

SOCIO-ECONOMIC DEPRIVATIONS AND VOTERS' PREFERENCES: A District Level Analysis

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Abstract

This study contributes to the existing literature by empirically investigating the impact of environment, terrorist attacks and socio-economic deprivations on changes in vote shares of the major contesting political parties between two consecutive elections in Pakistan. It is assumed that performance of the incumbent political parties affects individuals' preferences, which are reflected in changes in the vote shares. For estimations, the study uses district level data and fixed effect technique on pooled data for the election years 2008 and 2013. Results of the study show that environmental degradation reflected in the rise of temperature and terrorist attacks that represent a deterioration of security of life and property have significant and adverse effects on the voters' preferences for the incumbent regimes. Similarly, economic deprivation, lack of educational opportunities, and health facilities has also played a significant role in reducing the vote shares of the incumbent parties.

Keywords: Responsibility Hypothesis, Socio-Economic Deprivations, Voter's Preferences.

JEL Classification: D72, P16, P48.

I. Introduction

The link between economic indicators and election outcome has attracted a multitude of research, specifically in Europe and the USA [for example, Nadeau and Blais (1993), Holbrook (1994), Leyden and Borrelli (1995) and Grier and McGarrity (1998)]. The outcome of the research shows that adverse socio-economic performance affects the political support of incumbent parties during elections. However, researchers have paid little attention to this area of research in less developed countries. Security situation, environmental and socio-economic indicators matter for election outcomes. For instance, the prevailing political regime exerts effort for improving socio-economic indicators in order to influence the forthcoming election outcomes. We aim to explore

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to what extent security, end of the years (2002 to 2008) and (2008 to 2013) in Pakistan. In less developed countries, there is a prevalence of frequent hide-and-seek game between military dictators and politicians for power grabbing. Pakistan is one of such less developed countries that have experienced both types of governments; democratic and dictatorship. In Pakistan, voters have supported elected representatives at one time while dictatorial regime at the other time.

It is worthwhile to mention that Pakistan, which came into being in 1947 after a long political struggle, has a rich history of democratic struggles; political participation motivates us and political movements¹. This history of political movements and participation provide us motivation to test the importance of various variables such as security, environmental hazards, economic deprivation and lack of education, health and housing quality and services (socio-economic deprivations) in determining the preferences of voters towards the incumbent political party in the follow-up elections.

In the presence of existing empirical literature, this is the first study in the context of Pakistan that provides empirical estimates regarding how voters reward or punish the incumbent political parties. The study is novel as it takes into account multidimensional performance indicators that are security, environmental hazards and socio-economic deprivation. The study is also unique as it does not merely rely on national level performance indicators, but also provides an in-depth and comprehensive analysis using district level data. The study uses data from three general elections; i.e., 2002, 2008 and 2013. We calculate the share of each party at the district level, in particular the share of votes of the incumbent political parties that were in power in 2002-2008 and 2008-2013 periods. Firstly, we developed a theoretical model of reward and punishment in terms of the electoral success of the incumbent political entities. Next, we tested the hypothesis based on the theoretical model and we hypothesize that better economic performance will reward political parties in the form of a higher share of votes as compared to the share in the previous election and vice versa. In this way, our study contributes to the emerging literature on the political economy by empirically investigating the impact of security, environmental hazards and socio-economic deprivation on election outcomes.

The rest of the study proceeds as follows: Section II discusses related literature on the socio-economic deprivations and election outcomes both at micro and macro levels. The theoretical framework of the study is explained in Section III. Data sources and the empirical testing of models are described in Section IV. Section V discusses the econometric methodology, which is used for empirical purposes. The results of the study are discussed in Section VI, while the study is concluded in Section VII.

¹ A political movement known as the Lawyers' Movement to restore deposed judges of the Supreme Court of Pakistan was initiated by the legal fraternity. It is also known as the Movement for the Restoration of Judiciary. It was a mass protest initiated by the lawyers of Pakistan in response to the former president and army chief Pervez Musharraf's actions of March 2007, when he unconstitutionally suspended Iftikhar Muhammad Chaudhry as the chief justice of the Supreme Court of Pakistan.

II. Literature Review

Ever since the 1970s, researchers have pointed out that voting behavior and electoral results are becoming continually unstable. There is a plethora of studies available that exclusively deals with the political economy of election outcomes. This monograph surveys, some theoretical and empirical works are related to the linkages between election outcomes and economic conditions. Mainstream researchers have explored the causality between the two, while others have tried to decipher the association through other econometrical techniques.

Economic environment shapes election outcomes in the world's democracies where poor performance proved to be devastating for the incumbent parties and vice versa. In this context, analyzing the relationship between macroeconomic variables and election outcomes in the USA for the period 1896-1970, Stigler (1973) observed that people give importance to redistribution of income through a change in inflation rates. The higher rate of inflation causes a negative impact on the support of the incumbent party. The same data (1896-1970) was utilized by Bloom and Price (1975) to study the relationship between short-run economic conditions and electoral turnout. The results of the study show that the economic downturn is a major factor contributing to the defeat of ruling parties in the successive election. Asymmetric behavior of voters was observed regarding the position of the business cycles; indicating that people become more reactive in recession than recovery.

Similarly, Meltzer and Vellrath (1975) studied the response of voters to economic conditions for the period 1960-1972 for the USA. The study demonstrated that there was very little evidence that voters favored a party on the basis of macroeconomic stability. Later, Fair (1978) took data for the period 1889-1932 again for the USA to analyze the effect of economic events on votes and found that the macroeconomic variables had a significant impact on the presidential elections. Tufté (1975) looked into the determinants of the midterm congressional elections in the USA. The study covered the period 1938-1970 for the analysis and found that compared to other factors, the prevailing economic conditions had a more significant impact on the voting pattern of midterm congressional elections. Also, Jonung and Wadensjö (1979) investigated the effect of unemployment, inflation and real income on government popularity in Sweden using data for the period 1967-1978. They found that unemployment in the manufacturing sector and the overall inflation rate had a substantial impact on voting design and turnout in favor of the incumbent party.

In the 1980s, like the previous decade, most of the political economy research was carried out for the USA and other developed economies. Lewis-Beck (1980) studied the relationship between economic conditions and executive popularity in France using data from the year 1960 to 1978. The study unveiled that the destabilized macroeconomic variables disfavored the incumbent party in the presidential vote. Similarly, Owens and Olson (1980) conducted a study from the perspective of the

USA, which indicates that there was not a clear relationship between presidential voting patterns and macroeconomic variables during the study period. Hibbing and Alford (1981) study revealed that the patterns and margins of voting were heavily dependent on the macroeconomic conditions in the tenure of the incumbent and there was not an even distribution of votes for the incumbents and non-incumbents.

In addition to the above studies in 1990s, explored the impact of campaigns and national socio-economic conditions on the USA presidential elections Holbrook (1994). It observed that national conditions and the campaign events both had a significant impact on voters' judgment, but national conditions had a stronger impact on voters' decisions than campaign events. Leyden and Borrelli (1995) studied pooled data of forty-three states of the USA and confirmed that the success or failure of a political party was significantly dependent upon the economic situation prevalent in the era. Similarly, Nadeau and Blais (1993), Holbrook (1994), Leyden and Borrelli (1995), and Grier and Mc Garrity (1998) found support for the effect of macroeconomic fluctuations on the electoral fortunes of house incumbents in the USA. The study was based on the data for the years 1916 to 1994. The results reveal that households were more concerned with the change in the inflation rate or unemployment rate than per capita income.

As far as the developing countries are concerned, there is no serious attempt has yet been made to explore the linkage between economic performance and elections outcomes. Suri (2004) conducted a study on India and concluded that there is no specific relationship or causality between economic reforms and election results. The study further added that India is a divided nation and there is no consensus on economic reforms and opinions across castes, classes, occupation and locations. Similarly, Suri (2009) further investigated and concluded that voters are more conscious about present economic conditions than anticipated conditions and both individual and national economic conditions have an effect on election outcomes.

Some recent studies revealed the influential evidence of a strong macro level link between incumbent parties' electoral results and the state of the economy [Dassonneville and Lewis-Beck (1980)]. Bouvet and King (2016) investigated the parliamentary elections for OECD countries and assessed that how voters use economic situations to assign electoral accountability to the incumbent party. The results state that electoral outcomes are significantly affected by inflation, economic growth, and unemployment. The most consistent variable in economic voting is economic growth while unemployment and inflation have less extent in this regard. Correspondingly, they concluded that during the economic downturn, incumbent parties more likely to suffer electoral losses. A very similar analysis conducted by Lewis-Beck and Stegmaier (2000) postulating that economic voter reward or punish the incumbent party at the ballot box on the basis of existing economic performance.

Another prominent investigation, in this regard, is conducted by Peters and Ensink (2015) which explore the effects of preference difference and electoral partici-

pation with the perspective of Europe. They explored the extent of preference gap between the poor and the rich along with the level of electoral participation. Their findings are postulating that the European democracies experience a preference gap where lower income groups tend to be under-represented as compared to higher income groups. Also, suggest that every citizen should have an equal voice in the democratic electoral system because responsiveness is an important condition of the strong democratic system. Kuenzi, et al. (2017), comprehensively examine the economic determinants of electoral volatility in 35 African countries over the period of 1972-2010. Results concluded that structural adjustment and foreign aid plays a significant role in the electoral volatility. The electoral volatility is positively associated with lower foreign aid and structural adjustment programs.

In a nutshell, the evidence obtained on the topic from previous studies gives mixed results in terms of the impact of the economic performance of the incumbent party on its electoral success. The majority of the studies conducted so far are for the developed countries: (specifically in the un-text of the) USA, Australia, New Zealand, Canada, Japan, and France. The paper has examined the empirical relationship between understudy variables with the perspective of developing countries extensively, this article intends to fill this void.

III. Theoretical Framework

In this section, we provide a theoretical framework for the relationship between socio-economic conditions and voting decisions. For this purpose, we use rational choice model of the representative economic agent. The rational economic agent votes for the political party that has the potential to fulfill all of its promises, especially the promises relating to the economy after success in the elections. We postulate that a rational voter compares utilities in period t_2 (regime of incumbent) and t_1 (previous regime) at the time of casting his/her vote in the next election and if Ut_2 is greater than Ut_1 then he/she will vote in favor of incumbent party. We consider such a utility maximizing voter/economic agent whose lifetime utility depends on a stream of consumptions over the life span which comprises of different fixed tenure regimes².

$$U = \sum_{i=1}^T (1+\delta)^{t-1} u(c_i^p, c_i^g) \quad (1)$$

where utility is derived from private consumption c_i^p , which is financed through personal disposable income as well as cash transfers from the government and c_i^g is an exogenous term that represents quality of institutions in general sense and provision of public goods in free or at subsidized rates by the incumbent party in specific terms, especially for the goods or services, where government has monopoly over distribution.

² Normally tenure lasts 4 or 5 years in different democracies.

It is further assumed that the agent can choose only c_t^p , while c_t^g is given but there exists complementarity between c_t^p and c_t^g , that is, the marginal utility of c_t^p is dependent on c_t^g . The agent/voter's wellbeing would be much more from a given amount of c_t^p in a secure, peaceful and clean environment where amenities³ of life are available as per requirements as compared to an insecure and pollutant environment. If any incumbent party provides a pollution-free environment where property and life is protected and secure, then it would be a natural preference for the rational agent. It is assumed that the individual finances its private consumption (c_t^p) mainly through personal disposable income (y_t^d) and partially through cash transfer by the government (tr_t) besides initial wealth. Thus, the agent/voter faces the following budget constraint:

$$A_0 + \sum_{i=1}^T (1+r)^{t-i} (y_t^d + tr_t - c_t^p) \geq 0 \quad (2)$$

It is pertinent to mention that although c_t^g is not reflected in the agent/voter's budget constraint but it is integral part of his/her utility function as well as policy-maker's vote function because efficient institutions and provision of public goods not only increases agent's utility but also increase political support of the policy maker.

For the given initial wealth A_0 and the streams of incomes, y_t^d , and transfer from government, tr_t , the optimal solution to the agent/voter's problem for the current period private consumption will be of the following form:

$$C_t^p = f(\delta, r, A_0, y^d, c^g, tr) \quad (3)$$

where y^d , c^g , and tr are the lifetime vectors of private disposable incomes, public goods and services and transfers from government.

According to the responsibility hypothesis⁴ given by Royed and Borrelli (2000), rational economic agent rewards incumbent political party whose policies enhance his/her permanent disposable income, provision of public goods and services through efficient institutions and transfers. This sort of reasoning provides a logical foundation for the accountability of economic policies of different regimes by the voters, which is referred to as the responsibility hypothesis.

Rationality requires that better policies will always be rewarded and bad ones will be punished only if they affect the wellbeing of voters with some certainty. Thus, economic stability is also an important factor in decision making of the voters and they will reward the incumbent party if it successfully achieves targets for the economy and fulfills all other promises.

³ Amenities include electricity, natural gas, clean drinking water, proper sewerage system, paved streets/roads and other such civic facilities.

⁴ Responsibility hypothesis provides a framework to conceptualize how voters reward or punish any incumbent party and how political agents may interact and help to mediate the relationship between economic performance and political preferences of voters.

Our above conclusion depends on the presumptions of economic paradigm and theories. For example, under the classical theory, the government is assumed not to administer the aggregate demand and production. The private sector is considered to be efficient enough to absorb any exogenous shock in the economy. Hence, classical framework does not provide bases for the responsibility hypothesis.

On the other hand, the Keynesian paradigm presumes that the government can play a role in economic stabilization through demand management policies. If economy deviates from the desired path while private sector is not efficient enough to get the economy out of trouble, then government's proactive role is required to lead the stabilization process. Prudent and timely government interventions prevent huge losses to national income. Hence, the Keynesian framework is the one that provides the necessary setting to conceptualize reward and punishment theory. Voters may hold incumbents responsible for the better or adverse implementation of demand management policies because their efficient use may preclude devastating departures from desired path of the economy. As the government is accountable to the voters for its role to stabilize economy; therefore, conceptualization of the issue in this research is based on the responsibility hypothesis type of reasoning. Besides the Classics and the Keynesians, the views of some other schools of thought are summarized in the footnote⁵.

Following the above discussion, the vote-maximizing-policy maker can choose pro-people policies to attract more political support. For this purpose, the efficient provision of public goods for free or at a subsidized rate can be a prudent choice. It is pertinent to mention here that although c_t^g is exogenous for the economic agent, but it is endogenous for the policymaker. Here c_t^g is a composite term that includes quality of institutions and provision of different public services like education and health facilities (investment in human capital), hygiene/cleanliness (from local governments), efforts for better environment (e.g., Billion Trees Plantation Program), improving defense and law-and-order for safer environment (such as fight against terrorism and police reforms) and transportation and communication infrastructure (investment in physical capital)⁶ for free or at subsidized rates. Hence, c_t^{gs} indirectly becomes function of government's spending on heads like prevention of adverse climate change and protection of environment (E), insuring security (S) by fighting against terrorism and though police reforms, improvement in health facilities and education opportunities to develop human capital (HC), and efficient local governments for provision and betterment of physical capital (PC).

To proceed further, we now substitute the current period optimal private consumption into the lifetime utility function to obtain the following partial indirect utility function.

⁵ The rational voters understand that unemployment below the natural rate often before the elections in the form booms as a result of policy is definitely a short-run phenomenon [Chappell (1983) and Chappell, et al. (1985)]. On the other hand, Kahneman and Tversky (1979) and Thaler (1980) are of the view that in certain situations rationality of economic agents does not hold. The acts of economic agents are found to be inconsistent with economic theory, which makes a systematic error in predicting their behavior.

⁶ Motorways and Metro Bus Service.

$$U = u^* \left(f(\delta, r, A_0, y^d, c^g, tr), c_t^g \right) + \sum_{i=2}^T (1+\delta)^{t-i} u(c_t^p, c_t^g) \quad (4)$$

Since the vote for incumbent depends directly on the expected wellbeing (utility level) of the agent/vote, we can write the vote function as;

$$v = v \left(u \left(f(\delta, r, A_0, y^d, c^g, tr), c_t^g \right) + \sum_{i=2}^T (1+\delta)^{t-i} u(c_t^p, c_t^g) \right) \quad (5)$$

Voters are always concerned with their perceived wellbeing and their decision to reward or punish is indirectly related to their derived satisfaction in any regime and if it is greater than the previous regime then he/she will most likely vote in favor of incumbent party [Hibbs (2006)]. A vote-maximizing policymaker can affect the agent's utility by pursuing better economic policies to boost economic growth and better taxation and redistributive policies to provide public goods. Better economic policies will raise utility through c_t^p by raising y^d , pro-people redistributive policies tr , and the term c_t^g . The term c_t^g represents the policymaker's choices of the projects that improve security and quality of life of the voter. Hence, the policy-maker maximizes the vote function by choosing c_t^g while taking agent's optimal preferences as given⁷. Finally, according to Equation (5) the voting decision also depends on expected future utility. In empirical specification of the model, this aspect will be captured by including such variables that may affect a voter's perception about the future promise of the political party concerned.

The exogenous government support (c_t^g) consists of spending on public goods like environment (e), security (s), investment in human capital (hc) and investment in physical infrastructure (pc). The Vote share of any incumbent party is positively related to the arguments of indirect utility function. Hence, the expected signs of all partial derivatives of vote function with respect to these arguments are expected to be positive.

IV. Empirical Testing of the Model

To empirically test the model, we have collected data of all variables at district⁸ level for the years 2008 and 2013 in which elections have been held. The total number of district observations is 184 that are obtained after pooling for both the years of our analysis.

⁷ This reasoning is similar to that of Kydland and Prescott (1977) i.e., optimization by taking individuals' preferences/expectations as given.

⁸ District is a second order administrative unit after province.

1. *Percentage Change in Votes*

The dependent variable is the percentage change in votes for incumbent parties. Party votes are collected from each constituency and then summed up at the district level. In 2002 elections, six parties coalition formed the government. The names of the coalition partners were Pakistan Muslim League Quaid-i-Azam (PML-Q), Mut-tahidah Quomi Movement (MQM), Pakistan Peoples' Party Sherpao (PPP-S), Pakistan Muslim League Functional (PML-F), Pakistan Muslim League Zia (PML-Z), and Pakistan Muslim League Junejo (PML-J), and the leading party was PML-Q. Their votes are added district wise and the same procedure is adopted for 2008. In the election of 2008, new government headed by Pakistan Peoples' Party Parliamentarians (PPPP) was formed. The coalition partners of PPPP were Jamiat Ullema Islam Fazl-ur-Rehman Group (JUI-F), MQM, and Awami National Party (ANP).

On the basis of general elections of 2002 and 2008, we have calculated the percentage changes in total votes in favor of the government led by PML-Q. Similarly, on the basis of the elections of 2008 and 2013, we have calculated the percentage changes in total votes in favor of the government led by PPPP. The percentage share of votes of ruling political party in each election at the district level is calculated by taking constituency level data from the official website of the Election Commission of Pakistan (ECP).⁹ The dependent variable is percentage change of votes in two regimes of PML-Q and PPP led coalition governments of years 2002-2008 and 2008-13, respectively. The details of all independent variables and their rational are given below:

2. *Terrorist Attacks*

One of the independent variables is the number of terrorist attacks and it is quantified by counting the number of terrorist attacks in a given district in a year. This variable affects the voters' perception about his/her wellbeing derived from future consumption of private and public goods in periods 2 to T in Equation (5). A higher intensity of terrorist attack has two implications. Firstly, an increase in terrorists' attacks is expected to divert resources from development and consumption activities towards the fight against terrorism and will shrink the amount of per capita public consumption c_t^g . Secondly, with increased terrorist attacks economic growth is also expected to be affected adversely and hence reduce the amount of per capita private consumption c_t^p . The data for this variable are obtained from the Global Terrorism Database (GTD) of the National Consortium for the Study of Terrorism and Responses of Terrorism. This variable is used to cover the safety of life and property aspect in a given regime or to cover the performance on the law-and-order conditions for the incumbent parties, which is termed a safer environment in the theoretical model of our study. It is calculated as the total

⁹ Source: <http://www.ecp.gov.pk>

number of attacks in a district in the years 2008 and 2013 to account for the two time periods in which elections are held and that is the period of analysis of our study.

3. *Average Temperature (Celsius)*

Another important aspect of regime's performance can be assessed by its delivery of pollution-free environment. Unusually pollution is considered as one of the reasons for global warming, so to capture this aspect of performance, temperature is used as a proxy variable.¹⁰ Thus, higher temperature may correlate to more pollution and is an indicator of adverse performance for any incumbent party. Change in temperature is not a short-run phenomenon, so we have used five years moving averages at district level to make it a bit more reasonable proxy for the analysis. The data for this variable has been taken from Pakistan Metrology Department (PMD).

4. *Socio-Economic Indicators*

In addition to environment and security, we want to capture the impact of socio-economic variables. Since the unavailability of data on economic and social performance indicators at the district level for Pakistan is a serious lacking, so to resolve this issue, we take help from other researchers' work. These researchers have made individual efforts to create data for some variables. Keeping in line with the theoretical model's prediction, we are utilizing the data on a few indices developed by Jamal (2012). The indices used as proxies for socio economic performance indicators in the study are economic deprivation, education, health, housing services, and housing quality. All these factors not only affect the wellbeing of voters through present as well as future expected levels of utility. These indices range from 0 to 100, where higher value shows more economic deprivation, low literacy, lesser health care, and sub-standard housing. The study of Jamal (2012) used the unit record household level data of Pakistan Social and Living Standard Measurement (PSLM) surveys, conducted during the years 2008-09 and 2010-11 that covered 77500 households across all districts of Pakistan to construct the indices for the two years. This study has also used the Principal Component Analysis (PCA) that combined the indicators of poverty, housing, and deprivation in household physical assets to come up with district-level indices for the years 2009 and 2011. Table 1 shows the summary statistics for these variables for the two years.

The descriptive statistics reported above show number of observations, central tendency, average dispersion from mean and the minimum and maximum values of the dependent and independent variables used in our study. The statistics show that there is an average reduction of 3.8 per cent vote share with a standard deviation of 72 per cent.

¹⁰Temperature and environmental degradation strongly correlate with each other as argued by Tyagi, et al. (2014).

TABLE 1
Summary Statistics

Variables	Observations	Mean	Std. Dev.	Minimum (Min)	Maximum (Max)
Change in percentage vote	184	-3.755	72.07	-633.23	290.95
Temperature (Celsius)	184	22.998	4.519	12.358	29.052
Change in attacks (total)	184	12.614	34.994	0	350
Economic deprivations (0-100)	184	55.92	20.72	11.35	99
Housing quality (0-100)	184	31.35	12.25	3.9	63.89
Health (0-100)	184	29.07	10.81	9.23	69.19
Education (0-100)	184	38.67	12.82	12.2	75.39
Housing services (0-100)	184	25.04	18.61	3.16	82.46

Source: Author's Estimation.

V. Econometric Methodology

It is intuitive to consider the outcome of at least three general elections to analyze the responsibility hypothesis in terms of the percentage change in votes for incumbent parties at the district level as our dependent variable. The outcome variable of the study forms a longitudinal pooled data version derived from three elections. Therefore, for the empirical purpose, we use period fixed effects panel data models. The fixed effects model primarily emphasizes on the within-districts comparisons. The main advantage of the fixed effects models is that it controls regression results for slow varying unobserved heterogeneity that might affect both control and response variables. Therefore, fixed effect model gives cleaner regression results relative to other regression techniques.

For the empirical estimation of the coefficients, the fixed effects model is given by:

$$VS_{it} = \alpha_0 + \alpha_1 Temp_{it} + \alpha_2 TA_{it} + \alpha_3 ED_{it} + \alpha_4 Edu_{it} + \alpha_5 HF_{it} + \alpha_6 HQ_{it} + \alpha_7 HS_{it} + t_i + v_{it} \quad (6)$$

where VS_{it} is the percentage change in vote share of the incumbent party between two elections and the independent variables are: 5 years moving average temperature ($Temp$) at district level, the number of terrorist attacks (TA), economic deprivations (ED), lack of education opportunities, (ED) lack of health facilities (HF), deficiency of housing quality (HQ), and unavailability of housing services, (HS) whose values range from 0 to 100. Zero means the best indicators, while 100 means the worst performer. Finally, t_i in Equation (6) controls for time-fixed effects and v_{it} is an error term. Note that district fixed effects are not allowed because the time dimension is too short compared to the cross-sectional dimension. The empirical results based on Equation (6) are discussed in the following section.

VI. Results and Discussion

This section presents the regression results obtained through a period fixed effect model using Ordinary Least Squares (OLS) method for Equation (6). In order to check the robustness of the variables that may affect the percentage change in votes share in favor of the incumbent political party in the subsequent election, sensitivity analysis is performed with different specifications of Equation (6). The results, which are reported in Table 2, highlight the importance of different socio-economic variables on the percentage change in votes share in favor of the ruling party in the follow-up election(s).

TABLE 2
Results of the Period Fixed Effect Model (By OLS)

Variables	Model 1	Model 2	Model 3
Temperature	-2.910*		-2.111**
	[1.524]		[0.966]
Attacks	-0.008**		-0.007**
	[0.003]		[0.003]
Economic		-0.414*	-0.526***
		[0.222]	[0.184]
Education			-0.524**
			[0.201]
Health			-0.134*
			[0.0776]
HS			0.0711
			[0.0982]
HQ			0.0251
			[0.180]
Constant	5,861**	5,080***	5,499**
	[2,376]	[1,742]	[2,217]
Observations	184	184	184
R-Squared	0.082	0.264	0.447
Number of Cross Id	92	92	92
District FE	Yes	Yes	Yes
F-Test for Fixed Effects	0.97	1.47**	1.82***

Note: Percentage change in vote of the incumbent party in the following election is the dependent variable. Robust standard errors are presented in parentheses, where ***, ** and * indicate significant parameters at 1 per cent, 5 per cent and 10 per cent significance levels respectively.

Model 1 includes only two explanatory variables, average temperature and number of terrorist attacks that can probably reflect performance of the incumbent government on cleaner and safer environmental fronts. The intuition of taking these two variables together is that Pakistan is among the highly exposed countries to the threat of terrorism¹¹ and environmental hazards¹² since the dawn of the 21st century. Thus, Model 1 shows how vote shares pattern of the incumbent government changes if we consider only two indicators, temperature and terrorist attacks. It shows that temperature, a proxy for cleaner environment is negatively and significantly related to the percentage change in vote share in favor of the political officeholders. The significance of the coefficient of temperature indicates that people do care about long-term changes in environment and consider it in their voting decisions. A small deviation from five years moving average of temperature (Celsius) leads to a reduction in the percentage change in votes of the political office bearers by 2.9 per cent and this sensitivity to rising temperature becomes extremely acute in the presence of load shedding and power break downs because of the fact that the government has monopoly in this sector. Another significant variable in Model 1 is the terrorist attacks. Deteriorated law and order situation since 2008 played a significant role in the general elections of 2013. In particular, each additional terrorist attack in a district reduced the vote share of the incumbent political party on average by 0.008 percentage points.

Model 2 only controls for the economic status of the district. Economic deprivation (0-100 index) is negatively related to change in vote share and this relationship is also highly significant. Economic agents/voters hold the incumbent political party responsible for its bad performance and punish it through their vote. The estimated coefficient shows that if the governments fail to perform on economic front, then it will cost them heavily and they may be voted out in the upcoming elections. In quantitative terms, poor economic status (a per cent rise in the index) leads to 0.41 per cent decrease in the vote share of the incumbent political government.

Finally, Model 3 includes four more independent variables to check the robustness of the previous two models. It shows that both temperature and terrorist attacks have statistically significant and negative impacts on the vote share of the political office bearers. Similarly, economic deprivation has also the same sign and significance as in Model 2. Furthermore, Model 3 is also controlled for education, health, housing services and quality. Lack of education opportunities and health facilities also contribute to unpopularity of the incumbent party and resultantly a reduction in its political support. Our results reveal a lower vote share because of adverse performance in education and health sectors by the political office bearers in 2008 and 2013 general elections and consequently both of them lost the next elections. Nevertheless, housing service and quality do not find significant support in affecting vote share of the ruling party in our results.

¹¹ http://static.visionofhumanity.org/sites/default/files/GPI%202016%20Report_2.pdf?

¹² <http://www.uni-stuttgart.de/ireus/Internationales/WorldRiskIndex/>

It should be noted that the standard errors are clustered by district which are adjusted to potential auto-correlated and heteroskedastic residuals. Furthermore, the joint significance of the fixed effects (Model 2 and 3) show those districts are heterogeneous in terms of socio-economic and political time invariant and variant factors.

One of the important findings of our study is that increase in five years of moving average of temperature has a significantly negative impact on the vote share of two recent past regimes in Pakistan. This reduction in popular support base and vote share of the incumbent political parties highlights an important observation that if governments do not provide the voters' expected environment, then they are rational enough to punish them for their negligence. It is the basic responsibility of the incumbent party to invest in betterment of the environment so that people be able to live in a hygienically clean environment. The past governments failed to perform a better role on environmental front. Hence, they have been punished by rational economic agents.

This finding is consistent with the theoretical expectation of our model that increases in temperature, which is a proxy for adverse climate change and it would decrease vote share of the incumbent party. Our result is consistent with the theoretical expectations of Guber (2001); however, it does not find any empirical support and concludes that environment related issues seldom shape the US citizens' preferences in vote decision at national level.

The results for terrorism or deteriorated security situation in the country had a negative impact on the vote share of the incumbent political party in 2013 general elections. This unveils the observation that attacks which occurred between 2008 and 2013 made the lives of the people difficult, risky, vulnerable, and unpleasant so that they were left with no option other than punishing the incumbent party by decreasing their vote share in its favor. When we compare the impact of attacks in the years 2008 and 2013 general elections, we can draw the conclusion that attacks had no significant impact on the 2008 elections perhaps because before 2008 there was the initial phase of attacks and the adverse security situation. Therefore, voters may have hoped that the attacks would decrease very soon and the security situation would improve and become safer. As people realized that their expectations were not materialized and the attacks continued to disturb their lives where they lost a number of their loved ones, their level of tolerance reached the threshold level. As a result of continuous damage to life, property, and business environment since the start of attacks in 2003, people being rational economic agents punished the ruling party by decreasing vote share in the 2013 elections. In any case, our important finding regarding the impact of terrorist attacks in the year 2013 general elections is in accordance with the theoretical expectations of the model that individuals are sensitive to security situations or terror attacks. This finding is also consistent with empirical literature where Berrebi and Klor (2008), and Getmansky and Zeitzoff (2014) that find similar results and conclude that voters are sensitive to attacks in case of Israeli elec-

torate either it be from Israeli troops on Palestinians or from Palestinians on Israeli areas or troops. In both the cases, vote share of the right-wing increases. The finding of our study is also supported by Kibris (2010) that there is a high sensitivity between Turkish voters and terrorism and voters accuse the government of the losses caused by terrorist organization PKK. Furthermore, the study finds that an increase in terrorist activities is positively linked with vote shares of the right-wing parties.

Like temperature and attacks after 2008, economic deprivations also have a negative impact on vote share of the ruling parties in 2008 and 2013 general elections. It is the responsibility of the government to ensure the provision of sufficient economic opportunities to its people so that they can acquire better means to come out of economic deprivations. Both the governments led by PMLQ and PPP failed to deliver to the satisfaction of masses. Resultantly, their support decreased to the extent that they lost the elections in the years 2008 and 2013 respectively. There are many studies in literature that have similar findings as ours such that Lewis-Beck (1980) that finds that destabilized macroeconomic variables disfavored the presidential vote for the incumbent party in France and Nadeau and Blais (1993), who conclude that in Canada governments were rewarded or punished on the basis of economic performance. Similarly, Leyden and Borelli (1995) find that success or failure of a political government is significantly dependent upon the economic situation prevalent in the USA.

Besides temperature, terrorist attacks, and economic deprivation, the coefficient of lack of education opportunities also shows a negative impact on vote shares of incumbent political parties in 2008 and 2013 elections. Though both the governments of PMLQ and PPP extended the network of education by establishing new educational institutions, yet their efforts to bring the educational quality in public sector up to or even close to international standards did not bear any visible fruit. On the other hand, in the same era, the network of private educational institutions also spread far and wide. These institutions provided somewhat better quality education in comparison to public sector institutions but rather charged higher fees. This eventually resulted in reduction of the vote share of incumbent parties.

The results of our study show that deteriorating health facilities also caused reduction in vote share of the political parties. Provision of proper health facilities is the first hand responsibility of the ruling party. But both the previous governments did not bring much development in public health sector. The required health facilities did not increase in parallel with increase in population. Availability of few public sector hospitals with inadequate staff and dearth of other required stuff like quality medicine caused several people to go towards private hospitals that provide much better health care but at higher costs. This entire situation made people dissatisfied with the low-quality health care provided by the public sector health department. As a result, the people punished the governments by decreasing their support in favor of incumbent political parties.

VII. Conclusion

Change in the vote share in favor of incumbent political party is the most obvious and prime indicator of people's preferences in democratic regimes. Thus, it has remained the focused area of research, specifically, for the political scientists and political-economists since The World War II. Our study is valuable and significant as it is conducted for a transitory and unstable democracy like Pakistan. The study has made an attempt to analyze the socio-economic determinants of vote share in favor of the incumbent parties in 2008 and 2013 general elections. In other words, the study has examined how people respond to the performance of an elected government via ballots in the follow-up elections.

The study has used district level data on electoral voters' turnout and calculated the change in an incumbent's vote share, which is postulated to be a function of security, environment and socio-economic deprivations, lack of education opportunities and health facilities deficiency of housing quality, and unavailability of housing services.

The results of the period fixed effects regression models show that lack of security and environmental hazards have played a significant role in the vote share of the incumbent's political parties. Similarly, the bad performance of the incumbent party in the provision of economic opportunities, education and health facilities also significantly and negatively affect vote share in the follow-up elections.

An important policy implication of the study is that elected representatives should be aware that voters can punish them through ballots if they do not perform well on their socio-economic and security promises. Thus, it is highly encouraging that people in democracy even in its weak form have the power to overthrow non-performing politicians by decreasing their vote share in favor of incumbent political party in the upcoming election. It is expected that as democratic process takes its roots in Pakistan, the voters will become even more aware of their rights, responsibilities and most importantly, their power to choose their destination as a nation. It is important that democracy is allowed to function without any interruption.

Another conclusion is that the recent settlement of the democratically elected government in connivance with the establishment to carry out full-fledged fight against terrorism will not only pay dividend to society but is also expected to yield political dividend to the incumbent regime. The current regime may still lose the upcoming elections in the year 2018 due to reason such as governance, corruption, economic performance, etc. However, it is unlikely to lose because of inaction against terrorism.

Like almost every study, this study also has few limitations. For example, some variables like temperature and indices of multidimensional deprivation may not be perfect proxies to test our model empirically but due to data limitations, we have used these variables. In the future, if better variables are available, then the other researches can use more micro level data to empirically test the phenomenon.

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