

A Static Analysis of Pakistan's Trade Policy with Selected Asian Countries*

Summaira MALIK

National College of Business Administration and Economics,
Lahore, Pakistan
Summaira_mallick@yahoo.com

Amatual R. CHAUDHARY

National College of Business Administration and Economics,
Lahore, Pakistan

Abstract. *The paper critically analyzes Pakistan's trade policy during 1996-2006 and explores the determinants of bilateral export and import flows between Pakistan and selected Asian countries (SAC) in recent past. It contains the policy issues which may be helpful for policy makers of other developing countries facing same conditions. A gravity model of international trade is empirically tested with the help of generalized least square (GLS) method of estimation in panel data. Our results show that the income of trading countries is a determining factor of Pakistan's import flows but not for export flows. For exports, the openness of economies is playing central role instead the incomes of trading countries. The exchange rate is also found as a determining factor of Pakistan's export flows and import flows. There is convincing evidence that current import and export flows are highly correlated with previous year whereas infrastructural bottlenecks have negative impact on Pakistan's import and export flows.*

Keywords: trade policy; regional commerce; gravity model; import-export flows; generalized least square method; currency exchange rate.

JEL Code: F13.

REL Codes: 10D, 10E.

* This paper is drawn mainly from published M. Phil thesis of Malik (2010).

1. Introduction

Like many other developing economies, Pakistan followed an import substitute industrialization strategy in the initial stages of its development to provide protection to industries producing import competitive goods. Tariffs on consumer goods were set higher than the tariffs on intermediate and capital goods, the imports of intermediate and capital goods were either freely allowed or were subjected to low tariffs. This policy was adopted to support the industries of capital goods and intermediate goods. Development strategy during much of the sixties continued to be heavily biased towards industry through export bonus scheme, import controls and tariffs, tax concessions such as tax holidays, accelerated depreciation allowances and loans at very low interest rates to support industrial sector in the growth strategy (Kemal, 1978). The government maintained an over-valued exchange rate to ensure the cheap availability of capital goods and other imported inputs to the industrial sector. By keeping prices of agricultural inputs at below world market prices, it made domestic raw materials available to the industrial sector at very cheap prices. These policies not only led to healthy growth in the exports of manufactured goods but also helped to diversify the product composition of Pakistan's exports.

During the seventies, separation of East Pakistan in December 1971 created many difficulties for international trade of Pakistan because a bulk of trade was carried between East Pakistan and West Pakistan. West Pakistan's exports to East Pakistan were consisted of 52% of manufactured goods and 48% of primary commodities whereas East Pakistan's exports to West Pakistan were consisted of 80% of manufactured goods and 20% of raw material. Separation of East Pakistan was creating a shortage problem. In order to this problem, the Government of Pakistan revised its export policy and took many steps to improve its international trade. Trade agreements were made with Muslim countries and export bonus scheme was abolished on 12th May, 1972. All these steps were taken for promotion of foreign trade but country continued to face serious balance of payment difficulties due to high oil prices in international market which resulted in inflation at close to 30 percent in 1973-74. Natural calamities of floods and pest attacks did the remaining damage to the economy and destroyed crops severely, putting pressure on prices and affecting industrial production. Government fulfilled the gap between external payments and receipts with large amounts of foreign loans and grants.

Economic liberalization and deregulation began in the early 1980s. The economic policies initiated wide ranging structural reforms as part of the Structural Adjustment and Stabilization Programs that aimed at liberalizing and deregulating the economy. The adoption of these programs led not only

adjustments in demand management policies but also major changes in industrial and trade policies in the form of deregulation, privatization, and trade liberalization (Sajid, Chaudhary, 1996). In addition, different policy measures of fiscal incentives, tax holidays, de-licensing of investment regimes and reduction of tariffs on capital goods were adopted to encourage private investment and to improve the viability of Pakistan's industrial sector to compete international markets. A major change in economic policy from the previous decades was the adoption of a managed floating exchange rate system. The transition to the new system led to an adjustment in the rupee which boosted Pakistan's exports.

The process of trade liberalization continued in the nineties as the government undertook significant steps to reform the foreign trade regime including rationalization of the tariff structure, reduction of non-tariff barriers and simplification of import procedures along with an aim to enhance exports by improving the world market share of Pakistan's core exports in major markets. The maximum tariff on imports came down from 225% in 1986-87 to 25%, at present there are four slabs in the customs tariff 25%, 20%, 10% and 5%. Pakistan has made substantial progress in eliminating or reducing tariff barriers to trade. But there are not serious efforts in improving trade structure. Pakistan's export structure has a very narrow base, both in terms of products and markets, most of the exportable items are of low value addition. The composition of exports mainly consists of textile manufactures and food items, largely originating from the agricultural sector where the incidence of uncertainty is quite high and the market is highly competitive. The textile sector constitutes over 65% of our total exports, its production and exports have attained almost maximum capacity and there is a need to shift the focus to other exportable items. Pakistan is not a major trading player in the international trade. Pakistan's imports have generally been greater than its exports. Like exports Pakistan's imports are highly concentrated to few items. Pakistan's objectives in negotiating bilateral and regional (preferential and free) trade agreements are primarily to seek better market access by addressing tariff and non-tariff measures, to further facilitate and promote trade, investment and to enhance the comparative value of Pakistan's exports. During mid 90's Pakistan's foreign policies are primarily aimed at strengthening trade relations with Asia.

Pakistan is pursuing a policy of export-led growth for which the issues of market access are important. As a consequence, an orchestrated trade policy has been carefully designed. During 1990's the government placed new importance on developing trade links with nearby nations and realized the need to increase regional blocks in international trade. So, Pakistan has adopted a conscious

strategy to gradually increase regional blocks in international trade especially with Asian countries. China, Japan, Malaysia, Saudi Arabia, Singapore and Indonesia are among those Asian countries who showed a much pronounced rise in trade with Pakistan during recent years and almost 35 percent to 40 percent of Pakistan's imports are from these countries. Japan, Saudi Arabia and Hong Kong (China) are among world's top seven major export markets of Pakistan since 1996-2006. So, present paper will examine major determinants of Pakistan's trade with above mentioned six selected Asian countries (SAC) and will attempt to synthesize the current international trade problems faced by Pakistan in trade with SAC. Table 1 represents the percentage share of SAC in total trade volume of Pakistan.

Table 1

%age share of SAC in total trade volume of Pakistan								
Countries	Variables	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
China	% Share in Total Exports	3.30	2.48	2.19	2.34	2.46	2.82	3.39
	% Share in Total Imports	4.89	5.56	6.87	7.40	8.94	9.46	11.57
Japan	% Share in Total Exports	2.09	1.82	1.27	1.09	1.14	0.77	0.73
	% Share in Total Imports	5.38	5.01	6.58	6.00	7.04	6.43	5.69
Malaysia	% Share in Total Exports	0.55	0.57	0.7	0.67	0.46	0.39	0.42
	% Share in Total Imports	4.00	4.41	4.63	3.86	3.29	2.48	3.09
Saudi Arabia	% Share in Total Exports	2.98	3.61	4.27	2.83	2.26	2.00	1.70
	% Share in Total Imports	11.7	11.6	10.7	11.4	12.0	10.47	11.43
Singapore	% Share in Total Exports	0.52	0.51	0.78	0.95	0.39	0.23	0.40
	% Share in Total Imports	3.04	3.12	3.49	3.15	1.81	1.62	1.57
Indonesia	% Share in Total Exports	1.47	0.82	0.65	0.36	0.49	0.35	0.43
	% Share in Total Imports	1.51	2.34	2.11	2.29	2.79	2.65	2.77

Source: The World Bank (2001-07).

Unfortunately, the percentage growth rate of Pakistan imports from Asian countries has generally been greater than its exports. Pakistan's imports and exports are highly concentrated to few items. One third of Pakistan's exports consists of manufactured and semi-manufactured goods. Export earnings deficit has sharp fluctuations. This is because of a number of handful products. The

imports are also concentrated to few items namely, machinery, petroleum products, chemicals, transport equipment, edible oil, iron and steel, fertilizers and tea which account for more than 70% of total imports. The country has to import these products to move on the road of development⁽²⁾. Table 2 represents the major items of exports and imports of Pakistan with SAC.

Table 2

Major items of exports and imports of Pakistan with selected asian countries

Countries	Variables	Items
China	Major Exports	Cotton yarn & woven fabrics, Organic Chemical, Leather & Leather Manufacturers, Ores, slag & ash, Fish & fish product
	Major Imports	Boiler machinery & mech. appl, Electrical/appl./parts, Organic Chemicals, Petroleum products & oil, Misc chemical products
Japan	Major Exports	Cotton yarn & woven fabrics, Leather and leather manufactures, Sport goods, Fish & Fish product, Petroleum & oil
	Major Imports	Road vehicles, Boilers, Machinery & Mach. App, Iron & Steel, Telecommunication app/equipt., Organic Chemicals
Malaysia	Major Exports	Cotton yarn & woven fabrics, Rice, Fish, Made up textile articles, rags etc., Manmade filament & yarns
	Major Imports	Animal or vegetable fats & oil, Organic chemicals, Boilers, Machinery & mechanical appliances, Plastic, Telecommunication equipments.
Saudi Arabia	Major Exports	Articles of apparel/cloth access., Made up textile article, rags etc., Rice, Cotton yarn & woven fabrics, Foot wear
	Major Imports	Petroleum products & oil, Organic Chemicals, Plastic, Fertilizers, Leather & leather manufactures
Singapore	Major Exports	Made up textile articles, rags etc., Pharmaceutical products, Cotton Yarn & woven fabrics, Article of apparel/cloth access.
	Major Imports	Boilers, Machinery & mechanical appliances, Telecommunication appl. & equip., Plastic & articles thereof, Organic chemicals, Petroleum products & oil
Indonesia	Major Exports	Cotton yarn & woven fabrics, Ed. Fruits & nuts, Leather & leather manufactures, Made up textile articles, rags etc., Manmade filaments & yarns
	Major Imports	Animal or vegetable fats & oil, Petroleum products & oil, Manmade fibre & yarns, Paper, paperboard & articles, Organic chemicals

Source: The World Bank (2001-07).

Total trade is sum of two components, exports and imports. Present paper will identify which component has larger contribution in total trade of Pakistan in its international trade. Patterns of trade are analyzed by employing mathematical and econometric tools. Pooled data of Pakistan, China, Japan, Malaysia, Indonesia, Saudi-Arabia, and Singapore is applied with the help of generalized least squares (GLS) estimation technique. Time series data covering the period 1996-2006 has been selected because the government placed new importance on developing trade links with nearby nations and realized the need to increase regional blocks in international trade. For this study, the data has been taken from International Financial statistics (IFS) (CD ROM, 2006), State Bank of Pakistan's Publications and Pakistan Economic Survey.

2. Literature review

To analyze the impact of bilateral trade policies on economic outcomes, researchers have generally used gravity models. There are wide ranges of applied research where the gravity model is used to examine the bilateral trade patterns and trade relationships. Gravity models utilize the gravitational force concept as an analogy to explain the volume of trade, capital flows and migration among the countries of the world. The gravity models have significant explanatory power. The effect of policies on trade flows can then be assessed by adding the policy variables to the equation and estimating deviations from the baseline flows. The gravity models allow more variables to be taken into account to explain the extent of trade (Hamilton et al., 1992, Baldwin, 1994, Deardorff, 1998, Paas, 2000)⁽³⁾. There are wide ranges of applied research where the gravity model is used to examine the bilateral trade patterns and trade relationships (Bergstrand, 1985, 1989, Koo, Karemera, 1991, Oguledo, Macphee, 1994, Zhang, Kristensen, 1995, Frankel, 1997, Rajapakse, Arunatilake, 1997, Karemera et al., 1999, Mathur, 1999, Sharma, Chua, 2000, Paas, 2000, Hassan, 2000, 2001, Jakab et al., 2001, Kalbasi, 2001, Martinez, Nowak, 2003, Soloaga, Winters, 2001, Christie, 2002, Carrillo, Li, 2002, Egger, Pfaffermayr, 2000, Matyas et al., 2000). Tinbergen (1962) was the first to conceive the gravity model in its simple form while Poyhonen (1963) was the second. Numerous adjustments, additions and modifications were made in the gravity model since then. It became popular for modeling trade flows (Eichengreen, Irwin, 1998, Feenstra, 1998).

In the 1990s, many studies have been conducted by using gravity model to access the impact of regional integration in Asia. These studies suggest that the unilateral trade liberalization would yield many more gains for the region compared to preferential trade liberalization and small economies in the region would gain much more from preferential trade liberalization than larger economies (Srinivasan, 1994, Srinivasan, Canonero, 1995, Pigato et al., 1997, Srinivansan, 1998).

According to Wei (1996) an OECD member country imports about two and half times as much from itself than other identical foreign country. Dash (1996) reviews that due to the low level of mutual trust, spillover effects of the ethnic and religious conflicts and the magnitude of bilateral disputes in South Asia, it is unrealistic to believe that any substantial growth of regional cooperation is possible without easing political tensions. According to Matyas (1997) one of the most fruitful ways to formalize the modeling and predicting foreign trade flows is through the use of Gravity type models. Hariss and

Matyas (1998) have generalized a time series of cross-sectional data set with an application of random effect gravity model to exports flow in the APEC region.

According to Limao and Venables (1999) transport costs depend on many complex details and land distance is much more costly than sea distance. Hassan (2001) concludes that the seven SAARC economies are not only reducing trade among themselves but also with the rest of the world (ROW). Chaudhary and Qaisrani (2002) have investigated the role of trade instability on investment and economic growth. The results show that export instability does not directly affect economic growth and investment in Pakistan. According to Zarzoso and Lehman (2003) infrastructure, income differences and exchange rate are important determinant of bilateral trade flows to assess the trade potential between southern common market (MERCOSUR) and European Union trading blocks. Paulino and Thirlwall (2004) have used panel data and times series cross section analysis to estimate the effect of trade liberalization on export growth, import growth, balance of trade and balance of payments for a sample of 22 developing countries that have adopted trade liberalization policies since the mid-1970s. Results show that liberalization stimulates export growth but raises import growth by more leading to a worsening of the balance of trade and payments. This has constrained the growth of output and living standards of people of developing countries.

Rose (2004) empirically proves that regional trade agreements do have statistically significant effect in influencing bilateral trade in Asia. According to Baunsgaard and Keen (2005) developing countries are still heavily dependent on trade tax revenues. Further trade liberalization may be hindered unless they are able to develop alternative sources of revenue. According to Noshab (2006) on regional front, Pakistan did not make serious efforts in trade promotions through the establishment of free trade areas with other countries during the 1990s. However, during last four years it has been very active in this regard and many fruitful efforts have been made leading to many free trade agreements and consequent increase in trade volume. According to Soesastro (2006) economic integration in East Asia has been largely market driven and East Asian governments should redirect attention to the WTO with a clear focus on further liberalization and stronger non-discriminatory rules.

Bader (2006) provides empirical evidence in support of the hypothesis that imports of intermediate and capital goods are critical inputs in the export production of the Pakistan. Hussain and Jalil (2006) address the question of whether intervention in foreign exchange market in Pakistan has been successful in either altering the exchange rate level or smoothing the exchange rate fluctuations. According to empirical results there is evidence of

effectiveness of official intervention on exchange rate level as well as on the variance. According to Baysan and Pitigala (2006), South Asian countries are more interested in trade with the industrial economies, that is the EU and the US than with the neighboring sub-regional economies and this could be due to differences in factor endowments with the large industrial economies.

3. Theoretical background of the model

The focus of the present paper is to formulate the gravity type model to examine the trade potential of Pakistan with SAC. Gravity model of international trade states that: “The trade flow between two countries is proportional to the product of each country’s ‘economic mass’, generally measured by GDP each to the power of quantities to be determined, divided by the distance between the countries’ respective ‘economic centers of gravity’, generally their capitals, raised to the power of another quantity to be determined (Christie, 2002)...”

This is expressed as:

$$T_{ijt} = \frac{\beta_0 (Y_{it}^{\beta_1} \times Y_{jt}^{\beta_2})}{D_{ijt}^{\beta_3}}, i = 1, j = 2, 3, 4, 5, 6, t = 1996, 1997, \dots, 2006 \quad (1)$$

where:

T_{ijt} is total trade between two countries in t time. Y_{it} GDP in i country. Y_{jt} is GDP in j country and D_{ijt} is the distance between the countries’ respective economic centers of gravity.

In this equation, GDP is directly proportional to the trade between countries and indirectly proportional to the distance between them. Taking equation (1) into natural log form:

$$\ln T_{ijt} = \ln \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} - \beta_3 \ln D_{ijt}, \\ i = 1, j = 2, 3, 4, 5, 6, t = 1996, 1997 \dots \dots 2006 \quad (2)$$

Gravity model is estimated in terms of natural logarithms (\ln). Due to its log-log-linear structure, the coefficients of the gravity model are in terms of elasticity or ratio of percentage changes. These dimensionless measures are comparable across countries and give us direct measures of the responsiveness of trade flows to the trade potential variables of Equations. So, the equation (2) becomes:

$$\ln T_{ijt} = \ln \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln D_{ijt},$$

$$i = 1, j = 2, 3, 4, 5, 6, t = 1996, 1997 \dots \dots 2006 \quad (3)$$

Most estimates of gravity models add a certain number of variables to test specific effects. According to objectives of study, if we want to examine the impact of $\sum_{h=4}^{11} \beta_n F_{ijht}$ distinct factors then the model becomes:

$$\ln T_{ijt} = \ln \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln D_{ijt} + \sum_{h=4}^{11} \beta_n F_{ijht} + \varepsilon_{ijt},$$

$$i = 1, j = 2, 3, 4, 5, 6, t = 1996, 1997 \dots \dots 2006 \quad (4)$$

where,

$\sum_{h=4}^{11} \beta_n F_{ijht}$ is a sum of specific independent variables either facilitating or restricting trade between two countries.

There are a huge number of empirical applications in the literature of international trade which have contributed to improvement of performance of the gravity equation. Some of them are closely related to our work. In recent papers, Matyas (1997), Matyas (1998), Chen and Wall (1999), Breuss and Egger (1999), and Egger (2000) improved the econometric specification of the gravity equation. Berstrand (1985), Helpman (1987), Wei (1996) and Limao and Venables (1999) are among others who contributed to the refinement of the explanatory variables considered in analysis and addition to new variables. In modeling of gravity type model present paper has taken those specific independent variables in $\sum_{h=4}^{11} \beta_n F_{ijht}$ which either facilitate or restrict trade of Pakistan with SAC.

$$\begin{aligned} \sum_{h=4}^{11} \beta_n F_{ijht} = & \beta_4 \ln N_{it} + \beta_5 \ln N_{jt} + \beta_6 \ln OP_{it} + \beta_7 \ln OP_{jt} + \beta_8 \ln ER_{ijt} + \\ & + \beta_9 \ln IN_{it} + \beta_{10} \ln IN_{jt} \end{aligned}$$

$$T_{ij(T-1)} + \varepsilon_{ijt}, i = 1, j = 2, 3, 4, 5, 6, t = 1996, 1997 \dots \dots 2006 \quad (5)$$

where,

N_{it} is the population of i^{th} country at time t . N_{jt} is the population of j^{th} countries at time t . Data on exchange rates ER_{ijt} are available in national

currency per US dollar for all countries. So these rates are converted into the j^{th} countries' currencies in terms of Pakistan's currency (i^{th} country's currency). OP_{it} is openness of economy in i^{th} country at time t . OP_{jt} is openness of economies in j^{th} countries at time t . IN_{it} is the inflation rate in i^{th} country at time t . IN_{jt} is the inflation rate in j^{th} countries at time t . $T_{ij(T-1)}$ is lag value of bilateral import flows of i^{th} country to j^{th} countries at time t in million US dollars. ε_{ijt} is the error term.

Total trade is sum of two components, exports and imports. So we have driven two separate equations to identify which component has larger contribution in total trade. By adding specific independent variables, the generalized equation of our import model is as follows:

So, by adding specific independent variables, the generalized equation of our import model is as follows:

$$\ln IMP_{ijt} = \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln D_{ijt} + \sum_{h=4}^{11} \beta_n F_{ijht} + \varepsilon_{ijt},$$

$$i = 1, j = 2, 3, 4, 5, 6, t = 1996, 1997 \dots \dots 2006 \quad (6)$$

where,

\ln is the natural log of variables, j is used for selected Asian countries, i for Pakistan and t for time. The explanatory variables are defined as follows:

IMP_{ijt} is bilateral import flow of i^{th} country to j^{th} countries at time t in million US dollars. Y_{it} is the GNP of i^{th} country at time t in million US dollars. Y_{jt} is the GNP of j^{th} countries at time t in million US dollars. $\sum_{h=4}^{11} \beta_n F_{ijht}$ have been discussed in detail in equation (5).

Using the same methodology for gravity model of Pakistan's export flows, the natural log form is:

$$\ln Exp_{ijt} = \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln D_{ijt} + \sum_{h=4}^{11} \beta_n F_{ijht} + \varepsilon_{ijt},$$

$$i = 1, j = 2, 3, 4, 5, 6, t = 1996, 1997 \dots \dots 2006$$

where,

\ln is the natural log of variables, j is used for selected Asian countries, i for Pakistan and t for time. The explanatory variables are defined as follows:

EXP_{ijt} is bilateral import flow of i^{th} country to j^{th} countries at time t in million US dollars. Y_{it} is the GNP of i^{th} country at time t in million US dollars. Y_{jt} is the GNP of j^{th} countries at time t in million US dollars. $\sum_{h=4}^{11} \beta_n F_{ijht}$ have been discussed in detail in equation (5).

The gravity model developed in this paper has used balanced panel data with the generalized least squares (GLS) estimation technique⁽³⁾. In this technique, we assume that the intercept (β_0) represents the mean value of all cross-sectional intercepts and the error component (ε_{ijt}) represents the random deviation of individual intercept from the mean value. In GLS method, it is assumed that error component (ε_{ijt}) and independent variables are uncorrelated. With this assumption one is able to separately identify those factors which affect bilateral trade flows⁽⁴⁾. It is also proved from a priori point of view that the GLS estimation technique is appropriate for panel data when we estimate trade flows between samples of trading partners from large population⁽⁵⁾. Our sample includes only six major trading partners of Pakistan from a large population of Asia for detailed study. So, present paper has used GLS estimation technique.

4. Empirical results and general discussion

The models have good R-Square values and F-Statistics test shows that both models are significant at 1% level of significance. We have performed different diagnostic tests which show that there is no multicollinearity problem among the variables. The auto correlated error structure also supports the analysis. So, the equation (6) for import model and equation (7) for export model is estimated through GLS estimation technique and results are given in the Table (3).

Table 3

Independent variables	Import model dependent variable (IMP)	Export model dependent variable (EXP)
β_0	-0.053 (0.7294)	0.126 (0.461)
<i>Y</i>	0.064*** (0.0134)	0.036 (0.201)
<i>N</i>	0.078*** (0.0031)	-0.058** (0.044)
<i>ER</i>	-0.055*** (0.0073)	0.127*** (0.000)
<i>OP</i>	-0.117*** (0.0000)	0.148*** (0.000)
<i>IN</i>	0.001 (0.5446)	-0.001 (0.417)
<i>D</i>	-0.0613* (0.0635)	0.088*** (0.0149)
$IMP_{ijt(IMP-1)}$	0.877*** (0.0000)	
$EXP_{ijt(EXP-1)}$		0.702*** (0.000)
R-Square	0.89	0.71
F Statistic	94.79***	28.769***
Prob (F-stat)	0.000	0.000

Note: (***) for 1% level of significance.

(*) for 10% level of significance.

P-values are given in parentheses.

All values are calculated by author.

In our import model (Table 3), the income of trading countries (Y) is positive and significant factor. The empirical results show that Pakistan's import flows with SAC increase by 0.064% with 1% increase in Y . It indicates the level of development. If a country develops, consumers demand more exotic foreign varieties that are considered superior goods. Moreover, large domestic markets are able to absorb more imports. So an increase in the incomes of trading countries increases bilateral imports. There are many empirical studies in the literature who have confirmed a positive relation between import flows and income growth⁽⁶⁾. In our export model the income of trading countries (Y) is positive and insignificant. One reason for this difference is due to the high level production in SAC due to diversified nature of goods and their economies of scale, especially in China. Empirical studies on the relationship between export growth and income growth have largely supported the view that export growth has a favorable impact on income growth⁽⁷⁾.

Asia is the world's most populous continent with more than 60% of the world's current human population⁽⁸⁾. So, it is an important factor in estimation. Population size of trading countries (N) is statistically significant factor and has positive relation with Pakistan's import flows which means big absorption effect of Asian domestic markets are causing more reliance on international trade transactions. (N) has negative relation with Pakistan's export flows. The majority of the general equilibrium studies have found the population size of the trading countries to have a negative and statistically significant effect on trade flows⁽⁹⁾.

The impact of exchange rate (ER) has a negative and statistically significant relation with Pakistan's import flows from SAC. Depreciation of Pakistani currency has many adverse effects along with increase in prices and foreign debt. Unfortunately Pakistan's imports have generally been greater than its exports and it has to face the problem in balance of trade. According to empirical results Pakistan's import flows with SAC decrease by only 0.05% with 1% increase in ER . The impact is very small because Pakistan's imports are highly concentrated to few items that account for more than 70% of total imports. The empirical studies of Matyas (1997), Harris and Matyas (1998), Akhtar and Malik (2000) support the view that import flows are negatively correlated with ER whereas it has a positive and statistically significant relation with Pakistan's export flows to SAC. Along with many adverse effects of budget deficit and inflation, exchange rate is playing a vital role in increasing Pakistan's exports demand in SAC.

Openness of SAC economies (OP) is statistically significant factor and has a negative sign. The empirical results show that Pakistan's import flows with SAC decrease by 0.12% with 1% increase in the OP . According to Social

Policy and Development Centre (SPDC) annual report (2005-06) present efforts to liberalize the economies of Asia are insufficient. Asian countries are relying too much on negotiations while neglecting sensible trade policy reforms at home. Most of the trade liberalization policies have self imposed restrictions on trade through both tariff and non tariff barriers (NTBs)⁽¹⁰⁾. The average tariffs on manufacturing and primary goods are still high in South Asian economies as compared to East Asian economies⁽¹¹⁾. There are many studies which suggest that present efforts to liberalize the economies of Asia are insufficient⁽¹²⁾. (*OP*) is statistically significant factor and possesses a positive sign in export model. The empirical results show that Pakistan's export volume with SAC increases by 0.148% with 1% increase in the *OP*. Many studies have found it to be trade-enhancing and statistically significant⁽¹³⁾.

Inflation (*IN*) is statistically insignificant and possesses a negative sign in both models. Lag value of both models show a statistically significant and positive sign⁽¹⁴⁾. There is convincing evidence that current import flows are highly correlated with previous year⁽¹⁵⁾. It is supported by the empirical results that trade relations once established last for long time.

Distance (*D*) is used as proxy variable for transport cost. Distance between a pair of countries naturally determines the volume of trade between them. The distance variable is significant and has negative sign in both models. It also supports the theory that transportation cost is an important factor in determining the international prices of a country⁽¹⁶⁾. The empirical studies of Matyas (1997), Harris and Matyas (1998), Hassan (2001) and Rahman (2003) support the view that export flows are negatively correlated with transportation costs.

5. Conclusion and policy implications

Pakistan is a country which highly depends on trade because country needs to import variety of goods to fulfill the increasing demands resulting from its economic recovery and development. Pakistan's export structure has a very narrow base, both in terms of products and markets, most of the exportable items are of low value addition. The composition of exports mainly consists of textile manufactures and food items, largely originating from the agricultural sector where the incidence of uncertainty is quite high and the market is highly competitive. The textile sector constitutes over 65% of our total exports, its production and exports have attained almost maximum capacity and there is a need to shift the focus to other exportable items. As a result, Pakistan has to face the problem of deficit in balance of payments. This situation is not only

faced by Pakistan but many Asian economies with exception of few successful East Asian countries are facing this problem especially south Asian economies.

From the empirical evidences of the gravity model, we can conclude that the income of trading countries is a determining factor of Pakistan's import flows but not for export flows. For exports, the openness of economies is playing central role instead the incomes of trading countries. The exchange rate is also found as a determining factor of Pakistan's export flows and import flows. There is convincing evidence that current import and export flows are highly correlated with previous year whereas infrastructural bottlenecks have negative impact on Pakistan's import and export flows.

Six pronounced factors simultaneously constrain the growth of Pakistan's trade with SAC. These include non-availability of export surpluses in accordance, inefficient production process, non-availability of vocational training institutes to produce sector specific technical manpower, unstable exchange rate and inconsistency in economic policies, lack of diversification of exports both commodity-wise and market-wise and inadequate transits facilities in order to promote intra-regional trade. Joint ventures may also be encouraged in area where Asian countries have accumulated sufficient experiences. These include among others agro-based industries, textile, engineering, paper and chemicals. In order to promote technological collaboration SAC may also devise a common policy towards technology transfer. Hence, there is need to address all of these issues for sustainable growth in bilateral as well as regional trade within SAC.

Notes

- (1) For further details see Pakistan Economic Survey (2006-07).
- (2) There is a huge number of empirical applications in the literature of international trade, which have contributed to improvement of performance of the gravity equation. Some of them are closely related to our work. In recent papers, Matyas (1997; 1998); Chen and Wall (1999); Breuss and Egger (1999) and Egger (2000) improved the econometric specification of the gravity equation. Berstrand (1985); Helpman (1987); Wei (1996); Soloaga and Winters (1999) and Limao and Venables (1999) are among others, who contributed to the refinement of the explanatory variables considered in analysis and addition to new variables.
- (3) If each cross-sectional unit has the same number of time series observations, then such a panel is called a balanced panel.
- (4) For comprehensive discussion on assumptions of GLS method see Gujarati (2003) fourth edition and Harris and Matyas (1998).
- (5) There are many researchers who have empirically tested this view for example; Harris and Matyas (1998); Egger (2000) and Gujarati (2003).
- (6) For example Akhtar and Malik (2000); Rahman (2003); Chaudhary et al. (2007)

- (7) For example; Matyas (1997); Akhtar and Malik (2000); Chaudhary et al. (2007).
- (8) Asian Development outlook (2007).
- (9) According to Linnemann (1966); Sapir (1981); Bikker (1987); Matyas (1997); Harris and Matyas (1998).
- (10) For further details see annual review of Social Policy and Development Centre (2005-06).
- (11) For further details see Bhagwati (1993), p. 69.
- (12) See Bhagwati (1993); Bandara and McGillivray (1998) for example.
- (13) Oguledo and Macphee (1994); Rahman (2003); Akhtar and Malik (2000).
- (14) Many studies have used lag values of dependent variable as independent variable in Gravity type models for example, Matyas (1997; 1998) and Matyas et al. (1997).
- (15) According to Harris and Matyas (1998) lag value of bilateral import flows is used as instrument variable, which allows for a correlation between contemporaneous trade flows and those of the previous years, yielding a dynamic model of import flows. This habit persistence in import flows is likely due to (among other factors) political ties.
- (16) For detailed discussion on three types of transportation costs see, Amjadi A. and L.A. Winters (1997), Limao and A.J. Venables (1999) and Egger (2000).

References

- Akhtar, S., Malik, F., "Pakistan's Trade Performance *vis-à-vis* Its Major Trading Partners", *Pakistan Development Review*, 39 (1), 2000, pp. 37-50
- Amjadi, A., Winters, L.A., "Transport Costs and Natural Integration in Mercosur", *Working Paper* 1742, 1997, The World Bank Publication
- Asian Development Outlook* (2007). 19th Edition. (Available at <http://www.adb.org/Documents/Books/ADO/2007/default.asp>)
- Bader, Sadia, "Determining Import Intensity of Exports for Pakistan", *SBP Research Bulletin*, 2(15), 2006, pp. 363-381
- Baldwin, R. (1994). *Towards an Integrated Europe*, London: Center for Economic policy research
- Bandara, J.S., McGillivray, M., "Policy Reforms in South Asia", *Asian Economic Journal*, 16(1), 1998, pp. 1-23
- Baunsgaard, T., Keen 1, M., "Tax Revenue and (or?) Trade Liberalization", *IMF Working Paper* WP/05/112, 2005, Fiscal Affairs Department
- Baysan, T., Panagariya, A., Pitigala, N., "Preferential Trading in South Asia", *Policy Research Working Paper* 3813, 2006, Washington DC: The World Bank
- Bergstrand, J.H., "The Gravity Equation in International Trade: Some Microeconomic Foundations and Empirical Evidence", *Review of Economics and Statistics*, 67(3), 1985, pp. 474-81
- Bergstrand, J.H., "The Generalized Gravity Equation, Monopolistic Competition, and Factor Proportions Theory in International Trade", *Review of Economics and Statistics*, 71(1), 1989, pp. 143-53

- Breuss, F., Egger, P., "How Reliable are Estimations of East West trade Potentials based on Cross-Section Gravity Analyses?", *Empirica*, 26(2), 1999, pp. 81-95
- Bikker, J.A., "An International Trade Flow with Substitution: An Extension of the Gravity Model", *KYKLOS*, 40, 1987, pp. 315-37
- Bhagwati, J. (1993). *India in Transition-Freeing the Economy*, Oxford Clarendon Press
- Carrillo, C., Li, C.A., "Trade Blocks and the Gravity Model: Evidence from Latin American Countries", *Journal of Economic Integration*, 19(4), 2002, pp. 667-689
- Chaudhary, M. Aslam and Qaisrani Ashfaq A., Trade Instability, Investment and Economic Growth in Pakistan, *Pakistan Economic and Social Review*, 11(1), 2002, pp. 57-73
- Chaudhary, A.S., Chaudhary, M., "Trade Policy and Economic Growth within Bangladesh: A Revisit", *Pakistan Economic and Social Review*, 45(1), 2007, pp. 1-26
- Chen, I-H., Wall, H.J., "Controlling for Heterogeneity in Gravity Models of Trade", *Working paper* 99-010A, 1999, Federal Reserve Bank of St. Louis
- Christie, E., "Potential Trade in Southeast Europe: A Gravity Model Approach", *Working Paper* 21, 2002, The Vienna Institute for International Economic Studies
- Dash, Kishore C., "The Political Economy of Regional Cooperation in South Asia", *Pacific Affairs*, 69(2), 1996, pp. 185-209
- Deardorff, A., "Determinants of Bilateral Trade: Does Gravity Work in a Classical World?", *The Regionalization of the World Economy*, 20(3), 1998, pp. 363-368
- Eichengreen, B.H., Irwin, D. (1998). *The Role of History in Bilateral Trade Flows. Regionalization of the World Economy*, National Bureau of Economic Research, University of Chicago
- Egger, P., "A Note on the Proper Econometric Specification of the Gravity Equation", *Economic Letters*, 66, 2000, pp. 25-31
- Egger, P., Pfaffermayr, M., "The Proper Econometric Specification of the Gravity Equation: A Three Way Model with Bilateral Interaction Effects", *Empirical Economics*, 28, 2000, pp. 571-580
- Feenstra, R., "Integration of Trade and Disintegration of Production in the Global Economy", *Journal of Economic Perspective*, 12(1), 1998, pp. 31-50
- Frankel, J.A. (1997). *Regional Trading Blocs in the World Economic System*, Institute for International Economics, Washington, DC
- Gujarati, D. (2003). *Essentials of Econometrics*, Fourth Edition, McGraw-Hill International Editions
- Hamilton, C.B., Winters, L., "Opening up International Trade with Eastern Europe", *Economic Policy*, 14, 1992, pp. 77-116
- Hassan, M.K., "Is SAARC A Viable Economic Bloc? Evidence from the Gravity Model", *Journal of Asian Economics*, 12(2), 2001, pp. 263-290
- Hassan, M.K., "Trade Relations with SAARC Countries and Trade Policies of Bangladesh", *Journal of Economic Cooperation Among Islamic Countries*, 21(3), 2000, pp. 99-151
- Harris, M.N., L., Matyas, "The Econometrics of Gravity Model", *Working Paper* 5/98. Melbourne Institute, 1998, Available at: (www.ecom.unimelb.edu.au)
- Helpman, E., "Imperfect Competition and International Trade: Evidence from Fourteen Industrial Countries", *Journal of the Japanese and International Economies*, 1(1), 1987, pp. 62-81
- Hussain, F., Jalil, A., "Effectiveness of Foreign Exchange Intervention: Evidence from Pakistan", *Working Paper* 14SBP, 2006, State Bank of Pakistan

- Jakab, Z.M., Kovacs, M.A., Oszlay, A., "How Far Has Trade Integration Advanced? An Analysis of the Actual and Potential Trade of Three Central and Eastern European Countries", *Journal of Comparative Economics*, 29, 2001, pp. 276-292
- Karemera, D., Smith, W.I., Ojah, K., Cole, John A., "A Gravity Model Analysis of the Benefits of Economic Integration in the Pacific Rim", *Journal of Economic Integration*, 14(3), 1991, pp. 347-67
- Kemal, A.R. (1978). *An Analysis of Industrial Efficiency in Pakistan: 1959-60 to 1969-70*, Published PhD Dissertation. University of Manchester
- Kalbasi, H., "The Gravity Model and Global Trade Flows", Paper presented at *the 75th International Conference on Policy Modeling for European and Global Issues*, Brussels, July 5-7 2001
- Koo, W.W., Karemera, D., "Determinants of World Wheat Trade Flows and Policy Analysis", *Canadian Journal of Agricultural Economics*, 39, 1991, pp. 439-455
- Linneman, H. (1966). *An Econometric Study of International Trade Flows*, North Holland, Amsterdam
- Limao, N., Venables, A.J., "Infrastructure, Geographical Disadvantage and Transport Costs", *Policy Research Working Paper 2257*, 1999, The World Bank Publication
- Matyas, L., Konya, L., Harris, M.N., "Modelling Export Activity of Eleven APEC Countries", *Working Paper 5/00*, 2000, Melbourne Institute of Applied Economic and Social Research, The University of Melbourne, Australia
- Matyas, Lazolo, "Proper Econometric Specification of the Gravity Model", *The World Economy*, 20(3), 1997, pp. 363-68
- Matyas, L., "The Gravity Model: Some Econometric Considerations", *The World Economy*, 21, 1998, pp. 397-401
- Mathur, S.K., "Pattern of International Trade, New Trade Theories and Evidence from Gravity Equation Analysis", *The Indian Economic Journal*, 47(4), 1999, pp. 68-88
- Martinez-Zarzoso, I., Nowak-Lehmann, D., "Augmented Gravity Model: An Empirical Application to Mercosur-European Union Trade Flows", *Journal of Applied Economics*, 6(2), 2003, pp. 291-316
- Noshab, Farzana, "Globalization, WTO and Pakistan", *The Muslim World*. 96(2), 2006, Blackwell Synergy
- Oguledo, V.I., Macphee, C.R., "The Gravity models: A Reformulation and an Application to Discriminatory Trade Arrangements", *Applied Economics*, 26, 1994, pp. 107-120
- Pigato, M., Farah, C., Itakura, K., Jun, K., Martin, W., Murrell, K., Srinivasan, T.G., (1997). *South Asia's Integration into the World Economy*, Washington, DC: World Bank
- Poyhonen, P., "A Tentative for Volume in Trade between Countries", *Econometrica Samfundets Tidsskrift*, 16, 1963, pp. 69-77
- Paulino, A. Santos, Thirlwall, A.P., "The Impact of Trade Liberalization on Exports, Imports and the balance of Payments of Developing Countries", *The Economic Journal*, 114, 2004, F50-F72
- Paas, T., "Gravity Approach for Modeling Trade Flows between Estonia and the Main Trading Partners", *Working Paper 721*, 2000, Tartu University Press, Tartu
- Pakistan Economic Survey* (Various Issues). Ministry of Finance, Government of Pakistan
- Rahman, M., "A Panel Data Analysis of Bangladesh's Trade: The Gravity Model Approach", *BISS Journal*, 19(1), 2003
- Rajakapke, P., Arunatilake, N., "Would a Reduction in Trade Barriers Promote Intra-SAARC Trade? A Sri Lankan Perspective", *Journal of Asian Economics*, 8(1), 1997, pp. 95-115

- Rose, A., "Do We Really Know that the WTO Increases Trade?", *American Economic Review*, 94(1), 2004, pp. 98-114
- Sajid, A.M., Chaudhary, R.A., "Historical Development of Liberalization since 1947 in Pakistan", *Pakistan Economic and Social Review*, 36(2), 1996, pp. 179-192
- Sapir, A., "Trade Benefits under the EEC Generalized System of Preferences", *European Economic Review*, 15, 1981, pp. 339-455
- Soloaga, I., Winters, L.A., "Regionalism in the Nineties: What Effect on Trade?", *The North American Journal of Economics and Finance*, 12, 2001, pp. 1-29
- Soesastro, H., "Regional Integration in East Asia: Achievements and Future Prospects", *Asian Economic Policy Review*, 1(2), 2006, pp. 215-234
- Srinivasan, T.N. (1998). *Developing Countries and the Multinational Trading System: From GATT to the Uruguay Round and the Future*, New Delhi: Oxford University Press
- Srinivasan, T.N., Canonero, G., (1995). *Preferential Agreements in South Asia: Theory, Empirics and Policy*, Yale Growth Centre, Yale University. (As cited in Pigato, et al. 1997)
- Srinivasan, T.N., "Regional Trading Arrangements and Beyond: Exploring Some Options for South Asia, Theory, Empirics, and Policy", *Report No. IDP-142*, 1994, Washington, DC: World Bank
- Sharma, S.C., Chua, S.Y., "ASEAN: Economic Integration and Intra-Regional Trade", *Applied Economics Letters*, 7(3), 2000, pp. 165-69
- The World Bank (Various Publications). *World Trade Indicators*. Available at (<http://web.worldbank.org>)
- Tinbergen, J. (1962). *Shaping the World Economy*, New York: Twentieth Century Fund
- Wei, S.J., "Intra-National Versus International Trade: How Stubborn Are Nations in Global Integration?", *Working Paper 5531*, 1996, National Bureau of Economic Research
- Zaroso, I.M., Lehman, F.N., "Augmented Gravity Model: An empirical application to MERCOSUR- EUROPEAN union trade flows", *Journal of Applied Economics*, 6(2), 2003, pp. 291-316
- Zhang, J., Kristensen, G., "A Gravity Model with Variable Coefficients: The EEC Trade with Third Countries", *Geographical Analysis*, 27, 1995, pp. 307-20