Review Paper

Regional trade agreements and its impact on trade flows for South African agricultural products

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The aim of this study was to measure the impact of liberalisation on the South African agricultural economy, particularly the impact on trade flow of the exchange rate, trade liberalisation and distance of trading partners using the gravity model. The model found that all variables were significant at one percent and carried the expected sign. Only the EU dummy variable had an inverse relationship, implying that the EU trade agreement has a negative impact on the export capacity of the South African farmers. This result has important policy implications for the South African agricultural sector in selecting and strengthens the regional block agreement. Given the importance of distance to markets, South Africa should emphasise efforts to reduce transaction costs. It is also important to protect and advocate productivity growth within the era of globalisation challenges Secondly, from an export promotion standpoint, distance in the model result showed that per capita income in importing countries is elastic and significant when it comes to determining exports. Therefore, it is important for South Africa to revise all the existing trade links and extend further to countries or regions with a high per capita income in order to realise export potential.

Key words: Trade liberalisation, distance of trading partners, gravity model.

INTRODUCTION

Factors such as globalisation trends, international competition from exporting countries and environmental issues appear to be more permanent factors influencing the market. Over the past two decades, international trade in agricultural products has been expanding in volume, value, and number of participating countries (Kang, 2003). In this context, globalisation and agricultural growth become a question of market access. Trade agreements play an important role in ensuring market access between trading partners.

A wave of trade liberalisation over the last decade has positioned many developing countries to increasingly participate in the world markets (Kang, 2003). This new openness has been accompanied by concern that the poor will be adversely affected, and that the distribution of

income in developing countries will deteriorate (Grant, 2006). Indeed, it has been suggested that agricultural growth for poverty reduction be emphasised in the next round of World trade organisation (WTO) negotiations, sometimes called the "development round". The issue of trade and the growth of developing countries has become the focus of many researchers (Hertel and Reimer, 2004). Over the past decade, trade policy in South Africa has undergone several changes. These include multilateral reductions in tariffs and subsidies through the country's WTO commitments, the signing of free trade agreements (FTAs) and more recently, several negotiations around future commitments to liberalisation at both multilateral and regional level. These simultaneous developments have had an important influence on both de facto protections in the South African agricultural economy and welfare improvement (OECD, 2006).

Therefore, this paper focuses on issues that relate to the liberalisation process, in particular the impact of liberalisation on the South African economy. In addition,

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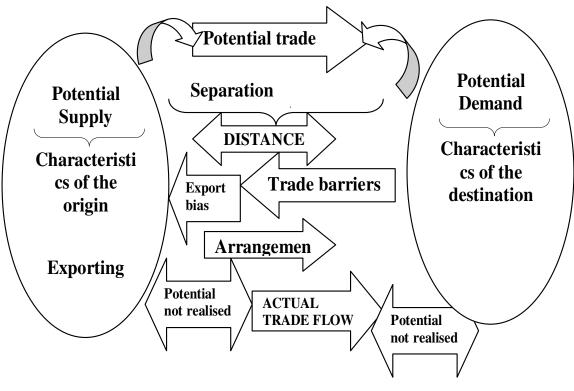
Figure 1. Design of the gravity model.
Source: DTI (2005).

the possible impact of world market prices on the South African agricultural industry due to liberalisation or a devaluation of the exchange rate is examined, along with the impact on trade flow of the distance between trading partners using the gravity model.

EMPIRICAL FOUNDATION OF THE GRAVITY MODEL

The gravity model, as social scientists refer to the modified law of gravitation, takes into account the population size of two places and their distance from each other. Since larger places attract more people, ideas and commodities than smaller places, and places closer together have a greater attraction, the gravity model incorporates these two features (Carrillo and Hernandez, 2000).

The gravity model has been widely used to analyse bilateral trade flows between country pairs. According to Brülhart and Kelly (1999) typical gravity models include the following variables as determinants of trade:

(i) Export supply, captured by economic factors (national output or output per capita) affecting trade flows in exporting countries;
(ii) Import demand, captured by economic factors (income or income per capita) affecting trade flows in the importing countries; and

(iii) Transportation costs, captured by geographical distance and other variables representing policy and cultural barriers to trade.

An alternative explanation of the gravity model can be presented in the following diagram using a simple supply-and-demand framework. According to Polder (2000) exporting and importing countries are the main objects in a gravity model. In Figure 1 the gravity model is presented graphically to show the potential supply and demand, determined by the sizes of the economies, to predict the potential trade flow between the countries as trading partners. This flow is subject to certain trade resistance factors that are improved by trade arrangements. As Kang (2003) stated in his study, the Gross Domestic Product (GDP) of the exporting and importing countries and the distance between the trading partners can be presented as economic size and trade barriers respectively.

The gravity model has been successfully applied for over forty years to explain trade flows in empirical literature. Thus, using the gravity model, the magnitude of trade flows can be estimated among trading countries. The gravity equation can be expressed in two forms. One of the standards of the gravity model is determined by the size of the countries' economies and the distance between them (Kang, 2003). The augmented gravity model equation is formed by adding more variables to the

standard gravity model.

STANDARD GRAVITY MODEL

According to Kang (2003) the standard gravity model states that bilateral trade flows are determined by four sets of variables:

(i) Variables indicating the total potential demand of the importing country j;
(ii) Variables indicating the total potential supply of the exporting country i;
(iii) The geographical distance between the countries' capitals (or economic centres); and
(iv) Variables aiding or hindering trade between the importing and exporting countries.

As stated in the study by Kang (2003) the standard form of the gravity model is an equation, linear in logarithmic form, explaining bilateral trade flows based on the masses of the two economies, the distance between trading countries, and a set of other variables:

$$\ln X_{ij} = \alpha_0 + \alpha_1 \ln Y_i + \alpha_2 \ln Y_j + \alpha_3 \ln L_i + \alpha_4 \ln L_j + \alpha_5 \ln D_{ij} + \alpha_6 \ln A_{ij} + \varepsilon_{ij} \quad (1)$$

Where X_{ij} is the value of exports from country i to country j;
Y_i and Y_j are the values of the incomes of countries i and j;
L_i and L_j are the populations of countries i and j;
D_{ij} is the distance between country i and country j;
A_{ij} represents the countries' infrastructure ratings;
ε_{ij} is a random error term, usually taken to be normally distributed.

Sanso et al. (1993), as cited in Kang (2003), denoted that the purpose of using a gravity model for international trade flows is to determine the micro-economic foundations of trading partner countries/regions. In addition, they proposed that "one of the characteristics of the equation is its general validity, since it is equally applicable to any pair of countries. It is also symmetric because it provides the trade flows in both directions by changing the country i variables for the country j" (Kang, 2003).

An alternative formulation of (2) can be constructed by using GDP per capita, instead of population variables. Thus, the specification of another form of the standard gravity model is:

$$\ln X_{ij} = \beta_0 + \beta_1 \ln Y_i + \beta_2 \ln Y_j + \beta_3 \ln y_i + \beta_4 \ln y_j + \beta_5 \ln D_{ij} + \beta_6 \ln A_{ij} + \varepsilon_{ij} \quad (2)$$

Where, y_i and y_i are the exporter (importer) GDP per capita variables.

The second specification of the gravity model could be used when a bilateral trade estimate is made for a specific commodity; while the specification form of the above Equation (2) can be used to estimate aggregate

trade flows. Therefore, this study applies the above model. Bergstrand (1989) distinguished aggregate trade flows into industries and goods; thus the coefficient of the exporter's GDP per capita income indicates whether the industry or commodity being studied is labour or capital intensive in production. In addition, the coefficient of an importer's GDP per capita indicates that the products are a luxury or necessity in terms of consumption. Consequently, the second form of the gravity model will be used in this case.

In the augmented model, more variables are added to the standard gravity model, including the real exchange rate, the importer's GDP and GDP per capita, the infrastructure, and dummy variables to take into account the effect of regional trade agreements, specifically within the South African Development Community (SADC) and European Union (EU) to make explicit the direction of trade between countries i and j. In this study, cross-sectional data was gathered for each year from 2004 to 2007 for the countries of origin and destination of South African agricultural products; along with panel/pooled data for the period 2004 to 2007. Therefore, for estimation purpose, equation (3) can be expressed in log linear form as follows:

$$\ln X_{ij} = \beta_0 + \beta_1 \ln Y_i + \beta_2 \ln Y_j + \beta_3 \ln y_i + \beta_4 \ln y_j + \beta_5 \ln DS_{ij} + \beta_6 \ln E_{ij} + \beta_7 \ln L_j$$
$$+ \beta_8 \ln D1_{ij} + \beta_9 \ln D2_{ij} + \varepsilon_{ij} \quad (3)$$

Where E_{ij} denotes the real exchange rates and L_j is the GDP of importing/exporting countries. $D1_{ij}$ and $D2_{ij}$ are the dummy variables for SADC and EU trade agreements. If trading partners have trade agreements with South Africa, this is equal to 1; otherwise it is equal to zero (Table 1).

RESULTS AND DISCUSSION

South African agricultural trade flows

The opening of the agricultural sector placed South Africa among the world's leading exporters of agro-food products. Up until 2006 South Africa witnessed particularly strong growth in agricultural exports (Figure 2). South Africa's agricultural export revenues reached almost 9% of the total value of national exports. Europe was by far the most important destination, absorbing almost one-half of the country's agricultural exports (OECD, 2006). However, in 2007 the trade trend showed agricultural exports declining tremendously and imports growing slightly (Figure 2). This is due to a multitude of factors. According to Coetzee (2008), the main factors affecting agricultural performance productivity in South Africa are the following:

(i) Since 1994 the government has restructured/focused South Africa's Commercial Agriculture Departments to

Table 1. Expected sign and explanation of variables.

Variable	Sign	Explanation
Exporter GDP	+	Potential export supply
Importer GDP	+	Economically larger countries import more
Exporter GDP per capita	+/-	A higher output per person indicates a potential for higher exports, but a larger population may both increase and decrease trade
Importer GDP per capita	+/-	A higher output per person indicates a higher import demand, but a larger population may both increase and decrease trade
Distance	-	Transportation costs
Real exchange rates	+/-	An appreciation of the importing country's currency promotes exports and hinders imports
SADC countries' trading partners	+	Trade agreements will enhance trade between those countries
EU countries' trading partners	+	Trade agreements will enhance trade between those countries
Infrastructure	+/-	Advanced infrastructure is likely to increase diversification of products and attract investment, which can potentially close the demand gap, or increase specialisation on the specific product, which can increase the extent of importing

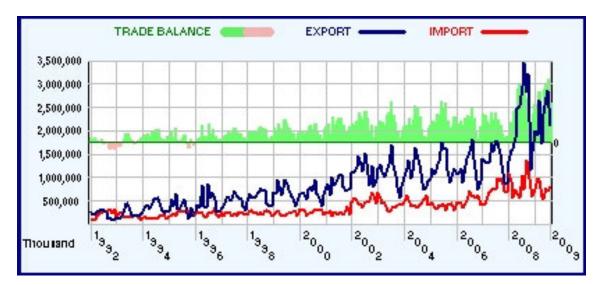Source: Hellvin and Nilsson (2000) cited in Kang (2003).

Figure 2. South African agricultural exports and imports, 1992 – June 2009 (Rand thousand).
Source: DTI (2008).

focus on encouraging newly emerging commercial farmers. Little attention has been paid to commercial agriculture's role in providing food to the local population.
(ii) Trade liberalisation with EU, subsidised imports from EU has caused local production to drop tremendously, as farmers' battle high input costs and lower prices.
(iii) Finally, the land transferred to previously disadvantaged people might not able to produce enough to close the gap of demand over supply, due to lack of experience in farming.
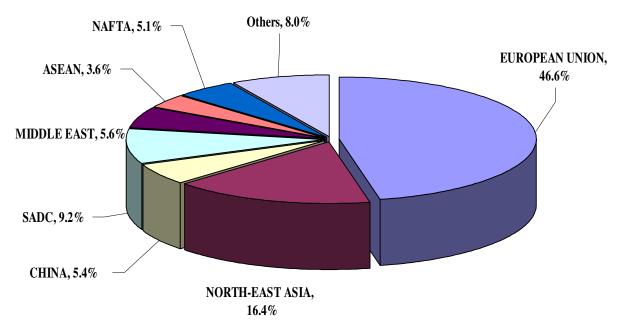
Figure 3. Average South African exports by region, 2004 - 2007.
Source: DTI (2008).

Figure 3 shows the total average South African agricultural exports per destination for 2004 - 2007. The EU imported the most, accounting for about 49.6%; the second and third largest importers were North-East Asia and the SADC at about 16.4 and 9.4% respectively. The total export to other regions accounts for about 16.4 percent. This may indicate that South African agricultural exports are competitive in the EU markets, or could be a result of consumer preferences for South African products. It may also indicate the ability of the South African agricultural industry to comply with market requirements.

In terms of the origins of South Africa's imports (Figure 4), the MERCOSUR trading-block region was the biggest exporter to South Africa, accounting for about 23%. The SADC was the second biggest exporter at 17%, followed by NAFTA (15%), with the EU and other regions in total accounting for 10 and 7%, respectively. This shows that South Africa, with its new import orientation, is seeking the cheapest region in terms of cost effectiveness in order to close the demand gap.

Within the above context, several questions arise: Firstly, the question of why the current decline in exports in 2007 and 2008 and rise in imports has come about and what are the main factors that led to these changes. Secondly, there is the question of how agriculture can play a role in improving the situation and what factors will have an impact on the process of agriculture playing a more prominent role. The third question pertains to the role of agricultural sector and government's open trade policy. The final question relates to the role of trade policy in the agricultural sector as a foundation for achieving government's growth objectives. Furthermore, it is necessary to provide answers to the following questions:

- Has the current open trade regime followed by South Africa, in particular in the agricultural sub-sector, culminated in increased economic growth, and what was agriculture's role in this?
- Are current policies sufficiently sequenced and linked to provide support to an open trade regime?
- What policy directions should be taken to foster agriculture's role in economic growth, especially in the case of trade policy?

International trade flow of South African agricultural exports: A gravity model approach

Once the necessary statistical test was conducted, the relationship among the variables was estimated. However, applying Ordinary Least Square (OLS) to both the cross-sectional and pooled data created a heteroscedasticity problem. To remedy this problem, Weighted Least Square (WLS) was applied to the cross-sectional and pooled data sets for each year (2004 - 2007) for 30 countries as export destinations.

Table 2 shows how the gravity model explains the factors relating to exports to 30 countries based on cross-sectional observation of the years under consideration (2004 - 2007). The overall explanatory power for export determinants is quite high at 99% in all cases. With the exception of INFRAS in years 2004 and 2005 and the dummy variable for the EU trade agreement impact in
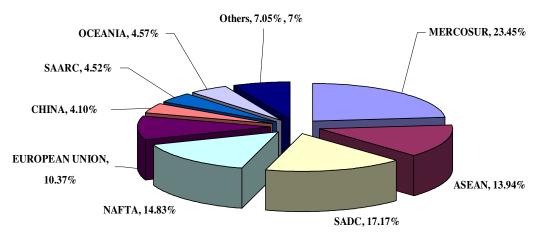
Figure 4. Average South African imports by region, 2004 - 2007.
Source: DTI (2008).

Table 2. Gravity model estimation of exports: Cross-sectional observation, 2004 - 2007.

Variable	2004	2005	2006	2007
GDPcap	1.579378*	1.388964*	1.725288*	0.587267*
	(0.056398)	(0.089009)	(0.178341)	(0.033427)
GDP	0.621513*	0.810635*	0.563046*	0.504345*
	(0.020435)	(0.01954)	(0.042327)	(0.006152)
Distance	-2.45252*	-3.07967*	-1.78765*	-1.31255*
	(-0.13579)	(0.200765)	(0.185502)	(0.027992)
Exchange	0.073183*	0.114596*	0.128525*	0.050929*
	(0.013279)	(0.009174)	(0.036184)	(0.004415)
Infrastructure	-0.53715	-0.69945	-3.74636*	-0.44317*
	(0.411333)	(0.575491)	(0.571451)	(0.153881)
D1	-0.67741*	0.199047**	0.134699***	0.184959*
	(0.093495)	(0.089188)	(0.082079)	(0.042885)
D2	1.102415*	0.361512***	1.150649*	-0.1646*
	(0.12155)	(0.458819)	(0.328448)	(0.048421)
C	2.346323	4.436028	1.261472	5.082553
R-squared	0.998	0.999	0.999	0.998
Adjusted R-squared	0.996	0.998	0.998	0.997
Durbin-Watson stat	1.995259	1.582653	1.607789	1.985901
Number of observation	30	30	30	30

* , ** and *** significant level at 1%, 5 % and 10 % respectively
Standard error indicated at the parenthesis.

2005 (not significant and not reported – Table 2) all other variables were found to be statistically significant at the specified level of significance. Furthermore, all variables were found to hold the expected sign.

GDP per capita of exporting country

The higher the per capita income for a country, the greater the demand for imports. Table 2 shows that this effect is quite strong. The positive coefficient of all years under consideration is the increase in per capita income of trading partners and increasing evidence of exports to the rest of the world as long as South Africa can produce surplus for export. The coefficient of the GDP per capita determinant for the year 2007 was much smaller than for the other years. This implies that the contribution of South African exports to the rest of the world decreased in 2007. Furthermore, it can be interpreted that 1% increase in per capita income of the trading partners only increased South African exports to the rest of the world by 0.58%, compared to 1.72% in the previous year (Table 2).

GDP or GDP per capita importing countries

The effect of GDP or GDP per capita is an indication of the growth of the economy and the success of international trade. A higher GDP would most likely affect the coefficient positively (Oleh and Peter, 1997). The positive and statistically significant coefficients of the importing country's GDP for the augmented gravity model are consistent with the theory behind the conventional gravity model, suggesting that the size of the economies should enhance the amount of trade between trading partners. A percent increase in the importing country's GDP created an increase in trade of between 0.50 and 0.81% from 2004 - 2007. This result reveals that other countries' demand for South African agricultural products is inelastic, and even lower figures for the year 2007 shows a decline in foreign export earnings. Due to factors such as unfair trade agreements creating high levels of competition, the cost price squeeze problem was much more serious in 2007.

Distance

A country that lies geographically further from South Africa is expected to attract less export, especially due to transport costs. The coefficients indicate that this is indeed the case. Although the influence of distance is significant for total exports, it might not be an obstacle for some individual sectors, depending on the goods and services produced in the particular sector. Transport costs for goods to the developed world have declined substantially over time. For example, the estimated coefficients for 2005 and 2007 were 3.07 and 1.31 respectively. This could be a good indicator that distance could be a less important factor in determining trade in light of the globally improved communication system and infrastructure.

Exchange rate

The magnitude of the coefficient is relatively small. Rapid short-run depreciations, nevertheless, will in most instances result in actual exports overshooting the potential level. Over the long run, however, the exchange rate effect becomes less severe compared with the other variables.

Infrastructure

This variable is drawn from a comprehensive rating of a county's infrastructure, which includes various factors ranging from roads and telecommunications to institutions. A higher rating indicates a better infrastructure. Better infrastructure should lead to higher levels of trade or it might discourage exports to the specific country. An improvement in infrastructure should lead to an improvement in specialisation and production. The coefficients indicate that this is indeed the case.

The dummy variables for SADC and EU trade liberalisation of the regions appear to be important variables in explaining trade. The dummy variables for the SADC (with the exception of 2005) and EU (with the exception of 2006) were found to be significant at 1% in all cases (with the exception of the EU dummy variable at 5%) (Table 2). Furthermore, with the exception of the dummy variable for the EU in 2004 and the dummy variable for the SADC in 2007, the dummy variables were found to be negative, with all other years being positive. The negative relationship might imply that trade liberalisation will discourage exports - that is, the impact of trade liberalisation might be captured over a longer observation period in future. On the other hand, open trade means creating high levels of competition between domestic producers and larger commercial or international producers, for instance the EU with its highly subsidised farmers. Comparing the two dummy variables D1 (EU dummy variable) and D2 (SADC dummy variable) reveals that D2 is more elastic, which implies that the SADC region is an efficient market for South African agricultural products. This might be due to cheaper transportation costs and similar industrialisation levels in the region, thus contributing to higher intra-trade levels in the region for better agricultural growth.

One must, however, caution against inferences regarding the dummy variable for the EU. The relatively smaller elasticity responsiveness of the EU dummy variable might have resulted from:

(a) The exclusion of beef, sugar and maize from the agreement, or it might imply that products/commodities that have preferential access to the EU are unable to explain economic growth.
(b) It might be due to the fact that EU liberalized very little in their agricultural imports that would be value to South Africa. That is, South Africa agreed to remove

Table 3. Gravity model estimation of export panel data, 2004 - 2007.

Variable	Coefficient	Std. error	t-Statistic
GDPcap_ROW	1.152747	0.027589	41.78235*
GDP	0.622136	0.015877	39.18579*
GDPcap_SA	4.962766	0.567189	8.749763*
GDP_SA	-5.325915	0.529333	-10.06155*
Distance	-1.994226	0.052103	-38.27485*
Exchange	0.048129	0.007484	6.431184*
Infrastructure	-0.750345	0.074139	-10.12083*
D1	-0.178369	0.023515	-7.585216*
D2	0.828328	0.040568	20.41841*
C	104.7842	8.973597	11.67694*

		Weighted statistics	
R-squared	0.999999	Mean dependent var	17.392
Adjusted R-squared	0.999998	S.D. dependent var	96.23318
S.E. of regression	0.015822	Akaike info criterion	-5.37512
Sum squared resid	0.027539	Schwarz criterion	-5.14283
Log likelihood	332.507	F-statistic	4.89E+08
Durbin-Watson stat	2.064508	Prob(F-statistic)	0.0000
Number of observations	120		

* shows significant level at 1%.

approximately 81% of duties on its imports of agricultural products from the EU, while the EU removed duties on approximately 61% of the EU's total imports of agricultural products from South Africa (Economic Commission for Africa, 2004).

Table 3 shows the pooled gravity model that explains factors for exports to 30 destination countries from 2004 - 2007. The overall explanatory power for export determinants is quite high at 99%. All variables were found to be statistically significant at 1% significance level. Furthermore, all variables were found to have the expected sign (with the exception of the dummy variable for the EU, namely D1). The negative relationship between export and trade liberalisation could be justifiable and acceptable in light of the current worldwide crisis of high food prices, mainly caused by high oil prices, unfair trade agreements (that is, high levels of competition with subsidised farmers of the EU). These are the factors that could prove discouraging to South Africa's export capacity.

The Durbin-Watson statistic indicates 2.06 (Table 3), which implies that there is no autocorrelation problem in the model. In other words, the estimated regression coefficients have the minimum variance property; the mean square error (MSE) is estimated with exact variance of the error terms; and the computed standard error of the estimated parameter values is the true standard error.

The "F value" and "Prob (F-statistic)" tests show the overall significance of the regression model. What was specifically tested was the null hypothesis that all of the regression coefficients are equal to zero, while the alternative hypothesis is the opposite statement (Kang, 2003).

The low F-value (0.000) of the model implies that at least some of the regression parameters are nonzero and that the regression equation does have some validity in fitting the data (that is, the independent variables are not purely random with respect to the dependent variable, and therefore the alternative hypothesis is accepted).

The estimated coefficients for gross income and per person income of the exporting country (South Africa) have the expected signs, are statistically significant and elastic. However, the GDP per capita of South Africa was found to have an inverse relationship with export supply, which might imply that the economy of the country is moving toward other sectors. The gross income indicates that a 1% improvement in national gross income will lead

to a decrease in exports of 5.32%, whereas an increase in the per person income of the exporting country (South Africa) will encourage export. However, the real income and per capita income of the importing countries have been found to be significant and positively related to export capacity. In contrast the gross income of the importing countries was found to be inelastic, with per capita income being elastic. For example, a 1% increase in real income or per capita income will lead to 0.62 and 1.15% respectively. This implies that South Africa's focus on agricultural export destinations should fall more on countries with larger populations. Therefore, policymakers have to create an export environment conducive to encouraging exports to more richer and populated countries.

The estimated coefficient of distance for South African agricultural products is -1.99. This elastic variable implies that if the distance between South Africa and the importing country were to increase by 1%, then total agricultural product exports would decrease by 1.99%.

The coefficient of real exchange rates also has a positive effect on South African agricultural exports as hypothesised. It is statistically significant at 1%. The dummy variables for the EU and SADC were found to be significant at 1%. The dummy variable for the EU was found to have a negative coefficient, which implies that South African farmers are facing high levels of international competition, which erodes these farmers' profit margins. On the other hand, the dummy variable for the SADC (D2) was found to be significant and positive (with a relatively higher coefficient (elastic) than the EU dummy variable, with the coefficients being -0.17 and 0.82 respectively). This holds the same interpretation as for the cross-sectional analysis.

Generally, the GDP per capita for importing countries, the GDP per capita for the exporting country (South Africa) and distance were all found to be elastic. This implies that a small percentage change in the above-mentioned variables would make a more significant difference to South Africa's export capacity.

CONCLUSION

This chapter evaluated, analysed and classified the significant determinants affecting agricultural exports for both cross-sectional data and panel/pooled data (2004 to 2007) using the gravity model. The model estimate was based on the panel data of 30 South African export destination countries. Consideration was also given to investigating the impact of income, per capita income, distance, exchange rates and dummy variables on EU and SADC trading partners in order to analyse the impact of trade agreements on trade volumes.

The model found that all variables were significant at 1% and carried the expected sign. Only the EU dummy variable had an inverse relationship, implying that the EU trade agreement has a negative impact on the export capacity of South African farmers. In other words, South

African farmers are not able to compete with the EU's subsidised farmers.

These results have several important policy implications for South Africa. Firstly, trade agreements - whether implemented unilaterally or bilaterally - will enhance potential trade flows between South Africa and other countries or regions. It is also important to protect and advocate productivity growth within the context of fair agreement. Secondly, from an export promotion standpoint, distance in the model result showed that the importing countries' per capita income is elastic and significant in determining export. Therefore, it is important for South Africa to revise the existing trade links and to extend trade to high per capita income in order to realise export potential.

On the other hand, to avoid the vulnerability of exports to future crises in EU regions or countries, where the largest proportion of South Africa's exports is directed, it is important that South Africa continues to concentrate its export promotion efforts in other regions of the world.

REFERENCES

Bergstrand JH (1989). The generalized gravity equation, monopolistic competition, and the factor-proportions theory in international trade. Rev. Econ. Statist., 71(1): 143-153.

Brülhart M, Kelly MJ (1999). Ireland's trading potential with Central and Eastern European countries: A gravity study. Econ. Soc. Rev. 30: 159-174.

Carrillo C, Hernandez M (2000). Economic integration, trade and industrial structure in the Andean economies: The Peruvian case. In: N. Hamaguchi (Ed.). Peru's new perspectives on trade and development: Strategic integration with the global economy. Chiba, Japan: Instit Dev Econ (IDE-JETRO).

Coetzee K (2008). Farmer's Weekly, No. 98015, issue 25 April – 2 May, 2008.

DTI (Department of Trade and Industry) (2005). A gravity model for the determination and analysis of trade potential for South Africa. URL: http://www.dti.gov.za/stats/gravity.pdf (Accessed on: 2008-11-05)

ECA (Economic Commission for Africa (2004). Unlocking Africa's trade potential, United Nations Economic Commission for Africa, Addis Ababa. URL: www.Uneca.org (accessed on 2008-04-02).

Grant C (2006). Southern Africa and the European Union: The TDCA and SADC EPA.

URL:http://www.tralac.org/scripts/content.php?id=4934 (Accessed on: 2008-08-25);

Hertel T, Reimer JJ (2004). Predicating the poverty impact of trade reform. World Bank Policy Research Working Paper 3444. URL:http://www.worldbank.org/external/default/WDSContentServer/IW3P/IB/2004/12/17/000160016_20041217172335/additional/310436360_20050014105925.pdf_(Accessed on: 2008-07-11)

Kang M (2003). US wood product exports and regional trade. Atlantic Econ .J, 31(4): 386-403. URL: http://www.springerlink.com/content/6g3513628j862241/ (Accessed on: 2008-11-29)

OECD (Organisation for Economic Co-Operation and Development) (2006). Agricultural policy reform in South Africa: Policy brief (April 2006). URL: http://www.oecd.org/dataoecd/31/45/36581609.pdf (Accessed on: 2008-11-05)

Oleh H, Peter K (1997). Intra-industrial trade of Arab countries: An indicator of potential competitiveness. URL: www.imf.org/external/publs/ft/wp/wp9747.pdf (Accessed on: 2008-08-08).

Polder M (2000). Forecasting international trade flows: A gravity-based approach. Medium Econometrische Toepassingen, pp. 24-24.