# Daily and Monthly Costs of Terrorism on Pakistani Exports

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## SUMMARY

This is first of its kind empirical study on the costs of terrorism on Pakistan's exports. The analysis finds that intensity of terrorist activity can be divided into three distinct periods. The LAL Masjid incident in mid 2007 marks the first sign of intensification of terrorism in Pakistan. The second one is the assassination of Benazir Bhutto. The third one comes in 2008 when the US announced to shift gear from Iraq to Afghanistan and incumbent government in Pakistan created a political support for armed action within Pakistani borders against the terrorists. The analysis finds that terrorism has more significant affect on Pakistani exports post Benazir assassination. The report calculates the monthly and daily costs of terrorism. On average there are 2 terrorist attacks every day whereas 5 citizens on average die in these attacks. A single terrorist attack costs 12 million dollars to the exports. Post Benazir assassination the costs rise to 18 million dollars due to increased intensity where not only the death toll on average has risen but the number of terrorist attacks have gone up. Average per month loss in exports due to terrorism is calculated to be around 500 million dollars. Pakistan in 2006-09 has lost nearly 30 billion dollars in exports as its market shares have fallen. Part of this loss is explained by terrorism, where we find that 18 billion dollars accounts for it. Please note that extending the data for later years may make our results more pronounced but suffice to say our calculated β's are robust capable of predicting terrorism for coming years. For example, it is found out that costs of number of deaths and number of injured are different while  exports are more sensitive to the former capturing severity of casualties that is the hall mark of extreme terrorist actions like suicide attacks.

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# 1. Introduction

Current collapse of Pakistan's economic growth rates challenge the economic prosperity achieved during 2003-2006 period. In Pakistan's case, it was rather clear. With intensification of war on terror (WOT) post 2006, Pakistan is currently witnessing yet more challenging economic circumstances. Though, the exogenous factors which relate to current economic situation are generally associated with rise in oil prices, energy crises, global financial crises and commodity price hike, there is need also to include factors like WOT into the paradigm. Armed conflict within a country also affects the economic potential of the country.

It has been nearly a decade now that Pakistan had been participating in the WOT as a front line ally. The conflict has deepened the structural problems within different sectors of Pakistan's economy. Recently there has been some efforts made in the international literature to associate global shocks like oil price shock, financial meltdown in USA, sub prime mortgage crises in USA, and global recession to WOT - especially armed conflict initiated by USA in Iraq which was an extension of WOT in Afghanistan. Likewise, there is a need to revisit the reasons for Pakistan's current economic downturn and asses the role played by the ongoing WOT. In recent years Pakistan's participation in WOT has deepened with more visible armed action in Pakistani Northern provinces. So much so that Pakistan ranks close to Sri Lanka and Nepal in incurring costs of terrorism while both the later countries have precedence of armed conflict and civil war spanning decades.

Table 1.1  Costs of Terrorism

| | | Rank | | | | |
|---|---|---|---|---|---|---|
| **Costs** | Pakistan | India | China | Bangladesh | Sri Lanka | Nepal |
| 1. The incidence of violence (1= imposes significant cost on business, 7= does not impose significant costs on business), 2007, 2008 | 99 (3.7) | 47 (5.2) | 50 (5.1) | 93 (3.9) | 84 (4.2) | 109 (3.2) |
| 2. Business costs of terrorism (1=imposes significant costs to businesses, 7= does not impose significant costs to businesses), 2007, 2008 | 118 (3.7) | 94 (5.0) | 79 (5.3) | 102 (4.6) | 120 (3.0) | 119 (3.0) |

*Source: The Global Enabling Trade Report 2009*

Incidents of terrorism, political violence and insurgency continued to haunt peace and stability in South Asian region. The militant related casualties, including dead and injured rose from 23, 098 in 2008 to 61,142 in 2009. The more than double fold increase in casualties in South Asia was due to Pakistan's three major military operations in FATA and NWFP during 2009. Pakistan suffered maximum number of casualties followed by Sri Lanka as is shown in table 1.2.

Table 1.2  Militancy Related Casualties

| Country | Militancy-related Casualties |
| --- | --- |
| Pakistan | 25,447 |
| Sri Lanka | 23,309 |
| Afghanistan | 8,812 |
| India | 3,364 |
| Nepal | 210 |
| Total | 61,142 |

*Source: Pakistan Security Report, 2009*

## 1.1.    Intensification of WOT: A Post 2007 Scenario:

Following kidnapping of civilians and foreigners in the heart of Islamabad, it was on July 3, 2007 that the Lal Mosque students tried to snatch arms and wireless sets from the security forces deployed around the mosque and attacked them.  The operation launched afterwards by the security forces on Lal Mosque left 134 people dead and 200 others injured. The incident was followed by two violent suicide attacks in the capital, killing at least 34 persons including 8 policemen and wounding another 125 persons.  This was the start of the intensification of WOT in Pakistan as by the end of 2007 there were already 6 suicide attacks in Islamabad and neighboring Rawalpindi  targeting Pakistani security forces and civilians. Alongside Maulana Fazlullah representing Pakistan Tehrik Taliban (PTT) in Swat took control of the district through a volunteer force and established his own Shariat court. TTP has been known to have close cross border ties with other terrorist networks, including Al-Qaeda and Taliban in Afghanistan. Violence by TTP lead to another concentrated operation by security forces in Swat district. Resultantly, security forces were frequently targeted and kidnapped in NWFP and FATA.

Years 2008 and 2009 were marked with increased terrorist attacks in the country as well as active armed action against the militants in multiple regions. Military operations in Malakand

region, South Waziristan, Khyber and other parts of FATA are more notable ones. While terrorist attacks on military's General Headquarter in Rawalpindi, Sri Lankan cricket team and Manawan Police Training Center in Lahore revealed the growing ability of terrorists to strike any target at will. Militants' network in South Punjab, drone attacks in Tribal areas, killing of Baitullah Mehsud, chief of the Tehrik-e-Taliban Pakistan, a surge in the number of NATO and US troops in Afghanistan are other highlights of WOT in Pakistan. Overall there has been a phenomenal rise in terrorist attacks in Pakistan since 2007 as can be seen in table 1.3.

Table 1.3  Terrorist Attacks in Pakistan

| Year | Total Attacks | Annual Increase since 2006 | Killed | Injured |
|------|---------------|----------------------------|--------|---------|
| 2006 | 675 | | 907 | 1,543 |
| 2007 | 1,503 | 123 % | 3,448 | 5,353 |
| 2008 | 2,577 | 282 % | 7,997 | 9,670 |
| 2009 | 3,816 | 465 % | 12,632 | 12,815 |

*Source: Pakistan Security Report, 2009*

Terrorists have used various violent means to attack. They comprise of suicide attacks, rocket attacks, beheadings, remote–control bombs, kidnappings, landmines, shootings, sabotage, targeted killings, bomb blasts, hand grenades and improvised explosive devices. The incidence of target killings and attacks through hand grenades have more than doubled in 2009 when compared to 2008. Suicide attacks, kidnappings and remote control bomb blasts have also seen remarkable increase in the span of last one year.

Table 1.4  Attack types

| Tactic | No. of Incidents | | |
|--------|------|------|-----------|
| | 2008 | 2009 | Growth (%) |
| Suicide attacks | 63 | 87 | 38.09 |
| Rocket attacks | 381 | 422 | 10.76 |
| Beheadings | 46 | 49 | 6.52 |
| Remote controlled bombs | 112 | 189 | 68.75 |
| Kidnappings | 116 | 174 | 50 |
| Landmines | 110 | 111 | 0.90 |
| Shooting/firing | 451 | 568 | 25.94 |
| Sabotage/fire/torched | 116 | 89 | -23.27 |
| Targeted Killing | 26 | 82 | 215.38 |
| Bomb blasts | 298 | 341 | 14.42 |
| Hand grenades | 82 | 219 | 167.07 |
| Improvised explosive devices (IEDs) | 373 | 355 | -4.82 |

*Source: Pakistan Security Report, 2009*

## 1.2.  Suicide Attacks: A Major Terror Tactic

Suicide attacks have been increasingly used by terrorists as a major terror tactic. In 2009, there is a steep rise of suicide attacks all over Pakistan. The major concentration of attacks in 2007 was in NWFP. In 2009, NWFP remained the worst hit region with total number of suicide attacks reaching to 52, whereas Punjab/Islamabad also witnessed a sharp increase in attacks counting to hefty number of 23. Out of 23, 8 attacks occurred only in the capital city of Islamabad. These suicide attacks targeted civilians as well as security personnel. Table 1.6 in at the end of the section gives detailed summary of the targets of suicide attacks. In 2009, most suicide attacks were targeted towards the security forces comprising of either police or army personnel. Attacks were also carried out on NATO supplies.

Table 1.5 Province Wise Suicide Attacks

| Administrative Entity | No. of Suicide Attacks | |
| --- | --- | --- |
| | 2007 | 2009 |
| NWFP | 33 | 52 |
| Punjab/Islamabad | 11 | 23 |
| FATA | 11 | 7 |
| Balochistan | 4 | 2 |
| Azad Kashmir | - | 2 |
| Sindh | 1 | 1 |
| | | |
| Total | 60 | 87 |

*Source: Pakistan Security Report, 2007 and 2009*

## 1.3.  Drone Strikes and Attacks on NATO supplies

51 US drone attacks were reported in 2009, which killed 667 people and injured 310. The major concentration of attacks were in South and North Waziristan targeting key Al-Qaeda and Taliban commanders which include Baitullah Mehsud, chief of TTP, Hakimullah Mehsud, chief of TTP after Baitullah Mehsud, Tahir Yuldushev, chief of Islamic Movement of Uzbekistan, Nazimuddin Zalallov alias Yahyo and Usama Al-Kini of Al Qaeda. . However, many civilians have also been killed in these attacks.

A total of 25 attacks were recorded on NATO forces out of which 15 took place in the NWFP and 10 in FATA. Most of the attacks were reported along the Jamrud-Torkhum highway border area and the outskirts of Peshawar.

Table 1.7. Attacks on NATO supplies in FATA and NWFP

| Month | Attacks in NWFP | Attacks in FATA |
|---|---|---|
| January | 3 | 0 |
| February | 1 | 3 |
| March | 1 | 2 |
| April | 4 | 0 |
| May | 2 | 1 |
| June | 0 | 0 |
| July | 1 | 3 |
| August | 1 | 2 |
| September | 0 | 1 |
| October | 1 | 0 |
| November | 1 | 0 |
| December | 0 | 0 |
| Total | 15 | 12 |

Source: Pakistan Security Report, 2009

## 1.4. Attacks on Schools:

Despite recent rise in terrorist attacks, the intensification of armed action by security forces against militants in Pakistan was supported by the masses because Taliban not only waged war against the state but also Pakistani society at large and women in particular. For instance, incidents of Taliban militants torching girls' schools grew as Taliban banned girls' education altogether. Initially, militants warned against sending girls to schools but later resorted to directly attacking girls' schools especially in NWFP and FATA where they destroyed around 100 schools. Only in 2008, Taliban targeted 119 educational institutions, out of which 111 were girls'. In 2009, Taliban targeted both boys' and girls' schools more intensely in NWFP and FATA where 54 girl's schools and colleges were destroyed while 86 boy's schools were attacked.

Table 1.8. Attacks on Schools and Colleges in NWFP and FATA (2009)

| | NWFP | | FATA | |
|---|---|---|---|---|
| | Girls | Boys | Girls | Boys |
| Attacks | 40 | 52 | 14 | 34 |

*Source: Pakistan Security Report, 2009*

## 1.5. Internally Displaced Persons (IDPs):

Continued violence and increased terrorist activities and attacks on civilians resulted in mass displacement of populations in FATA and NWFP. More than 300,000 persons have been displaced, hence stifling the whole socio economic structure of the region.

Table 1.8 Costs of IDP's

| | |
|---|---|
| Persons Migrated | 310,000 |
| Relief Camps Established | 12 |
| No. of IDPs Living in Camps | 61,180 |
| Houses destroyed / damaged | 38,750 |
| Approximate cost of repair | Rs 500,000 per house |
| Daily expenditure per head on food & facilities | US$ 1.875 |
| Total Cost of Rebuilding | US$ 232 Million |
| Daily Cost of IDPs | US$ 114.7 Million |
| Cost of Enhanced Security Infrastructure | US$ 6.1 Billion |

*Source: Ministry of Planning Estimates (2009)*

## 1.6. Disaster Management:

Provincial Disaster Management Authority (PDMA) has been active to cater to the increased demand of resources to mitigate negative fallout of the conflict in NWFP and FATA. A US$ 1 billion fund has been created by PDMA for this purpose, which in addition to other sectors also injects needed resources for the housing, education, health and social protection of displaced population.

Table 1.9. Disaster Management Fund

| Sector | Overall (NWFP + FATA) | |
|---|---|---|
| | PKR (M) | US$ (M) |
| **Social Sectors** | | |
| Livelihood & Social Protection | 15,360 | 192 |
| Housing | 6,580 | 82 |
| Education | 5,436 | 68 |
| Health | 1,527 | 19 |
| **Physical Infrastructure** | | |
| Transport | 19,651 | 246 |
| Water & Sanitation | 313 | 4 |
| Energy | 1,866 | 23 |
| **Productive Sectors** | | |
| Industry, Tourism, Private assets | 917 | 12 |
| Agriculture, Livestock & Irrigation | 22,681 | 284 |
| Cross Cutting Themes | | |
| Environment | 4,800 | 60 |
| Governance | 7,787 | 97 |
| **Grand Total** | 86,918 | 1,087 |

*Source: Provincial Disaster Management Authority (PDMA), 2009*

# 2. Literature Review

## 2.1. Terrorism and War on Terror (WOT):

The advent of 21$^{st}$ century has witnessed a new form of international conflict which increasingly relates to acts of terrorism. It was on September 11, 2001 that the basis of this new conflict was formed when a group of young men of Arabian origin belonging to AL Qaeda, perpetuated a spectacular act of terrorism against the US capitalist and defense symbols by hitting hijacked airplanes into the twin towers in New York City and the Pentagon. As an after math, a war was announced and waged against terrorists by the US which saw US going into Afghanistan and Iraq with much force and fury to dismantle regimes that supported these terrorists and their networks. The causes of 9/11 terrorist acts were seen to be derived from Islamic extremism, and thus a general backlash against Islamic fundamentalism was initiated in Western societies. Despite this peculiar brand of terrorism later emerging more frequently in the conflict areas of Afghanistan and Iraq forming the very basis for a prolonged War on Terror (WOT), terrorism still has very general connotations and it is a phenomenon which is not restricted to Islamic fundamentalism.

Rather terrorism is an extreme form of a war tactic which leads to violent outcomes mostly within civilian populations which makes it more deadly and against the norms of traditional forms of conflicts. Though all armed conflicts lead to casualties, civilian and defense, acts of terrorism are mostly perpetuated against civil populations. The terrorists seek maximum casualties through explosive devices. More lethal the explosive device is, more successful their action is. Terrorists choose targets which are often high in population density to create greater impacts on their victims.

Since 1983, the U.S. Department of State has employed the following definition of terrorism which is largely accepted by many governments and international organizations:'*The term "terrorism" means premeditated, politically motivated violence perpetrated against non combatant targets by substantial groups or clandestine agents, usually intended to influence an audience. The term "international terrorism" means terrorism involving citizens or the territory of more than one country.*'

The definitions of terrorism put more emphasis on the intentions of terrorists to cause fear and terror among a target audience rather than the harm caused to the immediate victims. Nations states can also be seen as perpetrators of terrorism. Poverty and underdevelopment, which is generally perceived to be promoters of terrorism, actually has little to do with terrorism. In case of suicide bombers, the evidence suggests that they are likely to come from economically advantaged families and have a relatively high level of education as to come from the ranks of economically disadvantaged and uneducated (Krueger and Maleckova, 2003).

Generally terrorists have three main tactical goals:

1) To gain Publicity for their cause and to have more media attention, terrorists prefer cities.
2) Terrorists seek to destabilize the political system in a country so that state legitimacy and control is compromised and anarchy is promoted which in turn would improve their chances of success.
3) Terrorists are particularly against the economy of the country. A poorly performing economy would entail higher material costs on the population which increase the chances that the population would yield to their demands.

There is rich literature available which discuss the economic costs of terrorism. The costs comprise of slowdown in tourist activities, FDI flows, trade flows and loss of real and human capital.

Table 2.1 Costs of Terrorist Attacks

| Author | Dependent Variable | Country | Time Length | Methodology | Cost |
|---|---|---|---|---|---|
| Enders and Sandler (1991) | Tourism | Spain | 1970-1988 | VAR | 14,000 less tourists |
| Enders et al (1992) | Tourism | Austria Italy Greece | 1974-1988 | ARIMA | $4.538 billion $1.159 billion $0.77 billion |
| Fleisher and Buccola (2002) | Tourism | Israel | 1992-1998 | Supply and demand model | $ 50 million |
| Sloboda (2003) | Tourism | US | 1998-2001 | ARMAX | $ 57 billion |
| Ito and Lee (2004) | Tourism | US | Spetember 11 | Reduced demand model for air line industry | 30 % of revenue passenger miles |
| Drakos and Kutan (2003) | Tourism | Austria Italy Greece | 1991-2000 | SURE | $ 4.467 billion |
| Enders and Sandler (1996) | FDI | Spain Greece | 1975-1991 1976-1991 | VAR | $ 500 million $ 400 million |
| Nitsch and Schumacher (2004) | Bilateral Trade | More than 200 countries | 1968-1979 | Extended Gravity Model | 4 % of bilateral trade flows |
| Becker and Murphey (2001) | Real and Human Capital | US | September 11 | - | $ 25-60 billion |

George W. Bush introduced the doctrine after 9/11 terrorist acts that 'either you are with us or against us' which forms the basis of War on Terror. Any entity which supports terrorism directly or indirectly is deemed as part of the terrorism problem. Taliban, who formed the government in Afghanistan in 2001, were found to be supporters of Al Qaeda and thus a direct war was waged against them. Taliban had influence in Pakistan's tribal areas and thus to side with US meant that Pakistan not only break its ties with the Taliban but wage a war against elements within its borders who are sympathetic with Taliban and Al Qaeda. Since 2001, Pakistan did act against Taliban and their sympathizers which resulted in a low intensity conflict in tribal areas of North Western Province of Pakistan. Al Qaeda became active in Pakistan by perpetuating terrorist acts against state and the people of Pakistan. All major cities of Pakistan have witnessed several deadly terrorist acts. Since 2007, Pakistani army has become more proactive in its actions against Al Qaeda and Taliban networks in tribal belts. The outcome has been an increased terrorist activity in the country.

The objectives of Al Qaeda in Pakistan are to de stablise the country by increasing economic and political costs. They have been successful in many counts. For example, just before 2007 elections, the murder of Benazir Bhutto, ex prime minister of Pakistan, through a suicide attack has been attributed to Pakistani faction of Taliban.

It is important to note here is that literature finds that deterrence against terrorism is best achieved if the coping strategy is based on benevolence rather than threat (Frey and Luechinger, 2003). After 9/11 in the US WOT, which is now a global WOT with Pakistan as a key stakeholder, the emphasis has been on using police and military forces against the terrorists which according to benevolence theory would deepen the conflict rather than solving it.


## 2.2. Costs of 9/11 to USA:

Were US justified to wage a global WOT? The economic costs of 9/11 may explain the US reaction which was based on deterrence through threat.

Various studies have estimated the economic effects of 9/11 on US economy. The direct costs involve destruction of infrastructure and human capital which goes as high as 60 billion dollars according to one estimate (Becker and Murphey, 2001). Another study estimates the human capital loss to be 40 billion dollars and property loss to be between 10 and 13 billion dollars (Navarro and Spencer, 2001).

 The destruction of twin towers alone lead to the loss 13 million square feet of real estate, and 30% of superior office space in down town New York.  It is further estimated that budget deficit of the city worsened after the attacks. The city was running a balance budget regime before but it witnessed a short fall in revenue by 7 % post 9/11(Bram et al, 2002) The main damage was done to the public facilities. Initial reports indicate that New York's public facilities experienced approximately $ 1.4 billion in damage from the attack.

'The importance of these facilities to New York City can be illustrated by way of a rough calculation of the value of the World Trade Center's PATH station. With the destruction of the facility on September 11, some 20,000 New Jersey – Lower Manhattan commuters were forced to find alternate means of transportation to work. For some this required a shift to more expensive ferries crossing the Hudson River from Hoboken, New Jersey. But for the substantial number who had commuted from the PATH station in Newark, New Jersey, the quickest option was to take a commuter rail to Pennsylvania Station in New York City and then a city subway to Lower Manhattan. New Jersey Transit, the state's commuter line, estimates that daily ridership to Pennsylvania Station increased by 15,000 passengers following September 11, despite the immediate loss of jobs experienced. For these riders, a twenty two minute ride from Newark to Lower Manhattan was replaced by a twenty minute train ride to midtown plus a twenty to thirty minute subway ride downtown, with a similar lengthening of the homeward commute. The additional time cost is thus approximately one hour per commuter per day. If we assume that 15,000 workers who value their commuting time at $ 25 per hour (half their hourly wage) are spending an additional hour per day commuting, we obtain the daily cost of $ 375,000, implying that the first year loss of the World Trade Center PATH station cost nearly $ 100 million in lost time.' (Bram et al, 2002:91)

Post 9/11 also witnessed a stringent security measures in the US which particularly hit the air line industry hard. Ito and Lee (2004) estimate that revenue passenger miles were dropped by 30% initially and in the long run a 7.4% reduction took place.

### 2.3. War on Terror: Identifying the nature of Conflict and related Costs:

*Estimating the full costs of conflicts is a very difficult, if not impossible task. The human and social costs of death, disability, dispossession and the psychological trauma associated with violence and terror are not really quantifiable. On the other hand, atleast in principle, the "purely economic costs" are amenable to quantitative measurement. Nisha et al (2001)*

Two types of conflict are identified in the literature: (a) Civil war (b) International war. Civil war is waged inside a country whereas international war is waged between two or more rival parties with cross border origins. As discussed above War on terror (WOT)  was originated in Afghanistan when in 2001, US lead coalition forces waged war against the Taliban regime in Afghanistan on the pretext of later's involvement in international terrorism which included 9/11 terrorist attacks in the US. However, as the time went by, the international conflict reached Pakistan where Pakistani faction of Taliban was involved in armed conflict with the security forces in the country. In this respect, WOT has both domestic and international dynamics. In this paper we are more interested in relationship of WOT with Pakistan and thus deal it as a civil conflict. More so because the break down of social order and absence of clear front line in case of WOT in Pakistan makes it more common to civil war than to international conflict.  There are studies which corelate terrorism to civil wars (see Krueger and Maleckova, 2003)

Collier (1999) and Nisha et al (2001) presents some costs of civil conflict:

(a) Part of the country's labour force is reduced  due to death, disability or emigration.

(b) In addition to psychological stresses and trauma, education and other forms of productive human capital acquisition (such as learning by doing) are disrupted and resultantly average skill level of the work force declines.

(c) Roads become unsafe.

(d) Civil liberties are suppressed which tend to reduce the efficiency of public expenditure.

(e) Diversion of public expenditure from output-enhancing activities. i.e: As the army and its powers are expanded, the police force and the rule of law diminish.

(f) Enforcement costs of contracts rise and security of property rights is reduced

(g) There will be dissaving in the economy which leads to the destruction of capital stock.

(h) In response to the deterioration in the economic environment, private agents will engage in portfolio substitution shifting their assets out of the economy. These assets include human as well as physical and financial capital. All types of domestic capital can gradually be transformed into financial capital by reducing investments. Households can reduce expenditures on education and training and send more educated household members abroad.

(i) Trade reforms may be abandoned because they may alienate a particular producer group whose political support is considered vital to the war effort.


In case the conflict is resolved there are still negative effects to the economy. Even if peace reduces costs of economic activity, suppression of civil liberties due to more involvement of security apparatus in national affairs may still prevail. There could only be partial restoration of productive public expenditures because military expenditures decline gradually.

Above factors are very relevant for a country's GDP growth potential because civil wars reduce growth mainly by depleting the domestic capital stock. Knight et al (1996) finds that physical and human capital, together with military spending and trade policy are most relevant in explaining negative growth effect of civil conflict. Military expenditure is the prominent variable in their conflict equations while other effects are indirectly linked with conflict. For example reduced trade or loss of physical and human capital is an outcome which arises from the violence rather than their direct effects on civil conflict. For growth however, civil war is more relevant if it effects the composition of public expenditure through for example military spending. However, it should also be noted here that in

conflict literature military spending is not always a cost because increases in military spending is not always associated with outbreaks of war (Nisha et al, 2001).

In finding over all growth impact of conflict, a decent econometric model may not be constructed due to high correlation of policy variables which are relevant for growth. Variable choice needs to be made which can prevent estimation problems arising from such correlations. In this respect most of the studies which capture effects of civil war on growth adopt simpler methodological choices by restricting the number of variables which enter in their growth equations.  (see for example Collier 1999; Easterly and Levine, 1997; and Sachs and Warner, 1995)

Here in this paper we are interested in gauging the effects of WOT on Pakistan's exporting industry and not growth per say. Thus in line of Collier et al (1998), we adopt simpler empirical methodologies whereby conflict is measured through violence while variables which are relevant for trade would be included. A detailed discussion on the variables is presented in the next section.

# 3. Pakistan's Export Performance and War on Terror

## 3.1. Introduction

It has been nearly a decade now that Pakistan had been participating in the War on Terror (WoT) as a front line ally. Pakistan's participation in the international campaign has caused uncertainty in the country, as it has been facing major challenges, like domestic, political and economic instability, high trade cost and increased law and order concerns amongst other reasons. In Pakistan, there are no two opinions about the fact that its economy has been weakened by the war. The extent of the costs/damages however remains a major question/controversy with serious policy implications. Where one can put a figure on them the cost is immense.[3]

Several reports prepared by National and International organizations have made an attempt to quantify the cost of war against terrorism in Pakistan, but there is still requirement of an in-depth analysis of impact, challenges and future constraints that this war holds to quantify the true cost of this war on Pakistan international trade. The conflict in recent years has deepened the structural problems within different sectors of Pakistan's economy. Likewise, there is a need to revisit the reasons for Pakistan's current economic downturn and asses the role played by the ongoing WoT. The following sections highlight the different channels through which WoT has impacted Pakistan's economy with special reference to export performance.

## 3.2. Trends in Macroeconomic Indicators

As Pakistan faced increased involvement in armed conflict against terrorists, Pakistan's larger economic landscape presented a bleak picture. GDP growth rate Post 2007 is averaged at merely 3%. Fiscal deficit has enlarged while development budgets are squeezed (see table 1). The economic turmoil has many dimensions. Last three years have witnessed many exogenous shocks to local economies. Financial meltdown, rising oil prices and commodity price hike had already weakened states all over the globe. Sluggish economic activity all round the world and specifically in Pakistan have reduced fiscal space as current account deficits ballooned while investments dried up. Nevertheless Pakistan's neighbors like China and India have largely continued with their progress with sustained growth rates even under global recession. Pakistan may have also followed the footsteps of China and India had it not been for adverse security situation within the country.

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[3] See The Three Trillion Dollar War: The True Cost of Iraq Conflict by Joseph Stiglitz

Table 3.1 Trends in Macro Economic Indicators

|  | 2006/07 | 2007/08 | 2008/09 |
|---|---|---|---|
| Inflation (average) | 7.8 | 12.0 | 20.8 |
| GDP growth | 6.8 | 4.1 | 2.0 |
| Large-scale manufacturing growth | 8.6 | 4.8 | -8.2 |
| Tax revenue (% of GDP) | 10.2 | 10.6 | 9.2 |
| Fiscal deficit (% of GDP) | 4.3 | 7.6 | 5.2 |
| External account deficit (% of GDP) | 5.1 | 8.5 | 5.3 |

*Source: Economic Survey of Pakistan*

The slowdown in Pakistan's GDP growth rate started in 2006 but it was still above 6% mark but by 2008 the rate plummeted to less than 4% and slumped to 2% by end of 2009(see Figure 1). Pakistan's exporting sector also slowed down by 2007 with negative growth rates in 2009 suggesting an overall decline in Pakistan's exports.

Figure 3.1 Trends in GDP and Export Growth
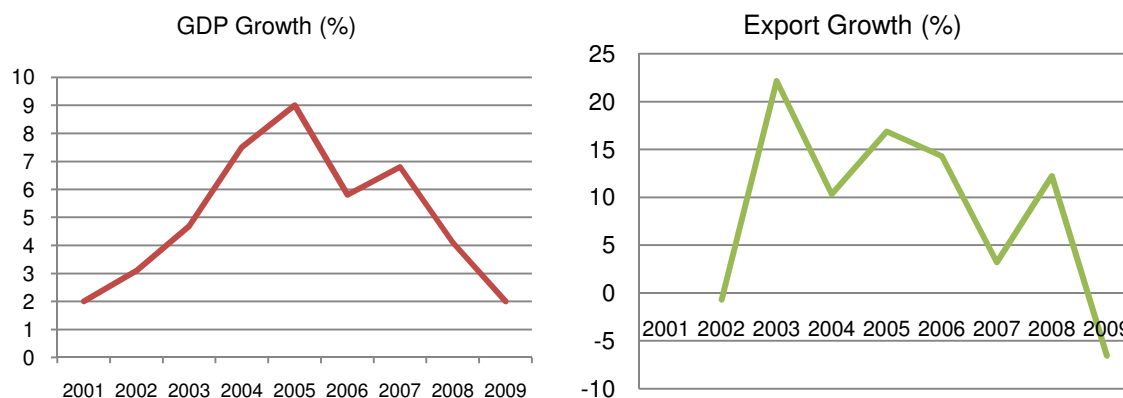


*Source: Economic Survey of Pakistan*

With a slowdown in the economy fiscal deficits have increased and settled at 6 % of the GDP as an average of last three years of WoT intensification period when compared to 2001-06 average of 3.8 %. A sharper fall has been observed in foreign direct investments (FDI) which witnessed a negative growth by end of 2009(see Figure 2).

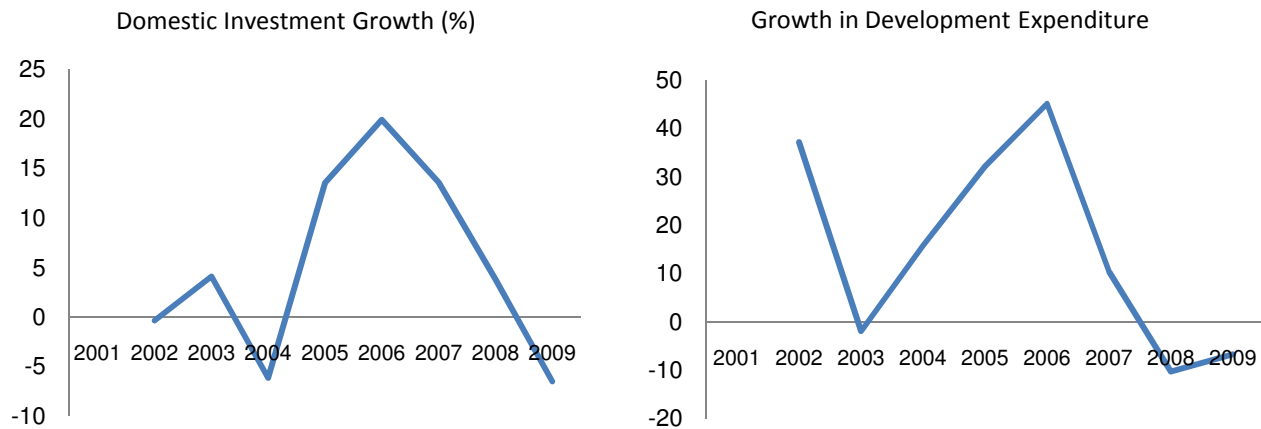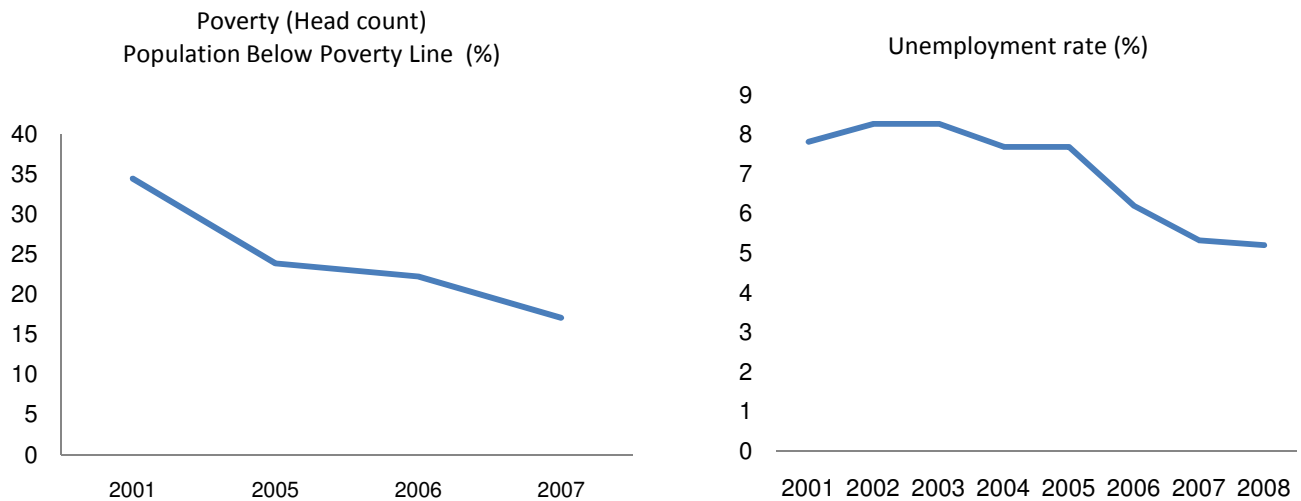Figure 3.2 Fluctuations in Fiscal & Trade Deficits and FDI Growth

Fiscal & Trade Deficits

FDI Growth

trade deficit as % of GDP          Fiscal deficit/GDP
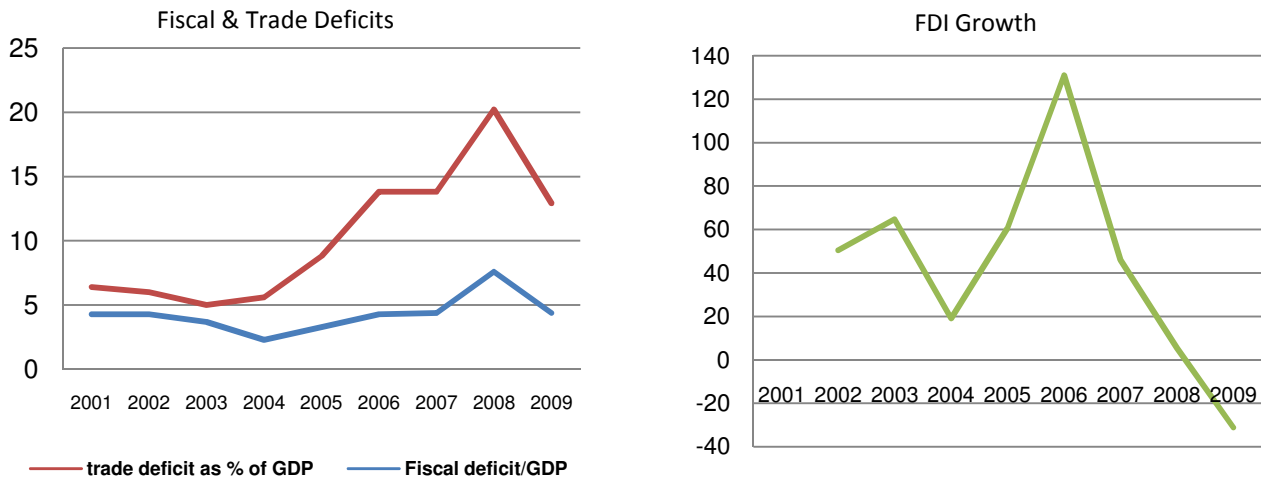
*Source: Economic Survey of Pakistan*

## 3.3.  Trends in Social Indicators:

With a falling fiscal space, development expenditures also witnessed decreasing trends with a negative growth rate in 2009 (see Figure 3). Large displacements of civilians in NWFP and FATA, higher budgetary constraints, low levels of investment in development sector have negative implication for poverty trends. Programs like Benazir support fund may become ineffective in the longer run as more people find themselves below poverty line while the state finds itself under resource crunch amid decline in larger economic activity. Due to healthy growth trends till 2007, Pakistan has performed well on poverty front with poverty falling to 17 % in 2007. However these trends have to be revised upwards in current scenario. First, with low growth rate, number of people living below poverty line is expected to rise in the coming years along with the unemployment rate (see figure 3).

Figure 3.3 Social Indicator Trends

Domestic Investment Growth (%)

Growth in Development Expenditure

Poverty (Head count)
Population Below Poverty Line (%)

Unemployment rate (%)

*Source: Economic Survey of Pakistan*

## 3.4. Diversion of Resources and Effect on Developmental Plans

National Economic Council approved Rs 334 billion for Public Sector Development Program (PSDP) for fiscal year 2008-09. However, only Rs 211 billion were made available which is only 63% of the actual amount provided. For 2009-10 fiscal year a hefty amount of Rs 421 billion was approved but only 10% funds have been released during the first 3 months (July – Oct) showing a steep fall in state's capacity to promote pro poor economic activity in the country. The Public Sector Development Program may shrink to Rs 275 billion against the total allocations of Rs 421 billion as per the federal government share. Budget deficit is expected to rise to 5.3 % of GDP as against the targeted 4.9%. The rationalization of PSDP has resulted due to the unbudgeted burden of Rs 310 billion, out of which Rs 170 billion is WOT related additional security expenditure.

The cut in PSDP will have serious implications in terms of critical development projects remaining underfunded. The allocation of Rs 275 billion would be a thin spread among the development projects resulting in delays leading to costs over run; the Bhasha dam project is a clear example for which per year economic loss is estimated to be around Rs 100 billion. The total PSDP for the 2009-10 was of Rs 621 billion; the share of the federal government was put at Rs 421 billion while remaining Rs 200 billion were to be met by the provinces. The operation in Swat, Malakand and Waziristan as well as subsidy on electricity could result in a further cut in PSDP making the actual allocation even lower then Rs 275 billion.

The rising budget deficit is causing a reduction in developmental spending as the defense budget cannot be cut due to ongoing operations Swat, Malakand and Waziristan. As the activity related to war on terror and security concerns increase further diversion of resources is

expected in the latter half of the current fiscal year. The expanding current expenditure with the intensification of war on terror would lead to further cut in developmental spending. This would have severe repercussions on the infrastructure requirements of the overall economy and specially the production sector. The transport sector already stretched due to being utilized by NATO and ISAF would experience further deterioration because of lack of investment in enhancing the transport capacity and road infrastructure. The energy and power projects experiencing delays and remaining underfunded would add more pressure on the business community in terms of higher input costs.

### 3.5. The Hard-Hit Exporting Sectors

In the fiscal year 2007-08, the manufacturing sector of Pakistan experienced the weakest growth in a decade. Large-scale manufacturing which accounts for 69.5% of overall manufacturing evidenced a growth of only 4.8% in 2007-08 and -8.2% in 2008-09 against growth of 8.6% in 2006-07. Clearly, the manufacturing sector of Pakistan has been hurt badly since the intensification of the war. In 2004-05, large-scale manufacturing reached the highest growth rate of 19.9%.

Export performance of important sectors of Pakistan has been deteriorating rapidly since war intensification. The two most important sectors of Pakistan, i.e. leather and textiles, have suffered immensely. Table 2 presents a picture a clear picture declining exports in the leather sector.

Agha Saiddain Chairman (2008-09), Tanning Industry, North Region, Pakistan Tanning Association (PTA) in an interview stated that:

*"There has been a 27% decline in export of leather products during July – November 2009, while India's exports increased by 30% over the same period. Power outages, government negligence of the sector, and most significantly disruption in the supply chain, raw materials for the industry coming from Baluchistan, due to WoT have resulted in huge losses for this sector. Leather sector of Pakistan is the hardest hit since the supply chains of raw materials from Afghanistan, NWFP and Baluchistan have been disrupted, leading to a loss of competitiveness in the international market for leather. Imported raw materials are now subject to higher insurance rates for Pakistan."*

Table 3.2  Month-wise Export Figures of Leather, Leather Apparel & Clothing, Leather Gloves, Leather Footwear and other Leather Manufactures (2007 and 2008)

| Month | Export Value ($ millions) | Month | Export Value ($ millions) |
|---|---|---|---|
| July 07 | 96.805 | July 08 | 107.804 |
| August 07 | 88.393 | August 08 | 90.654 |
| September 07 | 90.403 | September 08 | 103.540 |
| October 07 | 83.323 | October 08 | 70.203 |
| November 07 | 127.252 | November 08 | 93.901 |
| December 07 | 114.655 | December 08 | 69.239 |
| January 08 | 77.750 | January 09 | 78.082 |
| February 08 | 100.628 | February 09 | 65.720 |
| March 08 | 125.018 | March 09 | 65.261 |
| April 08 | 96.967 | April 09 | 63.927 |
| May 08 | 109.200 | May 09 | 72.978 |
| June 08 | 109.727 | June 09 | 77.837 |
| TOTAL | 1220.121 | TOTAL | 959.146 |

*Source: Federal Bureau of Statistics*

Small and Medium Enterprise(SME) sector is critical to inclusive economic growth and employment. Large corporations can engage with SMEs and localize the creation of value, and in this way, large corporations build the capacity of SMEs leading to economic development (WBCSD).

Pakistan's SME businesses have been adversely affected by the WoT. The negative consequences to the trading activities of SMEs are mainly attributed to the WoT and to a lesser extent to the global financial and energy crises. The negative consequences of global financial crisis are not as great for Pakistan as compared to other countries because the financial sector of Pakistan is inadequately linked with global markets (Ali 2009). Also, according to the IMF (2009a), Pakistan has not been adversely affected by the global financial crisis due to non-integration of the domestic financial sector with the global financial sector. The government has not been able to deal with the energy crisis because its attention and resources have been diverted towards the WoT.

Fayyaz Riaz Head, Industrial Support Program SMEDA highlighted that

*"New businesses that are small have been harmed as they are not considered credible. They cannot get customers as easily as the established ones. Both new and old firms have lost many business opportunities as it is harder to make new customers. New businesses have gone to competitors. No government assistance to any size of firm. Post quota era subsidy for R&D support, which encompassed that 6% of export value subsidy was given to all exporters is no longer there. It was eliminated in June 2007 or 2008. Sales tax refund on exports, the policy has changed for that as well. It was 100% sales tax refund."*

### 3.6. Performance in Major Export markets

The result of the WoT is the alarming deterioration in the image/perception of Pakistan, and poor image of the goods it exports to the extent that clients have requested to have no label on the products." Major trading partners of Pakistan have been given travel advice to avoid travelling to Pakistan. Pakistani exporters also face the problem of visa and hence find it difficult to make deals and promote & market their products. All these factors have contributed to the decline/stagnant export share of Pakistan in its major trading partner markets (see Table 3).
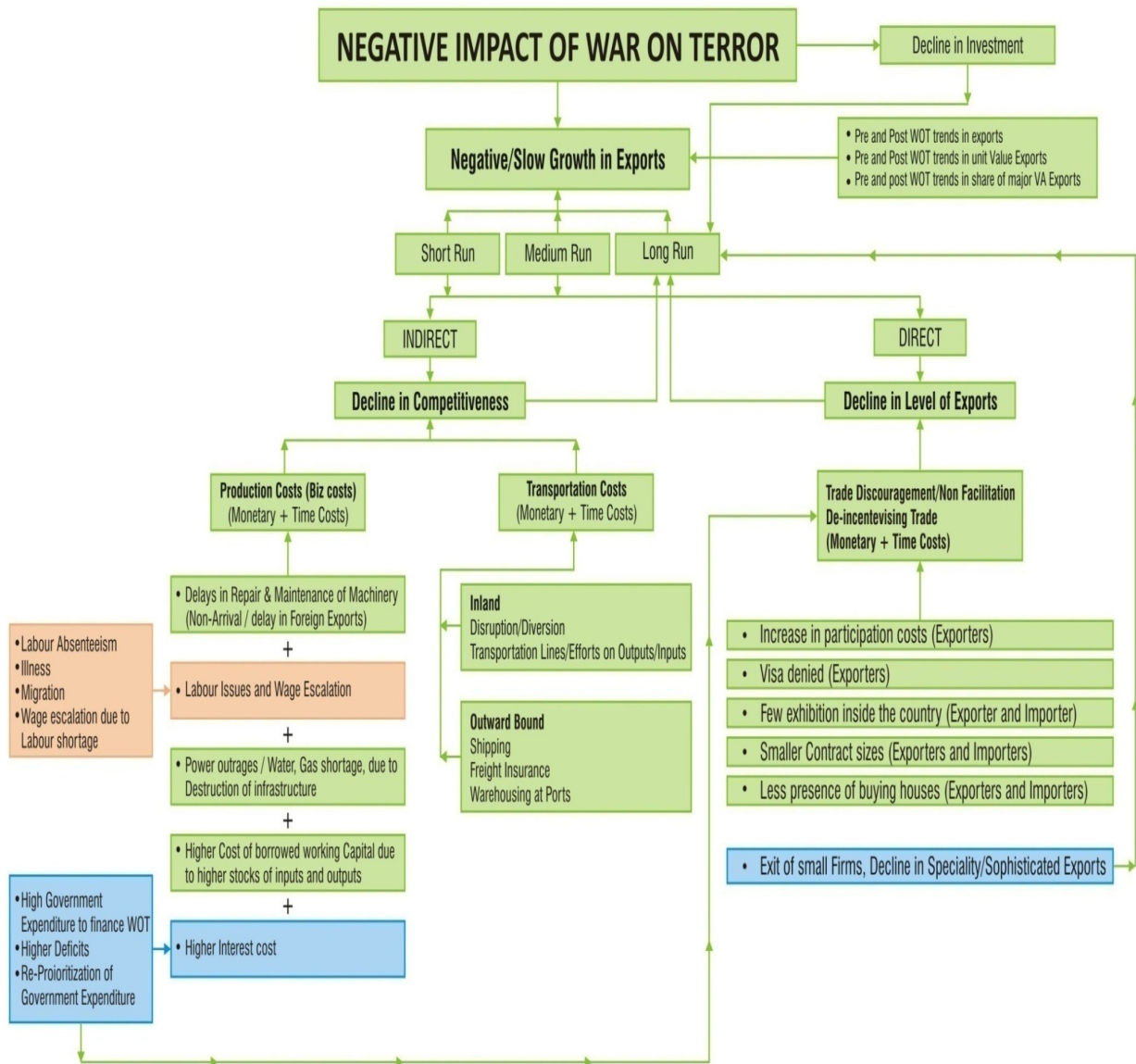
Table 3.3 Major Export Markets for Pakistan

| Country | 2005-06 (%) | 2006-07 (%) | 2007-08 (%) | 2008-09 (%) |
|---------|-------------|-------------|-------------|-------------|
| USA | 25.5 | 24.6 | 19.5 | 18.8 |
| Germany | 4.2 | 4.1 | 4.3 | 4.1 |
| Japan | 0.8 | 0.7 | 0.7 | 0.7 |
| UK | 5.4 | 5.6 | 5.4 | 4.8 |

*Source: Economic Survey of Pakistan, 2009*

### 3.7. Rising Costs in the Export Cycle

The Finance ministry estimated a loss $ 1.4 billion to exports which clearly shows that Pakistan's exports have suffered and are still suffering losses due to war on terror. It is feared that these losses might be much higher once a detailed assessment of the stages involved in the entire export cycle is carried out. The following sections seek to identify how the efficiency of the supply chain has been affected leading to higher logistics cost and rising trade cost due to the negative soft image abroad. High logistics cost to exporters are eventually transformed to higher export prices, thus reducing the competitiveness level of export commodities. It is most essential that the total quality of the product and supply chain is bound together to avoid shortcomings at one end resulting in un-competitiveness at the client end.

## NEGATIVE IMPACT OF WAR ON TERROR

**Decline in Investment**

**Negative/Slow Growth in Exports**

- Pre and Post WOT trends in exports
- Pre and Post WOT trends in unit Value Exports
- Pre and post WOT trends in share of major VA Exports

**Short Run** | **Medium Run** | **Long Run**

**INDIRECT**

**Decline in Competitiveness**

**DIRECT**

**Decline in Level of Exports**

**Production Costs (Biz costs)**
(Monetary + Time Costs)

**Transportation Costs**
(Monetary + Time Costs)

**Trade Discouragement/Non Facilitation
De-incentevising Trade**
(Monetary + Time Costs)

- Delays in Repair & Maintenance of Machinery (Non-Arrival / delay in Foreign Exports)

+

**Inland**
Disruption/Diversion
Transportation Lines/Efforts on Outputs/Inputs

- Increase in participation costs (Exporters)
- Visa denied (Exporters)
- Few exhibition inside the country (Exporter and Importer)
- Smaller Contract sizes (Exporters and Importers)
- Less presence of buying houses (Exporters and Importers)

- Labour Absenteeism
- Illness
- Migration
- Wage escalation due to Labour shortage

- Labour Issues and Wage Escalation

+

**Outward Bound**
Shipping
Freight Insurance
Warehousing at Ports

- Power outrages / Water, Gas shortage, due to Destruction of infrastructure

+

- Higher Cost of borrowed working Capital due to higher stocks of inputs and outputs

+

- Exit of small Firms, Decline in Speciality/Sophisticated Exports

- High Government Expenditure to finance WOT
- Higher Deficits
- Re-Proioritization of Government Expenditure

- Higher Interest cost

### 3.7.1. Logistics Costs

In the ever increasing race of achieving high level of competitiveness among countries, the quality of logistics can have a major impact on a firm's decisions about which country to locate in, which suppliers to buy from, and which consumer markets to enter. High logistics costs and more particularly low levels of service are a barrier to trade and foreign direct investment and thus to economic growth. Countries with higher overall logistics costs are more likely to face deteriorating overall as well as sectoral competitiveness.

Pakistan's performance in key logistics indicators has deteriorated significantly from 2006 onwards which also marks the intensification of War on Terror period. A comparison of Pakistan's Logistics Performance Index (LPI) with its major competitors reveals the worsening of logistics in the export supply chain from 2006 to 2010(see Figure 3.4).

Figure 3.4 Cross-Country Comparison of Logistics Performance Index (LPI)
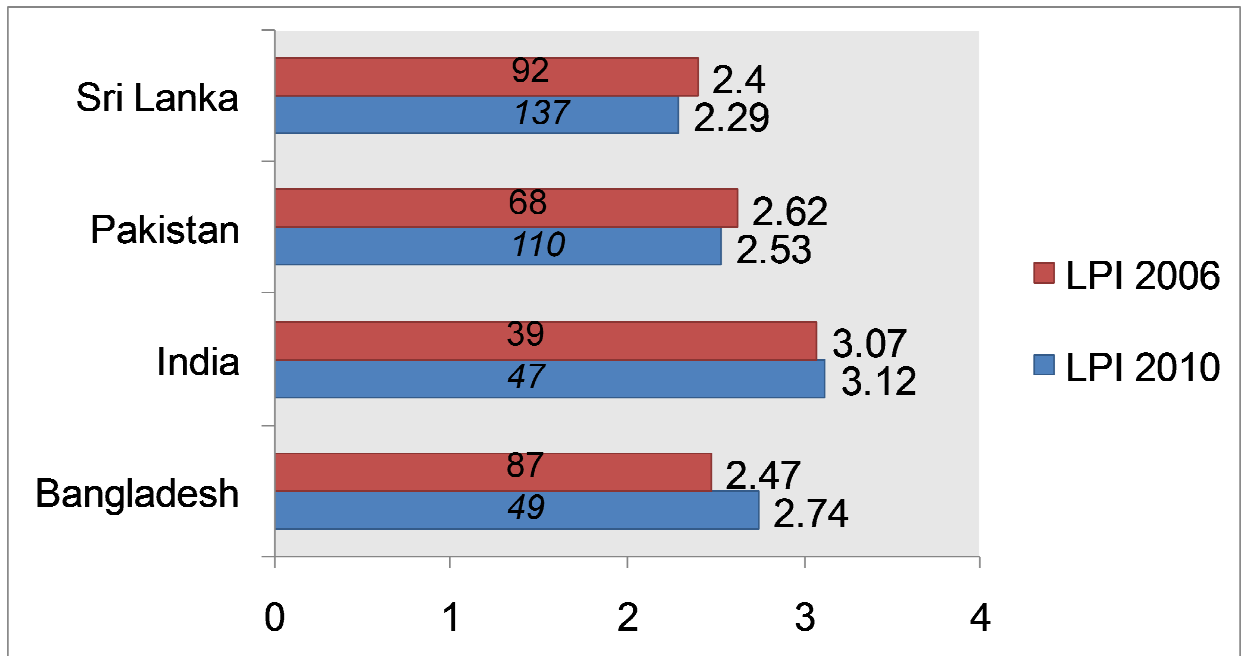


*Source: World Trade Indicators (2007 & 2010)*

Late deliveries and transport costs hampers the competitiveness of Pakistan's exports. The total quality of exports is a combination of quality in products and quality in supply. Here we analyze the quality of supply in Pakistan through different logistics efficiency measures in the year 2006 which is taken as the Pre war on terror period visa viz its competitors and in the year 2010 which is taken as the Post war period. Logistics Performance Index and its indicators propose a comprehensive approach to supply chain performance. The table 3.4 shows a major decline in Pakistan's performance in all indices with a major fall in the efficiency of customs and tracking& tracing vis-à-vis its major competitors.

Table 3.4 Cross country Comparison of Logistics Indices

| Country | Customs | Infrastructure | Logistics Competence | Tracking / Tracing | Timeliness |
|---------|---------|----------------|----------------------|--------------------|------------|
| India (2006) | 2.69 (47) | 2.9 (42) | 3.27 (31) | 3.03 (42) | 3.47 (47) |
| India (2010) | 2.7 (52) | 2.91 (47) | 3.13 (46) | 3.16 (40) | 3.14 (52) |
| Pak. (2006) | 2.41 (69) | 2.37 (71) | 2.71 (63) | 2.57 (76) | 2.93 (88) |
| Pak. (2010) | 2.05 (134) | 2.08 (120) | 2.91 (66) | 2.28 (120) | 2.64 (93) |
| Sri. (2006) | 2.25 (89) | 2.13 (105) | 2.45 (84) | 2.58 (75) | 2.69 (113) |
| Sri. (2010) | 1.96 (143) | 1.88 (138) | 2.48 (117) | 2.09 (142) | 2.23 (142) |
| Bang. (2006) | 2 (126) | 2.29 (82) | 2.33 (101) | 2.46 (87) | 3.33 (54) |
| Bang. (2010) | 2.33 (90) | 2.49 (72) | 2.99 (61) | 2.44 (96) | 2.64 (92) |

*Source: World Trade Indicators (2007 & 2010)*

According to the Doing Business surveys, there has been a reduction in the number of documents required for exporting in India and Bangladesh where as Pakistan has remained stagnant during the period 2006-2008 (see Table 3.5). The Doing Business 2008 report showed that it is now less costly to export a container consignment from Pakistan than from India, Sri Lanka and Bangladesh. Pakistan's days to export are considerably more as compared to its competitors and have remained stagnant (44 days) between the period 2006-2008 (see table 1). This shows that Pakistan's performance in these logistics indexes has remained either stagnant or deteriorated after 2006 which clearly illustrates that exports have potentially been effected through increase logistics cost.

Table 3.5 Cross Country Comparison of Cost of Doing Business Indicators

| Country | Days for export | Days for export | No. of documents for export | No. of documents for export | UNCTAD Liner shipping connectivity index (0 to 100, best) | UNCTAD Liner shipping connectivity index (0 to 100, best) | Cost to export (US$ per container) | Cost to export (US$ per container) |
|---|---|---|---|---|---|---|---|---|
| | 2006 | 2008 | 2006 | 2008 | 2006 | 2008 | 2006 | 2008 |
| Bangladesh | 35 | 28 | 7 | 6 | 5.29 | 6.4 | 902 | 970 |
| India | 23 | 23 | 10 | 8 | 42.9 | 42.18 | 864 | 945 |
| Pakistan | 44 | 44 | 9 | 9 | 21.82 | 24.61 | 515 | 611 |
| Sri Lanka | 6 | 6 | 7 | 8 | 37.31 | 46.08 | 797 | 865 |

*Source: World Trade Indicators year*

Moreover the logistics cost and performance may have changed with intensification of WOT from 2007 onwards. From a policy perspective, one needs to assess the role of worsening logistic performance (if any) on declining exports in the last two years. Discussed below are some of the key areas in the logistics supply chain which have been effected most due to the WoT and its intensification.

### 3.7.2. Transportation Costs Increased & Capacity Severely Stretched

The long waiting and traveling times, high costs and low reliability are hindering the country's economic growth. These factors reduce the competitiveness of the country's exports and constrain Pakistan's ability to integrate into global supply chains, which require just-in-time delivery.  The war on terror is impacting the transportation sector of Pakistan by increasing the:

1. Higher charges due to higher risks
2. Risks of damage/disruption involved in transporting
3. Non-availability of transport due to Diversion to Afghan Transit Trade (ATT), NATO, ISAF
4. Financial Impact of NATO/ISAF freight on Transit Routes
5. Rush due to strikes
6. One day closure of business activity causes rush the next day further raising the cost

After carrying out stakeholder consultations it was found that transportation costs have gone up significantly and they fluctuate on daily bases depending on the current security situation in the country. The Exporters and freight forwarders interviewed raised similar concerns on the fact that transporters charge more due to risk associated with traveling, which rises with every

terrorist activity. The average truck transport rates between Lahore and Karachi as presented in the World Bank logistics study compared to the current prevailing rates are as follows:

Table 3.6 Fluctuating Transport rates

| | |
|---|---|
| World Bank Logistics study (2006) | Rs 14,000 per 20' container |
| Current prevailing rates[4] | Rs 35,000-45000 per 20' container On the day of strike or terrorist activity the rates shoot up to Rs 60,000 |

The transport rates have also increased after the Afghan transit as the limited transport capacity of Pakistan has been diverted to carrying US cargo, resulting in limited transport available for exporters. This leads to a reduction in the bargaining ability of the exporter and sometimes trucks are not available, which causes delays in shipment. This problem is more frequently faced by exporters in Up country. If business closes due to strike for one day the rates go up the next working day due to backlog as well

### 3.7.2.1.    Freight charges

The global recession has led to a fall in international freight charges world wide but the case for Pakistan has been entirely opposite because of security issues intensifying in the past 2 to 3 years. All the exporters interviewed have put forth there concern over high freight charges. The freight forwarders5 justify the high charges due to higher risks of delays arising from strikes which increase the detention charges on the transport hired. Thus they have increased their over heads.

*In Pakistan Freight forwarders charge higher overhead due to risk and possibility of delays because of random terrorists attacks, which confounds the already poor shipping connectivity of Pakistan.*

### 3.7.2.2.    Insurance Costs

The risks arising from the security situation due to war on terror has affected the insurance cost. According to freight forwarders the inland transit insurance charges fluctuate on daily basis and even increase by 400% due to the higher risk resulting from a bomb blast or any other

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[4] These estimates are taken on average from the information provided by freight forwarders.

[5] Freight forwarders and express carriers are in a privileged position to assess how countries perform on logistics. They manage operations from factory and warehouse to port, from port to overland transit, and through one or more borders to destination, with each link testing a country's logistics infrastructure performance

terrorist activity. Sometimes the insurance companies even refuse or are not willing to cover up the entire insurance. This shows that insurance cost are highly sensitive to the current security risk. Shipping charges have also increased due to the fact that Pakistan's ports have remained in the red zone which increased the insurance cost of vessels.

*Shipping companies in order to cover up the high insurance cost have introduced the War Risk Surcharge which on average is $50 per container and increases as the security concerns heightened within the country.*

### 3.7.2.3. Delays in Shipment

*Pakistan's major export commodity is textile which is seasonal in nature. According to a few textile exporters interviewed*

*"*Buyers are not placing their orders in the prevailing uncertain environment. They doubt the timely supply of goods from Pakistan. As a result our exports are affected badly, where as exports serve as one of the major source for earning foreign exchange. Unfortunately the growth of this important sector of the economy is in a continuous jeopardy."

The timely export of goods doesn't remain possible many a times because of war on terror and the prevailing social unrest/hazards. The different channels through which war on terror is causing delays in shipments, identified from stakeholders' experiences are given as follows:

- *High security risk for inland transportation*
- *One day close-down of port costs Rs 4 billion [FBR estimates]*
- *Frequent port (and entry points) close-downs*
    - *Off days, followed by rush (further delays)*
    - *Vessels missed + delay/ detention charges on export containers starting from $5 per day demurrage and import container $7 per day as well as $40 per day detention charges.*

- *Shipment shut-outs due to stricter scrutiny at port/terminals*
    - *Karachi International Container terminal alone reported 5,842 Shut-out Teus in 2009*
    - *Special checking and scanning and increased cost of compliance for US bound cargo*

- *Port Congestion faced by both exporters and importers*

    - *Rush experienced when business activity is resumed after a strike or terrorists attack*
    - *Afghan bound cargo dwell time is 16 days (with 14 days free time resulting in excessive usage of port as a warehouse) compared to 4 days for exports and 10 days for imports.*

The rising issue of delays in shipment can worsen in the coming years. The delays in shipment is closely associated with war on terror, therefore a favorable trade environment is most vital for reducing these bottlenecks.

### 3.7.3. Marketing cost

Negative travel advisories against Pakistan by several foreign governments have discouraged foreign buyers from visiting Pakistan. The following costs have been identified that are having a detrimental effect on the costs of international marketing:

#### 3.7.3.1. Rising cost of Insurance for travelling to Pakistan

Travel advisories have negatively impacted Pakistan's exports in many ways. Negative travel advisories discourage travelling to Pakistan, which has heightened the risk factor. This has caused the higher business travel insurance premiums. However, some insurance policies do not even cover travel to vulnerable countries like Pakistan, Iraq and Afghanistan.

*"A review of travel insurance premiums charged by major international insurance groups[1] for Pakistan over the past ten years reveals that Pakistan has been categorized as a "high risk" zone and, depending on the type of insurance policy, the rates have been increased by approximately three times"*

According to the National Insurance Company, exorbitant premium rates under the provision of 'Terrorism Cover' are being charged, which are **50% - 200%** higher than the normal travel insurance cover rates[6]. The high insurance cost coupled with the risk of loss of life or kidnapping results in foreign buyers refraining from travelling to Pakistan.

#### 3.7.3.2. Inability to Attract Foreign Buyers / Technical Experts

In addition to foreign buyers and their associates not travelling to Pakistan, the negative impact of travel advisories is that technical experts, especially from USA & EU, are also refraining from offering their services in Pakistan which has resulted in delays and production losses.

*Pakistan Carpet Manufacturers and Exporters Association was of the view that hand knotted carpets were a unique product and so buyers place orders after inspecting every piece of the carpet. Since buyers are now reluctant to travel to Pakistan and transporting carpet samples to other countries is a costly undertaking, as a result exports have almost halved.*

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[6] National Insurance Company Limited "Implementation of Trade Policy 2009-10" Doc NICL/ICBusiness/43-09

**Figure 3.5. Travel Advisories Against Travel to Pakistan by USA**[7]
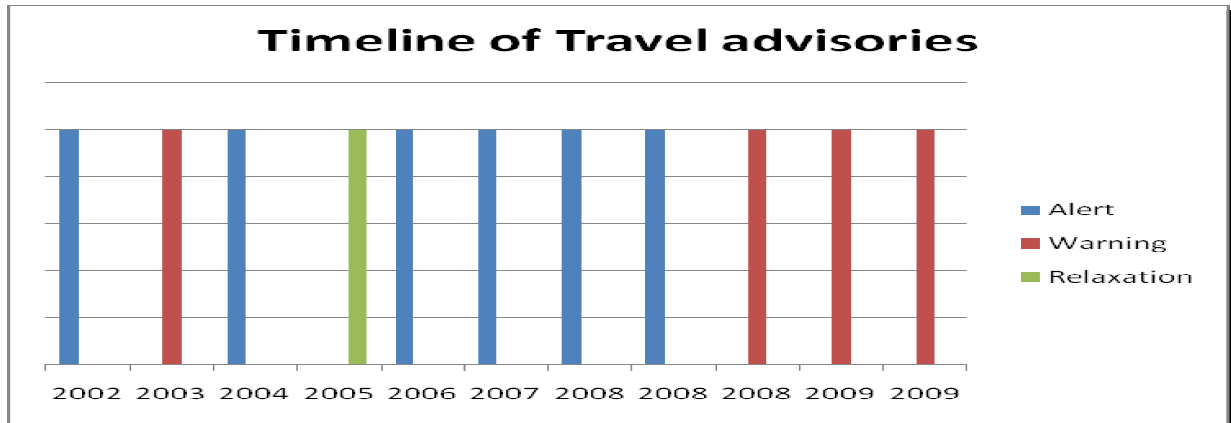


*Source: US Embassy*

First time the travel advisories of US issued the highest caution against travelling to Pakistan was in 2003 (see Figure 3.5). Soon after, the negative impact of travel advisories on exports began to unfold. Exporters and business representatives allayed their fears to government authorities on this issue. It was due to the gravity of the matter that on every subsequent foreign visit by the President or Prime Minister the removal of travel advisories was vociferously articulated at the highest level[8].

Figure 3.6.  Issuance of Business Visa to Japanese Businessmen
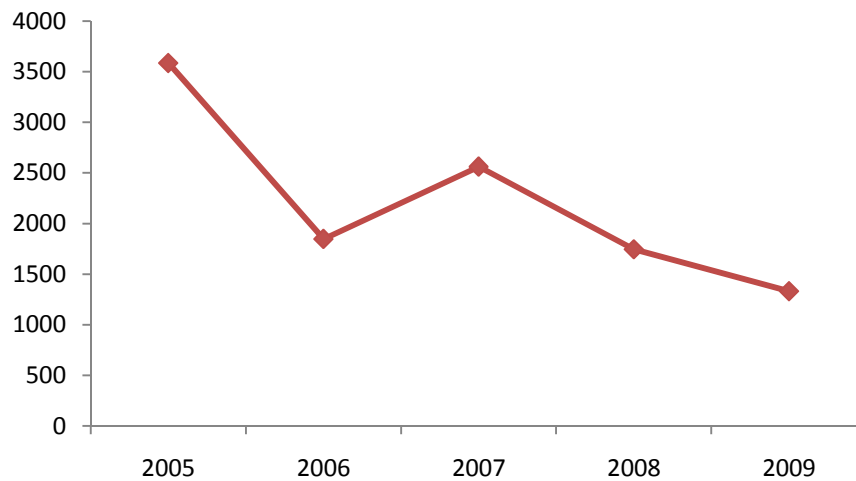


*Source: Pakistan High Commission in Japan*

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[7] (Many governments make a distinction between long- and from traveling to the listed countries.)
[8] Archive of speeches/ addresses made by President, short-term travel advisories. The U.S. State Department issues travel warnings for "long-term, protracted conditions that make a country dangerous or unstable," while travel alerts cover temporary problems such as natural disasters or election-related demonstrations. These warnings/alerts, no matter how strongly worded, are purely advisory and do not prohibit citizens PM and senior Government officials on foreign visits.

There has been a declining trend in the number of visits of foreign business men to Pakistan. Figure 3.6 shows that the number of business visas issued to Japanese business men has reduced drastically since 2007 which is the post war intensification period.

Due to security concerns, foreign buyers and exhibitors are not coming to Pakistan to attend trade fairs. TDAP Expo Secretariat officials in Karachi reported that the response of international buyers and exhibitors to participate in the upcoming event of EXPO 2010 was disappointing despite facilitation by TDAP, in terms of subsidized air tickets etc

Figure 3.7. Business Travelers
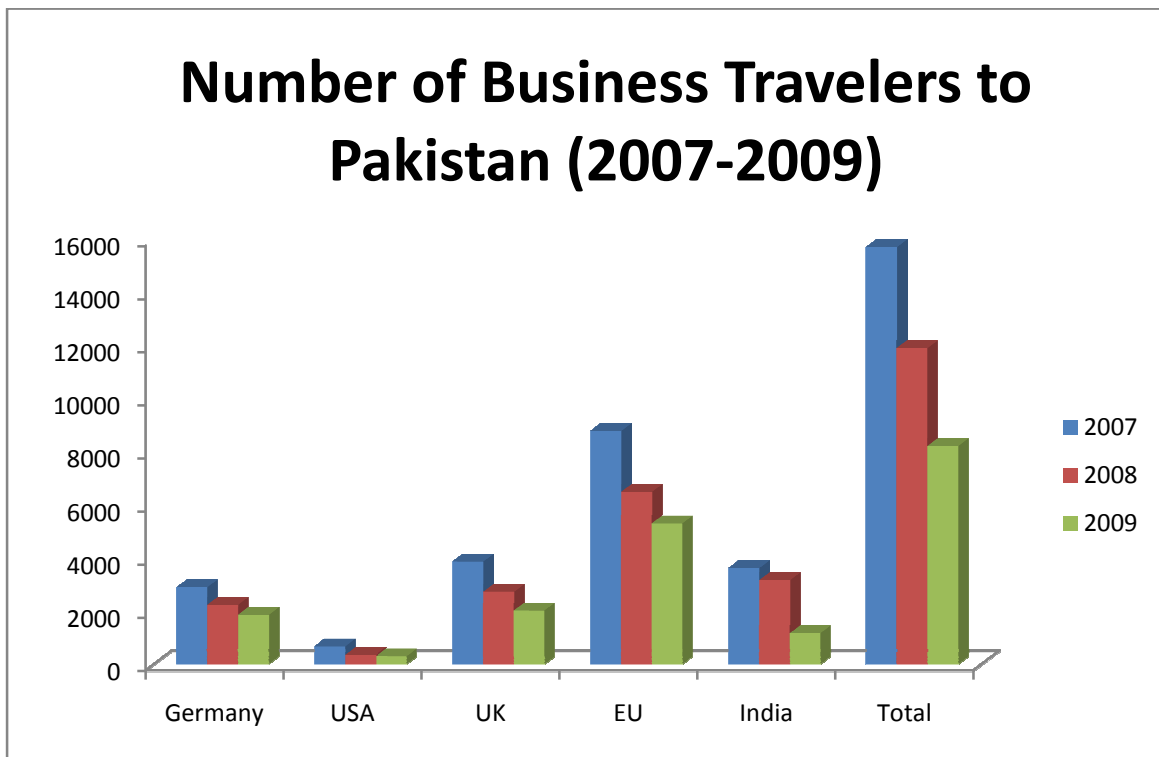


*Source : Calculation of data from Pakistan Mission abroad*

### 3.7.3.3. Increased Foreign visits of Pakistani Exporters

The negative impact of travel advisories has been strongly felt in textiles which is Pakistan's largest exporting sector. Since travel advisories are keeping potential buyers away from Pakistan, textile exporters have to send their representatives to negotiate and deal with buyers abroad.

The adverse security environment has led to the closure of foreign buyers' liaison offices in Pakistan. In comparison Bangladesh, which is not a victim of the War on Terror, has more than 1000 buying houses compared to a negligible few in Pakistan. Closure of liaison offices has added to the marketing costs of Pakistani exporters as not only do they have to travel abroad more frequently but exporters also have to open their own liaison offices and display centers in major markets like US and Germany.

*In an interview with S. M Khalid, GAP Buying House it was found that…*

"EU and USA buyers no longer feel safe coming to Pakistan. Before the WOT, importers would visit factories in search of reliable outsourcing partners. They would place orders and when satisfied, they would divert their orders from other countries towards Pakistan, but after WOT, they now place orders with India, Bangladesh, etc. While placing a huge order, the stakes are high and so it is an important consideration that the factory should be easily and frequently visited and inspected"

"Many foreign buying houses closed down in Pakistan after the WOT, as there is no point in maintaining them if company executives cannot visit. This has resulted in loss of exports for Pakistan and a gain for other countries."

"Pakistan has been USA's key ally in the WOT, but USA imposes a tariff rate of 19% on garments from Pakistan, whereas only 16% on Indian garments"

### 3.7.3.4. Decline in Participation in International Trade Fairs

The absence of foreign buyers has meant that exporters now have to travel more often to international trade fairs, which charge a hefty participation fee.  According to TDAP, the primary agency responsible for taking trade delegations abroad, exporters participate in international trade fairs through either TDAP, Chambers of Commerce or at their own expense which is more costly for an exporter. The war on terror has caused decline in participation in international trade fairs. The war on terror has resulted in fiscal imbalances and a shift in resources away from other sectors. The major reason for increase in participation costs has been the withdrawal of subsidies for participating in trade fairs as TDAP does not have enough funding to subsidize this activity anymore mainly due to the falling Export Development Fund (EDF). This is evidenced by the fact that in 1997 TDAP took delegations to over 100 trade fairs abroad whereas in 2009 it only took about 50 delegations[9].

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[9] Interview with TDAP sources

### 3.7.3.5. Denial and delay in issuance of visas to Pakistani business travelers

Issuance of visas was not a problem until a few years ago. Due to the current security situation, many countries have placed **stringent visa requirements** on Pakistani travelers and high visa refusal rates can be seen( see Table 3.7). This has resulted in an increase in psychological, monetary and time costs for Pakistani exporters.

Table 3.7. Average Business Visa refusal rate by US authorities (2006-2009)

| Country | Average Refusal rate (%) |
|---------|--------------------------|
| China | 19.75 |
| India | 23.65 |
| Pakistan | 39.45 |

*Source: Pakistan High Commissions*

### 3.7.4. Market Share Analysis

In 1999 Pakistan's share in global exports was 0.2 %. [10]However in the coming years Pakistan failed to retain its export share which first plummeted to 0.149% in 2001 and stands as low as 0.126 % in 2008 (table 3.8, first column). In between 2001 and 2008, the shares fluctuated but never reached the levels of 1990s. Beyond 2000, the fall in Pakistan's exports share in global export market may be attributed to a number of reasons; the prime being fall in the competitiveness of its exporting industry which is further attributed to the war on terror. In comparison to other South Asian countries during 2001-2008. India, however, has successfully improved its share from 0.7 % to 1.105 %.

If everything remains constant and assuming that Pakistan retains its export share of 0.2 % during 2001-2008 period, table 1 provides annual losses in total exports mounting to a total of $ 48.69 billion. The losses are calculated by subtracting actual exports (derived from actual export shares) with potential exports (derived from 0.2 % share retention).

By end of 2005, Pakistan lost GSP+ facility which resulted in yet steeper losses in export shares during 2006, 2007 and 2008. (see table 9, column 1). Bangladesh, which is a major competitor of Pakistan in its textiles sector, gained from this as it was able to exploit its position against

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[10] World Trade Organization Statistics

Pakistan with its total export share rising from 0.089 in 2005 to 0.097 in 2006. In later years, Bangladesh retained its higher shares which indicate that Pakistan continues to lose its market share to Bangladesh.

However within South Asia, trade is not only diverted to Bangladesh alone. India has also been able to witness significant improvements in world exports shares while rising from 0.83 in 2004 to 0.95 in 2005 (table 9, column 5). It accounts for annual growth in share of world exports of 14.23%, the largest gain in this decade for India. Indian export markets continued to grow steadily during 2006, 2007 and 2008. Part of Pakistan's export losses are attributed to Indian gains.

If we account for Bangladesh and Indian world export share growth rates, they were much higher than that of Pakistan. Pakistan share in world exports have largely witnessed negative growth. Assuming that both Bangladesh and India have captured Pakistan's export losses as their export gains through trade diversion, we can build up a scenario where we calculate Pakistan's potential exports if they have grown with the average of India and Bangladesh's export share instead of its own. In such a case Pakistan has lost $ 44.17 billion. (Table 3.9; see columns 11 and 12). To sum up the analysis we suggest that Trade diversion from Pakistan to Bangladesh and India has taken place due to Trade related cost of war on terror face by Pakistan in addition to losses accrued by Pakistan due to Loss of GSP Plus initiative in 2005.

Table 3.8. If Pakistan retained a 0.2% Share in World Exports

|  |  |  | (US Billions) |
| --- | --- | --- | --- |
| Year | Pakistan Exports (A) | Potential if Pakistan retained 0.2% of World Share in Exports (B) | Loss A-B |
| 2001 | 9.2 | 12.3 | 3.1 |
| 2002 | 9.9 | 12.9 | 3.01 |
| 2003 | 11.9 | 15.2 | 3.2 |
| 2004 | 13.3 | 18.4 | 5.05 |
| 2005 | 16.01 | 20.9 | 4.9 |
| 2006 | 16.9 | 24.2 | 7.2 |
| 2007 | 17.8 | 27.9 | 10.1 |
| 2008 | 20.3 | 32.1 | 11.8 |
|  |  |  | 48.9 |

*Source: Own Calculations using data from World Trade Organization*

Table 3.9. If Pakistan Share in World Exports grew by the same average as that of the other South Asian economies

| Year | PAK Share | Share growth | BANG Share | Share growth | IND Share | Share growth | Avg Share of South Asian Countries | Share growth | PAK Potential Share by South Asian AVG | PAK Actual Exp | PAK Potential Exp | Loss |
|------|-----------|--------------|------------|--------------|-----------|--------------|-----------------------------------|--------------|---------------------------------------|----------------|-------------------|------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 2001 | 0.149 | | 0.098 | | 0.700 | | 0.39 | | | 9.2 | | |
| 2002 | 0.153 | 2.32 | 0.095 | -3.57 | 0.759 | 8.3 | 0.42 | 6.83 | 0.16 | 9.9 | 10.4 | 0.5 |
| 2003 | 0.157 | 3.01 | 0.092 | -2.70 | 0.777 | 2.47 | 0.43 | 1.89 | 0.16 | 11.9 | 12.38 | 0.48 |
| 2004 | 0.145 | -7.72 | 0.090 | -2.23 | 0.831 | 6.97 | 0.46 | 5.99 | 0.17 | 13.3 | 15.95 | 2.65 |
| 2005 | 0.153 | 5.45 | 0.089 | -1.61 | 0.950 | 14.23 | 0.51 | 12.67 | 0.19 | 16.01 | 20.45 | 4.44 |
| 2006 | 0.140 | -8.66 | 0.097 | 9.93 | 0.999 | 5.16 | 0.54 | 5.56 | 0.20 | 16.9 | 24.93 | 8.03 |
| 2007 | 0.128 | -8.76 | 0.089 | -8.63 | 1.051 | 5.25 | 0.57 | 4.01 | 0.21 | 17.8 | 29.95 | 12.15 |
| 2008 | 0.126 | -0.84 | 0.096 | 7.33 | 1.105 | 5.07 | 0.60 | 5.24 | 0.22 | 20.3 | 36.22 | 15.92 |
| | | | | | | | | | | | Total Loss | 44.17 |

*Source:* Author's own calculation using data from World Trade Organization

# 4. QUANTIFYING LOSS IN EXPORT EARNINGS FROM TERRORIST ATTACKS

## 4.1. **Introduction**

In the context of various economies of the world, the review of literature chapter in this report extensively documented the conceptual framework and empirical evidence linking the impact of terrorists' attacks on selected economies as well as international trade/exports,. Some countries have experienced sporadic terrorist's attacks over a number of years while others continue to face them on a continued, i.e., daily, weekly and monthly basis. The nature, intensity and time profile of episodes of terrorists' attacks also vary by country and need a separate study to filter generalized trends and conclusions.

Even prior to 9/11, Pakistan was not immune to sporadic terrorist attacks (whatever the underlying cause) similar to the experience of many other countries. As a frontline state of war on terror, frequency and intensity of terrorist attacks in Pakistan increased notably after 9/11, but the costs to the economy and international trade remained benign and many would regard them lower then the benefits in terms of re-scheduling of debt, and increased foreign economic and military assistance. The positive spillover effects from Global expansion of trade and robust world GDP growth to the national economy further marginalized the costs of terrorists' attacks on the national economy and international trade during the period 2001-2007. However in absence of any empirical analysis it may be difficult to argue against the premises that due to terrorist attacks the economy failed to realize its full potential in growth and exports even in that booming period.

A basic premise of this analysis is that any of the following three incidents since 2007 may have lead to structural shifts in the frequency and intensity of terrorist attacks in the country:- a) Flushing out of militants from Lal Masjid in the capital city of Islamabad in April/May 2007 thereby raising the security level of travel advisories b) Death of Benazir Bhutto in December 2007 provided a signal of political uncertainty and weak political/military resolve to fight the militants and c) US government's announcement to shift gear from Iraq to Afghanistan in mid-2008. This period since 2007 also marks a gradual end to expansionary and supportive global economic environment wherein the economic and financial costs outweighed the benefits of partnership in war on terror.

The outline of this chapter is as follows:- The transmission framework of how the frequency and intensity of terrorist attacks impact the level and competitiveness (through changing unit costs) of exports will be discussed in the next section. Outline of a reduced form model to empirically estimate the impact of terrorist attacks on exports will also form part of this section. Section 4.3 will be an exploratory analysis (time trends, descriptive statistics) of indicators of reduced form model of the previous section as well providing statistical support to the delineation of above a priori time profile of incidents. Section IV will discuss the results of estimating the reduced form model using simple and sophisticated estimation techniques. The

estimates from modeling will form the basis for quantification of losses to exports since 2007.1 Section V will use the estimates of modeling exercise to quantify the range of losses to export potential since 2007.

## 4.2. From terrorist attacks to reduced exports

Terrorist attacks occurring on any single day/night are headline material nationally and internationally in mostly all types of news media ranging from newspapers to internet.  Thus in a globally wired world, the terrorist attacks are a symbol and signal of national insecurity increasing the risks to lives and property of the residents as well travelers.  Many advanced countries not only issue travel advisories but also change the level of previously issued travel advisories based on frequency and intensity of attacks.

The personal travel insurance as well freight insurance are raised and thereby impact on the cost of doing business as well outward and inward bound trade.  Trade facilitation measures such as national exhibitions and individual as well firm level meetings are re-scheduled to another time or place or even postponed indefinitely. Visits of technical experts are discouraged.  Frequent and expected occurrence of attacks also change the trading strategy of importers and exporters. Foreign firms may shift from smaller to larger firms or altogether stop importing specialty products. The above fallouts from terrorist attacks ultimately impact directly on the level of traded goods and indirectly on the unit cost of imports and exports. For exports they erode the competitive edge in the world markets.

In case of Pakistan for the period under consideration, external factors and internal macro instability further affected the growth of exports. The contagion of financial crisis in developed nations transmitted to Pakistan in the form of reduced exports of merchandise and foreign direct investment. Energy shortages and infrastructural bottlenecks within the country also impacted the domestic manufacturing capacity and thereby meet export orders in a timely and cost efficient manner, while a 25 percent depreciation of the Pakistani rupee against the US $ in a matter of 18 months helped to adjust real effective exchange rate in line with galloping inflation and may have stabilized exports.

The entire analysis of the following sections revolve around analyzing and modeling the above stated factors as determinants of monthly exports for the 36 month period from July 2006-June 2009.  Monthly data from July 2006 onwards related to number of terrorist incidents, including the number of persons injured and killed provided by the Ministry of Interior is the basis for this analysis.  The Pakistan Customs provided the monthly data on exports, while monthly quantum index of manufacturing and average monthly Pak Re/US $ is collected, processed and disseminated by the Federal Bureau of Statistics.  Quarterly data of GDP of 30 OECD countries was obtained from OECD website.

The basic and simple specification of the reduced form model is formulated as:-

Exports = f (Incidents or Intensity, QIM, Exchange, OECDgdp)

Where,

Exports = Monthly total merchandise exports of Pakistan

Incidents = No. of monthly terrorist incidents as reported by the Ministry of Interior

Intensity = Monthly total number of killed +injured divided by INCDNTS.

QIM = Monthly Quantum Index of Manufacturing

Exchange = Average Monthly Pak Re/US $ exchange rate

OECDgdp= Quarterly GDP of OECD countries

### 4.3. Exploratory Analysis

The above indicators are plotted against time as shown in figures 4.1 to 4.6. The descriptive summary of trends is as follows:-  The no of monthly terrorists attacks (Incidents) fluctuate over time with a rising trend, and a steep rise in the first half of 2009. The trend of intensity of attacks in terms of total number of casualties (injured + killed) per terrorist attack plotted in Fig 2, fluctuates around a narrow band except a significant spike in later half of 2008. This was mainly due to casualties from the terrorist attack on Marriot hotel in Islamabad in the last quarter of 2008.  Monthly exports exhibit a flat trend except short-lived rising trend in first half of 2008.  Quantum Index of manufacturing show a bi-modal distribution in a period of 36 months and discounting for these two spikes, the index is almost flat.  The exchange rate declined steeply during the entire 2008.  The quarterly OECDgdp shows a rising trend with steep decline from latter half of 2008.
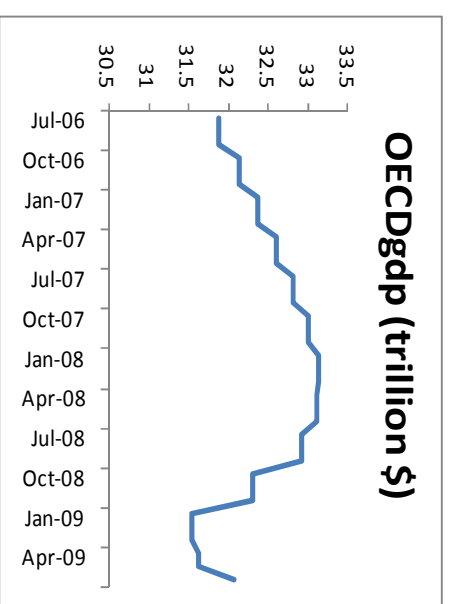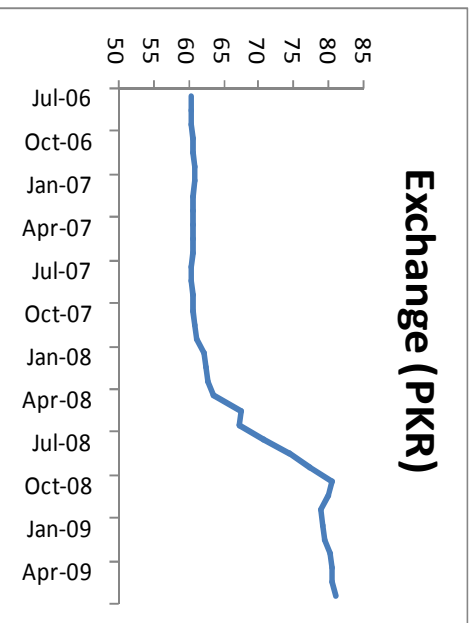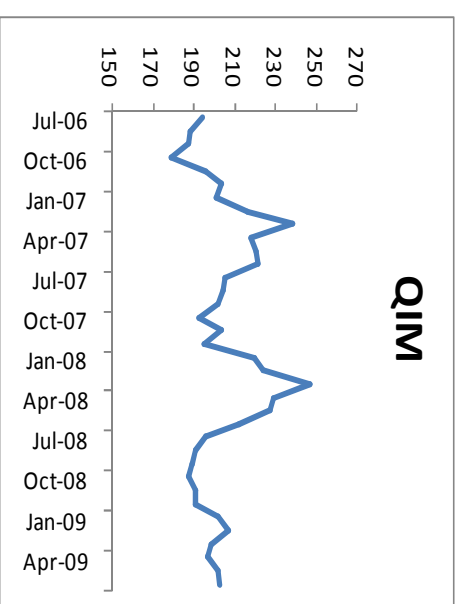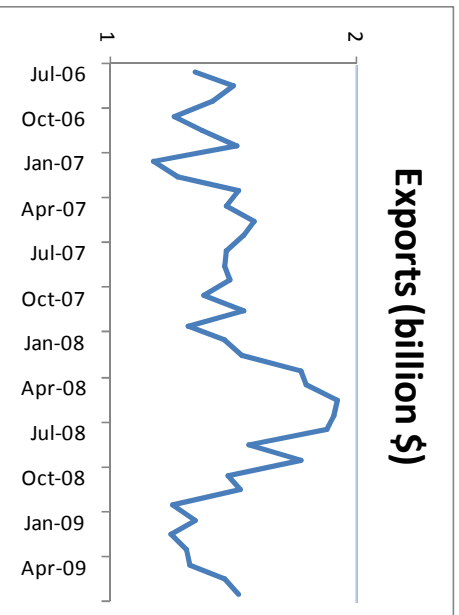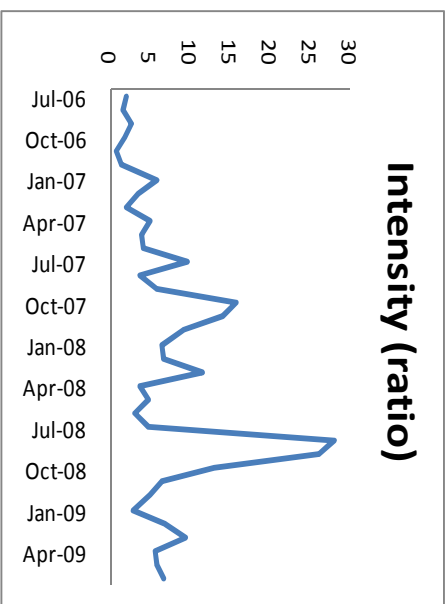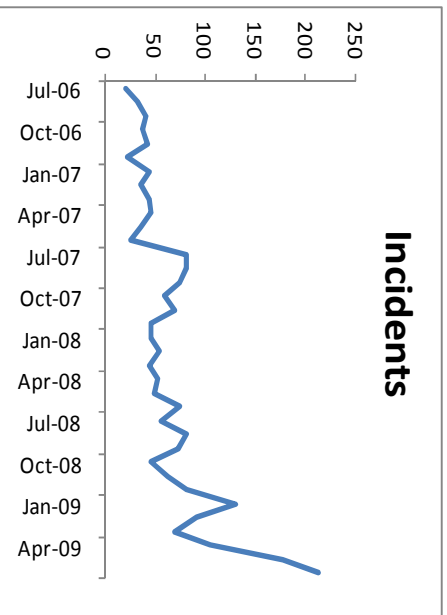
Figure 4.1-4.6

Table 4.1 and 4.2 give the descriptive statistics and correlations of/among indicators chosen for analysis. On average 65 terrorist attacks have occurred per month during the analysis period. In terms of fatalities, on the average 7 persons were injured plus killed during each attack. Compared to other economic indicators these two variables have the highest and second highest variability. Terrorist attacks have increased at a monthly compound growth rate of 6.6 percent and average monthly growth is more than twice at 14.5 percent.

Table 4.1. Descriptive Statistics

| Variables | Mean | C.V | MCGR | AMGR |
|-----------|------|-----|------|------|
| Exports | 1.49 | 12.75 | 0.35 | 0.90 |
| Exchange | 67.23 | 12.52 | 0.82 | 0.86 |
| QIM | 205.11 | 7.60 | 0.11 | 0.26 |
| Incidents | 65.61 | 60.61 | 6.64 | 14.50 |
| Intensity | 6.94 | 88.47 | 3.51 | 33.74 |
| OECDgdp | 32.65 | 1.69 | -0.02 | -0.02 |

MCGR=Monthly Compound growth rate
AMGR=Average Monthly Growth rate

The growth in monthly average intensity is 33 percent compared to the monthly compound rate of just 3.5 percent. The rest of the variables exhibit monthly growth rates of less than 1 percent. The correlations among the 6 indicators suggest absence of multicollinearity with correlation between incidents and exchange rate depreciation the highest at 0.66. Similarly the correlation between monthly exports and quarterly OECDgdp is the second highest at 0.58. The absence of multicollinearity among variables in a estimated model will increase the reliability of individual impacts including terrorist attacks on export performance.

Table 4.2. Correlation Matrix

| VARIABLES | Exports | Incidents | Intensity | QIM | Exchange | OECDgdp |
|-----------|---------|-----------|-----------|-----|----------|---------|
| Exports | 1.00 | -0.04 | 0.17 | 0.42 | -0.03 | 0.58 |
| Incidents | -0.04 | 1.00 | 0.15 | -0.13 | 0.66 | -0.38 |
| Intensity | 0.17 | 0.15 | 1.00 | -0.20 | 0.30 | 0.34 |
| QIM | 0.42 | -0.13 | -0.20 | 1.00 | -0.31 | 0.40 |
| Exchange | -0.03 | 0.66 | 0.30 | -0.31 | 1.00 | -0.47 |
| OECDgdp | 0.58 | -0.38 | 0.34 | 0.40 | -0.47 | 1.00 |

## 4.4. Search for intensification period

Identifying the structural shift in the intensification of the terrorist attack regime during the period is another objective of the study. The data on these indicators were split into the following 3 likely candidates for structural shifts. A) The Lal Masjid incident in mid-2007 gives us a pre-12 month period to be compared with 24 month post-Lal Masjid period. B) Death of Benazir Bhutto in Dec 2007 splits the 36 month period equally between pre and post- Benazir period. C) US government's announcement to shift gear from Iraq to Afghanistan in mid-2008 is another candidate for structural shift in frequency and intensity of terrorist attacks. Thus 24 month prior to this announcement is considered a pre intensification period and a 12 month period, i.e., July 2008 to June 2009 is considered a post-intensification period.

Table 4.3. Identifying Intensification Regime

| | | Important Indicators/Averages | | |
|---|---|---|---|---|
| | Factors | Period 1(Jul07-Jun09) | Period2(Jan08-Jun09) | Period3(Jul2008-Jul09 |
| Incidents | Pre | 36.17 | 47.16 | 48.79 |
| | Post | 80.33 | 84.05 | 99.25 |
| | T Value | 3.65 | 3.11 | 4.45 |
| Intensity | Pre | 2.87 | 5.15 | 5.37 |
| | Post | 8.99 | 8.74 | 10.09 |
| | T Value | 3.15 | 1.80 | 2.29 |
| Exports | Pre | 1.41 | 1.42 | 1.50 |
| | Post | 1.53 | 1.56 | 1.47 |
| | T Value | 1.78 | 2.26 | 0.39 |
| QIM | Pre | 205.40 | 203.86 | 209.56 |
| | Post | 204.97 | 206.36 | 196.22 |
| | T Value | 0.07 | 0.47 | 2.61 |
| Exchange | Pre | 60.63 | 60.67 | 61.59 |
| | Post | 70.52 | 73.78 | 78.50 |
| | T Value | 3.95 | 7.50 | 19.85 |
| OECDgdp | Pre | 32.25 | 32.47 | 32.63 |
| | Post | 32.55 | 32.44 | 32.10 |
| | T Value | 1.60 | 0.16 | 3.06 |

Table 4.3 gives the results of performing two-sample (as defined by the timing of the above incidents in War on Terror and designated as pre- and post the relevant period) t-test on the variables of interest.

Intensification Period 1, July 2007-June 2009: The variables incidents, exports, intensity and exchange rate are statistically different from the earlier period. Adopting another criteria i.e.,

relative absolute gap in the averages, only intensity has the highest gap between the two periods.

Intensification Period 2, January 2008-June 2009: The variables incidents, exports and exchange rate are statistically different from the earlier period. However, only exports have the highest relative absolute gap among the averages. this period is identified as variable WOTDUM2 in the multivariate analysis.

Intensification Period 3, July 2008-June 2009: Except exports, all other variables are significantly different in their values in post-intensification from the early 24 month period. Moreover in this period, 4 variables i.e., terrorist attacks, quantum index of manufacturing, exchange rate and GDP of OECD countries have the highest absolute relative gap among the calculated averages.

Thus the above simple exercise suggests that period 3 is not only different in terms of increase in frequency of attacks but also different in terms of economic environment facing the country. However the impact on exports in this period is not as severe as expected a priori.

## 4.5. Modeling the impact of terrorist attacks

In a reduced modeling framework, a priori terrorist attacks can impact on exports with or without a lag. Moreover, a terrorist attack may even increase exports during the week\month it occurs as exporters anticipating further attacks may try their best to ship existing orders in advance. However, once the news spread and future trade is affected, exports may decline and adverse impact may outweigh the initial kneejerk positive impact.

An exploratory model with 1-6 month lag in terrorist attack plus the frequency of attacks in the current month was included along with the other variables of the basic model specified above was estimated. The results in the appendix.A.2 indicate that terrorist attacks significantly impact exports with a 6 month lag. All other lag terms of terrorist attacks including its frequency in the contemporaneous month are statistically not significant.

Table 4.4 shows the results from estimating the model with 6 month lag for terrorist attacks in addition to a 2 month lag interacting with an intensification period identified as the post-Benazir period, i.e., Jan 2008-June 2009 (Incidents(-2)*WOTDUM2) . Note that not only the lag is shorter and therefore the transmission is faster but the impact on exports is more adverse than in the pre-Benazir period. Also all the variables have the correct a priori signs. Observe the following from the remaining determinants:- a) A one percent change in last quarter's OECD gdp results in a 4.3 percent change in our monthly exports. B) An anticipated 1 percent change next month in depreciation of Pak Re increases current exports by ½ a percent. However it is statistically significant only at the 80 percent level. c) Quantum index of manufacturing and exports have a near unitary elasticity, but in post-Benazir era, it increases to more than 1.

Table. 4.4. Model for Total Exports: No of Terrorist Attack

Method: Least Square
Sample (adjusted): 2007M01 2009M05
Included observations: 29 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -21.455 | 6.559 | -3.271 | 0.004 |
| LOG(Exchange(1)) | 0.525 | 0.361 | 1.452 | 0.163 |
| LOG(QIM) | 0.933 | 0.305 | 3.064 | 0.006 |
| LOG(LGOECDgdp) | 4.341 | 1.429 | 3.037 | 0.007 |
| LOG(Incidents(-6)) | -0.118 | 0.044 | -2.652 | 0.016 |
| LOG(Incidents(-2))*WOTDUM2 | -0.149 | 0.040 | -3.716 | 0.001 |
| LOG(QIM(-1))*WOTDUM2 | 0.119 | 0.036 | 3.268 | 0.004 |
| DUM1208A | -0.065 | 0.024 | -2.666 | 0.015 |
| MA(1) | 0.572 | 0.038 | 14.923 | 0.000 |
| MA(2) | 0.995 | 0.103 | 9.640 | 0.000 |

| | | | | |
|---|---|---|---|---|
| Adjusted R-squared | 0.841 | Mean dependent var | | 0.404 |
| S.E. of regression | 0.053 | F-statistic | | 17.494 |
| Durbin-Watson stat | 1.958 | Prob(F-statistic) | | 0.000 |

Similar to exploratory model for identifying lags in terrorist attacks, a model is tested for assessing the impact of intensity on exports. Appendix A.2 presents results of using 6 lags plus the concurrent month intensity of attacks. Interestingly only the ongoing monthly intensity of attacks has an impact on current months' export performance. It is only statistically significant at the 80 percent level and has the correct sign. The impact of other variables (except for coefficient of QIM) is comparable in magnitude and statistical significance to the corresponding model for number of monthly attacks.

Table 4.7 shows the results from estimating the model with concurrent intensity of attacks in addition to an interactive dummy of post-Benazir period and 5 month lag in intensity. In contrast to the model estimates with no. of incidents, the impact of intensification due to Benazir death on exports is smaller and comes with a delay of 5 months. All the variables have the correct sign and the impact on exports (excluding intensity indicator) is larger than in the level model. The explanatory power is smaller from the previous model.

Table 4.7.Model for Total Export: Intensity

Method: Least Squares
Sample (adjusted): 2006M12 2009M06
Included observations: 31 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -27.047 | 8.226 | -3.288 | 0.003 |
| LOG(Exchange) | 0.645 | 0.342 | 1.887 | 0.072 |
| LOG(QIM) | 1.315 | 0.315 | 4.167 | 0.000 |
| LOG(OECDgdp) | 5.141 | 1.991 | 2.582 | 0.017 |
| LOG(Intensity) | -0.078 | 0.019 | -4.036 | 0.001 |
| LOG(Intensity(-5))*WOTDUM2 | -0.042 | 0.017 | -2.419 | 0.024 |
| MA(1) | 0.913 | 0.051 | 17.875 | 0.000 |
| MA(2) | 0.994 | 0.173 | 5.735 | 0.000 |

| | | | | |
|---|---|---|---|---|
| Adjusted R-squared | 0.702 | Mean dependent var | | 0.404 |
| S.E. of regression | 0.070 | F-statistic | | 11.085 |
| Durbin-Watson stat | 1.776 | Prob(F-statistic) | | 0.000 |

## 4.5.1. VEC Analysis:

In any multiple variable analysis, the issue of endogeniety comes up. Clearly the variables depend on each other. For example, WOT variables put pressure on Pakistan's exchange rates or Quantum Index of manufacturing other than effecting the level of exports. Further more exchange rate depreciation effects manufacturng sector by putting down ward pressure on the imports of inputs. For robust empirical estimations it is necessary to run a simultaneous equation model. Since the data is time series, it is appropriate to use vector Autoregressive model (VAR), which is an extension of univariate Autoregressive (AR) models to capture the evolution and interdependencies between multiple time series. We treat all variables in a VAR symmetrically by including an equation for each variable explaining its evolution based on its own lags and the lags of other variables in the model. The number of equations in a VAR model depends upon the number of endogenous variables; each endogenous variable is regressed on its own lagged value, and the lagged values of all oither endogenous variables as well as any number of exogenous variables. This solves the problem of endogeniety among variables. In this sense, VAR model is a seemingly unrelated regression (SUR) model with lagged variables and/or deterministic terms as common regressors so that one can interpret the regression results for each equation as ordinary least square estimators.

However if the time series variables have unit root a simple VAR analysis cannot be run. Table 4.7 shows that all variables have unit root and are stationary at first difference only. In presence

of unit root, we move to vector error correction model (VECM) where relationship between unit root variables can exist if they are cointegrated.

Table 4.7. Augmented Dickey Fuller Test for Unit Roots

| Variable | Coefficient | T-statistics |
|---|---|---|
| DExports (-1) | -1.245 | -4.075*** |
| DQIM (-1) | -0.906 | -3.402*** |
| DExchange (-1) | -0.477 | -2.430** |
| DOECDgdp (-1) | -0.968 | -3.479*** |
| DIncidents (-1) | -1.244 | -4.251*** |
| DIntensity (-1) | -1.362 | -5.7888*** |

Where ***, **, * represents significance at 1%, 5% and 10% levels respectively.

The estimated form of the cointegrating equation with trend which also refers to long term $\beta'$ coefficients is as follows:

$$Exports_{t-1} + \beta_1 QIM_{t-1} + \beta_2 Exchange_{t-1} + \beta_3 OECDgdp_{t-1} + \beta_4 WOT_{t-1} + \beta_5 Trend = 0$$

Alternatively the estimated equation can be written as follows

$$Exports_{t-1} = -\beta_1 QIM_{t-1} - \beta_2 Exchange_{t-1} - \beta_3 OECDgdp_{t-1} - \beta_4 WOT_{t-1} - Trend$$

Where *Exports* is exports of Pakistan in US dollars term, *QIM* is quantum index of manufacturing, *Exchange* is exchange rate of Pakistan in terms of Pakistan rupees, *OECDgdp* is gdp of OECD countries in terms of dollars, and *Trend* is the trend variable, whereas WOT represents war on terror proxies (Number of incidence, Killed, Injured or Intensity).

Table 4.8 provides results for Incidents. Both Quantum Index of Manufacturing and Incidents are insignificant in column 1. Figures 4.7-4.8 provides the clue for selecting optimal lag orders for the variables to achieve significance. Both figures below are impulse response functions of Incidents on Exports and QIM. Figure 4.7 shows that upto 2 lags there is positive relationship between exports and number of Incidents. Exports start to decline only after the second month as a response to a terrorist attack. Column 2 of table 4.8 provides results with Incidents regressed at 2 lags. Now there is a significant and negative relationship between Exports and Incidents. However QIM now enters the equation significantly but with a wrong sign.

Figure 4.8 reveals the possible reason behind this observation. There is a strong correlation between Incidents and QIM from $2^{nd}$ month of impact to $5^{th}$ month. Only after the $5^{th}$ month the correlation subside down. The spurious results for QIM in column 2 of table 8 may be due to this correlation. Extending the lag of Incidents to 5 (see column 3 of table 4.8) solves the problem. All variables are significantly related with Exports and with right signs. Another important observation that can be made in table 8 is that OECD gdp has the highest impact on

Pakistan's export potential. We know that Europe and USA are one of Pakistan's top exporting destinations thus their economic performance effects Pakistan's exporting capabilities.

Table 4.8. Long Run Relationship *(β's)* for VEC with Incidents

| Endogenous Independent Variables | Endogenous Dependent Variable : Exports | | |
|---|---|---|---|
| | *Minus β's* | | |
| | 1 | 2 | 3 |
| QIM (-1) | -0.0019 | -0.0049 | 0.018 |
| | (-1.26) | (-3.97)*** | (3.93)** |
| Exchange (-1) | 0.033 | 0.0103 | 0.028 |
| | (4.00)*** | (1.84)* | (2.33)** |
| OECDgdp (-1) | 0.414 | 0.252 | 0.522 |
| | (6.78)*** | (6.58)*** | (4.99)** |
| Incidents (-1) | -0.001 | | |
| | (-1.18) | | |
| Incidents (-2) | | -0.007 | |
| | | (-7.44)*** | |
| Incidents (-5) | | | -0.017 |
| | | | (-3.13)** |
| *trend* | -0.018 | 0.010 | 0.033 |
| | (-2.75)*** | (2.07)** | (2.09)** |
| VEC (p) | (1) | (1) | (1) |

\*\*\*, \*\*, \* represents significance at 1%, 5% and 10% respectively, VEC(p) represents the co integration order.
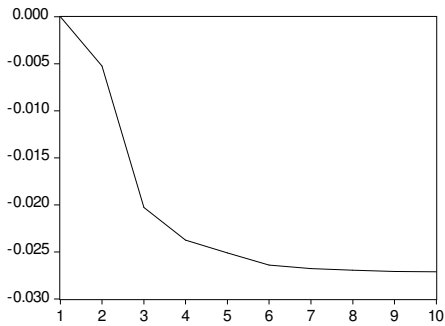
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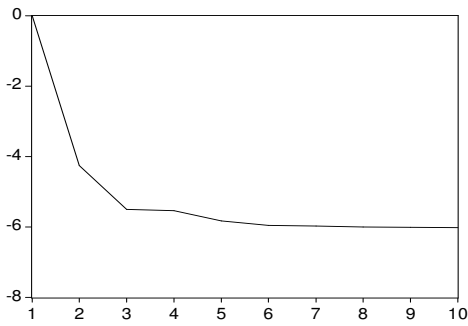Response of EXPORTS to One S.D. INCIDENTS Innovation
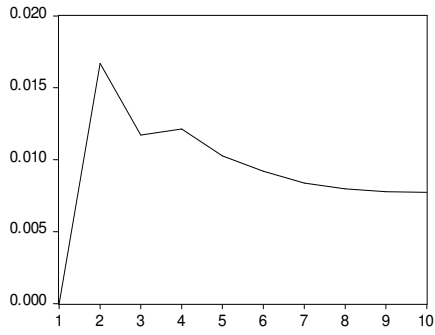
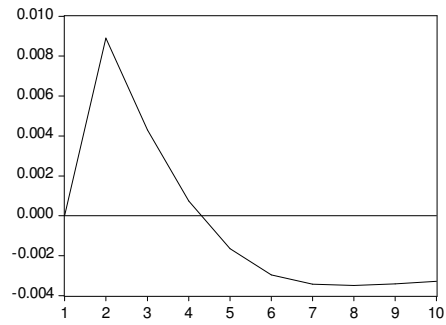Response of QIM to One S.D. INCIDENTS Innovation
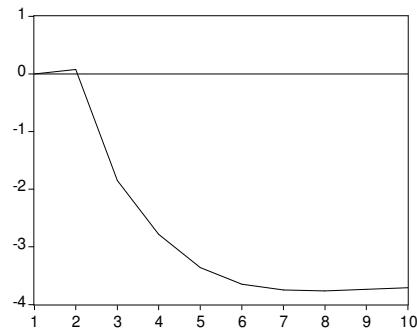
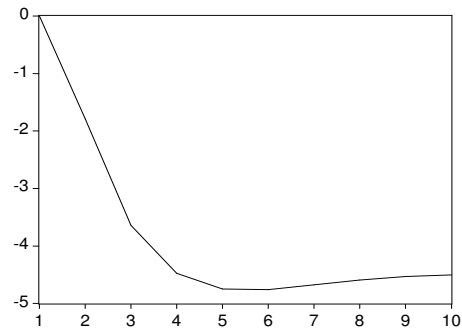Response of EXPORTS to One S.D. KILLED Innovation

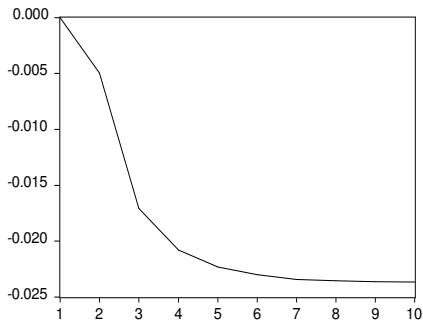Response of QIM to One S.D. KILLED Innovation

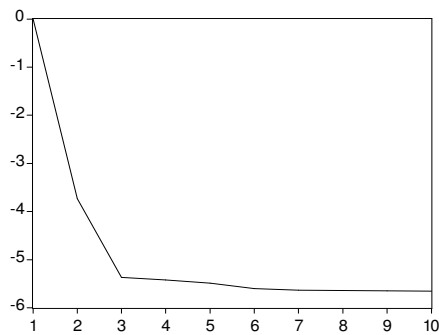Response of EXPORTS to One S.D. INJURED Innovation

Response of QIM to One S.D. INJURED Innovation

Response of EXPORTS to One S.D. INTENSITY Innovation

Response of QIM to One S.D. INTENSITY Innovation

Similar VEC regressions are carried out for Killed, Injured and Intensity and the results are provided in table 4.9 (see Appendix-2). Impulse response function helps to provide guidance for the choice of optimal lag length for these WOT variables. For example, column 3 in table 4.9 provides results for Killed with lag 1. All variables except QIM have right signs and are significant. Figure 10 suggests that correlation between QIM and Killed subside down at lag 3. For Killed (-3), in column 4 of table 9, the results show that all variables have right signs with QIM now positively and significantly related with Exports. Figure 4.11 suggests that number of injured from a terrorist attack decrease exports after the 2nd year while figure 4.12 shows that correlation between QIM and Injured subside down at lag 5. Table 4.9 gives results for Injured at lags 1, 2, and 5, For lags 1 and 2 Injured is negatively and significantly related with Exports fitting our model expectations. The last columns 9 and 10 of table 4.9 give results for Intensity. Though QIM comes out with the wrong sign, all other variables including Intensity are significant with right signs. Impulse response functions carried out in figure 4.13 also suggests that Intensity is negatively related with Exports. Furthermore there are no lags involved for both Intensity and Killed for their negative effects on Exports suggesting that number of casualties in a terrorist attack defines the intensity of the incident more than injured and Pakistan's exports are most sensitive to those incidents in the conflict where casualties are higher. These are expected results because casualties in an incident identify the brutal and destructive methods of terrorists that they employ in the conflict where incidents are dominated by suicide attacks.

Once we have obtained the coefficients for our WOT variables, we quantify the effects of the conflict on exports. As noted in table 4.9, we run multiple regressions for each WOT variable based on optimal lags. These WOT coefficients are averaged out and then multiplied with their respective monthly average scores and export mean to calculate dollar cost per month of the conflict. Table 4.10, column 4, provides costs for each variable. Numbers of incidence have the highest cost at 815 million dollars a month where as for other variables, average costs range from 400 to 500 million dollars a month. While the average cost of all these variables comes out to be 564 million dollar a month. We know that average exports of Pakistan each month are worth 1500 million dollars for 2006 to 2009. Our results suggest that Pakistan's exports are short of 500 million dollar each month since WOT has been intensified in 2006. Over all, the yearly losses amount to 6 billion dollars. This is a staggering figure. We know from our earlier discussion that Pakistan's export growth steeply plummeted during the period of the conflict. Please remember that the costs are averaged out on monthly basis. Column 5, table 4.10 also calculates per unit costs. Each terrorist incidence lead to 12 million dollar less exports for Pakistan. Similarly each person killed in the terrorist attack costs Pakistan 3.4 million dollar worth of exports while each injured person costs 1.4 million dollars. The per month overall loss of 500 million dollar comes to the better context when we note that on average terrorist attacks claim 158 lives a month while any given day there are at least two attacks. By any means this makes up for a high intensity conflict that has sever implications for the local industry of Pakistan and its exporting capacity.

Table 4.10: Costs of War on Terror (2006-2009)

| WOT Variables | Average Coefficients | Average Monthly Score for WOT Variables | Export Mean (million $) | Per Month Cost of the Conflict (million $) | Per Unit Cost (million $) |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4=1*2*3 | 5=1*3 |
| Incidence | 0.008 | 65.61 | 1492 | 815.75 | 12.0 |
| Killed | 0.002 | 157.67 | 1492 | 541.06 | 3.4 |
| Injured | 0.001 | 333.69 | 1492 | 497.86 | 1.4 |
| Intensity | 0.039 | 6.949205 | 1492 | 404.36 | |
| | | | AVERAGE Cost: | 564.75 | |

Pakistan's neighboring countries like India and China have been witnessing a steady increase in their exports since 2005 when both countries were exporting 761 billion and 100 billion worth of goods and services respectively. By 2009 the exports for both countries nearly doubled and now stand at 1.2 trillion dollars and 176 billion dollars. In comparison Pakistan could only witness a modest growth in its exports for the same period from 16 billion dollars to only 17 billion dollars. Assuming that Pakistan followed half good a similar trend in its export growth as its neighbors; today by any modest estimates Pakistan's exports would stand at 24 billion dollars. There is a deficit of 7 billion dollars only for 2009. Had Pakistan maintained its share of 0.2 % in world exports, Pakistan total gain for last 3 years amounts to nearly 30 billion dollars that is lost due to its falling shares. Our analysis suggest that a significant portion of this loss can be explained through the costs Pakistani exports have incurred due to war on terror where the approximate loss for last 3 years is around 18 billion dollars amounting to half of Pakistan's over all losses in exports.

For the sample period, there are 2 terrorist attacks every day, whereas on average 5 citizens die in these attacks. A single terrorist attack on average costs 12 million dollars and each casualty in the conflict costs 3 million dollars in fewer exports. For the intensification period post 2008, the figures get more pronounced. For example the number of terrorist attacks and casualties increase to 3 and 10, with average losses rising to nearly 800 million dollars a month.

# 5. Conclusions

Pakistan's economy has been underperforming since 2007. Inflationary trends are rising with peaks up to 20%. GDP growth rate has gone down to 2% in 2009. FDI has decreased significantly. Local investors are rushing abroad and investing in countries like Bangladesh. The government is left with no option but to curtail development expenditures amid high fiscal deficits and falling tax revenues. Public sector development plans are under utilized because government has failed to release funds affecting many infrastructure projects much needed for growing population.

There is a lot of academic interest to understand the causes. One cause shared by Pakistan with rest of the world is the looming global recession that has caught many a countries. However looking at South Asian region, one realizes that countries like India, China and Bangladesh have continued with their economic progress unabated. Pakistan's economic woes also have an indigenous dimension. One salient factor is the continuation of war on terror that has taken a bloody turn since 2007 where there has been a phenomenal rise in terrorist attacks within Pakistani borders affecting all major cities of the country.  War on terror that has converted into a low intensity conflict within Pakistan has lead to capital flight  and political instability and causing insecurity among private and public agencies with unfavorable economic and social outcomes. Despite falling resources, Pakistan's security related expenditures have ballooned. Hundreds of billions are additionally spent on domestic security forces like police to equip them with modern technology needed to handle terrorist threats nationwide. Pakistan is only second to SriLanka where business costs of terrorism are the highest in South Asia. Pakistan also precedes India, Bangladesh and China in the intensity and incidence of violence. Currently militancy related casualties are highest for Pakistan within the region.

Though a larger economic analysis on the costs of WOT is necessary to understand its overall effect on Pakistan, we restrict our analysis to the exporting sector of Pakistan in this report and investigate the effects of WOT post 2007.

Export performance of Pakistan's important sectors has been deteriorating rapidly since 2007. For example leather and textiles sector witnessed decline in exports due to deterioration in law and order in Balochistan affecting the supply of raw materials.

The logistics costs have increased due to attacks on transportations raising insurance and freight rates. There is also an increased movement of transport destined for NATO/ISAF forces in Afghanistan causing overall rise in transportation costs as transport is becoming increasingly unavailable for conventional trade. Internationally, freight charges have been following but Pakistan is trending opposite due to higher risks of delays insured by freight forwarders by charging higher overheads. With regular incidents of terrorism, inland transit insurance charges are fluctuating upwards.

Outside buyers are reluctant to place orders to Pakistani businessmen due to the uncertainty and risk of delays. Pakistani post is already congested due to Afghan bound cargo related mostly of NATO/ISAF forces in Afghanistan. Terrorist attacks lead to halt in business activity leading to a rush afterwards causing delay in movement of goods to the ports for export.

Foreign imports do not come to Pakistan to place orders because their travel advisories prevent then to travel. Even if they are willing to travel, their insurance policies do not cover travel for Pakistan anymore due to high risks. A major trade fair arranged by TDAP namely EXPO 2010 failed to attract international buyers and exhibitors suggesting significant affects on Pakistan's export promotion capabilities. Pakistani business travelers are also faced with more stringent visa requirements undermining their efforts to market their products internationally.

Overall one may agree that WOT has significantly affected Pakistani exports. The report carries out regression analysis where variables like global recession, exchange rate fluctuations are taken into account while examining the effects of WOT on Pakistani exports.

This report defines WOT through its outcomes. For example number terrorist attacks and people killed and injured in these attacks represent the conflict as well its intensity.

The analysis finds that WOT can be divided into three distinct periods. The LAL Masjid incident in mid 2007 marks the first sign of intensification of WOT. The second one is the assassination of Benazir Bhutto. The third one comes in 2008 when the US announced to shift gear from Iraq to Afghanistan and incumbent government in Pakistan created a political support for armed action within Pakistani borders against the terrorists. The analysis finds that WOT has more significant affect on Pakistani exports post Benazir assassination.

The report finally calculates the monthly and daily costs of WOT. On average there are 2 terrorist attacks every day whereas 5 citizens on average die in these attacks. A single terrorist attacks costs 12 million dollars to the exports. Post Benazir assassination the costs rise to 18 million dollars due to increased intensity where not only the death toll on average has risen but the number of terrorist attacks have gone up too. Average per month loss in exports due to terrorism is calculated to be around 500 million dollars.

Pakistan during 2006-2009 has lost nearly 30 billion dollars in exports as its market shares have fallen. Part of this loss is explained by WOT, where we calculate that 18 billion dollar accounts for it.

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# Appendix A.1

## Table 1.6. Suicide Attacks in 2009

| Date | Place | Target |
|------|-------|--------|
| NWFP | | |
| 4 January | D.I. khan | Policemen and government collage |
| 23 January | Swat | Check post |
| 5 February | Mingora , Swat | Police station |
| 9 February | Bannu | Police and FC check post |
| 20 february | D.I.Khan | Funeral Procession of the care taker of an Imambargah (mosque of Shia community) |
| 23 February | Bannu | DSP office |
| 11 march | Peshawar | ANP minister Bashir Bilour |
| 26 March | Jandola Tank | Peace community of Turkistan |
| 30 March | Bannu | Army convoy |
| 15 April | Charsadda | Police check post |
| 18 April | Hangu | Army check point and convoy |
| 5 May | Bera Qadeem, Peshawar | FC check post |
| 11 May | Dera Adam Khel, Kohat | FC check post |
| 21 May | Jandola Tank | FC fort |
| 28 May | Matni, Peshawar | Police check post |
| 28 May | D.I.Khan | Security check post |
| 5 June | Dir Upper | Friday prayers in a mosque |
| 9 June | Peshawar | PC hotel |
| 11 June | Peshawar | Police |
| 12 June | Nowshera | Military mosque |
| 22 June | Battgram, Mardan | Police check post |
| 25 July | Laki Marwat | Police convoy |
| 15 August | Khwazakhela, Swat | Check post |
| 22 August | Kanju, Swat | Security forces |
| 23 August | Momin Town, Peshawar | Ansar-ul-Islam leader's house |
| 30 August | Mingora Swat | Police training |
| 12 September | Doaba, Hangu | Police station |
| 18 September | Kohat | Shia community |
| 19 Spetember | Dara Adam Khel, Kohat | Security check post |
| 26 September | Sadar, Peshawar | Askari bank |
| 26 September | Bannu | Police station |
| 28 September | Bannu | Leader of a peace community |
| 9 October | Khyber bazaar, Peshawar | Civilian |
| 12 October | Shangla | Army convoy |
| 15 October | Kohat | Police station |
| 16 October | Peshawar | CIA office |
| 28 October | Pepal-mandi, Peshawar | Civilian |
| 3 November | Lachi, Kohat | PF firing range building |
| 8 November | Cattle market in Adezai area, Peshawar | Civilian |
| 9 November | Ring road, Peshawar | Police |
| 10 November | Farooq-i-Azam Chowk, Charsadda | Civilian |
| 13 November | Khyber road, Peshawar | ISI's regional headquarters |
| 13 november | Bakakhel, Bannu | Police station |
| 14 November | Pishtakhara intersection, Peshawar | Police check post |
| 16 November | Peshawar | Police station |
| 19 November | Peshawar | Judicial complex |
| 1 December | Kabal, Swat | Awami National party's (ANP) provincial meeting |
| 7 December | Peshawar | Session court |

| | | |
|---|---|---|
| 17 December | Isakhel village, Lakki Marwat | District Nazim's hujra |
| 18 December | Timergara, Lower Dir | Police lines mosque |
| 22 December | Peshawar | Press club |
| 24 December | Arbab road, Sadar, Peshawar | Police check post |
| | | |

| | | |
|---|---|---|
| **Tribal Areas** | | |
| 6 February | Jamrud, Khyber Agency | NATO supply trucks |
| 12 February | Landi Kotal | Charbagh |
| 27 March | Jamrud, Khyber Agency | Mosque? Friday prayers and Khasadar force |
| 4 April | Miranshah, North Waziristan | Security Forces' convoy |
| 28 July | Miranshah, North Waziristan | Khasadar check post |
| 18 August | Miranshah, North Waziristan | Security check post |
| 27 August | Torkham, Khyber Agency | Khasadar security post |
| | | |

| | | |
|---|---|---|
| **Balochistan** | | |
| 2 March | Killi Karbala Pashin | JUI (F) provincial leadership |
| 30 june | Qalat | NATO containers |
| | | |

| | | |
|---|---|---|
| **Punjab** | | |
| 5 February | D.G Khan | Procession at Imambargah |
| 16 March | Pirwadhai, Rawal pindi | Civilain |
| 5 April | Chawal | Imamabargah |
| 27 May | Lahore | Police/ ISI |
| 12 june | Lahore | Dr. Sarfraz Naeemi |
| 2 July | Choorh Chowk, Rawalpindi | Bus of Kahuta Research Laboratory (KRL) |
| 23 October | Kamra, Attock | Pakistan Airforce (PAF) Complex |
| 24 October | Lillah, Kalarkahar, Rawalpindi | Officer of an Intelligence agency |
| 2 November | Babu Sabu interchange, Lahore | Check post |
| 4 December | Parade lane, Rawalpindi | Army Mosque |
| 7 December | Moon market Iqbal town, Lahore (two attacks) | Civilian |
| 8 December | Bela Qasim Cantonment area, Multan | ISI building |
| 15 December | Khosa market, D.G. Khan | Senior Adviser to Punjab Chief Minister |
| | | |

| | | |
|---|---|---|
| **Sindh/ Karachi** | | |
| 27 December | Orangi Town, Karachi | Muharram Procession |
| | | |

| | | |
|---|---|---|
| **Azad Kashmir** | | |
| 26 June | Muzaffarabad | Army Barracks |
| 27 December | Muzaffarabad | Muharram procession |
| | | |

| | | |
|---|---|---|
| **Islamabad** | | |
| 23 March | Sitara Market, Islamabad | Police station |
| 4 April | Margala Road, E-7, Islamabad | FC check post |
| 6 June | G-8/4, Islamabad | Rescue 15 |
| 5 October | F-7, islamabad | UNWFP office |
| 20 October | H-10, Islamabad (two attacks) | International Islamic University |
| 2 December | E-8 Sector, Islamabad | Pakistan naval Complex |
| 24 December | Shakrial, Islamabad | Imamabargah |

# Appendix A.2

## Table 4.5.

Dependent Variable: LOG(TEXPT)
Method: Least Squares
Sample (adjusted): 2007M01 2009M06
Included observations: 30 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -30.639 | 10.014 | -3.060 | 0.007 |
| LOG(XCHNGRT) | 0.518 | 0.391 | 1.325 | 0.204 |
| LOG(QIM) | 1.537 | 0.455 | 3.377 | 0.004 |
| LOG(LGOECDGDP) | 5.977 | 2.266 | 2.638 | 0.018 |
| LOG(INCDNTS) | 0.076 | 0.061 | 1.250 | 0.229 |
| LOG(INCDNTS(-1)) | 0.057 | 0.041 | 1.417 | 0.176 |
| LOG(INCDNTS(-2)) | 0.018 | 0.059 | 0.298 | 0.770 |
| LOG(INCDNTS(-3)) | 0.016 | 0.058 | 0.278 | 0.785 |
| LOG(INCDNTS(-4)) | -0.014 | 0.059 | -0.245 | 0.809 |
| LOG(INCDNTS(-5)) | -0.042 | 0.046 | -0.920 | 0.371 |
| LOG(INCDNTS(-6)) | -0.157 | 0.069 | -2.263 | 0.038 |
| DUM1208 | -0.037 | 0.051 | -0.723 | 0.480 |
| MA(1) | 0.499 | 0.069 | 7.223 | 0.000 |
| MA(2) | 0.995 | 0.099 | 10.028 | 0.000 |

| | | | | |
|---|---|---|---|---|
| Adjusted R-squared | 0.748 | Mean dependent var | | 0.404 |
| S.E. of regression | 0.065 | F-statistic | | 7.630 |
| Durbin-Watson stat | 1.716 | Prob(F-statistic) | | 0.000 |

**Table 4.6.**

Dependent Variable: LOG(TEXPT)
Method: Least Squares
Sample (adjusted): 2007M01 2009M06
Included observations: 30 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -24.076 | 9.975 | -2.414 | 0.028 |
| LOG(XCHNGRT) | 0.432 | 0.388 | 1.114 | 0.282 |
| LOG(QIM) | 0.887 | 0.319 | 2.781 | 0.013 |
| LOG(LGOECDGDP) | 5.198 | 2.472 | 2.103 | 0.052 |
| LOG(INTENSITY) | -0.048 | 0.036 | -1.330 | 0.202 |
| LOG(INTENSITY(-1)) | 0.018 | 0.028 | 0.652 | 0.524 |
| LOG(INTENSITY(-2)) | -0.023 | 0.033 | -0.703 | 0.492 |
| LOG(INTENSITY(-3)) | -0.015 | 0.030 | -0.509 | 0.618 |
| LOG(INTENSITY(-4)) | -0.018 | 0.029 | -0.599 | 0.558 |
| LOG(INTENSITY(-5)) | -0.003 | 0.022 | -0.127 | 0.900 |
| LOG(INTENSITY(-6)) | -0.013 | 0.024 | -0.533 | 0.602 |
| DUM0809 | 0.039 | 0.050 | 0.787 | 0.443 |
| MA(1) | 1.034 | 0.053 | 19.666 | 0.000 |
| MA(2) | 0.995 | 0.097 | 10.224 | 0.000 |

| | | | | |
|---|---|---|---|---|
| Adjusted R-squared | 0.733 | Mean dependent var | | 0.404 |
| S.E. of regression | 0.067 | F-statistic | | 7.123 |
| Durbin-Watson stat | 2.236 | Prob (F-statistic) | | 0.000 |

## Table 4.9: Long Run Relationship *(β's)* for VEC with Killed, Injured and Intensity

| Endogenous Independent Variables | Endogenous Dependent Variable : Exports | | | | | | |
|---|---|---|---|---|---|---|---|
| | *Minus β's* | | | | | | |
| | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| QIM (-1) | -0.002 (-2.00)** | 0.0064 (1.82)* | -0.002 (1.79)* | -0.005 (-2.37)** | 0.096 (0.31) | -0.0014 (-1.54) | -0.0003 (0.19) |
| Exchange (-1) | 0.028 (5.72)*** | 0.197 (2.29)** | 0.038 (6.35)*** | 0.091 (5.55)*** | -1.29 (-0.28) | 0.028 (6.11)*** | 0.070 (5.02)*** |
| OECDgdp (-1) | 0.395 (10.37)*** | 2.02 (2.41)*** | 0.455 (9.92)*** | 1.025 (6.39)*** | -10.408 (-0.28) | 0.431 (11.66)*** | 0.921 (6.039)*** |
| Killed (-1) | -0.0006 (-7.24)*** | | | | | | |
| Killed (-3) | | -0.004 (-2.106)** | | | | | |
| Injured (-1) | | | -0.0002 (-3.31)*** | | | | |
| Injured (-2) | | | | -0.001 (-5.13)*** | | | |
| Injured (-5) | | | | | -0.002 (-0.29) | | |
| Intensity (-1) | | | | | | -0.021 (-8.01)*** | |
| Intensity (-3) | | | | | | | -0.057 (4.56)*** |
| *trend* | -0.013 (-3.98)*** | -0.063 (-2.16)** | -0.020 (-4.88)*** | -0.029 (-4.38)*** | 0.77 (0.29) | -0.012 (4.21)*** | -0.021 (0.006) |
| VAR (p) | (1) | (1) | (1) | (1) | (1) | (1) | (1) |

***, **, * represents significance at 1%, 5% and 10% respectively, VEC(p) represents the co integration order.