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An Empirical Analysis of Determinants of Swaziland's Export Performance

Sipho V. Skosan^a, Francois I. Kabuya^{b*}

^a Central Bank of Swaziland, Mbabane, Swaziland

^b Agricultural Economics and Management Department, University of Swaziland, Swaziland

^aE-mail: sv.nanase@gmail.com

^bE-mail: fkabuya@uniswa.sz

Abstract

The purpose of this study is to identify the fundamental factors that are key determinants in promoting the Swaziland export performance from 1980 to 2010. The study uses the cointegration technique to estimate both long run and short-run relationships among the variables under investigation and undertakes estimations in the error-correction model approach. The study found that foreign direct investment (FDI), world demand, and nominal exchange rate were key significant factors in determining the export performance at 1 per cent ($p < 0.01$) in the long run with elasticities of 0.58, 1.19 and 0.36 respectively, and at 5 per cent ($p < 0.05$) in the short run with coefficients of 0.26, 4.3 and 0.5, respectively. The real GDP and domestic demand have no statistical effect on Swaziland's export performance. The error correctional model was -0.372 that captured the speed of error correction. A conducive investment environment should remain an agenda setting in the pro-trade policy making process for the Swazi policy makers.

Keywords: Cointegration; determinants; exchange rate; export; foreign direct investment

1. Introduction

There is widespread agreement on the role exports play in supporting sustainable economic growth in low-income countries.

* Corresponding author.

E-mail address: fkabuya@uniswa.sz.

Senhadji and Montenegro [1] stressed the vital role of export as an engine of economic growth. Exports ease the pressure on the balance of payments and create the much-needed employment opportunities [2]. Exports can also reduce the impact of external shocks on the domestic economy.

Swaziland’s membership in the Southern African Customs Union (SACU) and the Common Monetary Area (CMA) determines the country trade patterns. The parity status of the Swazi currency, Lilangeni (SZL) to the South African Rand (ZAR) has, amongst other things, facilitated cross-border trade with CMA member countries, in particular South Africa (the country’s major trading partner). Although this association has its advantages, such membership prevents the country from developing its own monetary policy, thus making it virtually impossible for the country to follow an independent exchange rate policy.

The country is also a member of a number of other trade agreements, such as Common Market of Eastern and Southern Africa (COMESA) and the Southern African Development Community (SADC), which provide Swazi products with preferential access to a market consisting of more than 320 million people. Furthermore, Swaziland’s products enjoy preferential access to European Union (EU) markets while the African Growth and Opportunity Act (AGOA) has opened up free duty access for some of her products to the United States (US) market.

Under the Generalized System of Preferences (GSP), Swaziland’s exports have access to markets in countries such as the US, Australia, Japan and Canada. Figure 1 shows the trends of the value of exports, imports and trade balance in absolute terms. The import bill has been increasing steadily throughout the period under review. However, the rate of growth slightly increased between 1998 and 2003. Export earnings have been moving in tandem with the import bill until the period 1991 where the country started experiencing a negative trade balance. The Swaziland exports grew at a faster rate between 2002 and 2004 until in 2005, where a slowdown was experienced. This slowdown was mainly as result of the appreciation of the local currency against major currencies, which forced most of the exporting companies to close [3].

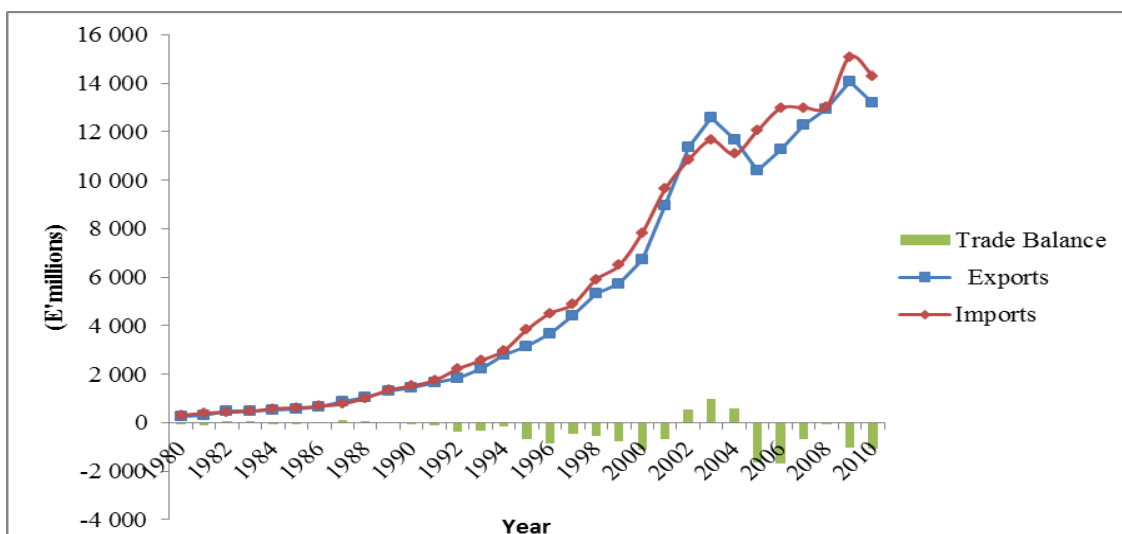


Fig.1.Trends in Exports, Imports and Trade Balance from 1980 to 2010: Source: Central Bank of Swaziland

Traditionally, developing countries have been suppliers of primary commodities (minerals and some tropical agricultural products) to the industrialized world [4]. Likewise, exports of agricultural and manufacturing commodities dominate the Swaziland export sector. These commodities include soft drinks concentrates, sugar, wood pulp that formed part of exports until 2009 when Sappi Limited Company closed down its pulp production. Other commodities are citrus and canned fruits, coal, textiles, and raw iron ore. Soft drink concentrates account for more than 50% of the total export earnings followed by sugar as shown in Fig. 2. About 60% of Swaziland's exports are destined to the South African market.

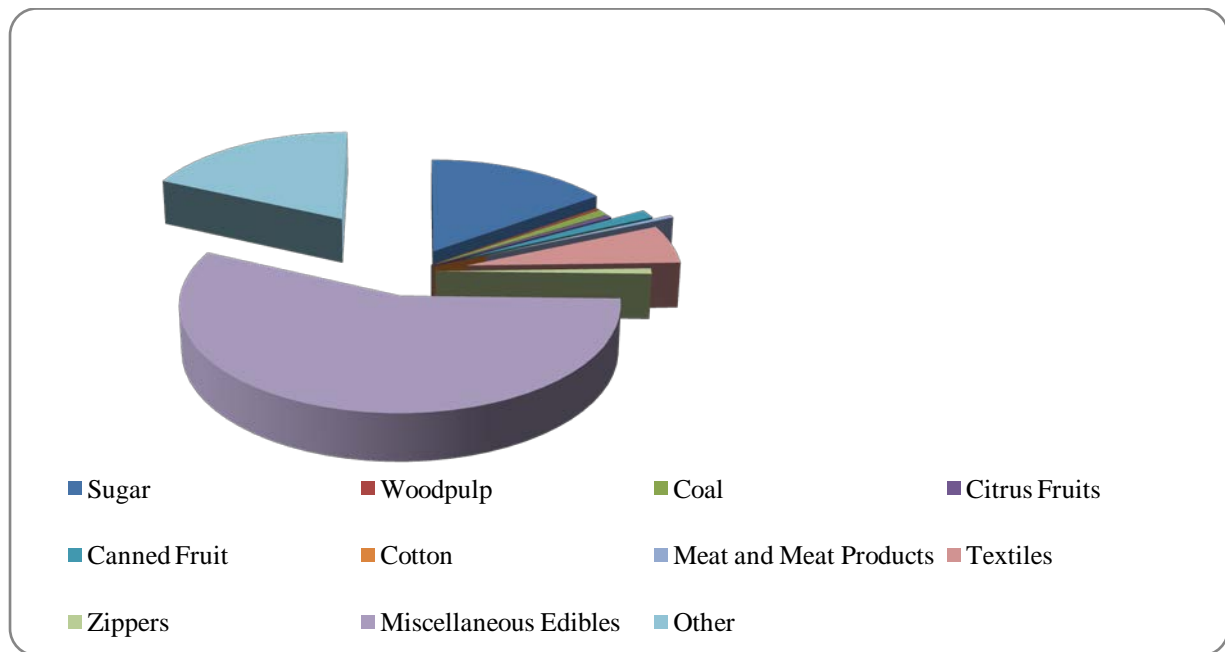


Fig.2.Composition of Exports by Commodity (2010): Source: Central Bank of Swaziland

The agricultural sector is the most important sector in the Swaziland economy given its contribution to employment (about 70%), foreign exchange, food, and its linkages with other sectors of the economy. Despite the declining volumes of output, the agricultural sector remains indispensable for the majority of Swazi people (especially the rural households) who continue to derive their livelihood and income by engaging in this sector's activities, which include the production of maize, cotton, sugar, fruits, vegetables, citrus and livestock. Moreover, the sector plays a role in providing substantial support to the manufacturing sector in terms of providing the necessary inputs required by the largely agro-based manufacturing firms.

2. Empirical literature

Schenk and Theeuwes [5] examined the determinants of export development in the Netherlands. Their study found a positive relationship between inward foreign direct investment and the Dutch export development. This was because of the fact that the Dutch resident companies owned by foreign companies tend to export more than the locally owned companies do. The results further revealed that companies with local ownership export almost 40 percent of their turnover, while companies with foreign ownership export almost 60 percent of their turnover.

Fang and Miller [6] in a study on exchange rate depreciation and exports found that FDI inflows into Singapore, China, Lesotho, Madagascar and Mauritius, have contributed on the increment of technological content of their exports by supporting the development of knowledge-based industries. This positive and significant relationship between export performance and FDI has contributed to capital formation. The study found that FDI does contribute to the technological upgrading, and then is expected to be directed towards innovative activities within an already existing sector, and in that sense, it stimulates essentially intra-sectorial rather than inter-sectorial diversification.

Kumar [7] conducted a study on the determinants of export growth in developing countries and confirmed that real GDP has a significant positive impact on export volumes. He further said higher production level is the main cause of export expansion since surplus output can be exhausted in the international markets. Chen and Liu [8] also analysed factors influencing export trade in Guangdong province and found out that gross domestic product (GDP) had the largest contribution to the growth of export volume, followed by the average wages of labour, the exchange rate, and finally the capital stock per capita.

Moniruzzama and Hassan [9] used annual time series data for the period from 1972 to 2009 to estimate the export supply model of Bangladesh. Their study used techniques of cointegration, [10] causality and vector error correction (VEC). The study had empirically tested the hypothesis, long run relationship and casualty between variables of the model. The cointegration analysis showed that all the variables of the study were cointegrated at their first differences meaning that there existed long run relationship among the variables. The VEC model estimation showed the dynamics of variables in the export supply function and the short run and long run elasticities of export supply with respect to each independent variable. The error correction term is negative, which indicates that any short run disequilibrium will turn into equilibrium in the long run.

Majeed and Ahmad [11] focused on the determinants of exports, using panel data ranging from 1970 to 2004 for 75 developing countries using the random effect model. The exports equation was specified with FDI, GDP growth rate, real effective exchange rate, communication facilities, indirect taxes and labour force as exogenous variables.

Their specified equation for export promotion was as follows:

$$EX_{it} = f(FDI_{it}, GDP_{it}, GROW_{it}, SAV_{it}, OD_{it}, IT_{it}, EXCH_{it}, TV_{it}, TP_{it}, VAD_{it}, LF_{it})$$

Where: EX (Exports as a percentage of GDP), FDI (Foreign Direct Investment as a percentage of GDP), GDP (Gross domestic production), GROW (annual percentage growth rate of GDP), SAV (national savings as a percentage of GDP), OD (official development assistance as a percentage of GDP), IT (indirect taxes as a percentage of GDP), EXCH (real exchange rate. It was obtained by multiplying the nominal exchange rate by US CPI and divided by domestic CPI), TV (number of televisions per 1000 persons), and TP (number of telephones per 1000 persons). All the variables carried significant magnitudes with correct signs except FDI, which was found to be insignificant although it carried its expected positive sign, contrary to the findings by [12].

Holden [13] did a study on exchange rate policy for a small open economy in a world of floating exchange rates with reference to South Africa. A partial equilibrium model was constructed for manufacturing and non-gold mining exports using quarterly data for the period 1973 to 1984. The study expressed the excess demand function in domestic currency for exportable in the form:

$$Q_{dx} = f(P_x, P^*, e, Y^*)$$

Where Q_{dx} is quantity of exports demanded, P_x being domestic currency price of exports, P^* being the foreign prices, e is the effective exchange rate (NEER), and Y^* is foreign incomes. The excess supply function was specified as follows: $Q_{sx} = g(P_x, P_y, Y - \dot{Y})$ where P_y represents domestic currency prices of other goods and $(Y - \dot{Y})$ represents deviation from the gross national product (GNP) trend. The results showed that the effective exchange rate was a highly significant determinant of the demand for both South African manufacturing and non-gold mining exports with coefficients of -1.03 and -7.28, respectively.

Sadia [14] examined the relationship between imports of inputs and exports of Pakistan, using a time series data over the period 1973-2005. The exogenous variables in the exports function were GDP of Pakistan, world GDP, Nominal Exchange Rate (NER) and the imports of inputs. He used the simple ordinary least squares (OLS) method and all the variables carried their expected signs and reasonable magnitudes.

When investigating the effects of exchange rate on the current account of Ukraine, [15] employed a polynomial distributed lag model using quarterly data for the period 1994-1 to 1998-4. Polynomial distributed lag models (PDLs) are finite-order distributed lag models with the impulse-response function constrained to lie on a polynomial of known degree. You can estimate the parameters of a PDL directly via constrained ordinary least squares, or you can derive a reduced form of the model via a linear transformation of the structural model, estimate the reduced-form parameters, and recover estimates of the structural parameters via an inverse linear transformation of the reduced-form parameter estimates [16]. The model was specified as follows:

$$\text{Export demand: } X_t = \beta + \beta_0 P_t + \beta_1 P_{t-1} + \beta_2 P_{t-2} + \beta_3 P_{t-3} + \dots + \beta_k P_{t-k} + \beta_0 Y^*_t + u_t$$

$$\text{Import demand: } M_t = \beta + \beta_0 P_t + \beta_1 P_{t-1} + \beta_2 P_{t-2} + \beta_3 P_{t-3} + \dots + \beta_k P_{t-k} + \beta_0 Y^*_t + u_t$$

Where slope coefficients are approximated by an m^{th} -degree polynomial in the length of lag

$$\beta_i(i) = a_0 + a_1 i + a_2 i^2 + \dots + a_m i^m, \text{ and } (m < k), \text{ which can be simplified as}$$

$$\beta_i = a_0 + \sum a_m i^m$$

The a_m 's coefficients were estimated using conventional OLS procedure and the original β_i 's were computed using the formula for polynomial restriction. The β_i 's were short-run elasticities of demand, while long-run (medium-run) elasticities were obtained by summing up the β_i 's of all lagged explanatory variables.

The estimation results for Ukrainian trade with the rest of the world region showed that short-run import demand elasticity was surprisingly positive, which might be explained by higher purchases in expectation of further devaluation. Export elasticity estimates appeared to be more dispersed. Short-run elasticity was found to be higher than medium-run one. The import elasticity rose from -1.98 in the same quarter to 0.45 after half a year. The export elasticity fell from 1.32 in the same quarter to 0.05 after two quarters. The estimated aggregate export and import equations show that devaluation does not improve the current account in Ukraine.

According to [17], memberships of regional groupings generate a significant increase in trade. The coefficient of the real exchange rate was found to be negative, implying that an appreciation of the real exchange rate discourages exports, while those of dummy variables are expected to be positive. Regional trade agreements and sharing a common border promote exports between countries.

Senhadji and Montenegro [1] examined the aggregate export demand elasticities for 53 developing and industrial countries using time series techniques. The study utilized the Phillips-Hansen's FM estimator, which yields efficient estimates of the short and long run elasticities [18]. The model was then formulated as an autoregressive distributed lag (ARDL), that is, with the lagged dependent variable included as an explanatory variable. This dynamic form was specified in the form:

$$\text{Log}(x) = \gamma_0 + \gamma_1 \log(x_{t-1}) + \gamma_2 \log(p_t) + \gamma_3 \log(GDP_t^* - x_t^*) + \varepsilon_t$$

The FM estimators of the long-run price and income elasticities were defined as $E_p = \gamma_2 / (1 - \gamma_1)$ and $E_y = \gamma_3 / (1 - \gamma_1)$ respectively. The study found a positive significant effect of the trading country's income with an elasticity of 1.5 and relative prices on export demand had an elasticity of -1 in the long run.

2.1 Empirical specification

This study includes FDI, exchange rate and world demand variables to capture external factors, while domestic consumption and real GDP variables capture internal factors.

Equation is as follows:

$$EXPT = \beta_0 + \beta_1 DD + \beta_2 GDP + \beta_3 NER + \beta_4 FDI + \beta_5 WD + \varepsilon_i \quad (1)$$

Where:

EXPT= value of exports in absolute emalangeneni (SZL) terms

DD = domestic demand (domestic consumption)

GDP = real gross domestic product

NER = the nominal exchange rate being the average bilateral nominal exchange rate between the Swaziland lilangeni and the US dollar. The exchange rate is such that a higher value of NER represents a depreciation of

lilangeni (appreciation of the dollar) and lower value represents an appreciation of lilangeni (depreciation of the dollar).

FDI = the stock of foreign direct investment

WD = world demand (the aggregate nominal GDP of the country's main trading partners)

ε_t = error term

The log-log regression is used to estimate the relationship between exports and its determinants. Hence, the export determination model can be specified as follows:

$$\text{LogEXPTS} = \beta_0 + \beta_1 \text{logDD} + \beta_2 \text{logGDP} + \beta_3 \text{logNER} + \beta_4 \text{logFDI} + \beta_5 \text{logWD} + \varepsilon_t \quad (2)$$

2.2 Data

The study is mainly based on time series secondary data covering the period from 1980 to 2010. The data on export earnings, foreign direct investment (FDI), and nominal exchange rates were obtained from the Central Bank of Swaziland, while data on real gross domestic product and private domestic consumption were sourced from the Swaziland Central Statistics Office.

3. Methods and results

The cointegration and error correction test were conducted to establish the long run relationship among the variables and to capture the speed of adjustment to long run equilibrium [19]. Finally, the study tested for the adequacy of the model by performing diagnostic tests.

3.1 Augmented Dickey Fuller (ADF) root test

Table 1. Augmented Dickey Fuller (ADF) unit root test results at levels

Variable	Constant		Constant, trend		None	
Log (EXPTS)	-2.078624	(-2.93)	-0.721825	(-3.50)	2.069950	(-1.95)
Log (FDI)	-1.361642	(-2.93)	-0.192319	(-3.50)	2.116594	(-1.95)
Log (REALGDP)	-2.061871	(-2.93)	-1.427420	(-3.50)	1.790517	(-1.95)
Log (WORLDGDP)	-2.281272	(-2.93)	-0.458923	(-3.50)	1.353655	(-1.95)
Log (NER)	-2.472256	(-2.93)	-1.977982	(-3.50)	0.638859	(-1.95)
Log (CONSMPTN)	-1.840476	(-2.93)	-0.691877	(-3.50)	2.587762	(-1.95)

Numbers in brackets are Dickey-Fuller critical values at 5% significance level

The hypothesis for each variable is stated as:

H_0 : Series contains a unit root and H_1 : Series is stationary.

As the results presented in Table 1 indicate, not all the variables are stationary at levels. This is, because the ADF test statistic is less negative compared to the Dickey-Fuller critical values in all the variables. A summary of the Dickey-Fuller critical values are presented in Table 2.

The null hypothesis of a unit root is not rejected for all variables at 5 percent levels of significance. This implies that all the variables included in the specified model are stochastic at least at 5 percent significance level.

3.2 Critical Dickey-Fuller values

Table 2.1% and 5% Critical Dickey-Fuller values

Sample size	Constant		Constant, trend		None	
	1%	5%	1%	5%	1%	5%
25	-3.75	-3.00	-4.38	-3.60	-2.66	-1.95
50	-3.58	-2.93	-4.15	-3.50	-2.62	-1.95
100	-3.51	-2.89	-4.04	-3.45	-2.60	-1.95
250	-3.46	-2.88	-3.99	-3.43	-2.58	-1.95
500	-3.44	-2.87	-3.98	-3.42	-2.58	-1.95
∞	-3.43	-2.86	-3.96	-3.41	-2.58	-1.95

Source: [20]

We tested for the stationarity of the variables taking their first order differences. Again, this involves testing the following hypotheses:

H_0 : Series contains a unit root and H_1 : Series is stationary.

The results of the ADF test are presented in Table 3, and they indicate that all the variables are stationary at their first order differences.

3.3 ADF test at first difference

This is because the ADF test statistic is more negative than the Dickey-Fuller critical values for all the variables. In all the variables, the null hypothesis of non-stationary is rejected at least at 5 per cent significance level at constant and trend, while DLog (EXPTS), DLog (WORLDGDP), DLog (NER) and DLog (CONSUMPTION)

are significant at 1%. The result suggests that all the variables are cointegrated of order one $I(1)$ and they move closely together overtime. Therefore, the long run regression on the levels of the specified variables is not spurious.

Table 3. Augmented Dickey Fuller (ADF) unit root test results at first difference

Variable	Constant		Constant, trend		No constant	
DLog (EXPTS)	-3.618720**	(-2.93)	-4.248886**	(-3.50)	-2.307304*	(-1.95)
DLog (FDI)	-3.832074**	(-2.93)	-4.009334*	(-3.50)	-2.694183**	(-1.95)
DLog (REALGDP)	-3.264673*	(-2.93)	-3.553513*	(-3.50)	-2.231444*	(-1.95)
DLog (WORLDGDP)	-1.867293	(-2.93)	-4.479402**	(-3.50)	-1.515491	(-1.95)
DLog (NER)	-4.640363**	(-2.93)	-4.399715**	(-3.50)	-3.893279**	(-1.95)
DLog (CONSMPTN)	-4.070943**	(-2.93)	-4.559572**	(-3.50)	-0.900174	(-1.95)

Numbers in brackets are Dickey-Fuller critical values at 5% significance level, *, ** indicate significance at 5% and 1%.

3.4 Cointegration

In the previous section, the variables have become stationary after differencing once. They are therefore said to be integrated of order one, denoted by $I(1)$. Some variables will become stationary after differencing twice and they are said to be integrated of order two, denoted by $I(2)$. The study uses the [20] residual-based approach for this analysis.

The Engle and Granger definition of co-integration states that if two (or more) series are linked to form an equilibrium relationship spanning the long-run, then even though the series themselves may contain stochastic trend (non-stationary) they will nevertheless move closely together overtime and the difference between them will be stable (i.e., stationary). In general, if Y_t is $I(d)$ and X_t is $I(d)$, where d is the same value, these two series can be co-integrated.

If that is the case, the regression on the levels of the two variables is meaningful and not spurious. By definition, cointegration necessitates that the variables be integrated of the same order. Thus, the first step in cointegration analysis is to test each variable to determine its order of cointegration. This has been done in the previous section where the ADF test has been used to infer the number of unit roots in each of the variables. Three cases can determine whether to proceed the cointegration analysis:

- i. If all the variables are stationary (I(0)), it is not necessary to proceed since the standard time series methods apply to stationary variables. In other words, we can go straight to apply the classical regression analysis.
- ii. If the variables are integrated of different order, it is possible to conclude that they are not cointegrated.
- iii. If the variables are integrated of the same order then we proceed with cointegration analysis.

Since the study has already established that the variables in the model are integrated of the same order, then we estimated the long run equilibrium relationship of the following equation:

$$\text{LogEXPTS} = \beta_0 + \beta_1 \text{logDD} + \beta_2 \text{logGDP} + \beta_3 \text{logNER} + \beta_4 \text{logFDI} + \beta_5 \text{logWD} + \varepsilon_i \quad (3)$$

And obtained the residuals of this equation and tested for unit root using the ADF test. The test is said to be a single equation-approach and it entails determining whether the residuals from the regression are stationary at levels (that is integrated of order zero, (I (0)) or not.

The results of the long run equation are presented in Table 4.

Table 4. *Long run regression results*

Variable	Coefficient	Standard error	t-statistic	p-value
Constant	-10.35323	6.991603	-1.480809	0.1507
Log (FDI)	0.583804	0.132135	4.418256	0.0002**
Log (REALGDP)	-0.546116	0.479275	-1.139463	0.2649
Log (WORLDGDP)	1.192245	0.420793	2.833330	0.0088**
Log (NER)	0.357519	0.116866	3.059222	0.0051**
Log (CONSMPTN)	-0.045331	0.199179	-0.227591	0.8217

** indicate significance at 1%.

R-square = 0.992979 and Adjusted R-square = 0.991629

F-statistic = 735.4668

Prob (F-statistic) = 0.000000

The long run regression results presented in Table 4 reveal that the coefficients of FDI, world demand and nominal exchange rate are significant in determining exports performance in the long run with elasticities of 0.58, 1.19 and 0.36, respectively. All these variables were found to be significant at 1 percent level of significance. In this case, a percentage increase in FDI results in 0.58 percent increase in export earnings in the long run. The *p*-value for FDI is 0.0002, which shows statistical significance at 1 percent level. Hence, we

conclude that in the long run an increase in FDI will lead to improvement in exports. The results are consistent with the findings by [5] for Netherlands and [12] in the case of South Africa.

The coefficient for world income is 1.19 with a p -value of 0.009. This shows significance at 1 per cent level. The coefficient indicates that when world income increases by a percentage point the level of export earnings will increase by 1.19 percent. This shows a high-income elasticity of exports in the long run for the period 1980 to 2010. These results support the findings of [21] whose study confirmed that Indian exports and world demand were positively related.

The nominal exchange rate coefficient indicates that there is a positive relationship between this variable and exports in Swaziland. This result confirms the expectation that the domestic currency depreciation will make the Swaziland exports more competitive in the international markets. According to the data used in this study, the exchange rate was presented in local currency per one unit of the US dollar. So an increase in the exchange rate denotes a depreciation of the domestic currency, hence the positive relationship. The coefficient of 0.36 means that percentage point depreciation in the domestic currency will lead to exports increasing by 0.36 percent in the long run.

Although the effect of exchange rate is positive, it shows however, that exports are inelastic to exchange rates in the long run. These results are consistent with the trade patterns in Swaziland because more than 50 percent of the country's exports go to South Africa where the Lilangeni and the Rand are on a one-to-one basis because of the Common Monetary Area arrangement. This means that international trade between the two countries is not affected by changes in exchange rates. The results are consistent with the findings by [22] when examining the impact of exchange rate policy on Pakistan's trade balance. Their results showed that nominal exchange rate had a positive and significant impact on export demand. The adjusted R-square value of 0.99 indicates that 99 percent of the variation in exports is explained by its determinants in the long run.

On the flip side, the results indicate that the coefficient of real GDP is not significant in explaining the performance of exports in the long run. This is evident because it has a p -value of 0.2649, which is greater than the p -value of 0.05 ($p > 0.05$). The coefficient of real GDP has a negative sign, contrary to expectation of a positive sign as [7] found in his study on the determinants of export growth in developing countries. The insignificance of real GDP in explaining exports could be due to the small size of the Swaziland economy in relation to its market share in the world market when it comes to trade.

The long run regression results also reveal that domestic consumption, which was used as a proxy for domestic demand, is also insignificant in explaining exports dynamics in Swaziland. Although the coefficient was found to have negative correct sign corroborating economic theory, the variable was found to be insignificant with a p -value of 0.8217. Abolagba et al. [23] found, contrary to our findings, that domestic demand pressure significantly reduced exports. The insignificance of domestic consumption in explaining exports can be explained by the fact that not all industries in Swaziland export their surpluses to international markets. Secondly, Swaziland imports most (about 90 per cent) of her goods and services from South Africa. This then eases the pressure on the domestically produced goods.

3.5 Error correction model (ECM)

If the variables are cointegrated, then the residuals from the equilibrium regression can be used to estimate the error correction model. This also helps to analyse the long run and short run effects of the export model as well as to see the adjustment coefficient, which is the coefficient of the lagged residual terms of the long run relationship among the variables. This technique has an advantage as it gives the speed of adjustment parameter that indicates how quickly the system returns to equilibrium after a random shock. The initial error correction model for export performance was presented using ordinary least squares (OLS) as follows:

$$DlogEXPTS = \beta_0 + \beta_1 DlogFDI + \beta_2 DlogWD + \beta_3 DlogNER + \beta_4 ECM_{-1} + \varepsilon_i \quad (4)$$

Where *D* means that the variable has been differenced, *ECM₋₁* is the lagged error correction variable, and β_4 is the adjustment coefficient that indicates how quickly the system returns to equilibrium after a random shock. The ECM coefficient β_4 is expected to be negative and less than one. However, the initial specification of the error correction model (equation 4) yielded meaningless results, as two of the coefficients of FDI and World GDP were insignificant hence, it cannot be taken as the final short run export model. The results are presented in Table 5

Table 5. Short run regression results (ECM)

Variable	Coefficient	Standard error	t-statistic	p-value
Constant	0.047075	0.032184	1.462696	0.1555
DLog (FDI)	0.112780	0.128092	0.880464	0.3867
DLog (WORLDGDP)	5.237489	2.757307	1.899494	0.0686***
DLog (NER)	0.653834	0.213855	3.057370	0.0051**
ECM ₋₁	-0.500048	0.138049	-3.622260	0.0012**

** , *** indicate significance at 1% and 10

R-square = 0.526870

Adjusted R-square = 0.454080

F-statistic = 7.238286

Prob (F-statistic) = 0.000467

The error correction model was then specified as follows:

$$DlogEXPTS = \beta_0 + \beta_1 DlogFDI_{-2} + \beta_2 DlogWD + \beta_3 DlogNER + \beta_4 ECM_{-1} + \varepsilon_i \quad (5)$$

Equation (4) was specified by lagging the FDI variable by two in order to achieve a robust and parsimonious export model and the results are shown in table 6. The re-specified export model is done through lagging FDI variable by two (2). This means that any effects of FDI on exports can only be seen after two years because the study uses annual data series.

The probability of the *F*-statistic indicates that the joint effect of the explanatory variables on exports is strongly significant. The *t*-values of the coefficients suggest that the effect of each variable on exports is statistically significant.

Table 6. *Final short run regression results (ECM)*

Variable	Coefficient	Standard error	t-statistic	p-value
Constant	0.035820	0.032087	1.116321	0.2753
DLog (FDI) ₋₂	0.255515	0.122861	2.079710	0.0484*
DLog (WORLDGDP)	4.313949	2.149593	2.006687	0.0103*
DLog (NER)	0.522961	0.206031	2.538259	0.0180*
ECM ₋₁	-0.371858	0.134037	-2.774296	0.0105*

* indicate significance at 5%

R-square = 0.726870

Adjusted R-square = 0.614080

F-statistic = 16.529893

Prob (F-statistic) = 0.000105

The adjusted R^2 means that about 61 percent variation in exports is explained by the included variables in the short run. This shows that this is an acceptable model for export performance in Swaziland.

4. Discussion

In this study, we used regression analysis to investigate the factors contributing to the export performance in Swaziland from 1980 to 2010 and to estimate the elasticity of exports to its determinants. The long run regression results reveal that FDI, world demand and nominal exchange rate are significant in determining exports performance with the elasticities of 0.58, 1.19 and 0.36 respectively, while the short run coefficients were 0.26, 4.3 and 0.5, respectively.

All these variables were found to be significant at 1 per cent level of significance in the long run and significant at 5 per cent in the short run. In the case of FDI, results were consistent with the findings by [5] for Netherlands and [11] in the case of South Africa. In the case of world income, the results supported the findings of [20] whose study confirmed that Indian exports and world demand were positively related. Furthermore, the internal factors, real GDP and domestic consumption, are statistically insignificant in explaining the Swaziland export performance due to smallness and openness of the economy towards the world trade partners.

The error-correction mechanism ($ECM_{1,t}$) was found to be significant at 5 percent and had a negative coefficient of -0.3719 suggesting that any short-run deviation of exports adjusts to its determinants with a lag and that only about 37.2 percent of the discrepancy between the long run and short run exports is corrected within a year. This was in line with expectation of the ECM that is supposed to be negative and less than one.

5. Conclusion

This study contributes to the literature by including variables that are likely to influence export growth, which promotes economic growth in small and middle-income country, the Kingdom of Swaziland. Results document the importance of these variables in measuring the export performance. Nevertheless, many factors can drive the growth of exports in an economy. Future research should use other factors whenever there is a dataset for Swaziland. A conducive investment environment should remain an agenda setting in the pro-trade policy making process in order to attract and to retain foreign direct investors in the nation. Economic development cannot be possible unless economic growth, sound economic policies and strong institutions take off.

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