Academic Fora

FULL PAPER PROCEEDING
Multidisciplinary Studies
Available online at www.academicfora.com

Full Paper Proceeding BESSH-2016, Vol. 202- Issue.11, 1-11

ISBN 978-969-670-602-1

BESSH -16

Trade Protection and COMESA Outward Foreign Direct Investment: An Analysis of the Knowledge-Capital Model

Seham H. Negem*

Faculty of Commerce, Tanta University, Egypt

Abstract

This paper introduces an assessment of the tariffs effect on the outward FDI of COMESA, representing the current largest regional trade bloc on the African continent. The estimated model is specifically based on the knowledge-capital theory of multinational enterprises (MNEs) over the period 2000-2014. The sample includes five COMESA countries and fifteen partner countries (intra and out of Africa). The specified model is estimated for the full sample (six industries of primary and secondary sectors) as well as two groups (member and non-member COMESA host countries). Among explanatory variables, applied bilateral tariffs of home and host countries appear to have positive influences on the outward FDI of COMESA, except tariffs applied by COMESA which negatively affect outward FDI for non-member COMESA host countries group. The positive impact confirms the prevalence of horizontal (Greenfield) FDI for both member and non-member COMESA host countries, while the negative effect of home countries confirms the predominance of vertical FDI for non-member COMESA host countries (advanced economies). The market size, represented by *sumGDP*, seems to have the greatest influence in stimulating outward FDI of COMESA countries.

Keywords— Knowledge-Capital Model, FDI, Tariffs, COMESA, Horizontal FDI,Vertical FDI, MNCs.

Introduction

A Multinational Enterprise (MNE) chooses to produce in a foreign country since it is more profitable than at home. These additional profits come from the fact that the enterprise is able to avoid trade barriers, tariffs and transportation costs, by setting up a foreign plant that reduce competitiveness of the enterprise's export (see Brakman and Garresten, 2008 for more details). Dunning (1981) proposed the existence of three conditions needed for enterprises to have an incentive to undertake foreign direct investments. The first one is concerned about the ownership advantage, meaning that the enterprise enjoys some market power in foreign market. Location advantage is another condition for undertaking FDI, especially if there are scale economies at the plant level. And finally, the internalisation advantage where exploiting the enterprise's ownership advantage internally, rather than sell or license its product to a foreign enterprise.

The theory connects Dunning's ideas with the enterprise technology and country characteristics in a consistent way (Markusen, 1997; Ethier, 1986; Helpman, 1985; Horstman and Markusen, 1992; Brainard, 1997; Ethier and Markusen, 1996; and Markusen and Venables, 2000). According to Markusen (1997), multinationals are important in industries in which intangible, enterprise-specific assets are important. These assets are characterised as "knowledge-capital", ranging from proprietary product or process know-how to reputations and trademarks. He added that direct investment increases relative to trade as host-country trade barriers increase, but deceases with distance.

In his work of 2002, Markusen defines the knowledge-capital model, key variable of interest, as it refers to "a technology in which enterprise fixed costs are characterised by relatively low costs of geographically fragmenting headquarters and a single plant, skilled-labour intensity of enterprise fixed costs relative to production, and jointness of enterprise fixed costs across multiple plants" (Markusen, 2002, 169). The knowledge-capital model combines "horizontal" motivations for FDI - the desire to place production close to consumers and thereby avoid trade costs- with "vertical" motivations - the desire to carry out unskilled-labour-intensive production activities in locations with relatively abundant unskilled labour (Blonigen at al., 2003, 980).

The knowledge-capital theory of multinational enterprise suggests that trade policies can be specified as a determinant of FDI. Based on the mentioned theory the trade policies differently affect depending on the pattern of

*All correspondence related to this article should be directed to Seham H. Negem, Faculty of Commerece, Tanta Uiversity, Egypt
Email: marites.h@bu.ac.th

FDI. On one hand, high trade barriers have an important role in explaining the decision of multinational enterprise to locate the same activity abroad, i.e. horizontal FDI (Cardamone and Scoppola, 2014); on the other hand, they have a negative impact on vertical FDI when the stages of MNE's production process are geographically dispersed.

With an increase in the number of regional trade agreements within Africa like COMESA and in the number of bilateral investment treaties, African outward FDI does play a significant role in some of the African and non-African countries, introducing an ideal case when investigating the impact of tariffs on the outward FDI. Representing the current largest regional trade bloc on the African continent, the Common Market for Eastern and Southern Africa, COMESA, was established to promote intra-regional trade. Its setting up was to replace the preferential trade area. Free Trade Agreement, signed in 2000, has been already implemented among 9 (Djibouti, Egypt, Kenya, Madagascar, Malawi, Mauritius, Sudan, Zambia, and Zimbabwe) out of 19 member states after the withdrawal of Lesotho, Mozambique, Tanzania, Namibia an Angola in 1997, 1997, 2000, 2004 and 2007, respectively. This agreement provides duty free access to goods imported from within the COMESA. The rest, 10, apply a reduction on their import tariffs for products ranging from 60 to 80%. 20% and 40% of their regional tariffs on COMESA originating goods are charged based on Most Favoured Nation (MFN).

According to COMESA investment report (2014), the COMESA countries FDI outflows have grown from 326.7 millions US$ in 2005 to 3,714.6 millions US$ in 2014. The key drivers of this growth were Egypt, Libya and Zambia whose outflows grew by 59, 10 and 7%, respectively. Despite it is a small and poor country, Zambia has invested in hotels and telecom, cotton, horticultural products, Malawi is a host. Also, UK is a host of Zambian mining quarrying. In 2008, COMESA agreed to an expanded free-trade zone including members of two another African trade blocs, the East African Community (EAC) and the Southern African Development Community (SADC).

The purpose of this paper is to investigate the impact of tariffs on the pattern of outward FDI of COMESA countries, developing and less developed economies, based on the knowledge-capital theory. To estimate the proposed knowledge-capital model over the period 2005-2014, a panel of 15 years, 5 COMESA home countries, 15 host (COMESA member and non-member) countries and 6 industries is used. The five COMESA home countries selected are: Egypt joined COMESA in 1998, Libya joined in 2005, Zambia joined in 1981 (preferential trade area), Ethiopia joined in 1981 and Kenya joined in 1981. At the industry level, the model is estimated for six industries (primary sector includes: agriculture, hunting, forestry and fishing; and mining, quarrying and petroleum and secondary one includes: food, beverages and tobacco; Textiles, clothing and leather; wood and wood products; and chemicals and chemical products). Based on different levels of tariffs preferences in the considered period under the various preferential schemes, the selected fifteen partner countries as host countries, located intra and out of Africa; Sudan, Eritrea, Uganda, Djibouti, Democratic Republic of the Congo (Congo DR), Tanzania, Armenia, Tunisia, Algeria, Italy, UK, USA, Netherlands, France and Kuwait.

The remainder of this paper is organised as follows: section 2 reviews relevant literature (theoretical and empirical). Section 3 presents the methodology which is demonstrated, in detail, for the panel of the full sample of 5 COMESA home and 15 host, (intra and out of Africa), countries with six industries over the period 2000-2014, including the specification of the empirical model. The unit root test is estimated using GiveWin, Pc-Give, (for more detail about Pc-Give see Volume I-III of Doornik and Hendary, 2003) and the empirical model is estimated by dynamic GMM. Section 4 shows data and discusses the results and section 5 concludes.

Relevant Literature of Tariffs and FDI: Theory and Empirics

The empirical literature on the determinants of FDI has used a variety of econometric specifications (Cardamone and Scoppola, 2014). The reasons for FDI within an industrial organisation framework have been examined. These studies tested how some factors, among them tariffs, affect FDI by using firm-level data. Another empirical specification on the FDI determinants was based on general equilibrium model of FDI and trade; the gravity model and the knowledge-capital model. The general equilibrium model, assuming that one sector is perfectly competitive while the other is subject to increasing returns associated with the joint-input characteristic of headquarters services, supports numerical computations that make theoretical predictions about the industrial regimes being active in two countries at various combinations of country sizes, factor endowments differences, and costs of investing abroad and exporting between markets (see Carr et al., 1998; Carr et al., 2001; Blonigen et al., 2007; Tekin-Koru and Waldkirch, 2010 for details).

From a partial equilibrium view of the multinational enterprises (MNEs), Blonigen (2005) examined the literature on FDI determinants. It is stated that external factors, considered as determinants of the location and magnitude of FDI by MNEs, ranged from exchange rates and taxes to trade protection and trade flows endogenised with FDI activity. The latter determinants, trade protection and trade flows, both, are, completely, ignored by the literatures on the impacts of the former ones; exchange rates and taxes (Hartman, 1984). Blonigen (2005, 385) argued

that most of literature examining determinants of FDI focus on exchange rate movements, taxes, and to a more limited extent, tariffs.

To estimate the knowledge capital model of the multinational enterprise Carr et al., (1998, 2001) assumed three principals. The first one is concerned with the services of knowledge-based and knowledge-generating activities such as R&D. These activities can be geographically separated from production and supplied to production facilities at low cost. Second, these knowledge-intensive activities are relatively skilled-labour intensive to production. Both characteristics give rise to vertical multinationals that fragment production and locate activities based on factor prices and market size. Finally, knowledge-based services have a partial joint-input characteristic, in which they can be supplied to additional production facilities at low cost. This gives rise to horizontal multinationals that produce the same goods and services in multiple locations. The theoretical model by which they empirically test the above predictions is drawn from Markusen (1997).

With the existence of two homogeneous goods, two countries, and two homogeneous factors which are internationally immobile, unskilled labour and skilled labour, Carr et al., (1998) specified their model. The first good is labour-intensive and produced under constant returns to scale in a competitive industry. The second one is skilled-labour intensive, exhibiting increasing returns to scale and being subject to Cournot competition with free entry and exit. In this headquarters services and plant facilities may be geographically separated and a firm may have plants in one or both countries (for more details, see Carr et al., 1998, 6).

Their central equation for estimation purposes is as follows:

$$RSALES = \beta_0 + \beta_1(SUMGDP) + \beta_2(GDPDIFSQ) + \beta_3(SKDIFF) +$$
$$\beta_4(GDPDIFF * SKDIFF) + \beta_5(INVCI) + \beta_6(TCJ) + \beta_7(TCJ * SKDIFSQ) + \beta_8(TCI) + u$$

Where, RSALES is the real volume of production (sales) by affiliates in country j of parents in country i. the variable SUMGDP is the sum of real GDP in the two countries, GDPDIFF is the difference between GDP in country i and GDP in country j, and GDPDIFSQ is the squared difference in GDP levels. The variable SKDIFF is a measure of skilled labour abundance in country i relative to country j, and SKDIFSQ is the squared difference in this measure. The variables INVCJ and TCJ measure the costs of investing in, and exporting to, the host country. TCI is the final regressor for trade costs in exporting to the parent country.

A theoretical model of multinational enterprise's foreign investment decision has been developed by Carr et al., (2001). Additional factors determining foreign direct investment patterns are suggested to allow for vertical motivations of FDI, low-cost locations for labour intensive production, gathered with the variables which capture horizontal motivations for FDI, replication of the firms' operations in other countries to be more proximate to consumers.

Carr et al., (2001) added geographic distance as an independent variable. It affects in both export costs and investment and monitoring costs. They used data for the estimation of a panel of cross-country observations over the period 1986-1994 for 36 countries in addition to the US with a trade cost index defined as a measure of national protectionism, or efforts to prevent competitive products importation. The panel estimates yield correct signs, as predicted by the knowledge-capital theory, and strong statistical significance for all variables except TCI and TCJ*SKDIFSQ, clarified above, that have correct signs but weak statistical significance. They hope, finally, that the model will prove useful in future analysis. It is noted that Carr et al., (2001) used proxies for the overall trade costs rather than tariffs.

Blonigen et al., (2003, 980) critically commented that the CMM's data set can not reject the horizontal model of MNEs in favour of the knowledge-capital model, rather than offering direct support for the knowledge-capital model. They demonstrate that the estimate of the influence of skill differences on the level of affiliate activity in the host country represents the distinction between the knowledge-capital model and the horizontal model. Blonigen et al., (2003) showed that the reason concerned with the CMM's empirical framework where the terms measurinf differences in skilled-labour abundance were misspecified. Correcting this specification error, Blonigen et al., (2003) found the coefficient estimates no longer support the knowledge-capital model. Instead the data support the predictions of the horizontal model of MNEs where affiliate activity between countries decreases as absolute differences in skilled-labour abundance widen.

Markusen (2002), theoretically, modelled the knowledge-capital to illustrate the relationship between trade costs, tariffs and transportation costs, and FDI by assuming two countries, two homogeneous goods produced, and two factors of production, skilled and unskilled labour that are mobile among industries but immobile internationally. In explaining the association of knowledge capital with multinationals while physical capital is not, Markusen (2002,

18) suggested that there are three features of knowledge capital for this. He started with an important property of knowledge capital, for either horizontal or vertical investments, that is the ease of the knowledge capital services to be transported to foreign production facilities relative to the services of physical capital. For example the engineers and managers can easily, despite it may add some costs, visit multiple production facilities and communicate with them in a low-cost via fax and email. He added that knowledge-based assets are skilled-labour intensive relative to production, creating a motive for the geographical fragmentation of production and vertical multinationals.

It is well known that R&D and management, skilled-labour-intensive "headquarters" activities, should be located where the skilled labour is cheap and abundant, while production may be located in less-skilled-labour abundant countries. He finalises his explanation with the third property of knowledge capital that is the knowledge capital often has a joint-input or "public-good" property within the firm. He asserted that blueprints, chemical formulae, or reputation capital are costly to be produced, but after that they can be supplied to the plant abroad with low cost.

Based on his theoretical model of 31st equations, Markusen (2002) extended his own horizontal model to allow for the geographic fragmentation of activities within single-plant firms. According to Markusen (2002, 163), firms may consider a more vertically structure in which different stages of production occur in different countries. Among six firm types, he assured the importance of the type-v, vertical multinationals that maintain a single plant in another country, when one country is small and skilled labour abundant.

When countries have the same size and relative endowments, type-v firms do not arise, assuming relatively high trade costs. The knowledge-capital model findings of Markusen weaken his results of horizontal model in which the multinationals arise between countries that have the same size and relative endowments. He amended the statement to include small, skilled-labour-abundant countries, explaining why Switzerland and Sweden are important home countries to multinational firms, while a large, unskilled-labour-abundant country like china is a large recipient of FDI, but does not supply much of it.

To investigate the effect of North-South integration on the location of FDI in both regions, based on Ekholm et al., (2007), Tekin-Koru and Waldkirch (2010) used the case of advanced economies, the North American Free Trade Agreement (NAFTA) and paid special attention to partner versus non partner country FDI. By including the openness degree as a proxy of trade protection, they have employed a three-country model (two Northern countries and one Southern country). Their theoretical analysis argues that integration may affect the incentives of partner and non partner Northern countries to locate in the South differently and result in investment diversion from the Northern partner (Tekin-Koru and Waldkirch, 2010, 696). They found that, in Mexico, NAFTA partner FDI has increased. Simultaneously, as an export platform, using Mexico has not been increased by other countries. Overall, a positive influence of the openness degree of home and host countries, US-Mexico, on FDI has been found; meaning that trade costs, tariffs, have a negative impact on FDI.

Based on advanced economies as well, Cardamone and Scoppola (2014) assessed the effect of trade policy on the pattern of the extra-EU FDI in the manufacturing sector using a sample of 5 EU countries and 24 partner countries over the period 1995-2008. Their empirical specification is based on the knowledge-capital model. They have used bilateral tariffs to measure bilateral trade protection. Their results confirm that the dynamic model is appropriate to explain the sticks of EU outward FDI.

Considering their control variables, their findings are in line with the earlier studies in this regard. They confirm that the pattern of the EU FDI is a mix of vertical and horizontal FDIs. They find that the Bilateral Investment Treaties (BITs) in force have a significant and positive impact on the outward FDI and the effect of tariffs varies across industries and countries, suggesting the predominance of horizontal FDI in some industries and the existence of the vertical one in others.

It is illustrated that tariffs have been rarely included in the knowledge-capital models. Even the studies including this variable, like Cardamone and Scoppola (2014), did apply on advanced economies, the European Union (EU). There is a lack of studies applied using the knowledge-capital model for developing and less developed economies.

Methodology

The Empirical Model

Like other recent papers concerning with the FDI determinants issue, the empirical model of this paper is specifically based on the knowledge-capital theory of multinational enterprise (Carr et al., 2001; Markusen, 2002; Markusen and Maskus, 2002; Baltagi et al., 2008; Tekin-Koru and Waldkirch, 2010 and Cardamone and Scoppola, 2014). The theoretical models of the mentioned studies are illustrated, in more details, when surveying the literature on the knowledge-capital model. Taking the availability of data into consideration, the main specified variables of the

model are the home and host countries sizes, market similarity between the two countries and relative skilled-labour endowments. Tariffs, the main variable, are tariffs applied by the host countries to the COMESA goods and the tariffs applied by the COMESA to the imports from host countries.

Bilateral investment treaties (BITs) are included and expected to have a positive impact on FDI (Busse et al., 2010). Distance and common language are added due to their importance as determinants of FDI based on gravity models (Cardamone and Scoppola, 2014). The model is specified as follows:

$$\ln FDI_{ijt} = \alpha_0 + \alpha_1 \ln sumGDP_{ijt} + \alpha_2 \ln relGDP_{ijt} + \alpha_3 \ln relskill_{ijt} + \alpha_4 \ln DIS_{ij} + \alpha_5 TAR_{hostjt} + \alpha_6 TAR_{\text{home}it} + \alpha_7 BIT_{ijt} + \alpha_8 common-lang_{ij} + \mu_{ijt}$$

Where the subscripts are:

i=1, ..., 5 refer to the home, i.e. the COMESA countries,
j=1,……, 15 refer to the host countries,
t refers to the period from 1998-2014.

FDI is the dependent variable represented by the outward FDI stock; market size of the COMESA and partner countries is measured by the first independent variable sum GDP which is the sum of GDPs of both home and host countries and is expected to have a positive sign as a stronger hypothesis is that the elasticity of affiliate sales with respect to sum of GDPs is greater than one. Market similarity is measured by the relative GDP of the home-to-host countries represented by relGDP. While sum GDP is expected, as mentioned, to positively affect FDI (horizontal), relGDP variable is expected to negatively affect FDI since horizontal FDI is positively affected by market similarity; $relskill$ is a measure of skilled-labour abundance in the home country relative to the host country which is expected to have a positive coefficient since firms tend to be headquartered in the skilled-labour-abundant country. DIS is measured as the distance between the home and host countries' capitals cities. According to Blonigen and Piger (2011), distance represents one of the most important determinants of FDI. It is expected that the distance negatively affects foreign direct investment via affecting trade costs, i.e. FDI deceases with distance (Markusen, 1997).

The weighted average bilateral applied tariffs measure tariffs which are divided into two variables indicated through the specified model. The first is the host tariffs applied to the home (COMESA) country exports by the host country and the second is the home tariffs applied by the home (COMESA) country to its imports from the host country. The knowledge-capital model predicts that, on one hand, there is a positive influence of host country tariffs on the horizontal FDI but they have no effect on vertical type or a negative impact if subsidiaries in the host country use intermediate goods imported from the home country (Cardamone and Scoppola, 2014, 6).

On the other hand, while home country tariffs negatively affect vertical FDI in case of shipping the produced goods in the low-cost host country back to the home one, their coefficient is expected to have a positive sign for the horizontal (Greenfield) FDI. Both common-language (common-lang) and bilateral investment treaties (BIT) are dummy variables. Common-lang equals to 1 in the case of common official primary language between the home and host countries and zero otherwise. The common language is supposed to have a positive impact on any type (pattern) of FDI. BIT equals to 1 if BIT is in force and zero otherwise. BIT is expected, as mentioned, to have a positive impact on FDI, especially towards developing countries. Finally, μ refers to error term.

Unit Root Test

Prior to estimating the knowledge- capital model, the first step is to check the stationarity of the variables for a relationship between the time series included in panel data used. According to Granger and Newbold (1974), the presence of non-stationary variables causes a so-called spurious regression, which means that the obtained results suggest that the relationships between the variables, in the regression, are statistically significant, whereas in fact they are contemporaneous correlation rather than meaningful causal relations to establish the order of integration presented.

In simple words, unit roots can lead two time series to appear related when they are not. Therefore, if the series is not stationary, the variables have to be transformed by differencing to produce a stationary series. Verbeek (2004) argues that although non stationarity arises from many sources, an important cause is unit roots or interchangeably stochastic trends. Stock and Watson (2007) state the problem of non stationarity and assert that non stationarity in the dependent variable and/or regressors will result in unreliable conventional hypothesis tests, unreliable confidence intervals, and unreliable forecasts. The spurious results resulting from the existence of unit roots can be avoided by

determining the order of integration of the non stationary series and identifying the possible long-term relationships among the integrated variables (Johansen, 1988).

For panel data, Im, Pesaran and Shin's (1998), IPS, panel unit root test technique is used to test for stationarity (determining the order of integration). The IPS test allows for heterogeneity in intercepts as well as in the slope coefficients. The IPS statistic is mainly an average of the individual ADF statistics computed as t-bar statistics. Any common time effects will be removed and the risk of correlation across countries will be reduced by regressing each variable on a set of time dummies and taking the residuals (see Negem, 2015 for more details)

Data and Empirical Results

To estimate the proposed model of outward FDI and tariffs, the empirical work in this paper uses panel data of 5 COMESA countries and 15 COMESA partner countries. A panel of 15-year average for the period 2000-2014 is created. The main variables of interest, as shown, are outward FDI stocks as a dependent variable; sum GDP is the sum of GDPs of both home and host countries and is used to represent market size of the COMESA and partner countries, relGDP is the relative GDP of the home-to-host countries, representing market similarity, $relskill$ is a skilled-labour abundance in the home country relative to the host country, DIS is the distance between the home and host countries' capitals cities, $TAR_{host} and TAR_{\text{home}}$ are bilateral applied tariffs by COMESA partner countries and COMESA countries to the imported goods, respectively, BIT is bilateral investment treaties and common-lang is official primary language between the home and host countries.

To analyse bilateral FDI at industry level for COMESA countries, outward stocks of FDI (dependent variable) were obtained mainly from United Nations Conference on Trade and Development (UNCTAD) and Common Market for Eastern and Southern Africa (COMESA) annual reports, both available at: http://comstat.comesa.int and http://www.comesa.int and UNCTAD, FDI-TNC-GVC Information system, FDI, TNC Database (www.unctad.org/fdisstatistics), respectively. Since Libya joined COMESA in 2005, some data values were missing. Also information about the existence of BITs was obtained from UNCTAD. Data on GDP are obtained from the World Development Indicators (WDI). Skilled-labour endowment of each country is measured by tertiary school enrolment obtained from the WDI as well. Distances, distance between capitals, and dummy on common language were obtained from CEPII's Distances measures: the GeoDist Database. Bilateral applied tariffs were obtained from the WDI, African development reports, COMESA International Trade statistics Bulletin and updated using the IMF's International Financial Statistics, International Trade Centre available at www.intracen.org/itc/market-info-tools/trade-statistics/. To avoid the endogeneity bias, due to the use of imports value shares as weights, countries are divided into three groups on the basis of their development level. Then, the weighted average of tariffs has been obtained by using, as weights, the share of imports of each country from the group the exporter belongs to (Cardamone and Scoppola, 2014). Estimations are run by including home and host tariffs by computing ln (1+tariff), that is, to overcome the existence of zeros in the tariff vectors. Estimations with tariffs in level are run as well.

The regression analysis using panel data starts by testing for unit root for each variable included in our regression. This appropriate test results are obtained using Give Win, Pc-Give. The knowledge-capital model is estimated using the generalised method of moments (GMM) approach as a simultaneous equation bias represents a problem in the single equation studies using Ordinary Least Square OLS regression. Also, heterogeneity bias arises due to the omission of observable and non-observable factors specific to each industry-country pair when using OLS. The results of unit root test are presented in the following table.

Table 1
Unit Root Results

Variables	Full Sample Average ADF		
	Level	1st difference	2nd difference
FDI	-1.593	-5.273*	-10.287*
sumGDP	-2.826*	-7.875*	-14.876*
relGDP	-2.318	-6.991*	-11.762*

relskill	-1.113	-1.934	-3.072*
DIS	-1.148	-2.042	-4.618*
TAR_{host}	-1.354	-2.568*	-5.875*
TAR_{home}	-3.675*	-8.237*	-26.806*

Notes: (1) Both *BIT and common-lang* have been omitted as they are represented by dummies (1,0).
(2) All data are in logarithmic form.
(3)* indicates significance at 1%level, critical value at 1%level is -2.4(as tabulated in IPS).
(4) Under the null hypothesis of non stationarity, the test is distributed as N (0,1), so large negative values indicate in favour of stationarity.

The IPS test results obtained in table 1, on the level form of the above variables, do not reject the null of non-stationarity, i.e. the time series within panel data are integrated of order one I (1) and have a stochastic trend and in this case the null hypothesis can not be rejected of the existence of unit roots for any of the variables under study, with the exception of the *sumGDP* and TAR_{home} ; however they do reject the null for almost all the variables as first differenced become stationary at the 1% significance level. All variables are stationary, i.e. I (0) in their second difference.

Empirical Results

The proposed model was estimated using, as mentioned, GMM (dynamic estimation. OLS was used to investigate the relationship between the dependent variable, outward FDI, and both explanatory variables, distance and common language. Table 2 reported the estimated results of the full sample by considering six industries of the primary and secondary sectors.

Table 2
Estimation results of outward FDI stocks (dependent variable) of COMESA -six industries (2000-2014)

Variables	*FDI equation*	*FDI equation*
	ln (1+tariff)	*Tariff in level*
lnFDI(t-1)	0.2891***	0.1797**
ln(sumGDP)(1.681) (1.925)	(2.487)	(1.743)
	1.7874**	1.4769**
ln(relGDP)	- 0.0239*	0.3456*
	(1.398)	(1.506)
ln(relskill)	0.2013	1.1987**
	(0.751)	(2.156)
ln(DIS)	-0.5104*** (OLS)	- 0.3918** (OLS)
	(3.064)	(1.924)
TAR_{host}	0.6496**	0.3235*
	(2.157)	(1.321)
TAR_{home}	0.2547**	0.1432
	(1.974)	(0.631)
BIT	0.3457*	0.7583*

	(1.523)	(1.316)
Common-lang	0.9543* (OLS)	0.9201*(OLS)
	(1.294)	(1.452)
R^2	0.571	0.510
F	12.631	7.812

Notes: (1) OLS is the ordinary least square.

(2) FDI (t-1) is one lagged difference of the dependent variable, outward FDI, i.e. current,

present, outward FDI depends on its value in the past.

(3) ***, **, * indicates the significance at 1%, 5% and 10% levels, respectively.

The results of full sample show that market size has a considerable positive effect as well as the differences in skilled-labour endowment. So, *sumGDP* impact is in line with the findings of other studies like in Egger and Merlo (2007). As in Tekin-Koru and Waldkirch (2010), distance, as expected, negatively affects outward FDI of COMESA, while the common language has a positive and significant effect. A 1% increase in the sum of GDP implies a 1.78%-1.47% increase in the COMESA outward FDI. The coefficient of the host country tariffs has a positive sign. This positive and significant coefficient is consistent with the predominance of horizontal FDI. Like host country tariffs effects, the tariffs applied by the COMESA countries have a positive influence on the outward FDI, but it appears insignificant with tariff in level. This finding is not in line with common expectations where home tariffs coefficient is expected to have a negative sign with vertical FDI prevails and to have no effect when horizontal FDI prevails. So, the results show that a unitary increase in host tariffs and COMESA tariffs implies an increase in COMESA outward FDI by 0.65 or 0.32 and 0.26 or 0.14, respectively. *BITs* positively affect outward FDI, while, as expected, *relGDP* negatively affect the outward FDI of COMESA countries.

Table 3 presents the results of the proposed model by splitting the full sample into two groups: the COMESA host countries group and non-member COMESA host countries group.

Table 3

Estimation results of outward FDI stocks of (dependent variable) COMESA -six industries (2000-2014) COMESA host group and non-member COMESA group

Variables	*FDI equation COMESAHgroup*	*FDI equation N-MCOMESAHgroup*
lnFDI(t-1)	0.3981**	0.5876***
	(1.854)	(4.758)
ln(sumGDP)	1.6213***	0.8933**
	(3.635)	(2.243)
ln(relGDP)	0.8231**	0.9768
	(2.320)	(0.354)
ln(relskill)	0.9436**	1.0976**
ln(DIS) -0.0687*** (OLS) -0.0165***(OLS)	(2.0415)	(1.978)
	(4.674)	(3.971)
TAR_{host}	0.0125	0.0473**
	(0.513)	(1.728)
TAR_{home}	0.1754**	-0.0743**

	(1.685)	(1.984)
BIT	0.7134*	0.0532*
	(1.520)	(1.363)
Common-lang	0.3672** (OLS)	0.2584*(OLS)
	(1.823)	(1.352)
R^2	0.531	0.652
F	9.613	7.248

Notes: (1) tariffs in level.
(2) COMESAH refers to COMESA host countries, NMCOMESAH refers to Non-member COMESA host countries.
(3) OLS is the ordinary least square.
(4) FDI (t-1) is one lagged difference of the dependent variable, outward FDI, i.e. current, present, outward FDI depends on its value in the past.
(5) ***, **, * indicates the significance at 1%, 5% and 10% levels, respectively.

Similar to the results obtained for the full sample reported in table 2, *relskill*, relative market size, has a significant positive contribution to outward FDI for both groups; however, there are disparities in the size of *relskill* coefficient. The comparative figures for full sample, shown in table 2, COMESA host countries group, and Non-member COMESA host countries group are 0.20%, 0.94% and 1.09%, respectively. The joint market size, *sumGDP*, has significant and positive coefficients for both groups as well as the whole sample, demonstrating a strong contribution to the outward FDI of COMESA. The comparative figures for whole sample, shown in table 2, COMESA host countries group, and Non-member COMESA host countries group are 1.78%, 1.62% and 0.89%, respectively.

The results suggest that the host tariffs, TAR_{host}, have a positive contribution to outward FDI for non-member COMESA group, like in the full sample, confirming the expectation of the prevalence of horizontal (Greenfield) FDI in developed countries. It is worth notable that almost all the non-member COMESA host countries are classified as developed economies. Contrary to this finding, TAR_{host} for the COMESA host countries appears to have a negative, but insignificant, impact on COMESA outward FDI. Home tariffs, like in table 2, have a positive and significant impact on the outward FDI hosted by COMESA member and non-member groups. The comparative figures for the full sample, COMESA host countries group, and Non-member COMESA host countries group are 0.25%, %, 0.17% and 0.07%, respectively. Like the results of full sample, distance has adverse impact on outward FDI of COMESA, while the common language has a positive effect. Regarding *BITs*, the results show the positive contribution to outward FDI; however, it seems to be greater in case of COMESA member host group, that is, 0.71 (for non-member group, it is 0.05 only).

Conclusions

This paper investigates the impact of tariffs, both levied by home and host, on the outward FDI of COMESA countries. To increase the number of observations and, consequently, the power of the estimation, a panel data approach has applied to investigate the mentioned influence. Our contribution to the literature is to capture the relationship of trade policy and the outward FDI for developing and less developed economies (COMESA) by conducting a knowledge-capital model. The model is specified within one equation framework based on the knowledge-capital theory of multinational enterprises (MNEs).

FDI is the dependent variable represented by the outward *FDI* stock. The explanatory variables, the determinants of outward FDI, are market size of the COMESA and partner countries, *sum* GDP, which is the sum of GDPs of both home and host countries, market similarity, *relGDP*, which is the relative GDP of the home-to-host countries, $relskill$ is a measure of skilled-labour abundance in the home country relative to the host country, *DIS* is the distance between the home and host countries' capitals cities, the weighted average bilateral applied tariffs measure tariffs which are divided into the host tariffs applied to the home (COMESA) country exports by the host country and the home tariffs applied by the home (COMESA) country to its imports from the host country, common-language (*common-lang*) and bilateral investment treaties (*BIT)* are dummy variables. The common language is supposed to have a positive impact on any type (pattern) of FDI.

The model was estimated using generalised method of moments (dynamic GMM) estimator, except the variables distance and common language for both OLS was used, for panel data of COMESA and its partner countries over the period 2000-2014. The results obtained, for the full sample and the other two groups (COMESA member and non-member host countries) found that there is a major contribution of the market size, *sumGDP*, to outward FDI of COMESA. This contribution is greater than the impact of both tariffs applied by host and home countries, confirming the importance of the market size as a determinant of outward FDI of COMESA. The results of this paper also shed more light on the impact of bilateral investment treaties (*BITs*) on the outward FDI of COMESA. This variable exhibits a strong impact in stimulating outflows investment of COMESA. Distance, as expected, has an adverse impact, for all groups, on COMESA outward, that explains why most of COMESA outflows are invested intra the continent, more specifically intra COMESA. At the last, to make the investment decision, COMESA countries must take the market size, of course besides the tariffs applied by the host and applied by COMESA itself, into consideration, especially for the smaller countries which have felt a need to invest abroad: Seychelles, Mauritius, and Swaziland.

References

Baltagi, B. H., Egger, P., & Pfaffermayr, M. (2008). Estimating regional trade agreement effects on FDI in an interdependent world. *Journal of Econometrics*, *145*(1), 194-208.

Blanchard, E. J. (2007). Foreign direct investment, endogenous tariffs, and preferential trade agreements. *The BE Journal of Economic Analysis & Policy*, *7*(1).

Blonigen, B. A. (2005). A review of the empirical literature on FDI determinants. *Atlantic Economic Journal*, *33*(4), 383-403.

Blonigen, B. A., Davies, R. B., & Head, K. (2002). *Estimating the knowledge-capital model of the multinational enterprise: Comment* (No. w8929). National Bureau of Economic Research.

Blonigen, B. A., Davies, R. B., Waddell, G. R., & Naughton, H. T. (2007). FDI in space: Spatial autoregressive relationships in foreign direct investment. *European Economic Review*, *51*(5), 1303-1325.

Blonigen, B. A., & Piger, J. (2014). Determinants of foreign direct investment. *Canadian Journal of Economics/Revue canadienne d'économique*, *47*(3), 775-812.

Brainard, S. L. (1993). *An empirical assessment of the proximity-concentration tradeoff between multinational sales and trade* (No. w4580). National Bureau of Economic Research.

Brakman, S., & Garretsen, H. (2008). *Foreign direct investment and the multinational enterprise*. *T*he MIT Press, Cambridge, Massachusetts, London, England.

Busse, M., Königer, J., & Nunnenkamp, P. (2010). FDI promotion through bilateral investment treaties: more than a bit?. *Review of World Economics*, *146*(1), 147-177.

Cardamone, P., & Scoppola, M. (2015). Tariffs and EU countries foreign direct investment: Evidence from a dynamic panel model. *The Journal of International Trade & Economic Development*, *24*(1), 1-23.

Carr, D. L., Markusen, J. R., & Maskus, K. (1998). *Testing the knowledge-capital model of the multinational enterprise* (Vol. 98, No. 5). Centre for International Economic Studies, University of Adelaide.

Carr, D. L., Markusen, J. R., & Maskus, K. E. (2001). Estimating the knowledge-capital model of the multinational enterprise. *The American Economic Review*, *91*(3), 693-708.

COMESA. (2014). *COMESA Investment report 2014: Regional integration and foreign direct investment in COMESA*. COMESA: Lusaka. Retrieved from http://comstat.comesa.int, http://www.comesa.int

Doornik, J. A. & Hendry, D. F. (2003). *Pc-Give Volume I-II.* London, Give Win Timberlake Consultants Limited.

Dunning, J. H. (1973). The determinants of international production. *Oxford economic papers*, *25*(3), 289-336.

Dunning, J. H. (2012). *International Production and the Multinational Enterprise (RLE International Business)*. London: Routledge.

Egger, P., & Merlo, V. (2007). The impact of bilateral investment treaties on FDI dynamics. *The world economy*, *30*(10), 1536-1549.

Ekholm, K., Forslid, R., & Markusen, J. R. (2007). Export-platform foreign direct investment. *Journal of the European Economic Association*, *5*(4), 776-795.

Ethier, W. J. (1986). The multinational firm. *The Quarterly Journal of Economics*, 805-834.

Ethier, W. J., & Markusen, J. R. (1996). Multinational firms, technology diffusion and trade. *Journal of International Economics*, *41*(1), 1-28.

Granger, C. W., & Newbold, P. (1974). Spurious regressions in econometrics. *Journal of econometrics*, *2*(2), 111-120.

Hartman, D. G. (1984). Tax policy and foreign direct investment in the United States. *National tax journal*, 475-487.

Helpman, E. (1985). Multinational corporations and trade structure. *The Review of Economic Studies*, *52*(3), 443-457.

Horstmann, I. J., & Markusen, J. R. (1992). Endogenous market structures in international trade (natura facit saltum). *Journal of international economics*, *32*(1), 109-129.

Im, K. S., Pesaran, M. H., & Shin, Y. (2003). Testing for unit roots in heterogeneous panels. *Journal of econometrics*, *115*(1), 53-74.

Johansen, S. (1988). Statistical analysis of cointegration vectors. *Journal of economic dynamics and control*, *12*(2), 231-254.

Markusen, J. R. (1997). *Trade versus investment liberalization* (No. w6231). National Bureau of Economic Research.

Markusen, J. R. (2004). *Multinational firms and the theory of international trade*. MIT press.

Markusen, J. R., & Maskus, K. E. (2002). Discriminating among alternative theories of the multinational enterprise. *Review of international economics*, *10*(4), 694-707.

Markusen, J. R., & Venables, A. J. (2000). The theory of endowment, intra-industry and multi-national trade. *Journal of international economics*, *52*(2), 209-234.

NEGEM, S. (2015). Tariffs and unemployment causality: evidence from a panel analysis of the EU. Paper Presented at *Second European Academic Research Conference on Global Business, Economics, Finance and Banking", Zurich, Switzerland*. Retrieved from http://globalbizresearch.org/Swiss_Conference/Conference_Papers.php

Stock, J. H. & Watson, M. W. (2007), *Introduction to Econometrics* (2nd ed.)., Boston, Massachusetts: Pearson Education, Inc.

Tekin-Koru, A., & Waldkirch, A. (2010). North–south integration and the location of foreign direct investment. *Review of International Economics*, *18*(4), 696-713.

Verbeek, M.(2004). *A guide to modern econometrics (2nd ed.).* West Sussex: John Wiley & Sons Ltd.