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Health Costs of Low Intensity Level Violent and Non-Violent Conflicts in Pakistan

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Abstract

The immediate health cost of violent armed conflict is in the form of deaths and injuries of the combatants as well as civilians. However, these costs are mostly pertinent to major violent internal and international conflicts. Minor violent armed conflicts and non-violent/latent conflicts do not have as much capacity to kill and injure. However, these conflicts do have the capacity to affect human health in the long run through some less obvious channels. Diversion of resources from health sector to military and changes in the priorities of state and its institutions severely restrict the state's capacity and willingness to provide health facilities and the people's capacity to avail these facilities. In this study, the effect of Pakistan's internal conflict and Pakistan-India conflict on the health of people in Pakistan is analyzed during 1972-2004. Pakistan's internal conflict and the conflict with India during 1972-2004 are minor violent and non-violent/latent conflicts and it is more probable that these conflicts may affect people's health through these less obvious channels instead of killings and destruction.

Keywords: conflict; internal conflict; Pakistan-India conflict; health index; institutions; military expenditure.

1. Introduction

The immediate health cost of violent armed conflict is in the form of deaths and injuries of the combatants as well as civilians. However, these costs are mostly pertinent to major violent internal and international conflicts. Minor violent armed conflicts and non-violent/latent conflicts do not have as much capacity to kill and injure. However, these conflicts do have the capacity to affect human health in the long run through some less obvious channels. Diversion of resources from health sector to military, social fragmentation, and changes in priorities of the state institutions severely restrict the state's capacity and willingness to provide health facilities and the people's capacity to avail these facilities. Pakistan's internal conflict and the conflict with India during 1972-

2004 are minor violent and non-violent/latent conflicts and it is more probable that these conflicts may affect people's health through these less obvious channels instead of killings and destruction. In this study, the effect of Pakistan's internal conflict and Pakistan-India conflict on the health of people in Pakistan is analyzed during 1972-2004. The health indicators in Pakistan during this time period are the lowest in the world. However, the internal and international conflicts faced by Pakistan during this time period are less violent and non-violent/latent conflicts. Most of the time, these conflicts are confined to borders and peripheral areas. They do not have as much capacity to cause mass killings and destruction. The question then arises as to whether there is any relationship between minor violent and non-violent/latent conflicts faced by Pakistan and the health indicators in Pakistan during 1972-2004. It is argued in this study that low level intensity conflicts and non-violent/latent conflicts like those faced by Pakistan do have the capacity to affect health indicators. These conflicts change the priorities of Pakistani state and society in so many different ways. For example, every government in Pakistan, authoritarian as well as civilian, places conflict with India as the basis of its foreign and internal policy. In times of conflict with India, the ruling elite divert the attention of the people from domestic issues towards international politics and the people are united in support of ruling elite against a common enemy. The natural consequence of conflict with India and internal ethno-political centrifugal forces make military in Pakistan the most important political actor and the vanguard of national security and integrity. However, this conflict gets its toll in the form of restrictions on civil liberties and political rights and neglect of human development.

1.1 Literature Review and Hypothesis Development

The first channel through which Pakistan's internal conflict and Pakistan-India conflict may affect health indicators in Pakistan is the interaction between different types of conflicts. The internal conflict in Pakistan is a low intensity level conflict and non-violent/latent conflict during 1972-2004 and it is mostly confined to peripheral regions of the country. On one side, this conflict may have the capacity to retard development, but on the other side, this conflict compels the central and provincial governments to redress some of the grievances of rebels through the provision of public goods. This is evident from the special developmental packages like Aghaz-e-Haqooq-e-Baluchistan for redressing the grievances of the dissidents in Baluchistan. The state tries to minimize the negative developmental consequences of this conflict through a carrot and stick policy. However, because of conflict with India, the state institutions in Pakistan dilute the pressure of human rights activists and political workers for redressing the grievances of poor and deprived regions. Instead, by having unconditional support of the people against a foreign enemy, the government manages to suppress any dissident voice on the pretext of national security. This may be resulted in the neglect of human development and thus worse health indicators. This means that as Pakistan-India conflict intensifies, internal conflict in Pakistan becomes more anti human development and causes lower health indicators in Pakistan.

> *H_1 As the conflict between Pakistan and India intensifies; the internal conflict tends to be negatively associated with health index in Pakistan*

The second important channel through which less violent Pakistan-India conflict may affect health indicators in Pakistan is the interaction of Pakistan-India conflict with institutions in Pakistan. Institutions like voice and accountability, civil liberties and political rights, and good governance are considered as important determinants of human development. Strong and stable democracy incorporates most of the characteristics of good quality institutions. Moreover, it is said that democratically elected regimes and leaders are more concerned with the welfare and development of people (Iqbal, 2010, Reiter, 2001, Olson, 2000, Looney, 1990). However, during times of international conflicts, the future of democratic regimes and leaders is linked with the conflict outcome. On one side, democratic regimes and leaders lose popular support in times of international conflicts because of unpopular decisions and policies like social spending cuts, increase in taxes to finance the conflict, and restricting civil liberties and political rights on the pretext of national security. On the other hand, international conflicts promote militarization of the state and society (Reiter, 2001, Rasler, 1986, Lasswell, 1997, Gurr, 1998, Thompson, 1996). This state of affairs not only weakens democratic regimes, but it also changes the priorities of these regimes vis-à-vis human development and thus retards human development.

H_2 *As the conflict between Pakistan and India intensifies; the democratic and civil institutions tend to be negatively associated with health index in Pakistan*

The third channel through which even minor and non-violent/latent conflicts may affect health indicators is the increased military spending at the expense of social spending. Conflicts and specifically international conflicts cause an increase in military spending at the expense of social spending (Iqbal 2010, Collier, 2006, Adeola, 1996, Dixon and Moon, 1986, Russet, 1969), which transforms into underdevelopment (Russet, 1969, Dixon and Moon, 1986, Adeola, 1996, Collier, 2006, and Iqbal, 2010). This increase in military expenditures at the expense of social sector is not only caused by major violent armed conflicts, but it is also caused by minor armed conflicts and non-violent/latent conflicts, past history of conflict with neighboring countries, preparation for a future war, and risk of a civil war (Iqbal 2010, Collier, 2006, Russet, 1969). Due to internal conflicts and conflict with India, Pakistan spends more on military and war related activities and most of the time at the expense of social and development sectors.

H_3 *As the conflict between Pakistan and India intensifies; the military expenditure tends to be negatively associated with government health spending in Pakistan*

2. Methodology

In this study, four models are estimated to test the validity of the hypotheses. Health status of the people and public spending on health in Pakistan are regressed upon different explanatory variables. Model-1 estimates the direct or immediate effects of Pakistan-India conflict, Pakistan's internal conflict, and democracy on people's health status in Pakistan. Model-2 estimates the indirect effect of Pakistan-India conflict on people's health status in Pakistan through its interaction with Pakistan's internal conflict. For this purpose, an interaction variable, i.e., Pak-India*Internal-Conflict, is included in Model-2 as explanatory variable along with other explanatory variables. Model-3 estimates the indirect effect of Pakistan-India conflict on people's health status in Pakistan through its interaction with democracy in Pakistan. For this purpose, an

interaction variable, i.e., Pak-India*Polity, is included in Model-3 as explanatory variable along with other explanatory variables. Model-4 tests the validity of guns for butter theory in Pakistan. It is estimated that whether Pakistan-India conflict causes an increase in military expenditure at the expense of public spending on health. For this purpose, an interaction variable, i.e., Pak-India*Milex, is included in Model-4 as explanatory variable along with other explanatory variables. All the models are estimated through Ordinary Least Squares (OLS) method. The regression equation for the first three models is given in the following general form.

$$(Health\,Index)_t = \alpha_0 + \alpha_1(Pak-India\,Conflict)_t + \alpha_2(Internal\,Conflict)_t + \alpha_3(Polity)_t + \alpha_4(Pak-India*Internal-Conflict)_t + \alpha_5(Pak-India*Polity)_t + \alpha_i(Control\,Variables)_t + \varepsilon_t \quad (1)$$

The regression equation for the fourth model is given in the following general form.

$$(Public\,Health\,Spending)_t = \alpha_0 + \alpha_1(Pak-India\,Conflict)_t + \alpha_2(Milex) + \alpha_3(Pak-India*Milex)_t + \alpha_i(Control\,Variables)_t + \varepsilon_t \quad (2)$$

The following sections give a detailed introduction and explanation of the dependent and independent variables, the data, and the estimation procedure.

1.1 Dependent Variables

Health status of the people in Pakistan is the dependent variable in the first three models and it is represented in this study by the health index taken from the United Nations Development Program (UNDP, 2010). This index is based on life expectancy at birth, i.e. the average number of years that a person is supposed to live if the current mortality rate does not change. The value of this index lies between 0 and 1. The annual relative change in health index is used in this study instead of its aggregate value.

The dependent variable in the model-4 is the annual relative change in public spending on health. This study uses data on annual relative change in number of health facilities (hospitals, basic health units etc.) and annual relative change in number of health personnel (doctors, nurses etc.) as proxy for government development spending on health. This data is taken from Handbook of Statistics on Pakistan Economy, State Bank of Pakistan (2010). The data on health facilities and health personnel is reduced into one principal component, having eigenvalue greater than 1, through Principal Component Method of factor analysis. The principal component, termed as public spending on health, represents a high proportion of variation in the constituent components, i.e. annual relative change in number of all types of health facilities and annual relative change in number of health personnel in all types of health facilities.

1.2 Independent Variables

The prime interest of this study is to estimate the direct as well as indirect effect of Pakistan-India conflict and internal conflict on health index in Pakistan. Pakistan-India conflict represents all the conflictual events ranging from antagonistic statements against each other to violent armed conflict between the two countries. This variable has been constructed by using two events datasets; the WEIS (1966-1992) and the IDEA (1990-

2004). Events datasets record daily interactions between countries on the basis of newspapers' reports. Each interaction is given a numerical or verbal code. Goldstein's (1992) scale, which ranges from -10 (most conflictual) to +8.3 (most friendly), is then applied to these numerical or verbal coded events of WEIS and IDEA.However, the WEIS and IDEA overlap during 1990 and 1992. We follow Thyne (2010) and merge the events between Pakistan and India by taking the mean value of the events from both the datasets during the overlapping period. By doing this, we get a continuous time series daily events data on Pakistan-India relationship from 1972 to 2004. As we are only interested in the conflict between Pakistan and India, therefore, friendly and neutral events are dropped from the series and absolute values of conflictual events are taken for the analysis. The values of daily conflictual events are converted into yearly mean values for empirical analysis. We divide the whole series on the highest value in the series to get values between 0 and 1.

The second important explanatory variable is internal conflict in Pakistan. The data on this variable is taken from Banks (2010). The internal or domestic conflict data is comprised of eight different indicators of internal violence and conflict. These indicators of internal violence and conflict are assigned different weights, i.e. assassinations (25), strikes (20), guerrilla warfare (100), government crises (20), purges (20), riots (25), revolutions (150), and antigovernment demonstrations (10), and then aggregated into a single indicator. The whole series have been divided on the highest value in the series to get values between 0 and 1.

The third important explanatory variable is the type and stability of political institutions in Pakistan, as strong and stable civil and democratic institutions are more concerned for the education, health, and general welfare of the people. For this purpose, the Revised Combined Polity Score on democracy and autocracy is taken from Polity IV. The score ranges from +10 (strong democracy) to -10 (strong autocracy). The Polity IV measure of democracy is based on civil liberties and political rights, rule of law, equal opportunities and rights for all the citizens and politicians to participate in political activities, and constraints on the misuse of power by the chief executive (Marshall and Jaggers, 2012, Mrshall et al. 2010). Therefore, it is safe to say that a stable and strong democracy incorporates all the characteristics of those political institutions which seek to guarantee basic human rights like civil liberties, political rights, education, and health etc.

For the estimation of indirect effect of both types of conflicts, three different interactive terms are used. The first interactive term is Pak-India*Internal Conflict, which captures the effect of internal conflict in Pakistan conditional upon the level of Pakistan-India conflict. It is argued in this study that internal conflict in Pakistan becomes more negative and anti-human development when it interacts with Pakistan-India conflict. The second interactive term is Pak-India*Polity, which shows the effect of political institutions on health index conditional upon the level of Pakistan-India conflict. Polity represents political institutions that are supposed to enhance human development. However, it is presumed in this study that polity becomes less effective in enhancing human development when it interacts with Pakistan-India conflict. The third interactive term is Pak-India*Milex, which is used to verify the existence of guns for butter theory in the health sector in Pakistan. Milex represents Pakistan's military expenditure in constant 2000 US Dollars and it is presumed that it negatively affects public health spending in Pakistan. This variable has been taken from Na Hou (2009).

Public health spending, combined gross enrollment rate as proxy for education, economic growth or per capita GDP in constant 2000 US Dollars, and foreign aid in constant 2000 US Dollars for social sector are presumed to positively affect health indicators in Pakistan. Simple annual difference in health facilities and health personnel are used to proxy annual public health spending. The data on annual difference in health facilities and health personnel is reduced into one principal component, having eigenvalue greater than 1, through Principal Component Method of factor analysis. The principal component, termed as public spending on health, represents a high proportion of variation in the constituent components, i.e. annual difference in number of all types of health facilities and annual difference in number of health personnel in all types of health facilities. Net Govt. Expenditure in constant 2000 US Dollars represents the government consumption expenditure less military expenditure in Pakistan, and it is presumed that this variable negatively affects public health spending in Pakistan. The reason is due to the fact that annual relative change in number of health facilities and number of health personnel are used as proxy for public health spending, which is a sort of development spending as it represents an increase in the productive capacity of the health sector. There is a probability of trade-off between the government consumption expenditure less military expenditure and the government spending on provision of new health facilities and recruiting extra health personnel. Urbanization is represented by the annual relative change in the population of those metropolitan areas which are inhabited by more than one million people in year 2000. This variable is used as independent variable because of the fact that on one hand urbanization represents development while on the other hand it also causes tremendous pressure on the health and general infrastructure of developing countries' cities. Burgeoning spread of slums in most of the developing countries' cities is one of the effects of this population explosion in developing countries' cities due to higher birth rates as well as ever increasing migration from rural areas to cities. The huge increase in cities' population in developing countries often causes pollution, epidemics, and disease. It is difficult for the government to cater the health needs of ever increasing population in developing countries. Data on all the above control variables are taken from the online World Development Indicators (WDI) of the World Bank (2011), UNDP (2010), State Bank of Pakistan (2010), and Rashid and Chaudhary (2011). All the independent variables are taken with one year lag to avoid the problem of endogeneity.

1.3 Data and Estimation Procedure

The data analysis is restricted only to the period from 1972 to 2004 due to non-availability of data on the main variable of interest, i.e. Pakistan-India conflict. Moreover, this study is only intended to analyze the developmental consequences of minor and non-violent/latent internal and international conflicts in Pakistan, and most of the time during 1972-2004, Pakistan faces minor and non-violent/latent internal and international conflicts. The choice of 1972 as the starting date is due to the fact that Pakistan was reborn in 1971, when half of the country became Bangladesh. Diagnostic tests, i.e. Jarque-Bera test for normality (Jarque and Bera, 1987), Breusch-Godfrey Serial Correlation LM test (Breusch, 1978, Godfrey, 1978) and ARCH test for Heteroskedasticity (Engle, 1982), are conducted for detecting the possible problems of Normality, Autocorrelation, and Heteroskedasticity in the data. The data is normally distributed; however some of the models are being suffered by the problems of

Heteroskedasticity and Autocorrelation. The AR process is applied to control for the problem of serial correlation in the first three models. To cope further with the problems of Heteroskedasticity and Autocorrelation, some of the models are estimated with White Heteroskedasticity-Consistent Standard Errors & Covariance (White, 1980) and Newey-West HAC Standard Errors & Covariance (Newey and West, 1987). All the models are estimated through Ordinary Least Squares (OLS) technique.

3. Estimation Results

The estimation results for annual change in health index in Pakistan are given in model-1, model-2, and model-3, while the estimation results for annual change in public health spending in Pakistan are given in model-4 in the following table 1. The results in model-1 show the direct effect of Pakistan's internal conflict and conflict with India along with other control variables on health index in Pakistan. Coefficients on both types of conflicts are insignificant statistically and are according to the expectations. It is argued in this study that the internal conflict in Pakistan and Pakistan-India conflict are lower intensity level conflicts and are mostly confined to the border areas and peripheries. These do not have as much capacity to kill, destroy, and displace human and physical capital. Therefore it looks reasonable that these conflicts do not have direct effects on the health of the people in Pakistan.

Table 1: Estimation Results for the Annual Change in Health Index and Annual Change in Public Health Spending

Independent Variables	Model 1 White Heteroskedast. Consistent Standard Errors & Covariance	Model 2	Model 3 Newey-West HAC Standard Errors & Covariance	Model 4 White Heteroskedast. Consistent Standard Errors & Covariance
Pak-India Conflict	7.51E-05 (0.7131)	0.000279 (0.4418)	4.22E-07 (0.9986)	0.608887 (0.6429)
Internal Conflict	0.000193 (0.1921)	0.000826 (0.1883)		
Polity	2.65E-05* (0.0831)	3.00E-05** (0.0209)	2.34E-05* (0.0747)	
Pak India*Internal Conflict		-0.002357 (0.2962)		
Pak India*Polity			-1.41E-05 (0.6391)	
Enrollment	8.48E-05*** (0.0002)	8.05E-05** (0.0259)	8.86E-05*** (0.0022)	
Health Spending	-6.11E-05 (0.3051)	-6.67E-05 (0.2810)	-5.28E-05 (0.3307)	
Urbanization	-0.060014** (0.0189)	-0.059227* (0.0986)	-0.059167** (0.0318)	
Milex				-1.89E-09 (0.2018)
Pak-India*Milex				1.20E-11 (0.9727)
Log(PCGDP)				7.209093 (0.3175)
Aid				2.18E-09 (0.0880)
Net Govt. Expenditure				-7.00E-10 (0.0885)
AR(1)	0.876674*** (0.0000)	0.873509*** (0.0000)	0.879679*** (0.0000)	
Constant	0.006291 (0.0000)	0.006376 (0.0008)	0.006162 (0.0001)	-38.16411 (0.3376)
	R-squared=0.95 F-stat=0.955***	R-squared=0.95 F-stat=52.7***	R-squared=0.94 F-stat=55***	R-squared=0.62 F-stat=6.61***

***P<=1%, **P<=5%, *P<=10%, P values are in parentheses

The coefficient on polity is statistically significant and carries positive sign. This is in accordance to the expectations that democratic institutions and leaders are more concerned for the health and general welfare of the people. Combined gross enrollment also positively and significantly affects health index in Pakistan. This means that health indicators improve as more people become educated. Education creates awareness about

personal hygiene as well as broadens the prospects of increased earnings of the people. With more earnings, people afford to eat sufficient and nutritious food. The coefficient on urbanization is negative and statistically significant. This means that, if on the one hand, urbanization causes agglomeration economies and helps industrialization, but on the other hand, urbanization causes health problems due to pollution, slums, and inability of the government to cater for the needs of ever increasing population. The coefficient on public health spending is insignificant statistically and carries negative sign contrary to expectations. However, this may be due to the fact that a comprehensive data on every health related government expenditure is difficult to obtain and instead this study uses the annual difference in health facilities and health personnel as proxy of public health spending. The government's spending on free and subsidized provision of medicines and food, free vaccination against potential diseases and other preventive measures, and maintenance of the existing facilities all contribute to the health of the people.

The first hypothesis (H_1) is tested by introducing the interactive term, i.e. Pak-India*Internal-Conflict, in model-2. The coefficient on the interactive term in model-2 is insignificant statistically and carries negative sign. However, this result does not tell us that how the relationship between internal conflict (primary variable) and health index changes as Pakistan-India conflict (conditional variable) varies. For this purpose, this study gets the marginal effect of the primary independent variable (internal conflict in this case) conditioned upon the conditional independent variable (Pakistan-India conflict in this case) while holding all the other independent variables constant at their means (continuous) and modes (dichotomous) (Brambor, Clark, and Golder, 2006). This result is given in Figure 1 and it is based on model-2. It tells us that how the coefficient on internal conflict changes as Pakistan-India conflict varies. This result implies that the coefficient on internal conflict is 0.000826 (the coefficient in model-2) when Pakistan-India conflict is 0, and the coefficient on internal conflict becomes negative with an increase in Pakistan-India conflict. However, this is only significant when confidence interval does not include zero, and in this case, there is only a small part where it is significant. Some support is found for H_1, i.e., the detrimental health effect of Pakistan's internal conflict intensifies as the conflict between Pakistan and India increases, however, the empirical evidence is very weak. The values and signs of the coefficients on control variables are almost the same as in the previous model.

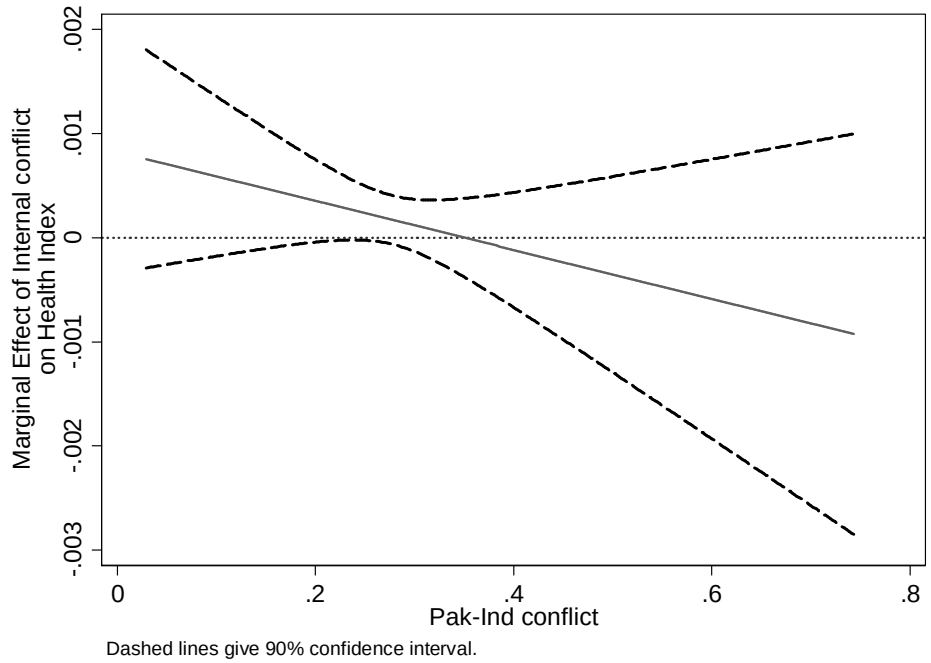

Figure 1: Effect of Pakistan's Internal Conflict on Health Index in Pakistan Conditioned upon Pakistan-India Conflict

The second hypothesis, i.e., H_2 is tested by including Pak-India*Polity as an interactive term in model-3. The coefficient on the interactive term in model-3 is insignificant statistically and caries negative sign. However, this result does not show a succinct picture of the effect of polity on health conditioned upon Pakistan-India conflict. For this purpose, this study obtains the change in marginal effect of polity (primary independent variable) on health index (dependent variable) with a change in Pak-India conflict (conditional variable), while holding all other independent variables constant. This result is given in the following Figure 2.

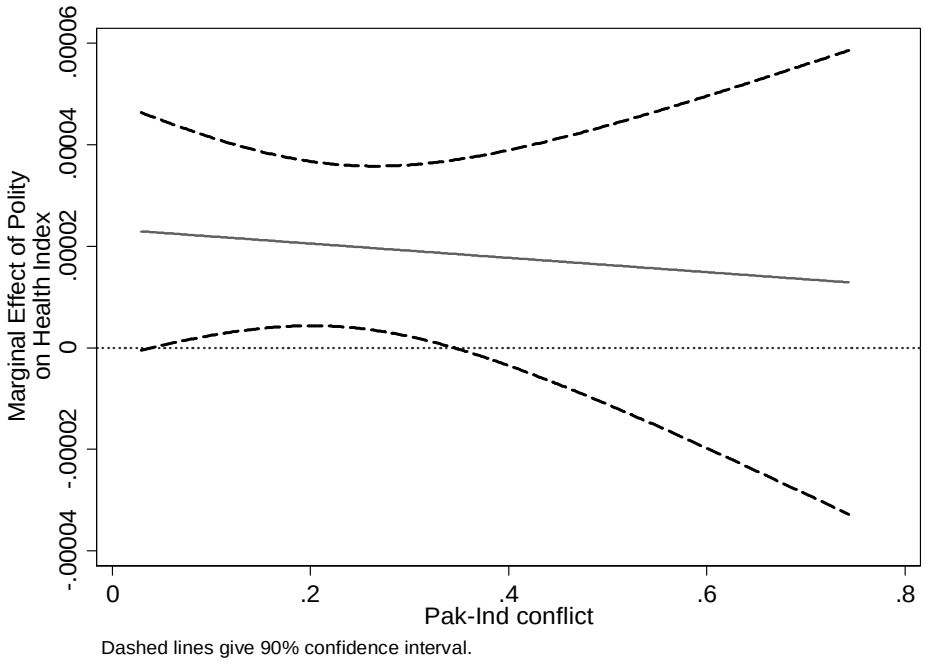

Figure 2: Effect of Polity on Health Index in Pakistan Conditioned upon Pakistan-India Conflict

The above figure is based on model-3 and it tells us that how the relationship between health index and civilian political institutions changes with variation in Pakistan-India conflict. This figure clearly shows that as Pakistan-India conflict increases, the marginal effect of polity on health index becomes weaker, although it does not become negative. It is significant only when the confidence interval does include zero, which is about everything below 0.38 on Pakistan-India conflict. The result from the above figure implies that Pakistan-India conflict is linked with health through its interaction with civil and democratic institutions. This is in conformity with our second hypothesis that the effect of political institutions becomes anti human development as Pakistan-India conflict increases.

The third hypothesis, i.e., H_3 is tested by including Pak-India*Milex as an interactive term in model-4. The interactive term is insignificant statistically, which means that there is no evidence of resource diversion from health sector to military in Pakistan during 1972 to 2004. This hypothesis is also tested by getting the marginal effect of military expenditure (Milex) on public health spending conditioned upon Pakistan-India conflict while holding all other explanatory variables constant (Brambor, Clark, and Golder, 2006).

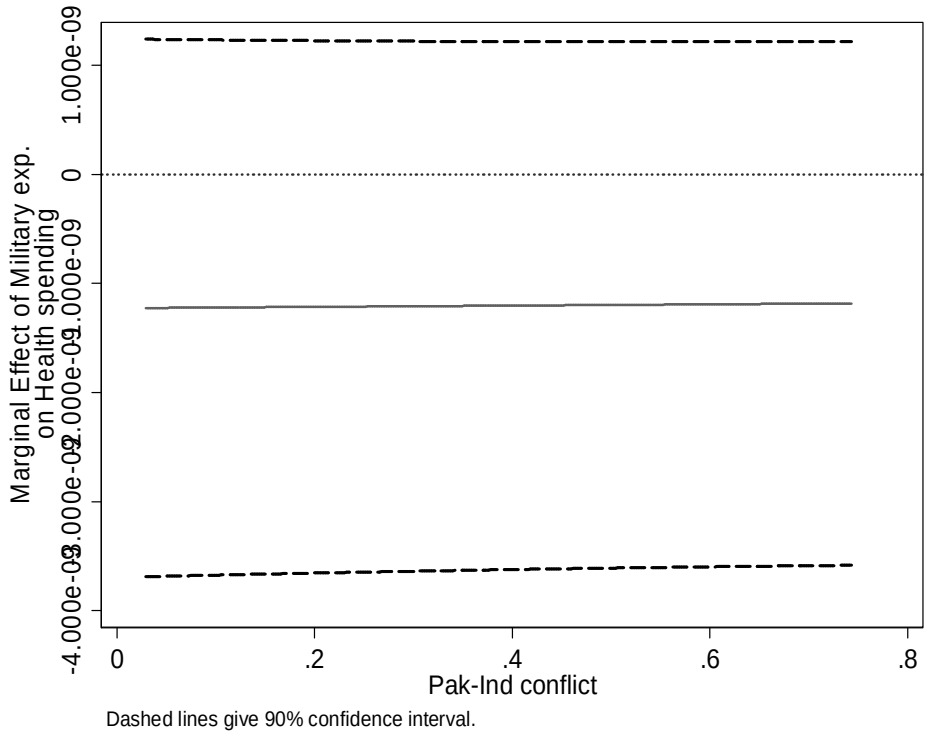

Figure 3: Effect of Military Expenditure (Milex) on Health Index in Pakistan Conditioned upon Pakistan-India Conflict

The above Figure 3 also shows that the marginal effect of Military expenditure on public health spending conditioned upon Pakistan-India conflict is insignificant statistically. The absence of evidence of resource diversion from health sector towards military expenditure may be due to insufficient data on public health spending and military expenditure. The data on public health spending only includes annual addition in health facilities and health personnel and does not include other health spending like public spending on preventive health measures, vaccination and maintenance. Moreover, comprehensive and accurate data on defense and military expenditure is not reported in countries like Pakistan.

Coefficient on per capita GDP is insignificant statistically, which indicates that economic growth in Pakistan does not transform into human development. This result confirms Easterly's (2001) notion of growth without development in Pakistan. Foreign aid for health and education positively and significantly affects public health spending in Pakistan. The effect of net government expenditure (government consumption expenditure less military expenditure) on public health spending is negative and significant. This shows a trade-off between government consumption expenditure and government development expenditure. This study uses annual relative change in health facilities and health personnel as proxy for public health spending, which is a sort of government development spending on health sector.

4. Conclusion

The empirical analysis and the estimation results in this chapter affirm this study's argument that low intensity level conflicts and non-violent/latent conflicts like Pakistan's internal conflict and Pakistan-India conflict do not have as much capacity to affect health and other human development indicators through killing and destruction. However, these conflicts do have the capacity to change the priorities and willingness of state and society vis-à-vis human development in the long run. In the absence of Pakistan-India conflict, the internal conflict in Pakistan acts as pressure on state institutions for increasing the provision of public goods to win over the support of general masses. Similarly, civil and democratic institutions and political leaders are concerned about the welfare of people when there is no conflict between Pakistan and India. However, whenever there is a conflict between Pakistan and India, the political leaders divert the attention of the people from internal issues towards international politics and the people start supporting the ruling elite against a foreign enemy. This state of affairs is resulted in the neglect of human welfare and human development.

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