date series, including two dummy variables as exogenous variables or fixed regressors, encoded as "decon" and "dreer". Both the dummy variables and the trend variable were found to be significant contributors to model stability and robustness indicated by their statistically significant p-values.

Table 4. Model specification

Variable	Selected model	Trend specification	R-Sqaured
$LECONS_{eq.1}$	4 0 0 0 0 0	Rest. constant	0.3835
$LEFIN_{eq.2}$	3 1 5 0	Rest. constant	0.3792
$LEWRT_{eq.3}$	2 3 2 2	Rest. constant	0.2696

Source: author compilation

Moreover, a prerequisite to producing robust model estimations is that the estimated models meet the stochastic processes through residual diagnostics to avoid econometric output errors which violate the classical linear model assumptions (Takaendesa, 2006:100). The study was necessitated to conduct post-estimation diagnostics, namely; Breusch-Godfrey's LM test for autocorrelation, and White's test for heteroscedasticity, including the skewness and kurtosis normality test

(Breusch, 1978; Godfrey, 1978; Gujarati & Porter, 2008). Table 5 exhibits post-estimation diagnostic results which revealed that the executed models passed all tests for serial correlation, heteroscedasticity, and normality tests. For the models; $LECONS_{eq.1}$, $LEFIN_{eq.2}$ and $LEWRT_{eq.3}$, the p-values were more than 0.05 significance level for the Breusch-Godfrey LM test and White's test. Thereby, accepting the null hypothesis of no serial correlation and heteroscedasticity, respectively. Normality test results of the Skewness and Kurtosis test (sktest) also confirmed that the three models were normally distributed as indicated by the p-values which were above the 0.05 significance level in favour of the null hypothesis.

Table 5. Residual diagnostics of selected models

	Breusch-Godfrey LM Test	**White's Test**	**Normality Test (sktest)**
	H0= No serial correlation	*H0*= No heteroscedasticity	*H0*= Normally distributed
(Eq.1) LECONS	(0.8298)	(0.7421)	(0.1262)
(Eq.2) LEFIN	(0.2846)	(0.2752)	(0.3760)
(Eq.3) LEWRT	(0.8278)	(0.2225)	(0.2054)

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

Long-run results of the Bounds test to cointegration

The ARDL model by Pesaran et al. (2001) is characterised by the estimation of the long-run cointegrating relationships via the bounds test, followed by the execution of error correction model adjustments together with short-run and long-run coefficients concerning the established models. Results of the ARDL bounds tests' long-run estimations in Table 6 revealed that the F-statistic values of the models; $LECONS_{eq.1}$ (6.345), $LEFIN_{eq.2}$ (9.028) and $LEWRT_{eq.3}$ (4.996) were above the projected lower and upper bounds critical values. This enforced the rejection of the null hypothesis of no cointegration for all models at 1 per cent and 5 per cent for some. This evidence permitted the conclusion of existing long-run cointegrations between the log of employment in the

construction sector, employment in the finance sector, and employment in the wholesale and retail trade sectors, with the log of FDI, the log of the real effective exchange rate and the log of trade openness.

Table 6. Bounds test to cointegration results: Long-run relationship

Estimated models	F-Stat	I0 Bound	I0 Bound	Outcome
Non-Tradable sectors				
(Eq.1) $F_{LECONS}(LECONS/LNFDI, LREXR, LTOPEN$	6.345**	3.25	4.46	Cointegration
(Eq.2) $F_{LEFIN}(LEFIN/LNFDI, LREXR, LTOPEN$	9.028***	4.455	5.875	Cointegration
(Eq.3) $F_{LEWRT}(LEWRT/LNFDI, LREXR, LTOPEN$	4.996**	3.264	4.474	Cointegration

Note: *** and ** denote significant at 1 per cent and 5 per cent, respectively.
Source: author compilation

Findings of the Error-Correction Model, and the short-and-long-run coefficients

The establishment of the long-run cointegration presented by the F-statistics model called for the estimation of the error correction model (ECM), to exhibit the correction from disequilibrium in the earlier period towards long-run equilibrium (Brooks, 2014). Where the dependent variables' variations are a function of the disequilibrium projected by the established cointegrating relationships and the independent variables' variations (Bhattacharya, 2011:39). The adjustment requires that the error correction term (ECT) of the ECM is negative with a significant p-value, where short-run deviations are equilibrated by the error term (Gujarati & Porter, 2008; Mukhtar & Rasheed, 2010). Tables 9, 10 and 11 of the Appendix report findings of the ARDL model's ECT in the ECM, with the ECT's respective adjustment coefficient, denoted as "adj" and the corresponding p-values. The study established that the ECM was statistically significant for all the models with p-values below 0.05 significance level, and the ECT was negative for all the models. Such that, the models; $LECONS_{eq.1}$, $LEFIN_{eq.2}$ and $LEWRT_{eq.3}$ respectively had negative values of -0.1029, -0.1003 and -0.0460 as the ECTs, with the p-

values 0.000, 0.000 and 0.001. These findings revealed clear disequilibrium adjustments towards long-run equilibrium for employment in the construction sector, employment in the finance sector and employment in the wholesale and retail trade sector. Such that, disequilibrium or departures were individually corrected at an error correction speed of approximately 10.3 per cent, 10.0 per cent and 4.6 per cent in each quarter in reaching the long-run equilibrium for the models; $LECONS_{eq.1}$, $LEFIN_{eq.2}$ and $LEWRT_{eq.3}$, respectively.

Having established the existence of long-run relationships using the F-statistics, and the existence of significant short-term adjustments towards long-run equilibrium based on the ECM, parameters of the long-run estimations provided additional information on the potential negative or positive relationships of the considered regressors and regressands. For employment in the construction sector, Appendix 3 revealed that employment in the construction sector had a negative and statistically significant long-run and short-run relationship with trade openness, where a one per cent increase (decrease) in the log of trade openness resulted in a decrease (increase) in the log of employment in the construction sector by 2.36 per cent and 0.2429 per cent respectively in the long-run and the short-run. Further coinciding with findings of the correlations analysis of a negative relationship between trade openness and employment in the construction sector. Both the long-run and short-run parameters of LTOPEN were statistically significant at 0.01 significance level. Subsequently, the parameters of LECONS with LFDI and LREER were not significant in the long run. However, short-run estimates suggested that the log of employment in the construction sector had a positive and significant relationship with the log of the real effective exchange rate. Such that, a one per cent increase (decrease) in the log of the real effective exchange rate was associated with an increase (decrease) in the log of employment in the construction sector by 0.0102 per cent, although this was only significant at 10 per cent significance level. Moreover, the parameters for LFDI were found to be non-significant in the short run.

Furthermore, Appendix 4 exhibited long-run and short-run parameters of employment in the finance sector and the respective independent variables. Results suggested that for the short-run, only LTOPEN was significant, and parameters for LFDI and LREER were non-

significant. It was suggested that the log of employment in the finance sector was negatively associated with the log of trade openness in the long run. Consistent with the negative and statistically significant correlation shown in Table 1 of the correlations output. Such that a one per cent increase (decrease) in the log of trade openness resulted in a 1.3196 per cent decrease (increase) in the log of employment in the finance sector, and was statistically significant at 0.01 significance level. However, in the short-run, no relationship was established between the log of employment in the finance sector and the log of trade openness. Short-run findings for the variable LFDI were non-significant, while the log of the real effective exchange rate displayed a statistically significant and negative short-run relationship with the log of employment in the finance sector. Such that, in the short-run, a one per cent appreciation (decrease) in the log of the real effective exchange rate is associated with a decrease (increase) in the log of employment in the finance sector by 0.0059 per cent, at 0.05 significance level. Despite being significant, this margin was found to be substantially low, and was non-significant in the correlations output albeit having also shown a negative correlation.

Lastly, Appendix 5 represented long-run and short-run findings of the log of employment in the wholesale and retail trade sector with the independent variables. Results revealed that in the long run, the parameters for LTOPEN were the only statistically significant coefficients, excluding the parameters for LFDI and LREER. Parameters for LTOPEN were negative and statistically significant at 0.05 significance level, consistent with the negative and statistically significant correlation established in the correlations output. Thus, implying that in the long run, a one per cent increase (decrease) in the log of trade openness was associated with a 1.6536 per cent decrease (increase) in the log of employment in the wholesale and retail trade sector. Moreover, short-run results indicated that only the parameters for LFDI and LREER were statistically significant, and non-significant for LTOPEN. However, short-run findings for LFDI and LREER were only significant at 10 per cent significance level. Suggesting that a one per cent increase (decrease) in the log of foreign direct investment, and a one per cent increase (decrease) in the log of the real effective exchange rate induces a decrease (increase) in the log of employment by 0.0057 per cent and 0.0050 per cent, respectively.

Discussions and conclusion

Based on the above findings, it is evident that trade-related factors such as trade openness, the real effective exchange rate and FDI have differing implications on South Africa's job creation dynamics within non-tradable sectors and may thus be sector-specific as noted by Itskhoki & Helpman (2015:1). Following Thurlow (2006:9), the implied trade openness induced loss of jobs in the wholesale and retail trade sector, including the finance sector, suggests that foreign competition resulting from an increase in South Africa's trade liberalisation endangers domestic jobs, particularly for the respective sectors within the long-run. However, the loss of jobs in these sectors would also imply that some of the jobs may not have simply been destroyed, but had been lost to either tradable or non-tradable productive sectors. This follows after the implied reallocation effects of foreign trade as highlighted by Itskhoki & Helpman (2015:1).

In light of South Africa's ever-increasing rate of unemployment, it is fair to note that the loss of jobs may not simply be due to the expansion or increased productivity of sectors such as the construction sector but as a result of distortions or inefficient economic policies. Meaning that positions for skilled or semi-skilled jobs may have rather been destroyed in the face of increased competition, than merely being absorbed by the construction sector due to an expansion in the latter. Further reiterating Thurlow's (2006:9) sentiments that the set trade policies may be countering the country's development objectives. To amass the trade benefits of globalisation in the finance sector, and the wholesale and retail trade sectors, Jansen et al. (2011:9) prompts that economies require efficiently run and smoother markets, as in the case for developed countries, to allow markets that may adapt well to survive.

Nevertheless, findings on employment in the non-tradable sectors and the real effective exchange rate are in contrast to the assertions by Gourinchas (1998:168) who noted that non-tradable jobs are unresponsive to exchange rate movements. The present study revealed that appreciations in the real effective exchange rate of the Rand appeared to have been an aiding factor in securing job creation for sectors such as the construction sector, including the wholesale and retail trade sector. However, such

assertions may not hold considering no causality tests were conducted. The appreciation in the real effective exchange rate of the Rand and the corresponding jobs increase in the constructions sector and the wholesale and retail trade sector may be due to Faggio and Overman's (2014:93) proposition that the appreciation in the real effective exchange rate may be coinciding with an increase in the domestic wages and employment, in this case, for the former and latter sectors. Under the condition that supply is perfectly elastic or inelastic. On the one hand, an appreciation in South Africa's real effective exchange rate is suggested to counteract the country's job creation efforts.

Lastly, among all the considered trade-related factors, FDI had the least significance in explaining variations in job creation for all non-tradable sectors within the long run, having displayed non-significant long-run relationships, contrary to Wei's (2013:52) findings. Also, short-run relationships between FDI and job creation were not significant for the finance sector and the construction sector. Tshepo (2014:18) purports that the flow of FDI may be inhibited by an increase in corruption. However, FDI only displayed a significant relationship with employment in the wholesale and retail trade sector, this relationship was found to be positive. Further suggests that an increase in FDI inflows induces an increase in job creation in the former sector. Karlsson et al. (2007:1) associate such a relationship as a likely result of firm characteristics such as the wholesale and retail trade sector's accessibility to export markets. Trade liberalisation affects South Africa's job market within the non-tradable sector either directly or indirectly. Therefore, there is a dire need for effective policies tailored towards boosting each industry's competitiveness and productivity, as results revealed that nontradable industries are characterised by idiosyncratic features which require tailored boosting strategies. To allow for smoother domestic market adjustments, it may also be beneficial to alleviate factors that prevent the efficient reallocation of production factors such as labour to promote the matching of skills in applicable sectors. Especially in light of South Africa's unemployment rate which is partly considered to be structural.

REFERENCES

Adamu, F. M., (2014), Trade openness and industrial performance in Nigeria: evidence from autoregressive distributed lag (ARDL) models, (Doctoral dissertation). https://acikbilim.yok.gov.tr/handle/20.500.12812/80321, Accessed: 17 November 2021.

Adhikary, B. K., (2011), FDI, trade openness, capital formation, and economic growth in Bangladesh: a linkage analysis, International Journal of Business and Management, 6(1), 16-28.

Altiner, A., Bozkurt, E., Toktaş, Y., (2018), The Effect of Economic Globalization on Unemployment in Emerging Market Economies, Atatürk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 22(Özel Sayı), 1763-1783.

Arvanitis, A., (2005), Foreign direct investment in South Africa: why has it been so low?, Post-Apartheid South Africa: The First Ten Years, 1(1), 64-79.

Asghar, M., Yousuf, M. U., Ali, S., (2014), Impact of trade liberalization on employment: review of SAARC Countries, Applied sciences and business economics, 1(01), 49-55.

Betts, C. M., Kehoe, T. J. (2001), Tradability of goods and real exchange rate fluctuations, Federal Reserve Bank of Minneapolis Staff Report. https://users.econ.umn.edu/~tkehoe/papers/caroline.pdf, Accessed: 13 December 2021.

Bhattacharya, M., (2011), Foreign Direct Investment Inflows, Merchandize Trade and Economic Growth in India: An Analytical Study, International Journal of Finance & Policy Analysis, 3(1), 36-49.

Bhorat, H., Tian, N., Ellyne, M., (2014), The Real Exchange Rate and Sectoral Employment in South Africa, Cape Town: University of Cape Town. (DPRU working paper no. 201404). https://ideas.repec.org/p/ctw/wpaper/201404.html, Accessed: 16 December 2021.

Bliss, C., (2004), Tradeable Goods, Non-Tradeable Goods and Participation, Department of Economics and Nuffield College. Oxford: United Kingdom. https://www.nuffield.ox.ac.uk/economics/papers/2005/W2/tradentrade.pdf, Accessed: 20 December 2021.

Breitenbach, M. C., Slabbert, T. J. C., (2008), Globalisation's ugly stepsister: estimating some economic impacts of localisation in South Africa, https://repository.up.ac.za/bitstream/handle/2263/8159/Breitenbach_Globalisation%282008%29.pdf?sequence=1&isAllowed=y, Accessed: 10 December 2021.

Breusch, T. S., (1978), Testing for autocorrelation in dynamic linear models, Australian Economic Papers, 17(31), 334-355.

Brooks, C., (2014), Introductory Econometrics for Finance, 3rd Ed., Cambridge: Cambridge University Press.

Casacuberta, C., Fachola, G., Gandelman, N. E. S. T. O. R., (2004), The impact of trade liberalization on employment, capital, and productivity dynamics: evidence from the uruguayan manufacturing sector, The Journal of Policy Reform, 7(4), 225-248.

Catão, L.A.V., (2007), Why Real Exchange Rates?, https://www.imf.org/external/pubs/ft/fandd/2007/09/pdf/basics.pdf, Accessed: 13 October 2021.

Cavallo, E. A., Frankel, J. A., (2008), Does openness to trade make countries more vulnerable to sudden stops, or less? Using gravity to establish causality, Journal of International Money and Finance, 27(8), 1430-1452.

Chen, R. & Dao, M. 2011. The real exchange rate and employment in China. IMF Working Papers, 148(11):1-50.

Dickey, D. A., Fuller, W. A., (1979), Distribution of the estimators for autoregressive time series with a unit root, *Journal of the American Statistical Association*, 74(366a), 427-431.

Dube, S., Zhou, Y., (2013), The Repo Rate Pass-Through to the Prime Rate in South Africa: Evidence from ARDL and FMLS Models, Journal of Business Theory and Practice, 1(2), 199-213.

Edwards, L. & Lawrence, R.Z. 2012. South African trade policy and the future global trading environment, South African Institute of International Affairs, Occasional Paper no.128, https://www.files.ethz.ch/isn/159807/saia_sop_128%20edip_%20edwards%20%20lawrence_20130207.pdf, Accccess: 06 February 2022.

Faggio, G., Overman, H., (2014), The effect of public sector employment on local labour markets, Journal of Urban Economics, 79, 91-107.

Faini, R. (2004), Trade liberalization in a globalizing world. Institute for the Study of Labor (IZA), (Discussion Paper No. 1406). https://www.econstor.eu/bitstream/10419/20704/1/dp1406.pdf, Accessed: 28 October 2021.

Flatters, F., Stern, M., (2007), Trade and trade policy in South Africa: Recent trends and future prospects, Development Network Africa, https://pdfs.semanticscholar.org/7397/b455aedaeeb548ab56f2a65377d61bcf9d92.pdf, Accessed: 20 October 2021.

Froot, K. A., Stein, J. C., (1991), Exchange rates and foreign direct investment: an imperfect capital markets approach, The Quarterly Journal of Economics, 06(4), 1191-1217.

Gaddis, I., Pieters, J., (2014), The gendered labor market impacts of trade liberalization: evidence from Brazil, The World Bank. (Working paper No. 7095). https://elibrary.worldbank.org/doi/abs/10.1596/1813-9450-7095, Accessed: 20 December 2021.

Godfrey, L. G., (1978), Testing for higher order serial correlation in regression equations when the regressors include lagged dependent variables, Econometrica: Journal of the Econometric Society, 46(6), 1303-1310.

Goldberg, L. S., Klein, M. W., (1997), Foreign Direct Investment, Trade and Real Exchange Rate Linkages in Developing Countries, National Bureau of Economic Research. (Working paper No. w 6344). https://www.nber.org/system/files/working_papers/w6344/w6344.pdf, Accessed: 28 December 2021.

Goldberg, P.K., Pavcnik, N., (2003), Trade, wages, and the political economy of trade protection: Evidence from the Colombian trade reforms, (CEPR discussion papers No. 3877). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=415820, Accessed: 04 January 2022.

Gourinchas, P. O., (1998), Exchange rates and jobs: what do we learn from job flows?, *NBER Macroeconomics Annual 1998*, 13, 153-208. https://www.jstor.org/stable/4623740, Accessed: 18 December 2021.

Gries, T., Kraft, M., Meierrieks, D., (2009), Linkages between financial deepening, trade openness and economic development: causality evidence from Sub-Saharan Africa, World Development, 37(12), 1849-1860.

Gujarati, D.N., Porter, D.C., (2008), Basic Econometrics, 5th Ed., Boston: McGraw-Hill Irwin.

Haltiwanger, J., Kugler, A., Kugler, M., Micco, A., Pages, C., (2004), Effects of tariffs and real exchange rates on job reallocation: evidence from Latin America, The Journal of Policy Reform, 7(4), 191-208.

Hasan, R., Mitra, D., Ranjan, P., Ahsan, R. N., (2012), Trade liberalization and unemployment: Theory and evidence from India, Journal of Development Economics, 97(2), 269-280.

Hausmann, R., (2008), Final recommendations of the international panel on ASGISA, Center for International Development at Harvard University, (Working Paper No. 161). https://www.hks.harvard.edu/sites/default/files/centers/cid/files/publications/faculty-working-papers/161.pdf, Accessed: 06 January 2022.

Huang, H., Pang, K., Tang, Y., (2014), Effects of Exchange Rates on Employment in Canada, Canadian Public Policy, 40(4), 339-352.

IDC (Industrial Development Corporation), (2013), South African economy: An overview of key trends since 1994, http://www.idc.co.za/reports/IDC%20R&I%20publication%20-%20Overview%20of%20key%20trends%20in%20SA%20economy%20since%201994.pdf, Accessed: 23 November 2021.

ILO (International Labour Organisation), (2016), World employment social outlook, http://www.ilo.org/wcmsp5/groups/public.pdf., Accessed: 24 November 2021.

IMF (International Monetary Fund). (2001), Global Trade Liberalization and the Developing Countries, https://www.imf.org/external/np/exr/ib/2001/110801.htm, Accessed: 06 December 2021.

Islam, R., Majeres, J., (2001), Employment-intensive growth for poverty reduction: what can labour-based technology in infrastructure contribute?, Urban Forum, 12(3-4), 279-296.

Itskhoki, O., Helpman, E., (2015), Trade Liberalization and Labor Market Dynamics with Heterogeneous Firms, https://www.princeton.edu/~itskhoki/papers/TradeLMDynamics.pdf, Accessed: 24 January 2022.

Janiak, A., (2006), Does trade liberalization lead to unemployment? theory and some evidence, Mimeo. Universite Libre de Bruxelles. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.508.5545&rep=rep1&type=pdf, Accessed: 20 January 2022.

Jansen, M., Lee, E. (2007), Trade and employment: challenges for policy research: a joint study of the International Labour Office and the Secretariat of the World Trade Organization, International Labour Organization. https://www.ilo.org/global/publications/ilo-bookstore/order-online/books/WCMS_091038/lang--en/index.htm, Accessed: 08 January 2022.

Jansen, M., Peters, R., Salazar-Xirinachs, J. M., (2011), Trade and employment: From myths to facts, Geneva: International Labour Office. https://www.ilo.org/wcmsp5/groups/public/@ed_emp/documents/publication/wcms_162297.pdf, Accessed: 20 December 2021.

Joshi, V., Ghosal, S., (2009), Impact of foreign direct investment on employment in Oman, In Conference of the International Journal of Arts and Sciences, 1(18), 34-51.

Karlsson, S., Lundin, N., Sjöholm, F., He, P., (2007), FDI and Job Creation in China, IMF (Working Paper No. 723). https://www.ifn.se/media/hiqhz35d/wp723.pdf, Accessed: 13 December 2021.

Karunaratne, N. D., (2012), The globalization–deglobalization policy conundrum, Modern Economy, 3(4), 1–15.

Kim, J., (2011), The effects of trade on unemployment: evidence from 20 OECD countries, http://www2.ne.su.se/paper/wp11_19.pdf, Accessed: 23 October 2021.

Kim, W., (2005), Analyses of the relationship between exchange rates and employment in Korea, Journal of Economic Development, 30(2), 131-153.

Klein, M. W., Schuh, S., Triest, R. K., (2003), Job creation, job destruction, and the real exchange rate, Journal of International Economics, 59(2), 239-265.

Kosteletou, N., Liargovas, P., (2000), Foreign direct investment and real exchange rate interlinkages, *Open Economies Review*, 11(2), 135-148.

Kurtishi-Kastrati, S., (2013), The effects of foreign direct investments for host country's economy, European Journal of Interdisciplinary Studies, 5(1), 26-38.

Mahadea, D., Simson, R., (2010), The challenge of low employment economic growth in South Africa: 1994 -2008, http://www.scielo.org.za/pdf/sajems/v13n4/a02.pdf, Access: 6 August 2021

Mano, R., Castillo, M., (2015), The level of productivity in traded and non-traded sectors for a large panel of countries, International Monetary Fund. (Working paper No. 15-48). https://www.imf.org/external/pubs/ft/wp/2015/wp1548.pdf, Accessed: 20 December 2021.

Marchand, B. U., (2017), How does international trade affect household welfare?, IZA World of Labor, https://wol.iza.org/uploads/articles/378/pdfs/how-does-international-trade-affect-household-welfare.pdf?v=1, Accessed: 17 October 2021.

Mehra, N., (2013), Impact of foreign direct investment on employment and gross domestic product in India, International Journal of Economics and Research, 4(4), 29-38.

Melitz, M.J., (2003), The impact of trade on intra-industry reallocations and aggregate industry productivity, *Econometrica*, 71(6), 1695-1725.

Menezes-Filho, N. A., Muendler, M. A., (2011), Labor reallocation in response to trade reform, National Bureau of Economic Research (No. w17372). https://econweb.ucsd.edu/muendler/papers/brazrloc.pdf, Accessed: 20 December 2021.

Moretti, E. (2010). Local multipliers. *American Economic Review*, 100(2): 373-377

Mukhtar, T., Rasheed, S., (2010), Testing a long run relationship between exports and imports: Evidence from Pakistan, Journal of Economic Cooperation and Development, 31(1), 41-58.

Mushtaq, B., Batool, S. A., Afzal, M., (2014), Globalization, technology transformation and economic growth (A case study of Pakistan), African Journal of Marketing Management, 6(5), 56-67.

Mwilima, N., (2003), Foreign direct investment in Africa, Social Observatory Pilot Project, Final Draft Report for the Labour Resource and Research Institute, 29-45. https://sarpn.org/documents/d0000883/P994-African_Social_Observatory_PilotProject_FDI.pdf, Accessed: 03 February 2022.

Ngandu, S. N., (2009), The impact of exchange rate movements on employment: the economy-wide effect of a rand appreciation, Development Southern Africa, 26(1), 111-129.

Nizamuddin, M., (2013), FDI in Multi Brand Retail and Employment Generation in India, International Journal of Engineering and Management Sciences, 4(2), 179-186.

Ojeda, J. N., Parra-Polonia, A., Vargas, C. O., (2014), Natural-resource booms, fiscal rules and welfare in a small open economy, Banco de la Republica Colombiana Borradores de Economia, No. 807. https://ideas.repec.org/p/bdr/borrec/807.html, Accessed: 05 February 2022.

Ortiz-Ospina, E., Beltekian, D. (2018), Trade and Globalization, https://ourworldindata.org/trade-and-globalization, Accessed: 15 December 2021.

Padayachee, V., (2010), Global economic recession: effects and implications for South Africa at a time of political challenges, Claves de la Economia Mundial. http://www.lse.ac.uk/internationalDevelopment/20thAnniversaryConference/ImpactoftheGlobalFC.pdf, Accessed: 08 November 2021.

Pesaran, M.H., Shin, Y., Smith, R.J., (1999), Pooled mean group estimation of dynamic heterogeneous panels, Journal of the American Statistical Association, 94(446), 621-634.

Pesaran, M.H., Shin, Y., Smith, R.J., (2001), Bounds Testing Approaches to the Analysis of Level Relationships, Journal of Applied Econometrics, 16(3), 289 –326.

Pigka-Balanika, V., (2006), The Impact of Trade Openness on Economic Growth, (Doctoral dissertation, thesis). https://thesis.eur.nl/pub/15905/356613-Pigka-Balanika.pdf, Accessed: 18 October 2021.

Ricardo, D. (1817), On foreign trade. Principles of political economy and taxation, https://socialsciences.mcmaster.ca/econ/ugcm/3ll3/ricardo/Principles.pdf, Accessed: 18 December 2021.

Rodrik, D., (2008), Understanding South Africa's economic puzzles, Economics of Transition, 16(4), 769-797.

Serrano, M. R., (2008), Of jobs lost and wages depressed: The impact of trade liberalization on employment and wage levels in the Philippines, 1980-2000, Monthly Review Foundation, 8. http://www.global-labour-university.org/fileadmin/Papers_Wits_conference_2007/B2/Serrano_paper.pdf, Accessed: 16 October 2021.

Smith, A., (1776), An inquiry into the nature and causes of the wealth of nations, https://www.ibiblio.org/ml/libri/s/SmithA_WealthNations_p.pdf, Accessed: 29 November 2021.

Spence, M., Hlatshwayo, S., (2012), The evolving structure of the American economy and the employment challenge, Comparative Economic Studies, 54(4), 703-738.

Spence, M., Hlatshwayo, S., (2014), Demand and Defective Growth Patterns: The Role of the Tradable and Non-Tradable Sectors in an Open Economy, The American Economic Review, 104(5), 272-277.

Squalli, J., Wilson, K., (2006), A new approach to measuring trade openness, Economic & Policy Research Unit. (Working Paper no 06-07). https://www.zu.ac.ae/epru/documents/06-07-web.pdf, Accessed: 20 February 2021.

StatsSa, (2021), Quarterly Labour Force Survey (QLFS) – Q3:2021, http://www.statssa.gov.za/?p=14957, Accessed: 11 January 2022.

Steyn, L., (2014), SA's unemployment rate spirals further into the record books, Mail & Guardian, 1, 29 July. https://mg.co.za/article/2014-07-29-sas-unemployment-rate-spirals-further-into-the-record-books/, Accessed: 15 January 2022.

Takaendesa, P., (2006), The Behaviour and Fundamental Determinants of the Real Exchange Rate in South Africa, (Master Dissertation, Rhodes University. Eastern Cape Province). https://www.tandfonline.com/doi/abs/10.1080/10800379.2006.12106418?journalCode=rsee20, Accessed: 26 January 2022.

The Presidency, (2014), Trade Mark Southern Africa, http://www.trademarksa.org/news/sas-trade-and-investment-1994-2014, Accessed: 08 November 2016

Thompson, R. L., (2007), Globalization and the benefits of trade, Chicago Fed Letter, The Federal Reserve Bank of Chicago, 236. https://www.chicagofed.org/~/media/publications/chicago-fed-letter/2007/cflmarch2007-236-pdf, Accessed: 16 January 2022.

Thurlow, J., (2006), Has trade liberalization in South Africa affected men and women differently? (No. 580-2016-39331). https://media.africaportal.org/documents/DSGD_Discussion_Paper_No._36.pdf, Accessed: 15 February 2022.

Tshepo, M., (2014), The impact of foreign direct investment on economic growth and employment in South Africa: A time series analysis, Mediterranean Journal of Social Sciences, 5(25), 18-27.

Ulasan, B., (2012), Openness to international trade and economic growth: a cross-country empirical investigation, Central Bank of the Republic of Turkey. (Discussion Paper no. 25). https://ideas.repec.org/p/zbw/ifwedp/201225.html, Accessed: 20 January 2022.

Usman, Z., Landry, D., (2021), Economic Diversification in Africa: How and Why It Matters, https://carnegieendowment.org/2021/04/30/economic-diversification-in-africa-how-and-why-it-matters-pub-84429, Accessed: 20 December 2021.

Wei, Y., (2013), The effect of FDI on employment in China, Iowa State University. Graduate Theses and Dissertations. (Working paper 13379). https://dr.lib.iastate.edu/entities/publication/f411f477-d2d2-497a-9054-42ce553bc2db, Accessed: 15 December 2021.

World Bank. (2018), "Stronger Open Trade Policies Enable Economic Growth for All", https://www.worldbank.org/en/results/2018/04/03/stronger-open-trade-policies-enables-economic-growth-for-all, Accessed: 15 September 2021.

World Trade Organisation. (2021), "World trade report: Economic resilience and trade", https://www.wto.org/english/res_e/booksp_e/wtr21_e/00_wtr21_e.pdf; Accessed: 15 January 2022.

Yanikkaya, H., (2003), Trade openness and economic growth: a cross-country empirical investigation, Journal of Development Economics, 72(1), 57-89.

Appendix 1: List of variables considered

Dependent or response variables	**Independent or explanatory variables**
Employment in the construction sector	Foreign direct investment
Employment in the finance sector	Real effective exchange rate
Employment in the wholesale and retail trade sector	Trade Openness [(Imports + Exports)/GDP]

Source: author compilation

Appendix 2: Descriptive statistics

	Employment in construction (Index)	**Employment in finance (Index)**	**Employment in Wholesale and retail trade (Index)**	**Net-FDI (Millions)**	**Real effective exchange rate (Index)**	**Trade openness [(X+M)/GDP]**
Mean	98.97429	99.0581	95.87048	8405.17	-0.08708	0.532555
Median	101.7	100.6	100.5	5051	0.39137	0.535808
Maximum	128.5	109.6	113.3	52712	13.4681	0.608591
Minimum	75.2	79.3	67.6	-13910	-15.1705	0.44993
Std. Dev.	12.8864	7.16515	12.66908	11648.6	5.07379	0.032625
Skewness	-0.25322	-0.487464	-0.795792	1.37157	-0.34142	0.096692
Kurtosis	2.183656	2.441848	2.569957	5.76634	3.83978	2.51399
Jarque-Bera	4.037689	5.521335	11.89159	66.4014	5.12528	1.197013
Probability	0.132809	0.06325	0.002617	0	0.07710	0.549632
Obs	105	105	105	105	105	105

Source: author compilation

Appendix 3: Long-run & short-run results of employment in the construction sector

$LECONS_{eq.1}$		**Coef.**	**Std.Err.**	**t**	**P>t**			**Coef.**	**Std.Err.**	**t**	**P>t**
ADJ	L1.	-0.1029	0.0250	-4.11	0.000						
LR	lfdi	0.0109	0.0297	0.37	0.716	**SR**	lfdi	0.0011	0.0031	0.36	0.717
	lreer	0.0994	0.0613	1.62	0.109		lreer	0.0102	0.0059	1.74	0.086
	ltopen	-2.3600	0.6405	-3.68	0.000		ltopen	-0.2429	0.0633	-3.84	0.000
	decon	-0.4827	0.1779	-2.71	0.008		decon	-0.0497	0.0169	-2.95	0.004
							dreer	-0.0400	0.0171	-2.34	0.022

$LECONS_{eq.1}$		Coef.	Std.Err.	t	P>t			Coef.	Std.Err.	t	P>t
							Date	-0.0003	0.0001	-2.98	0.004
							_cons	0.6029	0.1383	4.36	0.000

Source: author compilation

Appendix 4: Long-run & short-run results of employment in the finance sector

$LEFIN_{eq.2}$		Coef.	Std.Err.	t	P>t			Coef.	Std.Err	t	P>t
ADJ	L1.	-0.1003	0.0232	-4.32	0.000						
LR	lfdi	-0.0018	0.0202	-0.09	0.929	**SR**	lefin LD.	-0.0319	0.1019	-0.31	0.755
	lreer	0.1154	0.0784	1.47	0.145		lfdi D1.	0.0001	0.0014	0.04	0.967
	ltopen	-1.3196	0.2639	-5.00	0.000		lreer L4D.	-0.0059	0.0025	-2.35	0.021
							_cons	0.5162	0.1219	4.24	0.000

Source: author compilation

Appendix 5: Long-run & short-run results of employment in the wholesale and retail trade sector

$LEWRT_{eq.3}$		Coef.	Std.Err.	t	P>t			Coef.	Std.Err	t	P>t
ADJ		-0.0460	0.0139	-3.29	0.001						
LR	lfdi	-0.1435	0.0976	-1.47	0.145	**SR**	lewrt LD.	-0.0769	0.1009	-0.76	0.448
	reer	-0.0692	0.1189	-0.58	0.562		Lfdi D1.	0.0057	0.0029	1.89	0.062
	open	-1.6536	0.5167	-3.20	0.002		lreer LD.	0.0050	0.0027	1.84	0.070
							ltopen D1.	-0.0298	0.0459	-0.65	0.518
							_cons	0.3356	0.0776	4.32	0.000

Source: author compilation