DOES DEMOGRAPHY MATTERS IN GROWTH OF GOVERNMENT EXPENDITURE? A CASE STUDY OF JAMMU AND KASHMIR (INDIA) WITH CO-INTEGRATION APPROACH

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Abstract: *The paper investigates the behavior of demographic dimension on the growth of aggregate Government expenditure in the state of Jammu and Kashmir (India) in long and short run. Demographic dimensions, anywhere, are related to different aspects of population which pushes the government expenditure to higher level. The state of Jammu and Kashmir is not the exception, the increasing trend in different aspects of population, rising needs and aspirations of the growing population forces the government to increase expenditure on that count, which result in increase in aggregate government expenditure. Using multivariate co-integration technique followed by VAR model on annual time series data for the period 1984-2013, the study found that demographic dimensions do not have long run association with government expenditure. The demographic variables affect government expenditure only in short run. Our study found that population above 65 and rate of urbanization are significant demographic factors which produce positive change in government expenditure while increase in total population is insignificant to produce change in government expenditure.*
Keywords: *Population above 65, Hospitals, Education, government expenditure, Co-integration*

INTRODUCTION

Public spending, particularly on Demographic aspects, is a significant tool in the development process of an economy. Public spending has remained a fundamental issue in a welfare characterized state like Jammu and Kashmir, where the economy is characterized by high population growth, growing urbanization, poor infrastructural service delivery, declining productivity, high level corruption and policy instability. Over the years researchers have examine the impact of demographic level on economic growth. But how far the demographic level stimulates the government expenditure in short and long run is an empirical question to investigate. The non availability and lower quality of goods and services for majority of population, changes the entire courses of public spending. It is due to the fact that different aspect of population will demand more and qualitative infrastructure such as roads, water and sanitation, transport and communication, health amenities, Education etc to fulfill their needs. Therefore, demographic dimensions are important drivers of government expenditure over time, and

how far this dimensions have a positive impact on the growth of public expenditure in the state of Jammu and Kashmir is an open question and the present study is geared up in that direction.

The government expenditure, all over the world, is the mechanism in which different goods and services are brought together by state to fulfill the demands of people. It create public bequest for the society and produce positive externalities for the economy. Therefore, it can be said that government expenditure is always related to the population of the region, and how population or in other words demography of the region will change, in terms of tastes, priorities and demands; government expenditure will also change in same direction. Literature suggests that demographic structure and the level of Government spending have long term relationship. Feldstein (1996) found that the Demographic variables like elderly population influence the level and composition of public spending, as an aging population demand greater spending on health, housing, and social security. Dao (1995) find that structural differences, such as the degree of urbanization or population density, also affect government spending. (Aregbeyan et. al. 2013; Udude & Deve, 2014) find that while urbanization, younger population and population density exert a significant impact on government recurrent expenditure (especially on general administration, transport and communications), its influence on government capital expenditure, though positive, but is insignificant. Sanz &Velazquez (2003) stated that health, education, social security, transport and communication, public/private prices, age structure of the population and land area determine the composition of government expenditures in OECD countries. Killian (1998) highlighted on factors such as size of territory and population in a country as a significant determinant of the level of military spending.

With such background, how far the demographic level affects the allocation of government expenditure is an open debate. Therefore, this paper is an attempt to analyze the impact of demographic levels on government expenditure in short as well as long run in the state of Jammu and Kashmir. Rest of the paper has been divided in to three sections. Section I discuss the background and objectives of the study. Section II deals with the methodology and description of the variables Section III analyze the result and discussion of demographic determinants of government expenditure followed by conclusion.

BACKGROUND OF STUDY

The financial condition of Jammu and Kashmir State over last three decades has been a source for deep concern. Over the years, the consolidated financial position of the state has revealed a noticeable deterioration in some of their major deficit indicators. One of the primary weaknesses of state government finance can be credited to the increases in non developmental expenditure, mainly the revenue component of the non-developmental expenditure, and interest payments as a share of revenue receipts. Structural imbalances in the form of revenue and capital deficit in particular and large budget deficit in general, results rising interest burden, increasing distortions in the pattern of expenditure, and very slow growing non-tax revenues are major problem areas for Jammu and Kashmir state

financial system. These problems, over the years have been motivated a great deal because of several economic and political ups and downs in the state.

Government expenditure has increased tremendously in state over last three decades. In welfare characterized state, the quantum of public expenditure has not only increased tremendously but also has reached fantastic heights. Explosive public expenditure in Jammu and Kashmir in recent years most probably has not given enough momentum to the growth of the economy due to several leakages rather it has helped the state in extending the various tasks of the various governments. The extended tasks are; managing population and their requirements like health, education, law, social security, health facilities, roads, transport etc. Though significant development has taken place in some sphere since independence, access to opportunities for a reasonably minimum standard of living is one of the lowest in the country. While all other special category states get 70 percent as central grants and assistances and 30 percent as loan to bridge their fiscal gaps, the state of Jammu and Kashmir gets 90 percent as grants and assistances and 10 percent as loans which makes the state of Jammu and Kashmir different from other special category states.

The total government expenditure of the State has grown to nine times between 1990-91 to 2013-14 with average annual growth rate of 60.1 percent The tremendous increase in public expenditure in first phase might have been due to increased public expenditure on general services for containing law and order, organs of state and the increasing demand for social services such as education and health. Secondly, the tremendous increase in public expenditure might be due to growth of GDP, per capita income, growth of population, urbanization and other social and economic factors. There is also a vast change in the public expenditure in General services, economic, services and social services in Jammu and Kashmir. The expenditure in General services has increased 43 percent during 2006-07 to 2009-10 and 68 percent during 2009-10 to 2013-14. The average growth rate of General expenditure is 10.2 percent annually. The expenditure on General services has always remained high in the state which most probably might have been due to political conditions, rate of unemployment, security purpose, growing population etc, While the expenditure on social services has increased by 48 percent between 2006-07 to 2009-10 and by 44 percent between 2009-10 to 2013-14, the average annual rate of growth of Social service expenditure stands at 8.2 percent during the same period. The public expenditure on economic services grew by 45 percent during 2006-07 to 2009-10 and 17 percent during 2009-10 to 2013-14 with average annual growth rate of 11 percent.

The demographic and infrastructure indicators have fluctuated considerably over the years. The total population of the state has increases at an average annual growth of 2.1%. Rate of urbanization is increasing constantly as the job opportunities and increase in standard of living attract far flung areas to move towards urban cities and towns. Population density of the state has increases tremendously of last decade with strength and accumulation of more economic activities in plane areas of the state. The population of elderly people is constantly increasing over the years which increase the rate of dependent respondents. Also the level of literacy and other demographic indicators are still below than average level.

Keeping in consideration the above background of the study, the primary objectives of this is are as follows:

- To identify, whether Demographic dimensions have short and long run association with Government expenditure
- To study the demographic determinants of government expenditure in the state of Jammu and Kashmir

Sources of Data

The study is primarily based on the time series data using the time period of 30 years from 1984-85 to 2013-14. The specification of this time period is that, the entire period has witnessed wide economic ups and downs were the economic activities in the state have reduced widely. Further entire period has witnessed a drastic political instability and social unrest leading a wide change in revenue generating capacity of state. The major sources of data for the study are; Annual budget papers of the Jammu and Kashmir state, state Finance reports Reserve Bank of India, Annual Reports on Currency and Finance and also from Economic Surveys of J&K, census reports and NSSO Rounds. In case of unavailability of some data necessary to estimate different components in the exact form, we would like to prepare the data base by using arithmetic adjustments.

METHODOLOGY

The econometric framework adopted in this paper is based on developments in co-integration and error correction model suggested by Johansen (1988, 1995). By applying VAR techniques to the time-series data, based on the results of unit root and multivariate co-integration test, we are able to approximate a dynamic structure in which initially all the variables in both the models are treated as endogenous. Most time-series analysis demonstrate non-stationary characteristic in their mean or trending pattern. Therefore, in order to determine the suitable method of time-series econometric analysis, a common approach is to identify the form of the trend in the data and whether individual data series contain unit root characteristic. If the data is trending, then some form of de-trending is needed. The most common de-trending practices are differencing and time-trend regressions. Thus, the first step in co integration modeling is often taken by testing for unit roots to determine whether trending data should be differenced or regressed on deterministic functions of time.

After employing unit root and co-integration modeling for the time series data set of each determinant function, we are able to constitute a model with free of spurious properties and having dynamic robustness structure. Based on the unit root and co-integration results we identify the error correction models which are suitable to generate robust results in terms of demographic determinants of government expenditure. As stated above that this study employ employs Johansen multivariate co-integration approach developed by (Johansen, 1988; Johansen and Juselious, 1995), specified as a reduced-form VAR model of order *p*. Therefore, in this study, the VAR model is used to assess the determinates of government expenditure through demographic variables in the

state of Jammu and Kashmir. Therefore, the basic model specified for all the three studies is as:

$$y_t = A_1 y_{t-1} + \dots\dots + A_i y_{t-i} + \dots\dots + A_p y_{t-p} + Bx_t + e_t \quad (1)$$

Where:

y_t is the vector of endogenous variables(i.e, Government expenditure

$x_t$is the vector of deterministic variables (Demographic and infrastructure variables)

A_i and *B* are matrices of coefficients of the variables to be estimated

$e_t$is a residual *vector*

i is the lag length, *p* is the maximum lag length and *t* is the time period

The above equation (1) states that the procedure by which the dependent variables in y_t vary about their time-invariant means is entirely determined by the parameters in A_i and *B;* and the (infinite) past history of y_t itself, the exogenous variables x_t and the history of independently and identically distributed shocks, $e_{t-1}, e_{t-2} \dots\dots$ Therefore, the joint distribution of y_t is determined by the distributions of x_t and e_t and the parameters *B*, and A_i.

However, according to the granger representation theorem (Engle-Granger, 1987), if Co integration is established among a vector of variables in the model, then a valid error correction model may be estimated if not then VAR is used. Therefore, in this study, the choice of whether to use VAR or VECM for estimations follows Granger representation theorem; that is, it is based on Co-integration results. Interpretation of results in VAR models is based on Impulse Response functions and Variance Decompositions which are discussed in detail in the later sections of this chapter.

Description of variables

Dependent variable: Aggregate Government expenditure

Independent variables: Total population, Urbanization, Population above 65

Estimation Procedure

Non-stationary data leads to spurious regression due to non-constant mean and variance (Dimitrova, 2005). If a series is stationary without any differencing, it is said to be I(0) or integrated of order 0. However, if a series is stationary after first-difference is said to be I(1) or integrated of order 1.To this end, the Augmented Dickey-Fuller (ADF) (1979) and Philips Pearson (PP) (1992) test has been adopted to examine the stationary, or otherwise, of the time series data. The lowest value of Akaike Information Criterion (AIC) has been used in this to decide the optimal lag length in the ADF and PP regression. These lags were used in ADF and PP regression to make sure that the error term is white noise. If all the variables in an equation are in integral order of I(1) and the resulting residuals are I(0) then according to Engle and Granger (1987), it can be declared that there resides a corresponding error-correction mechanism (ECM or *et-1*) and the basic models will be transformed accordingly. The regression form ADF test is in following form:

$$\Delta y_t = \alpha_0 + \alpha_1 y_{t-1} + \sum_{j=1}^{p} \gamma_j \Delta y_{t-j} + \varepsilon_t \qquad (5)$$

Where, Δ is the first-difference operator, y_t is the respective variable of expenditure over time, *p* is lag, α_0 is constant, α_1 *and* γ_j are parameters and ε_t denotes stochastic error term.

If α_1= 0, then the series is said to have a unit root and is non-stationary. Hence, if the hypothesis, α_1 =0, is not accepted according to equation it can be concluded that the time series does not have a unit root and is integrated of order I(0), or in other words it has stationarity properties.

Similarly the regression form Phillips-Perron (PP) test is in following form:

$$y_t = \alpha_0 + \alpha_1 y_{t-1} + \alpha_2 (t - T/2) + \mu_t \qquad (2)$$

Where α_0, α_1, α_2 are the expected least-squares regression coefficients. The hypotheses of stationarity to be tested are *H0:* α_0 = 1 and *H0:* α_1 = 1, *H0:* α_2= 0.

Cointegration test

The Johansen's co-integration method is used to verify whether there exist a co-integrating vector among the variables or in other words whether there exists any long run association between the variables (Johansen, 1988). The Johansen's co-integration test employ two test statistics to identify the number of co-integrating vectors which are: the Trace test and the Max Eigen value test. The Trace statistics tests the null hypothesis of r co-integrating vectors/equation in the given series against the alternative hypothesis of n co-integrating equations. The trace statistic test is calculated by using the following expression:

$$LR_{tr}(r/n) = -T * \sum_{i=r+1}^{n} \log(1 - \check{Y}_1)$$

Where

$\check{Y}$ is trace statistic value, n is the number of variables in the system and r = 0, 1, 2, ..., n-1co-integrating equations.

Similarly the null hypothesis for the Max Eigen value is to test r co-integrating equations against the alternative of r+1 co-integrating equations where r = 0, 1, 2, ..., n-1 and n is the number of variables in the system. The test statistic for Max Eigen value is computed as:

$$LR_{max}(r/n+1) = -T * \log(1 - \check{Y})$$

Where

$\check{Y}$ is the Max Eigen value and T is the sample size.

In case Max Eigen value statistic and the Trace statistic yield different results, then trace test statistic will be preferred as suggested by Alexander (2001).

Model specification

After the Johansen co-integration test, next is to fit the suitable time series model. If co-integration has been establish between the variables, and then this implies that there exists a long run relationship between the variables under integration equation. Hence,

the VECM is applied in order to determine the short run relationships of co-integrated variables. On the other hand, if there exists no co-integration, then the VECM is transformed to Vector autoregressive (VAR) model, followed by impulse analysis, variance decomposition tests has been used to determine short run casual links and response of dependent variable towards independent variable with period of stability. The estimated model, is the modification of equation 1 after co-integration test. VAR model has been used to identify short run relationship of demographic variables to government expenditure in absence of long run co-integration. The estimated models for demographic determinants of Government expenditure are as follows:

$$govtexp_t = \alpha_4 + \sum_{i=0}^{n} \theta_i\, govtexp_{t-i} + \sum_{i=0}^{n} \theta_i\, urbnpop_{t-i} + \sum_{i=0}^{n} \theta_i\, pop65 + _{t-i} + \sum_{i=0}^{n} \theta_i\, tpop_{t-i} + \mu_t \quad (3)$$

In the above VAR model 3, $govtexp_t$ is the dependent varable at time t, α_4 *is the constant*, θ_i are the adjustment coefficients of the respective demographic variables at time period I where I is running from 1....2. The hypothesis of the equations is tested on probability value of t-statistics at 5% and 10 % level of significance.

Diagnostic tests

In order to check the strength of our models estimated, different diagnostic tests have been carried out. The diagnostic tests applied in the restricted equations of the government expenditure and NSDP are: the Breusch-Godfrey Serial Correlation or LM Test done for serial correlation of the model, ARCH Test (autoregressive conditional heteroskedasticity) has been carried for Heteroskedasticity. Similarly, the test for parameter stability of the model has been performed by the CUSUM statistics and the Normality test has been done through Jarque-Bera test. All the diagnostic tests are estimated through null hypothesis which are tested through the test statistic value of each test at the probability value at 5% level of significance.

RESULTS AND DISCUSSION

The empirical analysis begins with the lag creation. Akaike's Information Criterion (AIC) has been used to find out the lag order of each variable under study. In beginning, the preliminary analysis of the data is performed to check whether the data is stationary. The Augmented Dickey Fuller (ADF) and Phillips-Perron test is used to check for stationarity of variables in the dataset. In addition, the Johansen Co-intergartion test will be used to determine the appropriate time series model to fit. Further, the results of VAR are specified and interpreted.

Unit root test

The Augmented Dickey-Fuller (ADF) test and pearson Philips (PP) test was conducted to pretest the variables for unit roots to verify that the variables are not integrated of an order higher than one. Table 1.1 provides the cumulative distribution of ADF and PP test based on Mackinnon (1991).

Table 1.1: Estimated results of Augmented Dickey-Fuller and Phillips-Perron test for Stationarity									
Variables	At level				Difference				Order
	t-statistic	1%	5%	P value*	t-statistic	1%	5%	P value*	
Govtexp	-1.078	-3.679	-2.968	0.711	-4.682	-4.324	-3.581	0.0044	I(1)
urbanpop	-0.428	-4.310	-3.574	0.981	-5.379	-4.324	-3.581	0.0008	I(1)
pop65+	-2.464	-4.324	-3.581	0.342	-5.587	-4.339	-3.581	0.0006	I(1)
Population	-1.567	-4.310	-3.574	0.781	-5.614	-4.324	-4.324	0.0005	I(1)
M Mackinnon (1991) * 1% level of significance ** 5% level of significance Sources: Calculated by Author									

The estimated results of ADF and PP test in table 1.1 showed that all variables were found to be non-stationary at levels but were stationary after first differencing. It implies that, the variables likes Govtexp, urban pop, pop65+ and total pop are integrated of order one which further implies that the variables are having I(1) integrating order. Therefore, the unit root test has predicted a trend in the time series variables at level and after first difference the trend has been removed from the variables, so that the regression model would not be bias.

Since the time series are non-stationary, it became essential to test for co-integration. By using the log-level form of the series, we estimate a multivariate co-integration relationship to establish the existence of a long-run equilibrium relationship between the variables.

Cointegration test for demographic series

The preliminary analysis shows that all the demographic variables incorporated in this study like population above 65 (*POP65+),* rate of urbanization (*URBNPOP*) and total population (*TOTPOP*) are non stationary at level and stationary at 1st difference. Thus to identify the best model which will enable us with good results and to know the long run relationship of these demographic variables with government expenditure of the state, Johnson co-integration test has been carried out. The demographic variables were found to be non stationary at level and stationary at integral order of I(1) which implies that the variables have unit root after first difference. Therefore we can go for the co-integration test to identify the number of co-integrating equations along with we can find weather there exists any long run relationship between demographic variables and government expenditure. Table 1.2 shows the estimated result of Johnson co-integrated test.

Table 1.2: Series: LNGOVTEXP LNURBNPOP LNPOP65 LNPOP				
Unrestricted Co-integration Rank Test				
Hypothesized		Trace	5 Percent	1 Percent
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Critical Value
None	0.602534	46.61506	47.21	54.46
At most 1	0.319354	20.78095	29.68	35.65
At most 2	0.256393	10.00898	15.41	20.04
At most 3	0.059384	1.714171	3.76	6.65
Hypothesized		Max-Eigen	5 Percent	1 Percent

No. of CE(s)	Eigenvalue	Statistic	Critical Value	Critical Value
None	0.602534	25.83411	27.07	32.24
At most 1	0.319354	10.77197	20.97	25.52
At most 2	0.256393	8.294811	14.07	18.63
At most 3	0.059384	1.714171	3.76	6.65
*(**) denotes rejection of the hypothesis at the 5%(1%) level Trace test indicates no co-integration at both 5% and 1% levels Max-eigenvalue test indicates no co-integration at both 5% and 1% levels				

The results of trace and max-eigen statistic indicate that the demographic variable does not have long run relationship with government expenditure. It implies that over longer period of time demographic variables like population of 65+ age group, urban population and total population does not produce significant impact on government expenditure. The trace and max-eigen statistic indicates no co-integrating equation at both 5% and 1% level of significance. Therefore, we can only identify the short run relationships between demographic variables and government expenditure.

Demographic determinants of government expenditure

The VAR model is carried out through three techniques for structural analysis of variables like the Granger causality test, impulse-response analysis, and the variance decomposition method. In the VAR model, the mutual relationships between variables are obtained by the Granger causality test. While variance decomposition analysis establishes the interaction between variables, impulse-response analysis is used to reveal symmetrical relationships to determine dynamic relationships between the examined variables (Cansu, 2006). However most studies using VAR generally employ impulse-response analysis and variance decomposition methods rather than interpreting the calculated coefficients of the model (Gacener, 2005). Therefore our study has used VAR coefficients and impulse-response analysis to reveal the impact of demographic variables in government expenditure in absence of long run relationship. The results of VAR model used to identify the short run estimates of demographic variable are shown in table 1.3.

Table 1.3: Dependent Variable: DLNGOVTEXP

Method: Least Squares

DLNGOVTEXP = C(1)*DLNGOVTEXP(-1) + C(2)*DLNGOVTEXP(-2) + C(3)*DDLNPOP65(-1) + C(4)*DDLNPOP65(-2) + C(5)*DLNPOPDN(-1) + C(6)*DLNPOPDN(-2) + C(7)*DLNURBNPOP(-1) + C(8)*DLNURBNPOP(-2) + C(9)

	Coefficient	Std. Error	t-Statistic	Prob.
Govtexp(-1)	-0.301646	0.222358	-1.356576	0.1927
Govtexp(-2)	-0.271951	0.213844	-1.271728	0.2206
Pop65+(-1)	2.984152	0.908140	3.286004	0.0392*
Pop65+(-2)	2.358501	3.523998	0.669268	0.5123
TotPop(-1)	0.720355	1.079987	0.667004	0.5137
Totpop(-2)	-0.784873	1.133901	-0.692188	0.4982
urbnpop(-1)	-0.603638	0.955893	-2.631491	0.0361*
Urbnpop(-2)	0.322793	1.086744	2.297027	0.0700**

C	0.219957	0.072414	3.037476	0.0074
R-squared	0.740880		Adjusted R-squared	0.711824
Log likelihood	37.95514		Durbin-Watson stat	2.109459

Sources: calculated by Author, * at 5% level of significance ** 10% level of significance

The results of VAR model suggest that in short run the demographic variables are significant to produce any change in government expenditure. The table shows that government expenditure of two periods lag does have negative impact on current year's government expenditure but is insignificant as the probability value is more than 10% level of significance.

Further population above 65 age group has revealed interesting results. The population above 65 years age group shows that it has positive and significant impact on growth of government expenditure at lag 1 and at lag 2 though it is positive but insignificant. The table shows that 1% increase in previous year's population of above 65 years age group will increase the current year's government expenditure by 2.98% as the coefficient is significant at 5% level of significance. It is expected because with the growing old age population the expenditure related to old aged people such as old age homes, health services, pension, large subsidies, and different social welfare schemes etc increases considerably.

Increase in total population shows positive impact on government expenditure at lag 1 and negative impact on lag 2 but at both lags the impact on government expenditure is insignificant. It might be the due the slow growth of population and also due to the small population of the state in terms of the area which hardly impact the government expenditure allocation.

Lastly, rate of urbanization (urban population) shows negative but significant impact on government expenditure at lag 1 and positive and significant impact on lag 2. The table shows that 1% increase in urban population in previous year will reduce the current years government expenditure by 0.63% as the coefficient is significant at 5% level of significance, while as 1 percent increase in urban population in previous of previous years will increase the government expenditure by 0.32% as the coefficient is significant at 10% level of significance. It might be due to the increasing demand of services needed for urban population like education, health, transport and communication, roads etc which force government to increase expenditure to fulfill those demands.

Thus the demographic variables like population above 65 age group and urban population shows positive impact on growth of population in short run while as in long run they are insignificant. It might be due their small proportion which cannot led to long run impact on government expenditure and their demands can be fulfilled in short period of time.

The adjusted R^2 suggests that the demographic variables in the model statistically explain the changes in the position of the government expenditure in Jammu and Kashmir. 74% changes of the dependent variables are attributed to the independent variables. The Durbin-Watson statistics is also significant having a value of 2.109459, it allows us to conclude that there are no problems of autocorrelation between the variables.

Various other diagnostic tests have been done to estimate the significance of our model and specification of our coefficients. Breusch-Godfrey Test has been conducted to estimate weather our model suffer from serial correlation or not. The results shown in table 1.4 suggest that there is no problem of serial correlation in the model as the probability of observed R-square is greater than 5% levels of significance which compel us to accept our null hypothesis of no serial correlation. Similarly heterocidasticity has been tested by ARCH test. The null hypothesis of the test is accepted as the probability value of the test is greater than 5% level of significance. The table also suggests that the series in the model are normally distributed as the jerque-Bera statistic shows that probability value is more than 4%level of significance. The stability of the estimated coefficient of the error correction model has been presented in graphical representation through Cumulative Sum (CUSUM) test. The cumulative sum (CUSUM) plot which is shown in Figure 1.1 from a recursive estimation of the model also indicates stability in the coefficients

Table 1.4: Diagnostic tests			
Equation III			
Breusch-Godfrey Serial Correlation LM Test			
F-statistic	0.153484	Prob*	0.859044
Obs*R-squared	0.521408	Prob*	0.770509
ARCH Test			
F-statistic	0.320272	Prob*	0.576925
Obs*R-squared	0.343341	Prob*	0.557907
Normality test			
Jarque-Bera statistic	0.82827	Prob*	0.66091

Sources: calculated by Author, * at 5% level of significance

Figure 1.1: CUSUM test

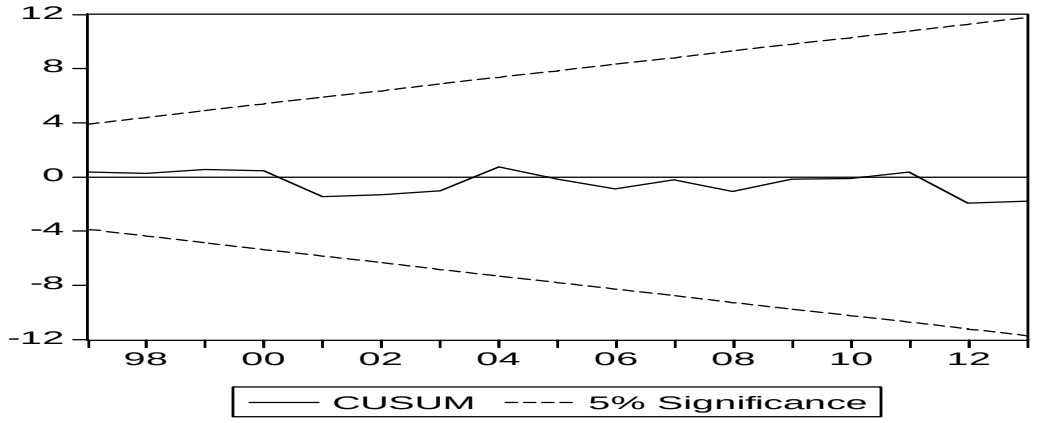

Figure 1.2: Impulse response of demographic series

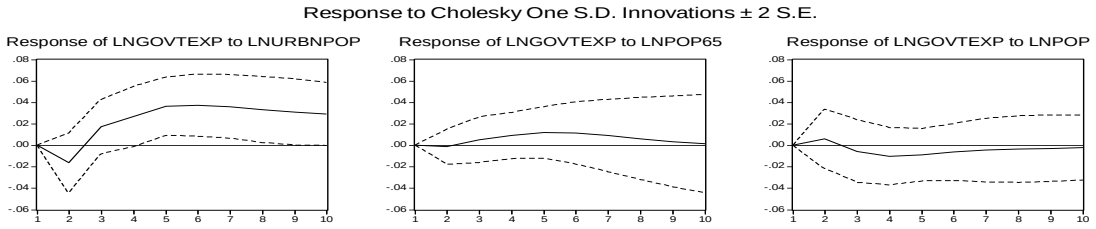

Figure 1.2 shows the response of govtexp to pop above 65, totpop and urbnpop. The response of government expenditure to standard shock in population above 65 age increase from 2nd period and after 2nd period it goes increasing upto 6th period and after 6th it decline but remain positive until 10th period. It shows any standard shock in population above 65 can be restored after 10th period.

Similarly the response of government expenditure towards shock in total population growth shows that standard shock in total population, the response of government expenditure is to increase until 2nd period and after 2nd period it will decline until 4th period. After 4th period the response of government expenditure is to increase but remain negative until 10th period. This shows the impact of total population in short run only.

Further, the response of government expenditure to shocks in urban population growth shows that a standard shock in urban population, the response of government expenditure is to decrease until 2nd period. After 2nd period it shows increase in expenditure and cross positive increase after 3ed period. After 3rd the response of government expenditure is to increase in later periods and stay positive. It implies that any shock in short run in urban population increase government expenditure only after 2nd period till 10th period.

CONCLUSION

The study has identified the factors of demographic dimension that influence the government spending in the state of Jammu and Kashmir. Using Co-integration method followed by Vector Autoregressive model (VAR) we found that demographic dimension do not have long run association with government expenditure. The demographic variables affect government expenditure only in short run. Among the variables we find that population above 65 is significant to produce change in government expenditure. Also the rate of urbanization is significant factor to change government expenditure. While as increase in total population is insignificant to produce change in government expenditure. Over last decade the state of Jammu and Kashmir has witnessed highest growth in elderly population and also heavy migration of people from hilly and remote areas to main towns and cities of the state for employment, trade and other purposes. Therefore, the expenditure of the state related health, education, transport, water and

sanitation, old age houses, pension and social welfare schemes has increased tremendously.

Therefore, in nutshell, we conclude that that the demographic status of the state is positively correlated with the growth of Government expenditure but the demographic dimension of the state cannot influence the long run policy making of government expenditure. It implies that demographic dimension does not create any pressure on government spending policy in the state of Jammu and Kashmir. Hence our study has given a concrete and logical conclusion and a favorable policy recommendation to the policy makers of the state. A long term policy programs should be adopted to take care the demographic factors so that in short run their impact on expenditure will be minimum. Also that state should give more focus on level of infrastructure to stabilize its enormous expenditure and to enhance its economic growth.

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