

INTERLINKAGES BETWEEN OPENNESS AND FOREIGN DEBT IN PAKISTAN

PAKİSTAN'DA DIŞA AÇIKLIK İLE DIŞ BORÇ ARASINDA KARŞILIKLI BAĞLANTI

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ABSTRACT: The paper empirically studies the impact of trade openness on foreign debt in Pakistan using quarterly data for the period 1972 to 2010. Generalized method of Moments (GMM) estimation technique is applied to overcome the potential endogeneity problem in the model. The study reveals a significant positive effect of trade openness on foreign debt. The results are robust to different model specifications. The results also highlight the role of other variables in determining external debt. Terms of trade, fiscal deficit and inflation significantly positively affect foreign debt; while foreign Exchange reserves and foreign direct investment have significant negative impacts on foreign trade.

Keywords: Foreign Debt; Openness; GMM

JEL Classification: C22; F13; F34

ÖZET: Makale, 1972'den 2010'a dek olan dönem için çeyrek dönem verileri kullanarak, Pakistan'daki dış ticaret serbestliğinin dış borç üzerine olan etkisini ampirik olarak incelemektedir. Modeldeki potansiyel içsellik probleminin üstesinden gelmek için Genelleştirilmiş Momentler Yöntemi (GMM) tahmin tekniği kullanılmıştır. Çalışma, dış ticaret açıklığının dış borç üzerinde anlamlı bir pozitif etkisi olduğunu ortaya çıkarmaktadır. Sonuçlar farklı model tanımlamalarına göre robust bulunmuştur. Sonuçlar ayrıca dış borcun belirlenmesinde diğer değişkenlerin rolünün de altını çizer. Döviz rezervleri ve doğrudan yabancı yatırımların borç üzerine anlamlı bir negatif etkisi varken, ticaret hadleri, mali açık ve enflasyon dış borcu anlamlı bir şekilde pozitif olarak etkiler.

Anahtar Kelimeler: Dış Borç; Dış Açıklık; GMM

1. Introduction

Developing countries accumulate foreign debt at their initial phase of economic development because in these countries domestic savings and capital stocks are low, current account deficits are high and capital imports are necessary to enhance domestic resources. Economic theory also suggests that reasonable levels of external borrowing are likely to augment growth in developing countries as in these countries investment returns are apt to be greater than in developed countries. However, this is true only if borrowed funds are used for productive projects that produce enough returns to render debt superfluous. Pattillo *et al.* (2002, 2004) found empirical support for a nonlinear effect of foreign debt on economic growth. At low levels, foreign debt positively affects economic growth but above particular thresholds or turning points, additional debt has a negative impact on growth (the so-called debt Laffer curve). In the second half of the 1990s and after the recent financial crisis, policymakers around the world have concerns that high foreign debt in many

developing countries is retarding their economic growth and development. This concern is also recognized by G-8 leaders, as well as the Bretton-Woods Institutions and the WTO Ministerial Declaration at the Doha Round in 2001 by emphasizing the need for a durable solution to the developing countries' external indebtedness problem.

Almost all developing countries like Pakistan agree that market access for their products is a prerequisite to reduce their foreign debt burden by generating trade surplus. In other words, developing countries can improve their debt position by increasing their foreign trade, which can be achieved through (both domestic and world) trade liberalization given that they have export capacity and that they are globally competitive. According to Auboin (2004) trade openness can improve the allocation of resources at national and international levels, thereby improving the buoyancy to external debt shocks. It also favorably affects the debt servicing capacity of the countries as foreign exchange reserves increase due to increase in net exports and foreign direct investment – a cheaper source of foreign capital than foreign borrowing. Further, imported capital goods lead to fast track industrialization process in the domestic country, which will increase the domestic growth rate. High output growth and economic development in the country will decrease the dependence on external borrowing (Lane and Milesi-Ferretti, 2000). Moreover, trade openness increases credibility in international capital market, which leads to high level of capital inflows, thereby decreasing the dependence on foreign debt. All it indicates is that liberalizing trade restrictions can have a positive impact on external debt and debt servicing position of developing countries. Thus, the brighter side shows the picture where the external debt is inversely related to the trade openness measures, any attempt to open the economy may cause a decline in the external debt burden.

In contrast to these arguments the darker side of the coin particularly for the developing countries shows a positive relationship between external debt and trade openness policy. If exports are greater than imports only then external debt position will be improved after trade openness. However, in developing countries like Pakistan imports have become larger than exports after trade openness and the scope for increased exports is also limited, which has created trade deficit in these countries. To overcome this trade deficit, these countries have borrowed a huge amount from IMF and other organizations. Further, advancing trade liberalization requires the gradual removal of exports and imports tariffs, which are important sources of revenues for developing countries. The resulting fiscal deficits in these countries may then have to be filled with increased foreign borrowing (Caliari, 2005; Baunsgaard and Keen, 2005). The high dependence on exports of primary commodities is also an important reason of high external borrowing in developing countries because world prices of these commodities have been declining for so many years and that the variability of these prices have made the income stream of these countries unpredictable (Caliari, 2005). Moreover, when various developing countries open their borders for international trade simultaneously, export prices decrease due to an excess supply of similar products (Khattry and Rao, 2002). It worsens their terms of trade, which adversely affects revenues directly through reduced export revenues, or indirectly through the lower income earned from exports and hence lower income tax receipts. Limited available empirical literature

also suggests that in developing countries trade openness has worsened their foreign debt positions e.g. see Osuji and Olowolayemo (1998), and Zafar and Butt (2008).

Pakistan's leading challenge today is to reduce its external debt burden through trade (not aid). To increase trade, Pakistan has opened its economy for international trade for many years. This trade openness has decreased external debt burden in Pakistan or not, this is an empirical question. Thus, the objective of this paper is to empirically analyze the effects of trade openness policies on external debt in Pakistan using quarterly time series data for the period 1972 to 2010. The relationship in the context of external debt and trade openness is not familiar in Pakistan. The only reported study is Zafar and Butt (2008), which has shown positive effect of trade openness on foreign debt in Pakistan. However, the main shortcoming of this study is that it does not tackle the endemic problem of endogeneity among explanatory variables. The results thus found are spurious and the policy implications drawn are not reliable.

The rest of the paper is organized as follows. The following section provides a brief history of trade openness and external debt in Pakistan. Section 3 constructs a theoretical model. Data description, estimation and interpretation of the results are provided in Section 4. Final section concludes the paper.

2. Openness and Foreign Debt in Pakistan: A Brief History

2.1. Trade Openness

At the time of independence in 1947, Pakistan implemented import substituting industrialization policy to protect its nascent industrial units from international competition. The government facing the foreign exchange shortages after the war with India in 1965 further implemented different kinds of controls on imports. In December 1971, after the secession of East Pakistan (now Bangladesh) from West Pakistan (now Pakistan), government initiated the trade liberalization policies. The most important policies were the massive devaluation of domestic currency, the elimination of the export bonus scheme, and the end of restrictive licensing. However, in late 1970s, when Pakistan faced an acute shortage of foreign exchange after the oil shock, imports were again restricted with new and more restrictive nontariff barriers. Under the auspices of the World Bank and the IMF, in late 1980s government started a comprehensive program of trade liberalization reforms. The most important initiatives were the reduction of tariffs on a number of raw materials, intermediate and capital goods, reduction in the number of banned items on restricted list, replacement of non-tariff barriers with tariffs, and the establishment of Tariff Commission to make recommendations on fiscal anomalies and effective protection. The thrust of Pakistan's trade policies in the 21st century has been on greater openness through trade liberalization with minimal tariff and non-tariff barriers and the market based exchange rate system. Pakistan, like many other countries of the world, is in the process of implementing the provisions of the WTO guidelines and agreements.

2.2. Foreign Debt

At the time of independence in 1947, domestic saving rate was too low to finance economic growth through productive investment. Therefore, Pakistan opted for external borrowing to accelerate the growth rate of the economy with the view that increased growth rate in future would raise the saving rate and produce sufficient

exportable surplus to retire the debt. This growth strategy remained successful in 1960s when Pakistan witnessed a high level of economic growth. The situation in 1970s was still manageable despite a reduction in growth rate of the economy, mainly because the size of external debt was small and the terms and conditions for external borrowing were still acceptable. During 1980s, the situation became critical. However, the aid from USA to assist in the Afghan war helped to postpone the debt crisis. As the American aid dried up the situation aggravated during 1990s. Governments not only opted to postpone the burden by rolling-over the existing debt but also ignored the core issue of management. After the event of 9/11 when Pakistan became the front line state against terrorism, it gained a huge amount of foreign aid from USA. Pakistan also wrote off some of its loans from USA and other lenders, and also restructured and rescheduled its loans which were due at that time. Due to hiked oil prices and after the recent financial crisis, Pakistan faced a huge current account deficit. It has also eroded the foreign exchange reserves of the country. To cope with this situation Pakistan has agreed a standby program with IMF worth \$11.3 billions but with harsh terms and conditions for reforming the economy. Now the total foreign debt and liabilities of Pakistan has reached \$58.5 billions. Pakistan has paid a total \$5.6 billion as debt serving in the fiscal year 2009/10, which accounts for more than 33% of the entire foreign exchange reserves of the country. The only way to get rid of this vicious circle of debt is to generate enough income from internal resources to pay off the debt servicing and the debts. For this purpose, the government has to increase its tax net. If government fails to generate income from indigenous resources then it has to take more loans to pay previous loans.

3. The Model

This sub-section derives the foreign debt model, which will be empirically estimated in subsequent section. In line with precious research on the topic, the following variables, which include both policy and endogenous ones, are identified as possible determinants of foreign debt. Each of these variables and the relevant theory that justifies its inclusion in the model are explained turn by turn.

$$fdt_t = \gamma_0 + \gamma_1 openness_t + \gamma_2 tot_t + \gamma_3 fd_t + \gamma_4 forex_t + \gamma_5 fdi_t + \gamma_6 INF_t + v_t \quad (1)$$

where the lowercase letters denote that the underlying variables are in natural log form, and where $v_t \sim N(0, \sigma^2)$. Various variables are defined as follows.

fdt_t	= Foreign debt
$openness_t$	= Trade openness
tot_t	= Terms of trade
fd_t	= Fiscal deficit
$forex_t$	= Foreign exchange reserves
fdi_t	= Foreign direct investment
INF_t	= Inflation rate
v_t	= White-noise error term

As discussed previously the effect of trade openness on foreign debt is equivocal. If exports earnings are greater than import bill after trade liberalization then openness

is expected to have a negative effect on foreign debt and vice versa. However, in developing countries imports increase faster than exports after trade liberalization, therefore trade openness is considered to positively affect foreign debt. Thus, the coefficient on trade openness γ_1 is assumed to be positive i.e. $\gamma_1 > 0$.

If demand for exported goods is price inelastic, improved terms of trade will alleviate debt burden problems (Birdsall and Hamoudi, 2002).¹ In turn, decline in terms of trade could lead to a drop in external earnings if this is accompanied by a decrease in exports, which will further exacerbate the debt burden or stress. Evidence has shown that terms of trade of developing countries have been deteriorated for so many years, which has worsened their foreign debt situation. However, the sign of coefficient of terms of trade γ_2 cannot be determined a priori. If a country persistently faces budget deficits then its foreign debt level will increase (Ishfaq and Chaudhary, 1999). The intuition is that if a country is unable to mobilize its domestic resources to meet fiscal deficits then it has to rely on foreign resources. So, fiscal deficit is considered to positively affect foreign debt i.e. $\gamma_3 > 0$.

Amassing foreign exchange reserves reduces the demand for foreign borrowing, therefore it negatively affects the debt stock of the country. Thus, the coefficient of foreign exchange reserves γ_4 is assumed to be negative i.e. $\gamma_4 < 0$. Foreign direct investment is a stable form of capital relative to other forms of financing. It has positive spillovers not only on the technical development of host countries but also on their balance of payments and capital formation (Lehmann, 2002). It also does not involve capital or interest repayments. Theoretically, the foreign investment is expected to improve the foreign debt position by generating valuable foreign exchange for the host country. The coefficient associated with foreign direct investment γ_5 is expected to be negative i.e. $\gamma_5 < 0$.

As the domestic level of inflation increases exports will decrease and the country will run trade deficit. Inflation also reduces the real value of government revenues, thereby creating budget deficits. To tackle both external and internal deficits government has to borrow funds from abroad. Thus, domestic inflation leads to accumulation of foreign debt. Further, inflation also increases the nominal value of foreign debt expressed in local currency. It indicates that the inflation positively influences the accumulation of foreign debt i.e. $\gamma_6 > 0$ (Gylfason, 1991).

4. Data, Estimation and Interpretation of Results

4.1. Data Overview

The study employs quarterly time series data for the period 1972 to 2010. Foreign debt variable is constructed by dividing total foreign debt with nominal GDP. Trade openness is defined as the ratio of sum of exports and imports to nominal GDP. Terms of trade is defined as the relative price of exportable to importable. Government budget deficit is taken as ratio of GDP. Foreign exchange reserves are taken in real terms. Foreign direct investment is obtained by dividing foreign direct investment with nominal GDP. Inflation is growth rate of CPI. The data is taken

¹ Improved terms of trade will aggravate debt burden problem if demand for exported goods is price elastic.

from International Financial Statistics (IFS), World Development Indicators (WDI) and Pakistan Economic Surveys.

Table 1 contains summary statistics for the variables used in this study, which may help in the interpretation of the coefficient estimates by providing the scale of the relevant variables. Table 2 presents the correlation matrix for the variables. Column (1) of Table 2 correlates foreign debt with all independent variables. The value of correlation coefficient of openness variable is 0.32, which indicates that foreign debt is positively correlated with trade openness. Figure 1 plots the simple regression between foreign debt and total trade. The figure displays an apparent positive (nonlinear, inverse S-shaped) relationship between foreign debt and total trade in Pakistan. The positive relationship shows that as trade increases, to finance trade deficit government borrows more funds from abroad. The rate at which government borrows funds first increases, then decreases and then again starts increasing, thereby giving a nonlinear inverse S-shaped curve. However, it is evident from the figure that as the number of polynomial terms are increased, the value of their coefficients become economically weak. The simple regression analysis, being essentially bivariate and simplistic, calls for exploration in a more rigorous framework. This is what the next section of the paper attempts to do.

Table 1. Descriptive Statistics of the Variables [1972Q1 – 2010Q2]

Variables	Mean	Median	Standard Deviation	Minimum	Maximum	Count
Foreign Debt (% of GDP)	228.35	227.37	53.75	128.70	369.37	154
Openness (% of GDP)	34.03	34.07	5.03	16.61	52.80	154
Terms of Trade	1.50	1.52	0.37	0.72	2.58	154
Fiscal Deficit (% of GDP)	7.04	7.00	2.03	2.39	13.15	154
Foreign Exchange Reserves (\$ Billions)	2.87	0.91	3.93	0.11	14.51	154
Foreign Direct Investment (% of GDP)	0.92	0.59	1.11	0.01	6.27	154
Inflation (%)	2.30	1.81	2.11	-1.15	15.26	153

Table 2. Correlation Matrix for the Variables Included in the Regressions [1972Q1 – 2010Q2]

	Foreign Debt	Openness	Terms of Trade	Fiscal Deficit	Foreign Exchange Reserves	Foreign Direct Investment	Inflation
Foreign Debt	1						
Openness	0.32	1					
Terms of Trade	0.68	-0.34	1				
Fiscal Deficit	0.58	-0.09	0.44	1			
Foreign Exchange Reserves	-0.68	0.28	-0.76	-0.63	1		
Foreign Direct Investment	-0.55	0.39	-0.63	-0.35	0.69	1	
Inflation	0.25	0.26	0.06	0.16	-0.02	0.07	1

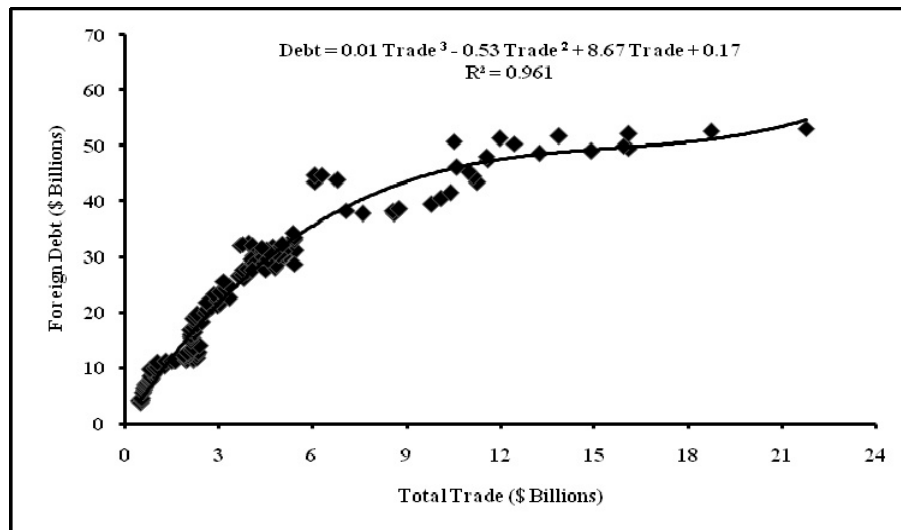


Figure 1. Simple Regression between Foreign Debt and Total Trade [1972Q1 – 2010Q2]

4.2. Estimation and Interpretation of the Results

To estimate our model we cannot apply least square method as the potential endogeneity of the variables can render the least square estimators biased and inconsistent. Therefore, we have applied Generalized Method of Moments (GMM) estimation technique of Arellano and Bond (1991), Arellano (1993) and Arellano and Bover (1995) to estimate foreign debt equation. The GMM estimators control for the potential endogeneity of the lagged dependent variable and for the potential endogeneity of other explanatory variables in the model (Judson and Owen, 1999). Lagged values of the variables are used as instruments.²

Results of foreign debt equation (1) are reported in Table 3. The t-statistics on openness coefficient (2.247) indicates that there is a statistically significant positive relationship between trade openness and foreign debt in Pakistan.³ The coefficient for the openness stood at 0.239, which means that a one-standard-deviation increase in openness (5.03) leads to about 1.2 percent increase in foreign debt. In other words, one percent increase in openness will increase foreign debt by 0.239 percent. The fraction of the variation in foreign debt due to openness, as explained by column (2), is nontrivial. The remaining columns of the table investigate the robustness of these results to some simple changes in specification. These changes alter the results only trivially. Thus, the estimated impact of trade openness on foreign debt is robust to alternative equation specifications. This finding is consistent with the notion that trade openness leads to more imports than exports. To overcome this external deficit a country has to borrow from abroad. The results show that trade deficits and the

² To verify long-run relationship between dependent and independent variables, we have applied ADF unit-root tests. The results show that only one variable namely inflation is stationary at levels, while the remaining five variables are integrated of order one. It indicates that the estimate of foreign debt equation can form a long-run relationship of foreign debt with five of the six explanatory variables, while the relationship with the one stationary variable is based on short-term variations in the latter.

³ To check the non-linear effect of openness on foreign debt, both squared and cubic terms of openness were included in the model. However, their effects on foreign debt turned out to be statistically insignificant and hence excluded from the estimation.

resulting foreign debt is a constraint on policymakers' incentives to liberalize trade in Pakistan.

Terms of trade significantly positively affects foreign debt. It indicates that in Pakistan demand for exported goods is price elastic, thereby improvement in terms of trade will aggravate debt burden problems. In fact, Pakistan's main exports include low value added and primary goods. These goods are not only price elastic and but the world prices of these commodities are steadily declining for so many years and they are subjected to sharp fluctuations. The value of coefficient on terms of trade indicates that one percent improvement in terms of trade will increase the level of foreign debt by 0.503 percent. This result is robust with alternative equation specifications. Fiscal deficit variable also significantly positively affect the foreign debt in Pakistan. The results show that as fiscal deficit increases by one percent of GDP, foreign debt increases by 0.111 percent of GDP. This result is consistent with the findings of Ishfaq and Chaudhary (1999), who have also shown that fiscal deficit has positively affected Pakistan's foreign debt position. Consistent with the theoretical literature foreign exchange reserves have shown a significant negative effect on foreign debt. The value of coefficient indicates that one percent increase in foreign exchange reserves will decrease the foreign debt burden by 0.05 percent of GDP. Although statistically this result is significant, economically it is somewhat weak.

Table 3: The GMM Estimates of the Relationship between Foreign Debt and Trade Openness [1972Q1 – 2010Q2]

	(1)	(2)	(3)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	1.392	0.986	0.563	1.891	1.338	0.925	0.900	1.649	0.916
	(5.157)*	(5.523)*	(4.064)*	(5.740)*	(5.555)*	(6.467)*	(5.372)*	(7.877)*	(3.320)*
Openness	0.239	0.265	0.070	0.295	0.247	0.253	0.268	0.255	0.372
	(2.247)*	(1.671)**	(0.520)	(2.275)*	(2.073)*	(2.245)*	(1.835)**	(2.655)*	(2.889)*
Terms of Trade	0.503		0.670					0.584	
	(4.841)*		(4.998)*					(6.905)*	
Fiscal Deficit	0.111			0.296				0.319	
	(1.757)**			(3.292)*				(4.646)*	
Foreign Exchange Reserves	-0.052				-0.078				0.035
	(-1.903)**				(-2.292)*				(1.214)
Foreign Direct Investment	-0.015					0.006			-0.022
	(-1.687)**					(0.692)			(-2.283)*
Inflation	0.575						0.661		1.349
	(2.469)*						(2.066)*		(3.940)*
AR(1)	0.860	0.935	0.873	0.899	0.927	0.942	0.952	0.765	0.968
	(2.862)*	(4.946)*	(2.398)*	(3.520)*	(5.136)*	(5.101)*	(4.691)*	(8.656)*	(5.962)*
R ²	0.920	0.927	0.906	0.912	0.922	0.926	0.933	0.894	0.917
Adjusted R ²	0.916	0.926	0.904	0.911	0.920	0.924	0.931	0.891	0.914
S.E. of regression	0.069	0.065	0.073	0.071	0.067	0.065	0.062	0.078	0.069
DW statistics	1.930	2.073	1.993	1.917	2.126	2.098	2.085	2.059	2.208

Note: Values in parentheses denote underlying student-*t* values. The *t* statistics significant at 5 % and 10 % levels of significance are indicated by * and ** respectively.

Like foreign exchange reserves, foreign direct investment also has a significant negative effect on foreign debt. The value of the estimated coefficient shows that if

foreign direct investment increases by one percent of GDP foreign debt will decrease by 0.015 percent of GDP. Again this result is statistically significant but economically it is weak. The reason is that Pakistan has a very limited amount of foreign investment and at worst foreign investment has decreased to a considerable extent in recent years due to eruption of terrorist activities in the country. Finally, as theoretically expected, inflation has eroded the foreign debt position in the country. The results show that one percent increase in inflation will increase foreign debt by 0.575 percent of GDP. Recent high inflation and the projected double digit inflation in next few years are contemplated to further exacerbate the situation. Reasonable values of overall R-squares and adjusted R-squares suggest that the model fits the data well. In estimations autoregressive (AR) process has been applied to remove autocorrelation problem from the models. The values of Durbin-Watson (DW) statistics are reasonably close to the desired value of two, indicating the absence of autocorrelation problem.

5. Conclusion

In recent empirical literature much attention has been given to explore the effect of trade openness on various macroeconomic variables like growth, income inequality, inflation, etc. However, only limited attention is given to the issue of impact of trade openness on external debt burden. The present paper tries to fill this gap. This paper empirically examines the effect of trade openness on foreign debt in Pakistan using quarterly time series data for the period 1947 to 2010. To control the potential endogeneity problem GMM estimation technique has been applied. The results show that trade openness has a statistically significant positive effect on foreign debt in Pakistan, which indicates that in Pakistan trade openness is acting as a stimulator of external debt accumulation. This result is robust with different model specifications. The results also show that foreign debt depends on a number of other endogenous and policy variables. Specifically, fluctuations in foreign debt can be explained by terms of trade shocks, government fiscal policies, accumulation of foreign exchange reserves, foreign investment policies, and domestic inflation rate.

For openness to reduce the debt burden, Pakistan has to take appropriate steps to boost its exports. Pakistan needs to, inter alia, increase export competitiveness, improve and strengthen trade infrastructures, diversify exports from primary goods to value-added goods, support the technological content of exports, foster infant industries by providing financing, and enhance overall productivity and competitiveness. To increase its exports Pakistan also needs to increase its access to foreign market, particularly to the European Union and USA for its textile exports. For this purpose Pakistan can use export marketing strategies. Pakistan also needs to reduce inflation rate as domestic inflation is higher compared to inflation in the counter trading partners, which is discouraging exports. On the import side, Pakistan has to transform its imports from consumer goods to capital goods because capital goods are usually associated with better productivity and higher returns over the investment. Further, importation of capital goods leads to increase in domestic output of goods and services, which ultimately result in the less dependence on the import sector and thus reduce the external debt burden.

External trade policies should be supported by policies aimed at mobilizing domestic private savings and foreign investment. To mobilize private savings there is need to improve macroeconomic management and financial sector. To increase

foreign investment inflows Pakistan has to improve law and order situation and business condition in the country. Further, a thorough evaluation of programs and policies introduced by the IMF and the World Bank is inevitable as some of the packages are adversely affecting the Pakistan's economy.

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