Foreign direct investment, cost of war and trade in Pakistan

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June 2011

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Abstract

This paper uses macro panel data and gravity model to examine the impact of FDI (Foreign Direct Investment) inflows from 20 trade partners and increasing war cost in Pakistan on import, export and trade deficit. The paper compares the effect and inflows of FDI in Pakistan before and after joining the war on terror in 2001. This research work confirms the complementary relationship between FDI and export and FDI and imports, however, the results of FDI impact on trade deficit is insignificant. Similarly, the impact of war cost on exports, imports and trade deficit is not significant.

JEL Classification: F21, F40, H56

Key words: Pakistan, gravity model, uncertainty, trade partners

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1. INTRODUCTION

Since the economic reform of 1991 and joining the WTO in 1995, Pakistan's export and import volume increased many folds. While the increase in exports has been welcomed, concerns have been raised regarding the impact of the persistent and severe trade deficit. Recently, the War on terror, retarded industrial growth and the prolong energy crisis, along with weak global demand conditions further increased the trade deficit in Pakistan.

The Pakistan trade deficit as a share of total exports swelled from 23 percent in 1991 to 80 percent by 2010 (see figure 1).

The historical data shows that the trade deficit is not a new problem for Pakistan. Except in 1951-1952 and 1972-73, Pakistan has never experienced a trade surplus. In the first case it was the Korean War that increased the demand for Pakistan's raw jute that earned surplus foreign exchange for Pakistan, while in the later case the trade surplus was achieved because of the devaluation in Pakistani currency and imposition of high tariffs on luxury imports.

It is interesting that the increase in exports, imports and their imbalance in Pakistan coincided with the rapid inflow of FDI (Foreign Direct Investment), particularly after joining the war on terror in 2001. It is also noteworthy that the major trading partners of Pakistan are also the main source of FDI inflows into Pakistan. Hejazi et al (2001) confirmed that FDI dramatically increased trade flows, particularly parents to affiliate trade. Therefore, it is considered that FDI inflows complement trade, whereas the impact of FDI on the trade deficit depends on the nature of FDI. FDI inflows in tradable sectors reduces the trade deficit by increasing exports, while the predominant flows of FDI in nontradable sectors increase the trade deficit by boosting imports and fueling domestic demand.

FDI in the tradable sector increases imports in the short run and enhances competitiveness, stimulates national investment, boosts productivity and embeds technical know how (Luis and Solimano, 1992) that ultimately increase export

performance and lessens the burden of trade deficit. However, the reverse is possible if FDI results in more imports than exports and causes outward remittances. Usually FDI in electronics, power generation and mining creates more imports than exports, and therefore adversely effects trade deficit in developing countries (Vaitsos, 1976).

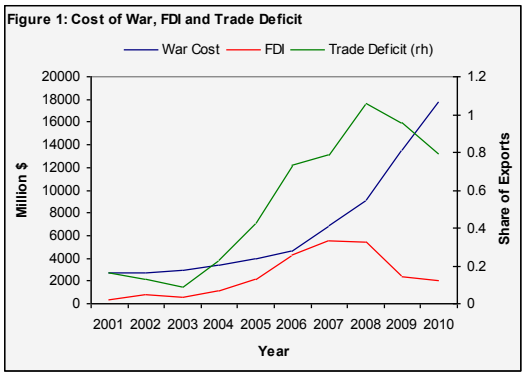
Lall and Streeten (1977) cast doubt on the positive impact of FDI on the trade balance because: i) FDI is relatively expensive ii) Multinational Corporations have the ability to crowd out domestic investment by raising cheap funds in the host countries and iii) the capital contribution can turn into intangible services. But they are of the opinion that efficient and more effective allocation of FDI is possible if the host countries provide a pro-trade infrastructure and solid policies.

Empirical studies indicate that the perception of political risk, uncertainty and wars discourage FDI (Shihata, 1988). Conflicts make the future uncertain and increase the value of the present. Hence, long term investment, income and consumption go down. Volker and Schumacher (2004) demonstrate that a doubling of terror incidents reduces bilateral trade by 4 percent. But, the case in Pakistan is quite different. FDI inflows into Pakistan increased substantially after 2002. This is the time when Pakistan joined coalition forces as a front line state in the war on terror in Afghanistan. Since then the cost of war in Pakistan increased from $ 2669 million in 2001 to $ 17830 million by 2010. This makes the flow of FDI and the cost of war for Pakistan matter of concern that need further enquiry. Thus this study is an effort to understand the overall impact of FDI and cost of war on import, export and the trade deficit in Pakistan.

The research sequence of the paper is as follows: section 2, FDI and cost of war in Pakistan; section 3 literature reviews; section 4, theoretical modeling and data sources; section 5, result and analysis; section 6, conclusion.

2. FDI AND COST OF WAR IN PAKISTAN

Since 1991, Pakistan deregulated domestic economy and introduced a number of market reforms including financial liberalization. Pakistan shifted away from import substitutions (ISI) strategy to pro FDI Export oriented polices. However, the government concerted efforts could not attract much FDI until 2001. After 2002 the inflow of FDI increased many folds. Figure 1 shows that after financial crisis of 2008, the FDI inflows to Pakistan start decreasing.



It is interesting that FDI inflows to Pakistan increased when the war on terror start showing negative sign on country's external sector, pace of the privatization hampered and overall economic activities decreased. Despite the fact that the key allies in the war on terror provided market access and delivered financial aid to Pakistan, still the cost of being a front line state out weigh all the concessions. Pakistan's economy bore enormous direct and indirect costs which jumped from $ 2.669 billion in 2001-02 to $ $ 17.8 billion by 2010-11. The direct and indirect cost to the economy is most likely to rise further (Pakistan Economic Survey, 2010-11).

3. LITERATURE REVIEW

There is growing literature on the FDI-export link (Lardy, 1994; Nauthgton, 1996; UNCTAD, 2002; Zhang, 2005; Zhang and Song, 2000). Other than capital augmenting element, some economists see FDI as having a direct impact on trade in goods and services (Markussen and Vernables, 1998). Trade theory expects FDI inflows to increase host countries' export competitiveness (Blomstrom and Kokko, 1998). But in other studies, the role of FDI in export promotion remains controversial and depends crucially on the basic motives of foreign investment (World Bank, 1998). If the motive behind such investment is to bypass trade barriers in the host country, then it is highly unlikely that FDI would promote trade (Blonigen, 2002). However, FDI motivated by comparative advantage contributes to export growth (Lipsey and Weiss, 1981, 1984). In the former case FDI substitutes while in the later case FDI complements trade.

It is considered that the role of FDI in trade promotion depends on the type of FDI. Efficiency seeking vertical FDI complements trade, while market seeking horizontal FDI substitutes it (Markusen, 1997). In the case of first, the rise in exports while in the second contraction of imports can reduce the trade deficit.

Similarly, from the standpoint of the host economy, FDI can be distinguished into import substituting, export increasing and government initiated FDI. Import substitution FDI works on the same rules of import reduction as does import substitution industrialization; however, in the former case foreign capital serves the end, while in the

later the major contribution come from domestic investment. Such FDI is determined by the size of the host country's market, transportation cost and trade barriers. Export increasing FDI, on the other hand, is driven by the urge to seek new sources of the inputs, while the purpose of government initiated FDI is to boost export and at the same time reduce the technological gap with the rest of the world. Government initiated FDI may be triggered, for example, when a government offers incentives to foreign investors in an attempt to eliminate a balance of payment or trade deficit.

Petri (1992) suggested that Japanese affiliated firms in Thailand are predominantly involved in triangular trade that widens Thailand's trade deficit with Japan and enhances the former's surpluses with countries outside the region.

Fukasaku et al. (2000) shows that there is strong impact of FDI on trade for trade oriented Latin American and Southeast Asian countries. Moreover, FDI inflows are more sensitive to changes in exports in Southeast Asian nations than in their Latin American counterparts. Similarly, Dunning et al. (2001) argues that the growth of trade in Korea and Taiwan tends to be positively associated with FDI. Lane and Milesi-Ferretti (2004), Rose and Spiegel (2004) confirm the positive impact of FDI on trade and growth of total factor productivity. FDI increase exports by increasing the overall productivity (Driffield and Love, 2007).

4. THEORETICAL MODEL AND DATA

In order to study the link between FDI, cost of war and trade, this study is using panel data based gravity model. Sajid and Nguyen (2011) used this approach for Vietnam and confirmed a spatial relationship between FDI and trade. We used their study as a lead. Similarly, Castilho (2002) used gravity model for Mercosur member states and confirmed strong relationship between FDI and imports. Similar relations were observed by others including Blonigen et al. (2007), Zwinkels and Beugelsdijk (2010) etc.

Schneider and Frey (1985) concluded that the models incorporating economic and political factors perform better than other models that don't contain political variables. Stevens (2000) makes such an attempt by integrating a number of political and other non-traditional economic variables into a standard theory of FDI.

Following Model 1 and 2 determine the relationship between FDI and bilateral export flows and the relationship between FDI and bilateral import flows. It is assumed that the relationship between FDI, imports and exports are complementary. Model 3 would investigate the linkage between FDI and net-exports. A positive estimated coefficient of FDI in Eq. (3) would show that an increase in FDI decreases trade deficit.

$$XPT_{jt} = \alpha_0 + \alpha_1 FDI_{jt} + \alpha_2 PGDP_t + \alpha_3 GDP_{jt} + \alpha_4 D_j + \alpha_5 Warcost_t + \mu_{jt} \qquad (1)$$

$$MPT_{jt} = \beta_0 + \beta_1 FDI_{jt} + \beta_2 PGDP_t + \beta_3 GDP_{jt} + \beta_4 D_j + \beta_5 Warcost_t + Э_{jt} \qquad (2)$$

$$NET\text{-}XPT_{jt} = \gamma_0 + \gamma_1 FDI_{jt} + \gamma_2 PGDP_t + \gamma_3 GDP_{jt} + \gamma_4 D_j + \gamma_5 Warcost_t + \xi_{jt} \qquad (3)$$

Where 'j' and 't' are indices for trade partners and time period, respectively. XPT_{jt} is bilateral export flows between Pakistan and country j at time t; MPT_{jt} is bilateral import flows between Pakistan and country j at time t; NET-XPT_{jt} is difference between export (XPT_{jt}) and imports (MPT_{jt}) between Pakistan and country j at time t; FDI_{jt} is the FDI inflows into Pakistan from a trade partner j at time t; $PGDP_t$ is the gross domestic product of Pakistan at time t, GDP_{jt} is gross domestic product of country j at time t and $Warcost_t$ is the direct and indirect cost of war on terror for Pakistani economy since 2001. All these variables are expressed in millions of US dollars. D_j is the distance in kilometers between Pakistan and country j. Later in estimation we will replace Warcostt by war dummy 'WarDj' and dummy for FDI after 2001 'WFDI' alternatively to capture the impact of war and FDI on export, import and net-export after joining war on terror. μ_{jt}, $Э_{jt}$ and ξ_{jt} are the usual error terms.

In this study we use annual data from 1990 to 2010. All the data for Pakistan and her 20 trade partners, except for distance[i], is collected from World Bank Development Indicators and from the Handbook of Statistics 2010 on Pakistan Economy, published by State Bank of Pakistan.

5. EMPIRICAL RESULTS AND DISCUSSION

The empirical results for exports, imports and trade deficit are reported in Table 1, 2 and 3, respectively. We report in the tables both OLS (Ordinary Least Square) and Random effect results for robustness. However, based on LM (Lagrangian Multiplier) test, the study prefers Random effect technique. Table 1 show that the coefficients of FDI and

trade partners GDP are positive and significant at 1 percent level through out regressions. This suggests that FDI complements exports. However, the contribution of FDI to exports decreased over time. During the full sample period, a one unit increase in FDI contributed a 0.66 unit increase in exports that decreased to 0.27 units in sub sample period from 2001-2010. One could argue that after the War on terror the inflow of FDI diverted to the safe and nontradable sector that is not linked to manufacturing sector. Data shows that the FDI inflows in Pakistan concentrate in the oil, gas and services sectors. Oil and gas exploration usually work in enclaves and have limited spillover impact on the economy and trade (Kokko, 1994). The results also support that the recent surge of FDI is market seeking horizontal FDI that may or may not contribute to trade.

The contribution of trade partners GDP to exports is significant and the coefficient is consistent across the full as well as sub sample periods. This shows that increase in the income level of trade partners increase demand for Pakistani exports. Contrary to expectations, the enormous rise in the cost of war on terror for Pakistan, after joining coalition forces in Afghanistan, does not influence exports. The cost of war coefficient is insignificant across the columns. Similarly, the geographical distance with trade partners does not determine exports.

Table 1 show that the coefficient of Pakistan GDP is insignificant and does not play a role in export promotion. Probably the main contribution in GDP growth is coming from something other than the real sector. Our results show that war dummy for export is significant at 10 percent level and confirms that export increased substantially

after 2001. Similarly, the net effect of FDI dummy is positive and significant at 1 percent level. Our results confirm that FDI is an important determinant of export in Pakistan. However, the full and sub sample analysis of FDI shows that the worsening law and order situation in Pakistan is changing the pattern and role of FDI.

Table 1: Dependent variable - Exports

Independent Var.	1990-2010		With Dummy for FDI		With War Dummy		2001-10	
Independent var.	OLS Robust	RE Robust	OLS Robust	RE Robust	OLS Robust	RE Robust	OLS Robust	RE Robust
Intercept	329.65 (0.000)*	145.89 (0.353)	305.40 (0.000)*	171.28 (0.167)	314. 31 (0.000)*	196.34 (0.142)	418.23 (0.000)*	243.18 (0.090)**
FDIj	1.1394* (0.000)	0.6660 (0.000)*	0.3227 (0..440)	-0.8128 (0.080)**	1.1312 (0.000)*	196.34 (0.142)	1.0497 (0.000)*	0.2672 (0.002)*
PGDP	-0.0012 (0.202)	0.0007 (0.430)	-0.0008 (0.044)*	-0.0004 (0.936)	-0.0013 (0.032)*	-0.0005 (0.332)	-0.0025 (0.046)*	0.00009 (0.874)
GDPj	0.0001 (0.000)*	0.0002 (0.000)*	0.00017 (0.000)*	0.0002 (0.000)*	0.0001 (0.000)*	0.0002 (0.000)*	0.0002 (0.000)*	0.0002 (0.000)*
Dj	-0.0262 (0.000)*	-0.0309 (0.202)	-0.0230 (0.002)*	-0.0170 (0.450)	-0.0263 (0.000)*	-0.0308 (0.188)	-0.0270 (0.003)*	-0.0317 (0.171)
Warcost	0.0057 (0.587)	-0.0035 (0.627)	-	-	-	-	0.0113 (0.309)	-0.0028 (0.591)
WFDIj	-	-	0.8293 (0.039)*	1.5263 (0.001)*	-	-	-	-
WarD	-	-	-	-	90.476 (0.09)**	102.06 (0.002)*	-	-
No. of obs	301	301	301	301	301	301	199	199
R^2	0.75	0.71	0.73	0.72	0.73	0.72	0.78	0.74
LM test		551 (0.000)		622 (0.000)		575 (0.000)		403 (0.000)

* and ** Significant at 5 and 10 percent level, respectively.

In table 2, the coefficient of FDI is significant at 10 percent level in full sample period. This shows that FDI complements imports where a 1 unit increase in FDI increases imports by 0.59 units. However, the impact of FDI on imports is insignificant in sub sample period. Usually FDI increases imports in the short run, particularly of latest technology, which has a lasting positive spill over effect on the economy and exports.

Therefore the insignificant role of FDI in sub sample period to determine imports is alarming both for the overall economy and exports.

Table 2: Dependent variable - Imports

	1990-2010		With dummy for FDI		With War dummy		2001-10	
Independent Var.	OLS Robust	RE Robust	OLS Robust	RE Robust	OLS Robust	RE Robust	OLS Robust	RE Robust
Intercept	754.42 (0.000)*	348.73 (0.360)	681.63 (0.000)*	359.55 (0.276)	699.60 (0.000)*	312.02 (0.335)	778.92 (0.003)*	879.45 (0.050)*
FDIj	0.6313 (0.136)	0.5922 (0.091)**	2.8627 (0.000)*	2.8303 (0.000)*	0.6099 (0.015)*	0.5747 (0.110)	0.5217 (0.225)	0.2006 (0.70)
PGDP	0.0053 (0.10)**	0.0074 (0.006)*	0.0066 (0.000)*	0.0080 (0.000)*	0.0066 (0.000)*	0.0085 (0.000)*	0.0080 (0.039)*	0.0086 (0.000)*
GDPj	0.0001 (0.000)*	0.00007 (0.063)**	0.0001 (0.000)*	0.0001 (0.023)*	0.0001 (0.000)*	0.00007 (0.006)*	0.0002 (0.000)*	0.0002 (0.000)*
Dj	-0.1507 (0.000)*	-0.1022 (0.050)*	-0.1596 (0.000)*	-0.1260 (0.026)*	-0.1506 (0.000)*	-0.1025 (0.050)*	-0.2209 (0.000)*	-0.2713 (0.000)*
Warcost	0.0047 (0.872)	0.0015 (0.945)	-	-	-		-0.0037 (0.903)	-0.0099 (0.585)
WFDIj	-	-	-2.3244 (0.002)*	-2.2779 (0.001)*	-	-	-	-
warD	-	-	-	-	-87.543 (0.313)	-106.49 (0.143)	-	-
Number of obs.	301	301	301	301	301	301	199	199
R^2	0.39	0.35	0.40	0.38	0.39	0.35	0.41	0.39
LM test	-	203 (0.000)	-	217 (0.000)	-	205 (0.000)	-	352 (0.000)

* and ** significant at 5 and 10 percent level, respectively.

Contrary to table 1, in table 2, the role of Pakistan GDP in enhancing imports is positive and significant at 1 percent level across the columns. It is another matter that the coefficient of GDP is very nominal. Similarly, trade partner GDP and geographical distance are also significant at 1 percent level, where the increase in trade partner GDP marginally increases imports while increase in distance reduces it.

Again the sign of war cost in table 2 is correct but highly insignificant. This shows that war cost do not influence imports. Similarly, war dummy is insignificant

while the dummy for FDI to capture the role of foreign investment after 2001 is significant and negative, which shows that the role of FDI in imports decreased. However, the net impact of FDI for full sample period is positive.

In table 3, the impact of Pakistan GDP and GDP of trade partners on trade deficit is significant at 5 percent, while the role of FDI inflows, war cost and geographical distance on trade deficit is insignificant. However, the rise in Pakistan GDP has inverse relationship with the trade deficit where a one unit increase in Pakistan GDP decreases trade deficit by 0.006 units. The results show that increase in the GDP of trade partner increases trade deficit of Pakistan.

Similarly, significant war and FDI dummy shows that Pakistan trade deficit increased after War on terror. The coefficient of geographical distance is significant only in sub sample period. This can be interpreted that distance widens the gap of the trade deficit after 2001. Our results confirm previous studies conducted for other countries (Sajid and Nguyen, 2011).

Table 3: Dependent variable – Net Export

Independent Var.	1990-2010		With dummy for FDI		With War dummy		2001-10	
Independent var.	OLS Robust	RE Robust	OLS Robust	RE Robust	OLS Robust	RE Robust	OLS Robust	RE Robust
Intercept	-424.76 (0.035)*	-200.89 (0.626)	-376.23 (0.000)*	-202.78 (0.588)	-385.28 (0.001)*	-111.36 (0.776)	-306.6 (0.151)	-636.60 (0.145)
FDIj	0.5081 (0.294)	0.04671 (0.904)	-2.5399 (0.007)*	-3.7239 (0.000)*	0.5220 (0.286)	0.0888 (0.823)	0.5279 (0.263)	0.0773 (0.801)
PGDP	-0.0066 (0.052)*	-0.0066 (0.015)*	-0.0075 (0.000)*	-0.0080 (0.000)*	-0.0080 (0.000)*	-0.0090 (0.000)*	-0.010 (0.007)*	-0.0086 (0.000)*
GDPj	0.00001 (0.678)	0.0001 (0.039)*	0.00001 (0.508)	0.00008 (0.162)	0.00001 (0.676)	0.00013 (0.040)*	0.00001 (0.754)	-0.00006 (0.436)
Dj	0.1244	0.06848	0.1365	0.1091	0.1241	0.0689	0.1939	0.2403

	(0.000)*	(0.294)	(0.000)*	(0.102)	(0.000)*	(0.287)	(0.000)*	(0.001)*
Warcost	0.0009 (0.972)	-0.0055 (0.791)	-	-	-	-	0.0150 (0.610)	0.0072 (0.671)
WFDIj	-	-	3.1537 (0.000)*	3.8456 (0.000)*	-	-	-	-
warD	-	-	-	-	178.019 (0.062)**	208.36 (0.005)*	-	-
No.of obs.	301	301	301	301	301	301	199	199
R^2	0.32	0.26	0.34		0.32	0.27	0.40	0.36
LM test	-	331.58 (0.000)	-	3920.32 (0.000)	-	340 (0.000)		365 (0.000)

* and ** significant at 5 and 10 percent level, respectively.

6. CONCLUSION

Recently FDI inflows to Pakistan increased many folds and in order to seek growth and address the problem of trade deficit, Pakistan is competing for more FDI. By using gravity model, the paper tries to capture the role of FDI and the rising cost of war on terror for Pakistan on imports, exports and the trade deficit. Empirical evidence supports that FDI complements import and exports in Pakistan. However, the role of FDI is insignificant in determining Pakistan's trade deficit. After 2001 the role and flow of FDI changed drastically where the contribution of FDI decreased in promoting exports while the role of FDI turned insignificant in case of imports. One of the possible reason is that the flow of FDI after 2001 increased but to safe and nontradable sectors. That is the FDI start working in enclaves and has little to no impact on trade.

The insignificant role of war cost across regressions shows that the rise in war cost is not the main reason of the swelling trade deficit; however, indirectly it reduces trade and growth by changing the pattern of important macro economic variables including FDI.

We can conclude that FDI is an important factor in determining imports and exports in Pakistan. However, their decreasing contribution is alarming. Therefore, in order to correct economic imbalances, government should devise policies that encourage FDI in the tradable sector and absorb the positive spillover impact of FDI. Similarly, in today's global complementary world, besides expansion for exports market, understanding the dynamics of trade partners GDP will help Pakistan to boost trade and reduce increasing trade deficit.

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[i] http://www.distancefromto.net