IMPACT OF IMPLEMENTATION OF SEVENTH PAY COMMISSION'S RECOMMENDATIONS ON PUBLIC EXPENDITURE AND GROWTH OF INDIAN ECONOMY

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CANDIDATE'S DECLARATION

I hereby certify that the work which is being presented in the thesis, entitled "Impact of implementation of seventh pay commission's recommendations on public expenditure and growth of Indian economy" in fulfillment of the requirements for the award of the degree of Doctor of Philosophy in economics and submitted in Galgotias University, Greater Noida is an authentic record of my own work carried out during a period from January, 2013 to October, 2015 under the supervision of Dr. Manju Dahiya and Dr. Shalini Sharma.

The matter embodied in this thesis has not been submitted by me for the award of any other degree of this or any other University/Institute.

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This is to certify that the above statement made by the candidate is correct to the best of our knowledge.

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DEDICATION

I dedicate this work to my wife, Mrs. Alka Vikram, and my children, Nikhil and Unnati, for being my constant source of support and encouragement.

ABSTRACT

This study explores the impact of implementation of seventh pay commission recommendations on public expenditure and growth of Indian Economy. In this study, different reasons have been advanced for the appointment of Pay Commissions by the Government of India at a regular interval of ten years. Most of these reasons are based on the author's own logic. Rationalization and simplification of the grade pay, grade pay structure, DA/ADA and other allowances, including the reduction of their numbers, are the most important reasons for the appointment of Central Pay Commissions (CPC). Containment of inequality in the mandated earnings of different layers and levels of grade pay of the public employees between prior determined or recommended minimum and maximum pay is an important facet of the recommended grade pay structure. The maximum recommended pay to the highest level civil servants has bridged the gap between the salaries of the highest level employees of private sector, especially CEOs of large companies, whose pay may be as high as more than 1 crores p.m. in some exceptional cases.

The impact of pay commission on employment distribution has seen that public and private sector employment does not significantly diverge from normal distribution. Inter-temporal distribution of GNI diverges from normal distribution, and consequently, its time series is not stationary at 0.05 probability level. Total employment consistently stagnates for 3-5 years before it sluggishly increases again. Public sector employment consistently declines while private sector employment grows over the years at a sluggish rate. The ratios of public sector employment to total and private sector employment decline through time. Total employment is the positive function of lagged total employment and GNI. However, total employment increases nominally in response to an increase in GNI. Public sector employment significantly depends on public expenditure while GPNI is the significant determinant of private sector employment.

As far as impact of public expenditure is concern, the time series of public expenditure on employees' salaries and total public expenditure approximate normal distribution and consequently, both the series are nominally skewed and marginally concentrated. Similarly, time series of total public expenditure and expenditure on public employees' salaries are stationary at first difference. And total public expenditure and expenditure on public employees' salaries incurred by all 30 states

and union territories have increased at statistically significant high annual compound rates of growth. The positive trend coefficient of the ratio of salary expenditure to total public expenditure is significant for 8 states/UTs while the negative trend coefficient of the ratio is significant for Bihar. Thus, 21 trend coefficients of the ratio are not significant.

Ten non-significant negative trend coefficients of the ratio of salary expenditure to total public expenditure suggest that the ratio has remained constant, and hence, pay commissions' recommendations do not seem to have affected these spatial units significantly. However, elasticity coefficients of salary expenditure with respect to total public expenditure indicate significant positive relation between the year on year growth rates of these variables. Public expenditure of all 30 units has been significantly affected by the implementation of the Pay Commissions' recommendations. Public employees' salaries are determined by the lagged salaries and current total public expenditure. But the adjustment of observed to desired level of salaries is spread over 5 to 7 years.

ACKNOWLEDGEMENT

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List of Abbreviations

ACGR	Annual Compound Rate of Growth
ADF	Aggregate Demand Function
AFPRC	Armed Forces Pension Revision Committee
ASF	Aggregate Supply Function
BDO	block development officer
CAPF	Central armed Police Forces
CAPFs	Central Armed Police Forces
CEMAC	Central African Economic and Monetary Community
CGEGIS	Central Government Employees Group Insurance Scheme
CGHS	Central Government Health Scheme
CMIE	Centre for Monitoring Indian Economy
CPC	Central Pay Commission
CPI	Consumer Price Index
CV	coefficient of variation
DCR	Death Cum Retirement
DCRG	Death-cum-Retirement Gratuity
DGTD	Director General of Technical Development
DLM	Distributed Lag Model
ELQ	Entry - level position qualifications
EPFO	Employees Provident Fund Organisation
EVA	Economic Value-Added
FDI	Foreign direct Investment
FII	Foreign Institutional Investor
FRBM	Fiscal Responsibility and Budget Management
GDP	Gross Domestic Product
GIC	General Insurance Corporation of India
GNI	Gross National Income
GOI	Government of India
GPNI	Gross Private National Income
GSDP	Gross State Domestic Product
GSDP	Gross State Domestic Product
IAS	Indian Administrative Service

IFoS	Indian Forest Service
IFS	Indian Foreign Service
IMF	International Monetary Fund
IPS	Indian Police Service
JAG	Junior Administrative Grade
LFPR	Labour-force Participation Rate
LIC	Life Insurance Corporation of India
LPG	liberalization, Privatization and Globalization
MACP	The Modified Assured Career Progression
MACP	Modified Assured Career Progression
MSP	Military Service Pay
MTFP	Medium-term Fiscal Policy
NCE	Non-Combatant Enrolled
NDA	National Democratic Alliance
NEP	New Economic Policy
NSSO	National Sample Survey Office
OECD	Organisation for Economic Co-operation and Development
OECD	Organisation for Economic Cooperation and Development
PBOR	Personnel Below Officer Rank
PRP	Performance Related Pay
RBI	Reserve Bank of India
RERA	Real Estate Regulatory Authority
RFD	Results Framework Document's
STS	Senior Time Scale
TPSWS	Total Public Spending on Wages and Salaries
UPA	United Progressive Alliance
WAEMU	West African Economic and Monetary Union
WWII	World War II

List of Publications

1. Basantwani, L.K. and Sharma, S. (2017) 'Impact of pay commissions recommendations on public employees' wages / salaries and public expenditure, , International Journal of Economic Research, Volume 14, 2017, Serials Publications, ISSN : 0972-9380, page 75-85

2. Basantwani, L.K.,Sharma, S., Daga, V., and Chhikara, K (2021) Impact of National Income and Public Expenditure on Employment and Its Public- Private Sector Composition in Indian Economy, International Journal of Agricultural and Statistical Sciences, Volume 17 (1), ISSN 0973-1903.

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CHAPTER ONE

Impact of Implementation of Seventh Pay Commission Recommendations on Public Expenditure and Growth of Indian Economy

Introduction

To ensure a proficient workforce, Indian Government has established guidelines for hiring people who are skilled, competent, efficient and knowledgeable. For increasing the efficiency of recruited personnel, the government has established "Administrative Reform Commissions" from time to time to recommend measures to improve administrative efficiency. The Government of India has also established different Pay Commissions from time to time to improve the pay structure of its employees in order to recruit better talent to the public sector.

The global economy has changed dramatically in the twenty-first century, and this has had a significant impact on the salaried class's living conditions. The monetary worth of their previous salaries has depreciated. The economy is becoming increasingly consumer-driven. As a consequence, in addition to keeping the employee salary structure viable, it has become necessary to raise employee pay in order to hire better, more qualified and talented people to serve in areas of governance.

In this regard, the government formed the Seventh Central Pay Commission with specific Terms of Reference. The terms' primary points are to analyse and assess the existing pay structure and provide recommendations for adjustments in pay, perks, as well as other benefits which have been desired and practicable for civilian employees as well as the Indian Defence Forces, while maintaining the interests of the historical and conventional parities associated with its implications.

The methodology of recruitment should be aligned to the need to hire the best and brightest people for government positions while also encouraging efficiency, accountability, and responsibility in the workplace. It will also analyse the existing pension system and other retirement benefits, as well as review the bonus norms in light of performance and productivity.

Suggestions regarding recruitment of governmental positions should be given in light of the country's economic conditions and resources, as well as the expected impact on the finances of the state governments of India, according to the specifications as mentioned in the commission's guidelines. The Commission's Framework also requested it to provide recommendations based on best-practices from around the world, as well as their adaptation and relevance to Indian situations and contexts. A closer look at the commission's provisions reveals a number of new elements that have broadened the Commission's mandate.

The Pay Commission's only consideration is to ensure that government personnel are not placed in financially difficult situations so that they can provide the best possible service to the country and ensure that governance is robust, vibrant and effective.

Pay Commission

Indian Government, just after gaining independence from the British rule established the Pay Commission in 1947 to make recommendations on improvements to the wage structure of its employees. Seven pay commissions have been established on a regular basis since India's independence to assess and offer suggestions on the work and pay structure of all civil and military divisions of the Indian government. The panel, which is based in Delhi (India), has 18 months from the date of its establishment to offer recommendations.

1.1   First Pay Commission

The first pay panel was created in January 1946, and its report was given to India's interim government in May 1947. Srinivasa Varadachariar presided over the meeting. The 1st (nine members) was tasked with reviewing and recommending the remuneration framework for non-Defence personnel.

Special Committee for the Defence Forces in 1ˢᵗ CPC

The structure of defence personnel's emolument got decided through a Departmental Committee comprised of service members, rather than the 1st Central Pay Commission (CPC). This committee's goal was to offer recommendations "in the structure of emoluments and perks for military members in light of the pay commission's recommendations for civilian employees." The "Post War Pay Committee for the Armed Forces" was the name of the First Pay Committee, which was established following the First Pay Commission. This committee's recommendations were used to create the New Pay Code, which went into effect on July 1, 1947. A separate group dubbed the "Armed Forces Pension Revision Committee (1949–50)" looked into the pension benefits.

1.2   2ⁿᵈ Central Pay Commission (CPC) constituted by Government of India

The 2ⁿᵈ Central Pay Commission (CPC) was established in the month of August in 1957, 10 years after India got independence from the foreign rule, and delivered the recommendations after 2 years. The 2nd Central Pay Commission (CPC) recommendations incurred a fiscal consequence totalling Rs 39.6 crore. Jagannath Das was the head of the 2nd Central Pay Commission (CPC). The criterio on which salaries must be established was repeated by the second pay commission. It was argued that government employees' pay and working conditions should be established in such a manner that they ensure the system's efficient operation by employing people with requisite competencies.

The Committee for the Armed Forces headed by Raghuramiah

The Raghuramiah Committee (1960), which had service representatives, was established following the 2nd Pay Commission. It looked at the pay of the armed services and provided suggestions.

1.3   3rd Central Pay Commission (CPC)

The 3rd Central Pay Commission (CPC), which was established in the month of April in 1970. It submitted its report in the month of March in 1973. It took over three years to complete and generated proposals that cost the government of India around 144 crore rupees. Raghu Bir Dayal was heading the 3rd Central Pay Commission (CPC). To make the prevailing pay structures sound in nature, 3rd Central Pay Commission (CPC) added 3 extremely significant ideas: inclusivity, comprehensibleness along with. The 3rd Central Pay Commission (CPC) went above and beyond the first pay commission's concept of minimum subsistence. According to the commission report, the true criteria that the government should use is to determine whether the services are appealing and retain the individuals it need, and if these people are satisfied, they should be rewarded.

3rd Central Pay Commission (CPC) and its implications on the pay structure of the Indian Armed forces

1. The 3rd Central Pay Commission (CPC) was the 1st CPC for the unit of Armed Forces of the Defence Forces of India. The latter was previously assigned to the committees of the department that included representatives from the members of the services as well.

2. There was no governmental interference in service suggestions. The Chief of Satff General Kumar Mangalam and Ad. Chatterjea, as well as other veteran officers, were asked to participate in the discussions.

3. The Commission also went to front positions at 13,500-foot, military bases, navy ships, submarines, ammunition depot, army hospitals, and other locations for getting a first-hand look at difficulties in service conditions. The study contains no indication of bureaucratic or political meddling. Shri Raghubar Dayal, a former Supreme Court justice, led the CPC. The Third Central Pay Commission's Report, Volume III, was published in 1973.

The commission believed that the most realistic and equitable technique for calculating Service pay would be to compare it to the pay rates established for Central Government civilian personnel. When the consideration of the recruitment to the Indian Armed Forces is intentional, then it becomes important that people must be recruited among citizens, then this link becomes much more relevant and desired.

Only if Service pay is similar to stages of salary in citizenship employment will the superiority of recruiting to the Indian Combatant Forces to be satisfactory. As a result, in the instance of volunteer military forces, there is an intrinsic relationship between the two.

In 1973, the government made the following adjustments to the Armed Forces' pensions:

Pensions prior to the 3rd CPC Many shady sources suggest that pensions were calculated in fractions rather than percentages. Fractions will be converted to percentages in the following paragraph for clarity.

Armed Forces Pension -

Pay and pensions in the armed forces were lower than in the UK. These were increased during WWII for apparent reasons. Following the decade after World War II, it was significantly lowered and brought into line with civilians to a greater or lesser extent. Armed Forces Pension Revision Committee fixed Armed Forces pensions after independence (AFPRC). Its recommendations went into effect on June 1, 1953.

Pensions remained mostly unchanged until the next civilian pay commission was completed. For example, from June 1953 to October 1961, a person having the position of Lt Col received a fixed amount of Rs. 625 as his/her pension benefits. Prior to the 3rd CPC, no DA/DR was available to retirees. In October 1961, the amount of pension benefit was doubled and reached to Rs 675. To recompense for

the provision of the gratuity of death and retirement, the annuity was lowered to Rs 587 in September 1970. (DCR). In terms of Personnel Below Officer Rank (PBOR), the Army's upper age of retirement was 50 years and for the remaining 2 services, it was fixed the age of 55 years. The AFPRC utilised the 1/60 calculation to determine pensions for officers and PBOR.

The maximum retirement age was set after being in service for 30 years. An individual retiring after 30 years of being in service received a pension equal to 30/60 (50 percent) of his or her rank emoluments. Individuals were not eligible for the pension. It was done in order of importance. To be eligible for a pension, a rank had to be held for at least two years. However, for officers, it was calculated using the rank's minimal wage., and in the case of Personnel Below Officer Rank (PBOR), it was based on the mean of the pay group. For those who served as a Personnel Below Officer Rank (PBOR) for 15 to 25 years, there was a two-year respite.

As a result, troops were paid for the duty of 13 years even though their service tenure has been for 15 years, and the like. In 1968, the despair was lifted. Until 1970, pensioners of the service didn't get any DCR. DCR was implemented in 1970, while civilians have been receiving it since 1950, with their pensions cut accordingly from 1/60 (50 percent) to 1/80 (80 percent) (37.5 percent). To compensate for DCR, the pension was reduced by 12.5 percent. In a same vein, officers' pensions were decreased by about 8% and for Personnel Below Officer Rank (PBOR) by 11% in 1970 to compensate for DCR.

From the above information, it can be seen that a Personnel Below Officer Rank (PBOR) who retires after being in service for 15 years of received the pension amount of 25% minus 11 per cent before the 3rd CPC. A Personnel Below Officer Rank (PBOR) who retired at the age of 30 or more received 30/60 (50%) minus 11%, approximately 39% of her income as the amount of pension benefit.

It is clear from the commission's criterions that no PBOR received a pension amount exceeding 39 percent of income, differing to the assumption that the pension amount of the PBOR was 70 previously the 3rd Central Pay Commission (CPC) and OROP was in effect. (According to the Report of the 3rd Central Pay Commission (CPC)

Liberalized Pension for the family members: Terms and Conditions

Then Prime Minister Indra Gandhi first introduced the liberalized family pension scheme for the widows of martyred defence forces and her children. It began in 1947 and encompassed all previous operations, including counterinsurgency actions. In the case of the demise of a member of the military in the circumstances described in the guidelines by the commission and mentioned below, the eligible family member is eligible for the scheme of "Liberalized Family Pension" totalling to the latest qualifying earnings for both the members of officer's grade and PBOR. The benefits of the "Liberalized Family Pension" at this percentage is awarded to the widow in the instance of public officials and for the designated legal heir of the personnel in the case of PBOR. It is applicable until death or exclusion.

Ministry of Defence, Government of India via its official letter number 200847/PenC/71 dt. 02/24/72, made a decision to name the legally nominated heir of the personnel of PBORs of the Indian armed forces, as well as the Non-Combatant Enrolled (NCE) employees (including the personnel of the APS and DSC cadres) involved in the operations against a neighbouring country and with the following actions were assassinated or disabled:

- The Kashmir Operations of 1947-1948, International Wars of 1962, 1965 (including Kutch and Kargil Ops.), 1971, and operations in Goa and Hyderabad.
- During military operations or border skirmishes with Pakistan on the ceasefire line or another country, operations against armed enemies such as Naga and Mizos and also during a deployment in peacekeeping missions abroad.

- When laying or clearing mines.

These rewards were provided to the designated legal heirs or Next of Kins of all army personnel killed as a result of the aforementioned actions, activities and operations from 1947 to 1948, with effect from 1-2-1972.

Pension Rates Under "Liberalized Pension Scheme"

Under this pension category, the PBOR's legally nominated heir will be given a "Liberalised Family Pension" totalling the last reckonable remunerations drew, which comprises payments in the pay matrix + Grade Pay + Military Service Pay + Group X allowances if applicable + Classification grants actually received if any, till demise or disqualification from the service.

In the special case where a Personnel Below Officer Rank (PBOR) is not survived by a widow, but is survived only by child/children – then in that case all the children altogether will be eligible for "the Liberalised Family Pension" at the specified rate of 60 percent until the condition of disqualification is reached. The condition of disqualification under this special case will be when the children will attain the upper age of 25 years. After that, it will be passed on to the next eligible child upon the death or disqualification of the senior most children. When all children become disqualified, then the disabled child will be eligible for a family pension continuation award. The disabled kid will receive this award for the rest of his or her life, at a rate comparable to 60 percent of "the Liberalised Family Pension".

Apart from that, the civilian employees working in non-combatant field activities (dishwashers, cooks, water carriers, etc.) received uniforms and thus came under Non-Combatant Enrolled (NCE) employees.

Civil Pensions

For civil pensions, the age for retirement ranged was 50 years for senior executives and 58 years for employees working under 'Grade 4' service

conditions. Till 1950, they did not receive any kind of Death-cum-Retirement Gratuity (DCRG). The amount of their pension benefits was calculated through the 1/60 formula. It was limited to service of 30 years. They received 50 percent of their average income during the last three years as their pension.

After 1949, Death-cum-Retirement Gratuity (DCRG) was announced and under it the maximum amount of pension was reduced to 37.5 percent. This policy continued until the 3rd Central Pay Commission. Therefore, both non-combatants and Personnel Below Officer Rank (PBOR) received less than 40 percent of their total income from pensions according to more or less similar formulas. Both also got a similar DCR. There was no DA/DR for anyone. PBOR had no early retirement benefit. (Report of the Third Central Salary Commission, 1973, vol. NS. 4,444 pensions of the 3rd CPC.)

The civil pension formula has not changed significantly. The main change was to increase the eligible length of service from the previous 30 years to 33 years. Thereafter, the maximum amount of pension increased to 41.25 percent during thirty-three years of being in service.

The condition for DR has been developed. It can be quoted from paragraph 92 Vol. IV - "We have received numerous statements suggesting that some measures should be recommended to protect the pensions of existing civil servants from erosion in view of possible increases in the cost of living in the future. We recommend that all future pensioners, regardless of the amount of the pension they receive, grant a relief of 5 per cent of their pension, at least 5 rupees per dining room and a maximum of rupees. 25 per dining room. Relief on these tariffs should be granted if the All India 12-month working-class average consumer price index (1960 = 100) increases by 16 points. "

 While on the other side, long-service pensions have been redesigned. The previously used 33/80 formula was used to decide army pensions. The classification criterion for obtaining the pension was not changed. Benefits of

pensions were awarded for 2 years, depending on rank. Enhancements have been made to basic pension conditions on the range's highest salary instead of the lowest or average salary as used earlier.

The highlight of the 3rd Central Pay Commission was that the military personnel were weighted for the early retirement for the first time and the DR was awarded too. Personnel Below Officer Rank, Brigadiers, Colonels and Lieutenant Colonels, weigh in 5 years, older than 6 years and captains that were less than 7 years in service conditions.

This resulted in a Personnel Below Officer Rank having 15 years of service to retire and receive a pension of 25 per cent as compared to 18.75 percent of that a civilian got. A PBOR who retired after 28 years of service received 41.25 percent as compared to a civilian who received a lower percentage of 35 percent. It was for the 1st time since India got Independence, this CPC gave the Indian armed forces an advantage over the civilian population in terms of benefits of pensions.

1.4 Fourth Pay Commission

The 4th Central Pay Commission (CPC) was established in 1983. This commission delivered its report in three phases in the course of 4 years. It costed the Central Government of India around 1282 crores. The 4th Central Pay Commission (CPC) was headed by P.N Singhal.

Implications of the 4th Central Pay Commission (CPC) On the Armed forces

The government of the National Congress of India (I) under the leadership of Rajiv Gandhi has reached in the course of 4. Degree pays affected all ranks of officers. The entire range included from the lieutenant to brigadier general in the Indian army to the corresponding ranks in the Indian Navy and the Indian Airforce. The "money range," that was within 200 and 1200, was indeed a deduction from his pay scale, not an extra pay check.

That put an end to long-standing mistakes by the Indian Military Police. On the basis of the new grades, policemen and officials of other All India Services with 14 years of public service who were formerly in the same level as seniors having 14 years of service were positioned on an equal basis with the brigades. Major General Satbir Singh, a military pay grade structure specialist and a police pay scale expert , called that rank "less often, less often for fraud, perjury and injustice against defence forces."

He explained: "How can the first military rank of second lieutenant, along with two promotions of lieutenant and captain, be allowed to all be in first civil rank?" In the same way, at the positions of the majors, the "salary range" had the effect of promoting levels of civil compensation similar to those of the majors up to the 3rd. Reason for General Suspicion of the Pay Commissions and the Government of Congress I. Finally, Major, AK Dhanapalan, is suing the biggest retiree, 'Rank Pay'. After lengthy legal disputes, despite many appeals, the Supreme Court outlawed the concept of "rank pay" in a landmark decision. In its ruling, the Oversight Committee determined that the "classification fee" was erroneously deducted from the base salary and that a new salary was ordered "with effect from" and not "as of" January 1, 1986

1.5   Fifth Pay Commission

The announcement for the establishment of the 5th CPC was released on April 9, 1994, although it did not begin functioning until May 2, 1994, when the Member Secretary assumed responsibility. Justice S. Ratnavel Pandian was heading the fifth pay commission. M.K Kaw of the Indian Administrative Service and Suresh Tendulkar, Professor of Delhi School of Economics, University of Delhi were among the members.

The first CPC comprised nine members, comprising military personnel, the second comprised six members, including one military personnel, and the third and fourth CPCs have all had five members, but still no military personnel. Three people

made up the fifth, and yet none of them were members of the military. In the beginning, there was no member secretary, simply a secretary.

All pay commissions since the 1st CPC have had a position of member secretary, The member secretary was nominated invariably come from the IAS cadre.

The 5th Central Pay Commission report, which reach over nine parts and 172 chapters. It was a gigantic tome of information policy suggestions. It took the Commission 3 years to compile the report. The commission started its work with the sanctioned workforce of 107 but later it grew to 141 persons. It included personnel from Indian Revenue Service, Central Secretariat Service, the Accounts Service, Indian Economic Service, Central Public Works Department, Border Security Force, Geological Survey of India and National Informatics Centre. It cost Rs. 17,000 crores to build.

Part VI of the report covered civilians' pensions including retirement benefits, while Part VII covered pay rates and entitlements for the Armed Services. The Commission's concluding section is Part IX.

Financial Implications of the Fifth Central Pay Commission (CPC)

With the implementation of the Fifth Pay Commission, the national government took on a severe impact. Over 3.3 million national government employees will get a pay boost, according to the announcement. It also asked that wages be increased by the state authority. The 5th Central Pay Commission (CPC) caused a stir after it was implemented, causing financial problems for both the federal and state governments.

In 1996-1997, the Centrals Government pay bill was around 220 billion that included pension dues. By 1999, it rose by about 100 percent. It caused a huge burden of around 43,000 crores in 1999-2000.

In the instance of the state government, the financial burden increased by 74%. State governments were required to pay around Rs 900 billion in salary in 1999,

up from Rs 515.48 billion in 1997. This clearly demonstrates the state's and federal government's burden. According to several economists, about 90% of the state's revenue was spent on salaries. Due to the hike, 13 Indian states were unable to pay their employees' salaries, prompting the central government to intervene.

Other recommendations

One of the report's proposals was to reduce the federal employment by around 30%. It also advised that the number of pay scales be reduced from 51 to 34, and that the government not recruit for the approximately 3,50,000 vacant positions. None of these proposals were taken into consideration.

Criticisms by World Bank

The World Bank criticized the Fifth Pay Commission, calling it the "single most adverse shock" to the country's public finances. It also stated that the government's workforce was 'not excessively' huge, but that there was a "pronounced imbalance" in skills. Around 93 percent of the employees were in third or fourth grade, according to the report.

Fifth Pay Commission and the Armed forces

Terms of Reference

For reasons not clearly mentioned in the report, the 4th CPC did not have separate Terms of References for the Armed Forces. The 5th CPC, on the other hand, was instructed for the first time to assess the Armed Forces' terms and conditions and provide recommendations for what should be done "deemed desirable and possible. As a result, the pay panel made the ambiguous observation that "Even their suggestions for modifications in the structure of emoluments for Armed Forces Personnel, including death cum gratuity, had to be made with due regard for the terms and conditions of their service".

Lateral Transfer

In its January 1997 report, the 5th CPC recommended a 10% to 25% increase in posts for Members Of the armed forces in Group C and D in Central Armed Police Forces (CAPFs). 5 CPC argued for setting aside 25% of officer's positions in the CAPFs for Short Duty Commissioned Officers once they completed their service in the military. The Pay Commission's suggestions aimed to cut the defence pension bill, save money on training and recruitment, supply trained manpower to government ministries, and give soldiers a second profession following their military service.

The Pay Commission's proposals were generally rejected by the Janata Dal (United Front) and the following BJP regime of Atal Bihari Vajpayee. Mulayam Singh Yadav, the minister of defence (1996 – 1998), Indrajit Gupta, the home minister (29 June 1996 – 19 March 1998), and Lal Krishna Advani, the home minister (1998 – 2004), did almost nothing to implement these proposals. The problem worsened, and the pension bill skyrocketed.

1.6   The 6th Central Pay Commission

The 6th Central Pay Commission was approved by the Cabinet in July 2006. This 18-month commission was established under the leadership of Justice B.N. Srikrishna. As per media speculations, the cost of compensation hikes for a total of 5.5 million government employees would be over 20,000 crores when the 6th Pay Commission's recommendations were released in early April April 2008. Employees had warned to go on strike if the government did not improve their salaries. Increasing inflation and greater salary in the private sector as a result of globalization's impacts have fueled the desire for rises.

Class 1 officials in India are severely underpaid, with a 25-year-old IAS officer receiving only Rs.55,000 every month. Pay arrears are expected from January 2006 to September 2008. Mostly all government employees received 40% of their

pay arrears in 2008, and the remaining 60% arrears were deposited to their accounts in 2009 (as guaranteed by the government). The Sixth Pay Commission was primarily concerned with reducing the number of pay scales and introducing the concept of pay bands, as well as minimising uncertainty around various pay scales. The elimination of the Group-D service cadre has been proposed.

1.7 7th Pay Commission

A substantial number of representations were received by the Commission from both recognised and unrecognised bodies. The Commission also allowed these organisations' representatives to make oral submissions. Visits were made to remote locations such as the northern border areas, fields of Ladakh, highs of Arunachal Pradesh, remote posts of the Rann of Kutch, and Rajasthan, as well as remote portions of India such the north-east regions and the Islands of Andaman and Nicobar. The main objective of the trips was to have a direct personal observation of the working circumstances, difficulties and challenges associated with various vocations.

Bengaluru, Vishakhapatnam, Mumbai, and Kolkata were among the metros visited by the Commission, which had a large number of Central Government personnel. After gathering oral and recorded evidence, the Commission reviewed all of the issues raised by these members, bearing in mind the terms of reference. The commission member documented the worldwide best practices. They also interacted with the officials of the government of the Australia and the New Zealand.

In cooperation with Indian Institute of Management Bangalore, SVP Police Academy, Hyderabad and Administrative Staff College of India workshops were organised to obtain insight into the fundamentals of emoluments. The local office of the World Bank in India, was asked to give their comments on the best global practises. The Representatives from the World Bank presented on a variety of

topics, including international trends in public sector pay, allowances, and pensions, among others.

Employees at all levels expect a large boost in compensation as well as improvements in other facilities. A number of well-known organizations have placed their claims for a pay structure that is comparable to that of the private sector. At the centre of these desires is the country's recent economic success, which have resulted in new opportunities for outstanding young people; numerous of them have been engaged by the private sector at salaries far higher than those offered by the government.

The Commission has given careful consideration to all of the concerns and has addressed them in suitable chapters. It should be noted right away that public service is more than just a contractual job; it confers the social status that simply cannot be measured in terms of money.

The Commission's major concern was that cost structure should be intended to attract the right type of talent in a transparent way while also taking the government's budgetary restrictions into consideration. The objective has always been to provide salaries that are enough for a decent lifestyle. Any significant reduction in the actual value of remuneration due to inflation should be accounted for in the compensation package.

For one's accomplishments, one should be properly compensated. Salary increments will not be able to keep up with market pressures, but they should not be so unattractive that talent will not be lured to government service. As a consequence, they devised a pay scale based on the Aykroyd formula, which represents the country's underlying average living costs. The goal was to come up with a fair renumeration package that allows people to afford the necessities of life.

The new pay system has been designed to be an open-ended, tiered matrix that applies to both civilians and military service members. To minimise dissatisfaction, this has been taken into consideration that a person should not languish and should have a sufficient chance to grow via merit and receive higher remunerations. The existing rate of rise has been maintained since it is regarded adequate. All levels of grade pay have been incorporated into the pay matrix, and the idea of discrete grade pay has been discontinued.

"The Modified Assured Career Progression" (MACP) programme has been changed in a significant manner. The current formulation is expected to address widespread discontent with the previous approach, in which promotions, progressions or gains through "The Modified Assured Career Progression" (MACP) programme was deemed insufficient.

Employees will feel appreciated and fairly rewarded, and their pay will not be below that of a comparable position in another company. While they work to meet their aspirational goals, but it is well recognised that workers who have outlived their usefulness should not be maintained on the payroll, and their continued presence in the system should be avoided.

After careful consideration and thought, it was decided to implement separate payment matrices for different cadres of services. Pay Matrices was separately decided cell by cell for Defence Forces, Military Nursing Service Personnel and Civilian employees. The structure has been reduced so that any employee can locate their place in the suggested matrix, which is essentially the same for all segments.

All personnel from diverse services will progress according to their own service circumstances, receiving merit-based advancement. Any interruption to the matrix structure will have a major influence on the inter se placement of various levels of the organizational hierarchy, all of which were carefully examined, as well as all Indian government personnel's service conditions.

As a result, the necessity of not changing any part of the three matrices cannot be overstated, as doing so will disrupt the services' parity and lead to unusual occurrences.

In addition, the Commission's discussions with various labor organizations have shown a significant lack of uniformity among ranks in terms of entry - level position qualifications (ELQ), compensation packages, nomenclature, and advancement prospects. The Commission's goal is to bring ELQs and remuneration closer together across organisations while engaging with cadres that have comparable work content and duties.

It is also recommended that the matrix be refreshed on a regular basis rather than waiting ten years. It can be examined and amended using the Aykroyd method, which takes into account changes in the pricing of the commodities that make up a common man's basket and is reviewed by the Shimla Labor Bureau on a regular basis. It is suggested that this be used as the foundation for periodic matrix revisions, rather than waiting for another Pay Commission.

A big number of allowances have also been updated to make them more appropriate and practical. Those that no longer serve a purpose have been phased away. It is also felt that as a step toward better governance, transparency and administrative simplicity each provision should be publicly disclosed.

Productivity, accountability, and performance are all stressed in the terms of reference. This puts the notion of performance-based pay, which has grown in popularity over the previous three Central Pay Commissions, into much greater focus. A framework for performance compensation was recommended by the 6th CPC.

To that end, recommendations were created based on the Results Framework Document's performance measurement approach (RFD). However, the RFD

system was still being implemented at the time, and it was about to be implemented in a number of governmental departments.

As a result, the performance-based pay structure programme failed to taken into serious consideration. The "System of RFD" is now well established. The commission advocated to implement the performance-based pay structure programme based on performance reports, RFD and some other broad criterion for all types of employees under Union Government of India.

It was also suggested that incentive payments should not be made automatically, and that all present bonus payment schemes must be linked to productivity in work. There is no blueprint for increasing government effectiveness and competitiveness. Governmental organisational set ups are typically big, multi-layered, and complex. In such a situation, a variety of extrinsic and intrinsic factors play a role in increasing efficiency and production.

Various Cadres/Associations brought a slew of issues before the Commission, including cadre issues, administrative issues, organisational structure, and so on. A body like "the Administrative Reforms Commission" or "the Civil Service Reforms Commission" should ideally deal with the broader issues of efficiency, productivity, excellence, and service delivery administratively.

1.8 Relation between Pay Commission and Public Expenditure

The strategy adopted by the Indian government after the independence focused on building infrastructure and capital stock to promote growth (Second five-year plan). It is the responsibility of the government to take initiative when the private sector fails to do so. Government is also required to ensure allocative efficiency and redistribute resources in an equitable manner to create conditions for growth and stability (Musgrave, 1959).

The arguments for these roles are based on normative concerns (Marshall, 1950; Rawls, 1971). Governments however are constrained by their limited budgets. The

composition of public expenditure and their source of financing can have effect on the employment levels, inflation and future growth prospects. The cause of the crisis in the 1990s was imprudent behaviour of the government. Since then, public expenditure management has become an important objective of the Government of India (GOI).

The expenditure items can be broadly classified as revenue and capital expenditure. Revenue expenditure does not create assets or reduce liabilities. Capital expenditure on the other hand by creating assets improves the long run potential of the country. In case of India the share of revenue expenditure has comparatively been higher than capital expenditure. This pattern of the government expenditure has been constantly criticized on account of the resulting fiscal imbalances and the substitution of expenditure towards less productive purposes instead of capital formation (Bose and Bhanumurthy, 2013; Goyal and Sharma, 2015).

It is being argued that current spending might not improve the long run growth prospects of an economy but capital expenditure with focus on human capital, infrastructure; and science and technology can have sizeable effect (Diamond, 1989; Barro;1991, 1997; Barro and Sala-i-Martin, 1995; Romer, 1994).

The role of dedicated bureaucracy in providing good leadership and governance in a highly populated country like India is invaluable. Without greasing the wheels of its administrative machinery, the functioning of the government might become highly inefficient. Efficiency wage theory dictates that to get efficient and competent workers, a firm should provide wage which is more than the market-clearing wage in order to increase their productivity or efficiency (Akerlof, 1982; Akerlof and Yellen, 1986).

Although, paying high wages to everyone is not possible but wages can be raised to a level which allows the government employees to maintain a decent standard of living (7th Central Pay Commission). The changing global outlook in the 21st

century and the evolving consumer driven nature of the economy has led to vast differentials in salaries of skilled workers in private sector as compared to the public sector (Glinskaya and Lokshin, 2005; Singh et. al, 2015). Regular pay structure revisions are critical to attract better talent to public service.

The size of the public wage bill is typically an important issue of economic policy. The government at times have limited resources and might be keen on reducing the wage bill burden. One option could be to allow the inflation to erode the real wages. However, these cut in real salaries do not go unnoticed and leads to discouragement and creation of an inefficient workforce (Chew, 1993). Clearly, the governments are caught in a non-ending trap. The provision of higher wages can leave government with too little resources for other activities. And, the strategy to keep low wages might result in a de-skilled and poorly paid workforce (Chew, 1993).

The society suffers. Social sector services need to be more professional and delivery oriented. The problem is compounded when the salary increases for skilled personnel in private sector at a faster pace. There is a trade-off between compensation and productivity.

The solution could be to implement compensation reforms in a manner that the incentives of the employees are not distorted (IMF, 2016). It is true that there is no market for output of the public sector. It might be difficult to come up with a method to estimate the vales of these services. The solution in this case will be to compensate the public sector employees at a rate which is comparable (if not equal) to that for equivalent skills which are marketed in the private sector (Campo et. al, 1997). To provide the employees sustainable wages and to nudge the competent and talented workers in the government sector, the Government of India has set up various Pay Commissions from time to time.

Developing economies are keen on achieving rapid economic development. Even the developed economies are consistently looking for continuous improvement in

the Page | 3 standard of living of their people. It is widely acknowledged that expenditure and economic growth are correlated. But there are always constraints and opportunity costs while making optimal use of the resources.

Private sector is not in the capacity to make huge investments, especially for social activities, because of their objective of profit maximization and the ever-persistent uncertainty. Although, the government also faces a number of budget constraints, economic development is to a great extent dependent on public expenditure, especially during the initial stages when the economy is taking-off. The expenditure incurred by the government could cater to different needs, sectors and sections of the economy.

1.9 Role of Pay Commission in the Growth of Indian Economy

To elaborate, infrastructure is a handicap which can impede growth. By building rails and roads, the government improves the connectivity across various regions and helps the business to flourish. Similarly, the governments have welfare concerns for the population. It incurs expenditure on schemes for people on lower economic plane and allots higher funds for backward areas to promote balanced regional growth.

Expenditure is also incurred to provide basic amenities to ever increasing population such as education, housing facilities and security. In developing countries, inflationary pressures are always destabilizing, the government provides subsidies and rations food to alleviate them. Subsidies are also provided for the production of goods which have the potential to generate foreign exchange.

Public expenditure has the potential to make a difference through multiple channels. For example, investment in health and education can lead to formation of human capital formation which implies improvement in productivity of the workers and can lead to higher economic growth. Similarly, the expenditure

incurred on agriculture or industry could create backward and forward linkages. This in turn can lead to creation of employment opportunities.

To understand how the public expenditure could create multiplier effect and to what extent, it will be helpful to understand the various categories of expenditure incurred by the Government of India. Revenue expenditure has a recurring nature and undertaken on yearly basis. Capital expenditure is the investment in durable type assets.

Further, revenue expenditure is categorized as expenditure on: General services, Social Services, Economic Services, Grants in Aid and Contributions; and Aid Materials and Equipment. Capital expenditure is divided between Capital Expenditure/Outlay and Loan/advances and includes General services, Social Services, Other Services and loans.

The 2008 crisis forced policymakers to think about the component of the public expenditure which could be increased to effectively counter the crisis. Lack of evidence in favour of any particular component had put them in a quandary.

Also, it is true that India was not exposed much to the crisis. It was already discussed in the previous section that the expenditure incurred on components of public expenditure can provide impetus to the economy through different pathways and the impact can be felt either in the short run or long run.

Another issue is fiscal retrenchment. Once the phase for expansionary policies subsides, there are components for which the budget has to be cut back as the fiscal health of the government deteriorates. Subsidies, loan waivers to farmers and higher borrowings are some of the items where government should be fiscally prudent.

Fiscal dominance during the election years in India is a recurring phenomenon. In case of India, the expenditure incurred on salaries, pension and interest payment is usually frowned upon. It has been stressed again and again that the expenditure

incurred on capital expenditure will provide environment for growth in the future. It is questionable whether the scope for their substitution is possible or not. The expenditure on both the items should be incurred in tandem without caring about substitution.

However, in case of India given the budget constrain, the scope for substitution does arise (Bose and Bhanumurthy, 2013). The cumulative impact of 5 th Pay Commission on the State finances was estimated to be around 1 per cent of the Gross State Domestic Product (GSDP) and that of sixth pay commission around 1.4 per cent (Mohan, 2008; RBI, 2018). When the 5th Central Pay Commission was implemented, the fiscal deficit to GDP ratio jumped to 5.8 per cent in 1997-98 from 4.8 per cent in 1996-97. It was 6.5 per cent in 1998-99.

During the implementation of the Sixth Pay commission, the Great Financial Crises had occurred. The fiscal deficit did overshoot from 2.6 to 6.2 per cent of GDP. The studies on estimation of multipliers for India report a higher value of capital expenditure as compared to revenue expenditure. And, these studies have made the recommendations that the share of the capital expenditure be increased. Notably, the fiscal dominance of India has been a cause of worry since the crisis in the early Page | 5 1990s.

It was the implementation of Fiscal Responsibility and Budget management act (FRBM) in 2003 which quelled the tension. However, the Medium-term Fiscal Policy statement (MTFP) 2018 states that the government plans to do away with the target for revenue deficit. It has been argued in the document that the expenditure incurred on maintenance of schools, and hospitals is as important as expenditure required for their construction.

Although it has been made clear that expenditure incurred on capital will not be compromised but still question arises about the components of revenue expenditure on which the government will focus upon. There are studies which have tried to estimate the value of multiplier for India and most of them have

focused on revenue and capital expenditure (Bhattacharya, 1984; Krishnamurty, 1985; Yadav et. al., 2012; Jain and Kumar, 2013; Bhanumurthy, 2013, Goyal and Sharma, 2015).

However, they have considered the revenue and capital expenditure in totality. None of these studies estimate the impact of increase in expenditure incurred on individual components.

Rigorous analysis about the impact of expenditure on growth and consumption can provide invaluable evidence to the policy makers during the periods of crisis and fiscal imbalance.

1.10 Objectives of Research Investigation

The following are the main and major objectives of this research investigation:

I. The first objective is to determine the year on year level of total employment and its secular change in Indian economy. Year on year and secular changes in employment not only propel the growth of GDP/GNI but these also reflect the relation of employment and its growth with the growth of GDP/GNI on the one hand, and it also depicts the impact of growth of income on employment on the other.

II. The second objective pertains to employment in public sector and its relation with the total and private sector employment on the one hand, and the relation of public sector employment with public expenditure on the other.

As public sector employment has been the dominant part of total employment in India during the era of planned development, the study of public employment is important from the viewpoint of its changing relation with the total employment over the years during the era of New Economic Policy.

III. The third objective relates to the employment in private sector and its relation with the total and public sector employment on the one hand, and the relation of private sector employment with the private income/expenditure on the other.

As the public sector employment has been declining both in absolute and relative terms during the era of liberalization, privatization and globalization, the study of ascending

role of both absolute and relative private sector employment in India has acquired the importance of its own and also the study of its changing relation with the total and public sector employment.

IV. The process of LPG under NEP has been expected to have adversely affected the public expenditure. However, the curtailing of the public expenditure and the reducing of the size of the Government have been and are still practically in-surmountable tasks. The fourth objective is the evaluation of the thesis that the size of the Government, reflected by the level of public expenditure, and its growth are sticky downwards and highly upward flexible (Musgrave, Peacock & Wiseman, Prakash, Shri & Chowdhury, Sumitra, 1994, Prakash, Kiangi, R.F. & Shama, Sudhi, 2017). Wagner's Law has shown that there is an inbuilt tendency for the bureaucracy to multiply itself. The childbirth in one's home not only enhances the financial burden but it also adds to the responsibility of child bearing and rearing (See, Marshall, Alfred, 1892/1962). This propels population control. However, the authority of job creation (birth of new jobs) remains with the policy makers and the senior bureaucrats who do not bear the pangs of child/job/birth nor do they bear any financial burden or responsibility of paying for these jobs. However, LPG under NEP implied leaner, meaner and thinner government with maximum governance. In view of this, it is imperative to analyze the inter-temporal behavior of the public expenditure in India.

V. The fifth objective of the study is the evaluation of the relation between the expenditure on salaries of the government and the total public expenditure. The results are expected to reveal the impact of the recommendations of the Pay Commission.

VI. The sixth and the last objective is the evaluation of relation between private sector employment and private income. This will reflect the relation between the private income and expenditure on salaries of private sector employees.

1.11 Approaches to Formulation of Hypothesis for Empirical Evaluation

There are two alternative approaches to the formulation of hypotheses for empirical evaluation:

(i) Traditional Approach to formulation of hypotheses; and

(ii) Modern Approach to Nested hypotheses formulation.

(i)Traditional approach to hypothesis formulation deals with two hypotheses. These hypotheses in statistical parlance are defined as Null Hypothesis and Alternative Hypothesis. These hypotheses are symbolically represented by H_0 and H_1 respectively.

Null hypothesis is a simple and single hypothesis, denoted by H_0, which encompasses one and only one possible state of reality that is not expected to exist. Hence, right from its initiation to the stage of testing, null hypothesis is expected to be rejected on empirical evidence on *a priori* reasoning and or belief. It is totally negative in orientation thrust and even in statement. Thus, H_0 is designed or formulated in a manner which makes it stand in contradiction to the observed or expected facts. For example, it is known that the piece of paper is actually blue; then, what purpose does it serve to deny that the color of the paper is blue? The null hypothesis shall run as follows: 'The color of the paper is not blue; alternatively, it may state that the color of the paper cannot be blue on the available empirical evidence.'

However, all other empirical possibilities of the color of the paper are expected to be embodied in the alternative hypothesis, H_1. Thus, H_1 is a set of all possible facts that may belong to the complex reality. H_0 is a closed and bounded state of factual reality, and H_1 is an open ended set of statements which is compatible with any observed fact under the sky. Reverting to the example of the color of the paper, we find that H_0 is rejected. We say that the empirical evidence supports the acceptance of the alternative hypothesis, so H_1 is accepted. But the color of the paper remains undecided except that it is not blue. This is not scientific (For elaboration of this, See, Prakash, Shri & Sharma, Amit, 2017). This is why it is always probable to commit either type I or type II error in statistical testing of the hypothesis. This approach, thus, compromises with the precision or accuracy and even the objectivity which is supposed to be the hallmark of scientific research (cf. Prakash, Shri and Sharma, Amit, 2017, Sharma, Sudhi, 2016, Kiangi, Richard, Fue, 2016, Negi, Gautam, 2016, Khalid, Ramdhani, 2018).

(2) Modern Approach to Hypothesis Formulation

Modern approach to hypothesis formulation is known as the Approach of Nested Hypothesis formulation. Modern approach does away with the concept of null and

alternative hypotheses. It treats all hypotheses either as mutually exclusive and alternative; or complementary parts of the compound or mixed hypotheses. Mixed hypothesis comprises many more than just two hypotheses. The Nest of Hypotheses is the universal set of hypotheses which pertains to the chosen topic of research. Each sub-set of this universal set relates to one specific objective of research investigation and it may naturally comprise several hypotheses. Each of these hypotheses will relate to one specific reality or facts.

The Nested Hypotheses constitute a comprehensive but alternative sets of propositions each of which is trusted to correspond to one possible state of reality which is in consonance with some observed or expected fact(s). Thus, all the propositions in the Nest/Set are assumed either to be each other's alternatives or each other's complement. Therefore, the Nested hypotheses constitute a closed and bounded set.

As the human mind has its own limitations and intellectual endowment differs among scholars, total number of hypotheses in nested approach is limited by the knowledge and ability of the scholar. However, each research question or objective of investigation generally lies at the base of more than one or two hypotheses.

Nested approach to the formulation of hypotheses has an in-built advantage over traditional approach and it is that each hypothesis may itself suggest an appropriate method or model for analyzing the data (Gujarati, et al., 2007). Thus, the use of nested approach to hypothesis formulation brings about a fusion between objectives, hypotheses and methods and models chosen for data analysis.

1.12 PERIOD OF STUDY

The period covered by the research investigation might have comprised two distinct parts each of which relates to the distinct era of a different policy regime. This has an important bearing upon the subject of research.

I. Era of License and Permit Raj, which reigned supreme during the policy of planned development. Planning era dawned in India with the launching of the First Five Year Plan in 1951 and it lasted till the end of 1989-90. Therefore, the sub-period from 1980-81 to

1989-90 may be the first sub period. This is the period when public expenditure was the base of growth of the economy and public sector was the major employer of manpower.

2. The era of the New Economic Policy, also called the policy of liberalization, privatization and globalization (LPG). It commenced in 1990-1991. This is the period during which the private sector started emerging as the dominant sector of the economy. Private investment and consequent private sector growth induced employment generation which started overtaking the public sector's role of employment creation and sustaining the growth of GDP/GNI. This process continues till date. Specification of these facets of Indian economy is important since the study covers basically post liberalization period. The reason of this restricted choice is the availability and accessibility of data relating to the expenditure on the salaries of the government employees.

Both these sub-periods are characterized by the constitutional obligation to appoint, accept and implement the recommendations of Pay Commissions to revise and up-grade the pay-packages of the public employees.

The chosen sub-period relates to the radical changes in the roles and functions of the government in the economy, and consequently in employment generation. The period has also witnessed disinvestment in public sector enterprises and opening up or the sharing of the responsibility with the private sector. For example, railway catering has been handed over to the private hands. Power distribution has been given to private companies. Oil exploration, steel, hotel, road transport etc are also open to private sector. These are just a few illustrations. While the era of policy of planned development coincided with the state interventions in all spheres of economic activities, the era of LPG is associated with the replacement of controls and restrictions of private enterprise by guidance and regulation of operations of private sectors into socially useful and economically desirable directions.

1.13 Formulation of Objective Wise Hypotheses

Hypotheses Relating to Objective I. Under the policy of privatization, liberalization and globalization, the government is expected to dilute its role as the promoter of growth and generator of employment in the Indian economy. The first objective is, therefore, to

determine the impact of this policy on total employment. The following set of the hypotheses are formulated to realize this objective:

H_{11}: Total employment has neither been adversely affected nor has it been positively affected much by the New Economic Policy and the implementation of recommendations of Sixth Pay Commission.

The reasoning underlying the hypothesis is that the trend of growth of total employment has remained operative despite the decline in public sector employment because the private sector has undertaken the responsibility of the government for the generation of employment at the same old pace.

H_{12}: The level of expenditure on salaries of the employees of the governments (EWSPE) has been declining over the years due to the decline in public sector employment.

The above hypothesis is the corollary or an adjunct of H_{11}, and hence, the logic is self-explanatory. Declining public sector employment entails a decrease in public expenditure on salaries unless the salaries are concurrently raised proportionately to the decline in employment. This has never been observed.

H_{13}: Total employment stagnates for few years before it begins to rise again.

The logic underlying this hypothesis is that (i) even in such enterprises of public sector which come under disinvestment; employees do not lose their jobs. Such enterprises are taken over by or merged in private enterprises. Therefore, the employees are transferred from public to private sector which does not affect total employment at all. Besides, the government does not fill up the vacancies caused by attrition for a few years though it appoints casual workers of class IV and III categories in such vacancies. Such appointments are made for 3 months and after every three months, the incumbent is replaced by new appointee. This mitigates the propensity of shirking work and unionise though total employment is only marginally affected in the short run. However, once the vacancies are filled up, total employment again starts rising.

H_{14}: Total employment has been continuously declining since the Indian economy has been experiencing job-displacing growth (For Explanation, See, Prakash-Sharma, 2018).

In the chapter two on review of literature, we have explained different types of economic growth as have been propounded by Prakash & Sharma on this subject. The fact is that the Indian economy has chosen the factor transformation of growth under which less labor with more capital and advance technology produce more output. As labor productivity grows, labor is displaced since more capital intensive automotive processes come into operation. As several scholars and analysts found that the growth of the Indian economy is driven by the growth of labor productivity, it is inferred that total employment declines as the economy grows.

H_{15}: Total employment has been rising secularly despite its periodic stagnation and decline in public sector employment.

The logic underlying the hypothesis is multifold. In the first instance, the withdrawal of the government from licensing and permit issuing operations is continuously replaced by the appointment of regulatory authorities. For example, despite the privatization of insurance and banking business, neither L.I.C., nor G.I.C, nor L.I.C. Housing Finance have been closed or privatized. However, the Insurance Regulatory Authority has been appointed. Similarly, though the banking is now open to private sector, public sector banks have not been closed. However, an Ombudsman has been appointed. Similarly, large scale privatization of construction industry, especially housing segment, is now under RERA and housing Loans Ombudsman. Hence, there is no space for total employment to decline. Besides, both public and private sectors recruit new personnel in their ranks.

Hypotheses Relating to Objective II

The second objective pertains to the employment in public sector and its relation with the total and private sector employment on the one hand, and the relation of public sector employment with the public expenditure on the other. Relation of public sector employment with total and private sector employment is measured by the ratios of public sector employment to total and private sector employment.

The following are the main hypotheses relating to the employment in public sector:

H_{21}: Employment in the public sector in India has been continuously rising despite the adoption and implementation of NEP in 1990-91.

The logic underlying the above Hypothesis is explained briefly hereunder. Public sector has acquired the commanding heights of the Indian economy after the adoption of the Industrial Policy Resolution of 1956. Public sector has now emerged as the dominant investor and producer of goods and services in the Indian economy. The goods and services produced by public sector ranged from the hospitality service, road, rail and air transportation to entertainment goods like television and wrist watches, and these are in addition to steel, heavy electrical, railway wagons and locomotives, several machine building machineries etc. The government of India has also emerged as the protector of jobs in the ailing cloth mills which it took over to save jobs. Such government could not be trusted to do away with the millions of jobs in the public sector. Besides, the continued operational manpower requirements of such departments as FCI, Electricity and Road Transportation Corporations, Irrigation, Post & Telegraph departments, Public sector banks and Insurance Corporations, Police & Armed Forces, Judiciary and many others continue to expand and modernize for which they recruit large scale manpower each year.

The erstwhile license-permit raj prevails in such establishments as DDA and several regulatory authorities. It led to exponential multiplication of bureaucracy and public expenditure, including expenditure on the salaries of public servants. This conforms to Wagner's Law. Therefore, the expenditure on salary and wages of public functionaries is also expected to have increased to a very high level. Implementation of recommendations of Fifth and Sixth Pay Commissions in mid-nineties and the first decade of 21st century has also resulted in considerable increase in public expenditure.

H_{22}: The public sector employment has been consistently declining since 1990-91.

Despite the lukewarm commitment of the governments of Chandra Shekhar, Deva Goda and Indrajeet Singh Gujral, the UPA and NDA governments implemented the economic reforms under NEP. Hence, both the public expenditure and public sector employment have been declining though a bit haltingly.

H_{23}: The continued decline in public sector employment has resulted in the decrease in the ratio of public sector employment to total employment.

H$_{24}$: The continued decline in public sector employment has resulted in the decrease in the ratio of public sector employment to employment in private sector.

H$_{25}$. The employment in public sector is positively related to the public expenditure.

The logic underlying the hypothesis is that no employer, whether public or private, can hire workers and employees without having the capacity to give them their wages and salaries. However, the expenses on wages and salaries of the workers and employees of the government and public sector enterprises are an inseparable part of public expenditure. Total public expenditure and its inter-temporal growth depict the spending power of the government and its growth over the years with the growth of national income. Greater the spending power of the government, greater shall be the disbursement of income on wages and salaries. Besides, periodic implementation of the recommendations of Pay Commissions along with the biannual grants of DA/.ADA/DP entails ever increasing expenditure on salaries of public employees which cannot be sustained without the sustained growth of public revenue and public expenditure. However, public revenue is guided and governed by the public expenditure needs (Prakash-Choudhury, 1994, Prakash-Kiangi-Sharma, 2017).

An interesting feature of public spending is that a great proportion of total expenditure is accounted by expenses on defense, health, education, subsidies and various administrative services all of which are considered to be unproductive. However, the economists such as Marshall, Schultz, Vakil and Brahmananda, Shri Prakash etc. considered expenditure on education, health, hygiene, sanitation and nutrition as growth promoting (For detailed discussion See, Prakash, Shri, 1977, 1994, 1995). Besides, all these heads of expenditure are amongst the most labor intensive activities of Indian economy. These sectors are the largest employers after primary production activities and informal self-employment sectors of the Indian economy.

For example, army, air-force and navy employ 42,253, 12,404 and 10,393 officers, and 11.94 lakh, 1.27 lakh and 56, 835 soldiers and other-ranks respectively. Payments of salaries and wages are made from revenue account expenditure under the category of administrative costs, including payments on account of expenses incurred on tours and travels undertaken to discharge routine administrative operations. These are in addition

to the expenses included under the head, wages and salaries. The total budgeted expenditure on defense has been capped at 2.95 lakh crore in 2018-19 budget of Government of India. Day-to-day operation costs, wages & salaries account for Rs. 1, 95, 948 -1.96 lakh crore (Rajat Pandit, 2018). Thus, it accounts for 66.45% of total budgeted expenditure. Service sectors like health, education, transport, irrigation etc. are also labor intensive and account for large proportion of total expenditure. For example, Indian Railways has decided to reduce the manpower strength of Railway Board, which is a policy making powerful body from 500 to nearly 250. The officers being eased out hold the positions such as additional members, executive directors, directors etc. This is an unambiguous indicator of Wagner's Law being empirically in operation (Times of India, 6 Feb. 2018, P.1).

Hypotheses Relating to Objective III

The third objective relates to the employment in private sector and its relation with the total and public sector employment on the one hand, and the relation of private sector employment with the private income/expenditure on the other.

H_{31}: Employment in private sector has been continuously growing (i) in absolute terms; (ii) relative to total employment; and (iii) relative to public sector employment. The hypothesis is obviously a composite hypothesis and it comprises three individual/single hypotheses.

The logic of the hypothesis is embodied in the new economic policy which heralded the dawn of liberalization, privatization and globalization. The policy paradigm made the private sector the main driver of investment, growth of income and generator of employment. This explains the first constituent of the composite hypothesis.

The three legged policy of LPG not only propelled the private sector but it also sowed the seeds of reducing the government to the minimal level to ensure maximum governance.

Consequently, the role of the public sector as the main generator of employment opportunities and the basic propellant of growth of income was greatly diluted while the role of private sector as the generator of employment and promoter of growth increased

many-fold. Consequently, the ratio of private sector employment to (i) total employment; and (ii) public sector employment increased continuously.

H_{32}: Employment in private sector increased uninterruptedly from 1990-91 to 2008, but it declined thereafter absolutely as well as relative to total and public sector employment.

Like the first hypothesis, this is also the composite hypothesis as it tries to capture two opposite directional trends of employment and economic growth. The first part of the hypothesis, as explained earlier, is ingrained in the NEP while the second part of the hypothesis is based on observed facts relating to worldwide economic slow-down triggered by Lehman of US. The sub-prime crisis engulfed the banking industry practically all over the world. Since most of the banking industry in India is in public sector, the financial crisis reached India a bit late. However, when it reached here, it badly affected the private sector. Demand recession engulfed most of the industries. Consequently, pink slips were issues to numerous employees every Friday. In many cases, salaries were reduced drastically which the private sector employees prefer to accept rather than lose the job. It has two diverse consequences: (i) level of employment and employment relative to total and public sector employment declined; and (ii) Expansion and diversification business plans were put on hold which resulted in no or low recruitment of new employees.

H_{33}: Employment in private sector has been increasing at decreasing rate over the years which has resulted in decline in private sector employment relative to total and public sector employment.

Logic: Employment generation in private sector is guided by the considerations of cost and benefits. Unless the benefits exceed cost two to three times, no new jobs are created. In other words, marginal/average productivity is generally compared with total cost of hiring rather than salary expenditure alone. Besides, the creation of new jobs occurs during the course of growth of output, expansion and diversification of operations. Besides, in the few initial years of liberalization and globalization, 1 million small and tiny units were closed while 10 million private sector jobs were lost (Prakash, Shri, 1994). The private sector took time to restructure itself to face both increased domestic and international competition. This could be understood in the context that the private

sector has been operating in a closed and protected market till 1990. The Indian companies found the solution in lower costs which required them to go for leaner, meaner and thinner organizational structure. This resulted in the employment of fewer hands per unit of output than before. Most of the class three and four jobs were abolished to create new managerial and professional jobs for inducting fresh professional graduates and post graduates. Therefore, employment in private sector grew slowly at a decreasing rate which made its growth lower and slower as compared to the growth of total and public sector employment. The consequence of the restructuring has been the fewer jobs of higher levels with greater earnings.

Hypotheses Relating to Objective IV

The fourth objective of the study relates to the impact expected from the implementation of economic reforms visualized in the New Economic Policy adopted in 1990-91. Liberalization, Privatization and Globalization were the major planks of this policy. Therefore, the hypotheses formulated in relation to the fourth objective of the research study revolve round the impact of NEP on public expenditure which not only affects expenditure on salaries but also employment in public sector. The following are the hypotheses pertaining to the fourth objective of the study:

H_{41}: The level of public expenditure, which represents the size and diversity of public activities, has been continuously declining ever since the adoption of NEP.

The following logic underlies the above hypothesis: implementation of NEP entailed the transition of Indian economy from the centrally planned, socialist and controlled entity to the market based capitalist economy which was open and liberalized for the foreign business entities, FII and FDI. India spent four decades in moving the open market based economy to the closed socialist and controlled economy. Therefore, the process of transition to market oriented capitalist economy was heralded with fanfare by the then Finance Minister of India at relatively high speed. One after another sector, starting from foreign trade and banking, encompassed a large number of sectors of the Indian economy, especially tertiary and manufacturing sectors. Speed had been the buzz word for the implementation of the economic reforms. Consequently, public expenditure has been consistently declining since 1990-91.

H_{42}: The growth of public expenditure, which represents the size and diversity of public activities, has been contained ever since the adoption of NEP.

It took forty years to establish the planned Socialist economy governed and guided by licenses and permits practically in most walks of life. It is not an easy task to demolish such a mansion overnight. Besides, those empowered to control the economy have had vested interest to perpetuate the same. Even otherwise, the government and its vast and intricately interwoven bureaucracy is the Colossal Immobile which is extremely difficult, if not impossible, to reduce in size. It is, therefore, logical to infer that the growth of public expenditure was muted but not halted during the era of economic reforms.

H_{43}: Public expenditure continued to grow consistently even during the era of NEP.

Adoption and implementation of economic reforms and the transition to capitalist market based economy do not mean that the government ceases to exist or stops to work. Public expenditure on people's welfare continues to grow with population growth and public expenditure on creation and/or improvement of the existing social, economic and physical infrastructure tends to grow with time. All other public activities remain operative, so operational public expenditure has to be maintained and new projects and programs of development have to be initiated which need public investment. Therefore, it is inferred that the growth of public expenditure has not been adversely affected by NEP.

Hypotheses Relating to Objective V: The fifth objective of the study is the evaluation of the relation between the expenditure on salaries of the employees of state and central governments and the total public expenditure.

The results are expected to reveal the impact of the recommendations of the Pay Commission.

The following hypotheses are formulated for the realization of the fourth objective of research study.

H_{51}: Expenditure on salaries of public employees has been declining while total public expenditure has been rising which is the hallmark of an inverse relation between these two variables of the research study.

The logic behind this Hypothesis is that the adoption and implementation of NEP in 1991 has resulted in economic reforms which have resulted in the opening up of the Indian economy not only to international investors but also to the domestic private investors. Opening up of the sectors of Indian economy under second and third schedules of Industrial Policy Resolution, 1956 has reduced the manpower needs of the government and public enterprises. Even otherwise, the liberalization, privatization and globalization necessitated the movement towards minimum government and maximum governance. Consequently, several thousand public employees of DGTD were removed from the rolls of the government and thousands of employees took voluntary retirement under the Golden Hand Shake Scheme. Reduced public sector manpower entailed reduction in the public expenditure on salaries of the government employees. Besides, the growth of Indian economy has been dominated by consistent growth of productivity which has resulted in employment-lagged growth (Prakash, Shri and Balakrishnan, Brinda, 2008, 2010, Sharma, Amit & Prakash, Shri, 2018).

H_{52}: The public expenditure and the public spending on the salaries of public employees have been consistently rising during the study period since these two variables are positively related.

Public expenditure I is difficult to reduce at any time because the government brings forward several of its welfare and growth programs from the preceding to the current period. Besides, inflationary pressures, introduction of new schemes, and/or emergent crises also lead to an increase in public expenditure. However, salary expenditure also rises along with total public expenditure because (i) annual increments given to public employees; (ii) biannual grant of DA/ADA/DP; and iii) salary hikes due to promotion ; and (iv) increased pay grades as part of pay commission's recommendation. Therefore, the public spending on the salaries of government employees and public expenditure are positively related.

H_{53}: There is no significant relation between public expenditure and the public spending on the salaries of public employees.

The hypothesis has been formulated on the ground that two opposite directional forces simultaneously operate on employees' salaries which, more or less, cancel out each

other's impact. Consequently, the positive and negative changes in the public expenditure on salaries are so negligible that they emerge to be statistically not significant. Hence, the net effect of such changes on salaries' expenditure is practically zero.

H_{54}: Both public expenditure and the spending on the salaries of public employees have been neutral to policy regimes since these two rise and fall together with the rise or fall in public revenue and/GDP.

The following is the logical base of the hypothesis:

Wages and salary offers to workers and employees revolve round the paying capacity of employers. Government's paying capacity depends on public revenue, and hence, total public expenditure. Therefore, the public spending on wages and salaries of workers and employees is not related to any policy in place. In fact, employment and wages/salaries policy may itself be guided by the state of the economy which determines the finances of the government. Expenditure on salaries of public employees depends on the public revenue and/or expenditure, which revolves round GDP.

Hypotheses Relating to Objective VI: the sixth and the last objective is the evaluation of the relation between private sector employment and private income. This relation will reflect the relation between the private income and expenditure on salaries of private sector employees also.

$H_{6.1}$: The salaries of private sector employees and employment directly depend on the income earned by the private sector enterprises.

The employment and the salaries of the employees of private sector are determined by supply relative to demand for manpower in the labor market. Demand for manpower is the derived demand as it depends on the demand for goods and services in the commodity markets. Increased supply of goods and services necessitates increase in output which, in its turn, requires increase in employment of manpower at the given labor productivity level. However, the producers will engage more workers and employees only if they expect that the additionally employed manpower can produce an amount of output the value of which at least equals the salaries to be paid.

Thus, the wages and salary offers to workers and employees revolve round the paying capacity of employers. Hence, the spending on the wages and salaries of workers and employees is not related to the public policy regime. Both the level of employment and the wages and salaries of workers and employees of private sector depend on labor productivity and income of private sector.

$H_{6.2}$: The salaries of private sector employees and employment directly depend on the employers' expectations of future state of the demand and the level of commodity prices in the market.

The reasoning of the above hypothesis is based on the time lag involved in the production processes. Employers work according to their business plans of the future. They have to hire the manpower and procure the materials required for the production of requisite level of output. Therefore, the offers of wages and salaries to the workers and employees are guided and governed by the future prices, and hence, extra income to be derived from additional output. They continue to hire up-to the point at which the current productivity equals wages and salary offers to the workers and employees. Greater the expected level of demand for commodities and prices, larger shall be number of workers and employees to be recruited and greater shall be the wages and salary offers. The converse of it also holds.

$H_{6.3}$: Both the level of employment and wages and salaries of the private sector workers move up and down during the boom and doom phases of business cycles respectively.

The reasoning of this hypothesis is based on an essential feature of the market oriented capitalist economies, and business cycles are an inbuilt trait of such economies. During the boom phase, due to the expectations of future commodity demand, the prices, investment and employment are generally high. Therefore, the private sector employment soars and profits rise, and consequently, output, employment and earnings, including those of labor, increase. However, the phase of recession or depression of the business cycles makes the business men down cast, and therefore, their expectations of future are bleak and cloudy. Consequently, they hesitate to take the risk of investing and the hiring of additional manpower to produce more output since they apprehend that great proportion of output will remain unsold. Besides, some current employees are left on the

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way side, but some others stay back as they accept the wages/salaries lower than what they received in the past.

The above mentioned details provide the objective wise hypothesis formulation. The adherents and supporters of the traditional approach to hypothesis formulation may kindly note that to the best of the knowledge of the scholar, no rationalization or logic is ever offered by those who follow the beaten track of Null and Alternative hypothesis formulation. Besides, the scholar has put forward only those hypotheses for each objective which could be seemingly supported by theoretical or empirical based logic.

1.14 Sources of Data

The secondary data is the data base of the study. All the data have been taken from the web sites of Ministry of Finance, Department of Personnel of the Ministry of Home Affairs, and Commerce Ministry, Government of India. However, the Ministry of Finance and the Ministry of Commerce are the main sources of data. Economic Surveys of different years have been used to cull out data relating to the annual budgets of Government of India and data relating to total, private and public sector employment.

1.15 Methods and Models of Data Analysis

Data and the methods and models of data analysis are the body and soul of the empirical research. The choice and proper use of methods and models of data analysis is the key to quality research. In view of this, an explanation for the choice of methods and models is given below:

The following are the important considerations and aspects of the choice of methods and models for the analysis of data.

Nature and expanse of the data themselves constitute an important criterion of exercise of choice between several methods and models that are available to the scholar. For example, qualitative data amenable to only ordinal measures, including interval measurement, are not susceptible to the use of parametric statistical tools and econometric models. This is irrespective of the dummy variable model. One has to adopt either non-parametric statistical methods or such methods as historiography or comparative method or just pure and simple logical approach to analyze the ordinal data.

Similarly, cardinal data base may be appropriate for some and inappropriate for other methods and models.

Regression and correlation analysis is used for the determination of inter-relations between the core variables of research investigation. However, time series data is often found to be non-stationary which necessitates the use of Dickey-Fuller test of stationarity based on Random Walk Model. This is often required to be supplemented by Engel-Granger test of co-integration.

Without the use of above two models of testing stationarity, time series modeling may furnish spurious results though one may also choose Augmented Dickey-Fuller or Johansen test of stationarity. One may also go for Auto-regression modeling or VAR modeling or Distributed lag model. Incidentally, Auto regression and VAR modeling are fully atheoretical, and therefore these are not appropriate for discovering results amenable to theoretical interpretations though these are generally used for forecasting. In view of this, Distributed Lag model is preferred in the study. The logical explanation of some hypotheses and the statistical property of growth rates being sensitive to the base-effect require extreme care and caution in the interpretation of the rates of growth of expenditure and GNI. This is the reason for the use of linear trend equation to determine the linear trend growth rate along with the use of exponential growth curve to determine the annual compound growth rate. Incidentally, linear trend equation is seldom used to determine the trend growth rate.

For the analysis of inter-relations between two or more variables, some variants of regression models, which are appropriate for the nature of data, are used. Besides, the objective of research and the hypotheses formulated for empirical testing have a direct bearing on the choice of methods and models (See, Prakash, Shri and Sharma, Amit, 2017, Sharma, Sudhi, 2016). This aspect has guided the choice of methods and models also.

The above considerations and explained criteria prompted the scholar to use the following methods and models for analyzing data:

Descriptive Statistics

Descriptive Statistics is used as a preliminary step in the data analysis. Descriptive Statistics is non-inferential in nature and it is appropriate not only for the condensation of large size of the data but it also portrays the important features of data base. It comprises mean and median, variance, range and the standard deviation which captures the oscillations of observed values around or away from the mean. It also contains the coefficients of skewness and kurtosis which highlight the degree and direction of inequality and concentration of high values. All these statistics familiarize the researcher with the basic traits and nature of distribution. Besides, these results are also amenable to calculate the coefficient of variation which normalizes the standard deviation and makes it amenable for the comparison of two or more samples. Application of t-test to determine the statistical significance of the difference between the sample mean and median, and the difference between the values of two central tendencies highlights the convergence or divergence of the observed data from normal distribution.

The acceptance and implementation of the recommendations of Pay Commission is a qualitative variable. This property of the data base prompts the author to use the dummy regression. Distributed lag regression model has facilitated the separation of long run (Structural Model) from the short run reduced from regression model. This model has also enabled the determination of the period required to move from short to long run equilibrium.

Several Diagnostic test statistics such as t-test, Durbin-Watson test, Dickey-Fuller test, Engel-Granger test and step wise regression to detect multicollinearity have been used in the study.

1.16 Chapter Scheme

For the systematic presentation of the outcomes of research investigation, the research outcomes are divided into parts and each part comprises theme based chapters.

Part One-

Part one comprises three chapters.

Chapter One:

Chapter one deals with the statement of the research problem, explanation of its importance and the rationale of choice of the topic. Nature and scope of the topic selected for research investigation has also been elaborately explained. The objectives of research and objective-wise sets of nested hypotheses have been included in the chapter. Logical explanation of each hypothesis is an innovative aspect of this thesis. The choice of the methods and models along with the sources of secondary data used in analysis are briefly discussed in the chapter.

Chapter Two:

The search for past studies on the impact of implementation of recommendations of pay commissions on the wages and salaries of the public employees revealed that no such study has been conducted in the past so far. However, the scholar found only a handful of studies of the differentials of wages and salaries of public and private sector employees for some developed economies and one study each for India and Indonesia. Even the studies dealing with the determination of wages and salaries of civil servants have been extremely limited. Therefore, the chapter briefly discusses eight past studies which are directly or indirectly related to the wages and salaries of workers and employees of public sector and growth and employment in Indian economy.

The chapter also includes a brief review of five past studies which are directly or indirectly related to the theme of this investigation. One study explains the parameters which are appropriate for the evaluation of adequacy or inadequacy of pay packages of civil servants across the globe. It furnishes the indicators of comparison of pay and allowances of civil servants with the size of the economy and population and compares the same with the bench marks furnished by private sector. Second study reviews the theory of wages which furnishes the theoretical and conceptual backdrop of empirical analysis in general including this study. The remaining three studies deal with the pay packages of civil servants in Indonesia, India, France, U.K. and Italy on the one hand, and the differentials between private and public sector pay packages on the other. The other three Indian studies deal with the theme of jobless or job-creating growth of Indian economy.

Chapter Three:

The chapter focuses on the historical background as the part of constitutional provision for the appointment of pay commissions at the specified time intervals. The chapter also analyzes the factors that impel and compel the governments to appoint the pay commissions to revise and upgrade the level of grades, grade pay and the structure of grades of public employees. It explains the roles and functions of pay commissions and the mechanism and procedures followed by pay commissions to upward revise, rationalize and simplify the pay fixation of public employees with a view to make the system transparent, efficient, productive and integrity oriented.

Part Two

Part two comprises three empirical chapters and one chapter of findings and conclusions. The contents of these chapters are briefly described hereunder.

Chapter Four :

Chapter four describes the sources from which secondary data have been taken. It explains the data profile. The chapter, first of all, furnishes an overview of the main traits, twists and turns in the values of the core variables of total employment, employment in public and private sectors over the years.

Employment both in public and private sectors is first normalized by total employment. These twin ratios display comparative growth of employment in public and private sectors. The public sector employment is directly compared with the private sector employment. The radical decline in the ratio of public sector employment to total and private sector employment implies inter temporal decrease in public expenditure on salaries, provided that pay hikes do not neutralize these declines over the years.

The chapter also contains the discussion of linear trend growth and compound growth rates of such core variables as total and public sector employment, pay packages etc. It also portrays the growth of GNI and public expenditure.

Chapter Five-

This is the second empirical chapter of the thesis. It presents the results of descriptive statistics and discusses the facets and features of distribution of values of the core

variables of investigation. It also examines whether the time series data of different variables conform to stationarity or it converges to non-stationarity. It examines the inter-relations between the salaries of the employees of 30 state governments and public expenditure. The chapter comprises the analysis of results yielded by various regression models and diagnostic tests.

Chapter Six;

This is the last chapter which deals with results of data analysis. In other words, this is the last empirical chapter of the thesis. The chapter contains the results of data analysis based on the summary statistics of the pre and post revised basic and total pay of all cadres and scales of the employees of the government of India in accordance with the recommendations of the Sixth Pay Commission. The chapter also contains the results pertaining to the summary statistics of salaries recommended by the Seventh Pay Commission for all levels and pay grades of central government employees. Besides, the chapter deals with the results of the impact of Sixth and Seventh Pay Commissions' recommendations on the basic and total salaries. The dummy variable regression model has been used in both the cases. The dummy refers to the pre and post implementation of the recommendation of the Sixth and Seventh Pay Commissions.

The dummy variable has a value zero for the year preceding the implementation of recommendations of the Sixth and Seventh Pay commissions and it has a value 1 for the year after the implementation of the recommendations.

As the implementation of the Seventh Pay Commission is still awaited, the scholar has used the recommended pay, pay grades and levels of employees.

Chapter Seven:

This is the last chapter of the thesis. It contains the main findings and conclusions of the thesis and highlights the contribution of this research study to the current stock of knowledge about the topic of research. Besides, the chapter points out the scope for future research and the implications of the findings for public policy especially the one relating to growth of the economy and inflation.

CHAPTER TWO

REVIEW OF LITERATURE: IMPACT OF RECOMMENDATIONS OF PAY
COMMISSIONS ON EXPENDITURE ON SALARIES OF PUBLIC EMPLOYEES

2.0 Overview

The author of the thesis could not find any study of the impact of implementation of the pay commission's recommendations on the expenditure on salaries of employees of the government and public sector enterprises which is the topic selected for research. Therefore, the review of literature in the chapter focuses on such studies of wages and salaries of government and public sector's workers and employees which could be found and accessed by the author. The chapter, in fact, reviews five studies of wages and salaries of workers and employees of government and public enterprises relative to the wages and salaries of employees and workers of private sector. These studies, however, cover five countries comprising two emerging market economy, one developing economy and three developed capitalist economies of OECD. These studies relate to India, Indonesia, U.K., Germany and France. Besides, three studies of employment, a closely related area, are also included in the review. The number of studies reviewed is, thus, limited but the studies cover vast segments of world's population and three different types of economies. The review also examines the concepts and theories of core variables that constitute the subject of investigation of this thesis.

Wages and salaries of workers and employees of the government and public enterprises in planned socialist economies are the administered prices which are determined by executive orders and fiats though the executive orders passed to fix salaries and wages of employees may be governed and guided by certain norms and the state of development of the economy. However, the wages and salaries of workers and employees of private sector are determined by the demand for and supply of labor in market economies. Wages and salaries are also affected by periodic negotiations between the trade unions and employers. Trade unions' demand for wages revolves round the (i) protection of their real wages against inflation; and (ii) the coverage of their average cost of living. Besides, the unions also strive hard to obtain an adequate share in inter-temporal gains in productivity in the process of growth.

So far as India is concerned, Pay Commissions' recommendations determine the levels of wages and salaries, pay grades and pay structure of the employees of the government, public enterprises and public agencies' employees. However, the search for past studies

for inclusion in the review reveals that no study of the impact of pay commissions' recommendations on the salaries of public employees has been conducted so far in India or abroad. The fact is that the appointment of pay commissions for periodically upward revising the pay, pay grades and pay structure of government employees is a unique constitutional feature of Indian polity and economy. Besides, only few studies of public-private sector pay gap and salary differences in public and private sectors have been conducted so far. However, the studies reviewed in the chapter show that (i) Sharp differentials in wages and salaries paid to public and private sector employees exist; (ii) Unskilled and low skilled workers are paid more in public than private sector while higher educated and highly skilled workers receive more pay in private than public sector; (iii) Institutional factors play pivotal role in the determination of private and public sector pay differentials; (iv) The governments account for greater proportion of total employment and substantial positive pay differentials in salaries of employees exist both between and within private and public sector; (v) Total employment has grown very sluggishly in India economy since employment in public sector has been consistently declining as a proportion of total employment in India; (vi) here exists great deal of differences of opinions among Indian analysts with regard to jobless or employment neutral growth in India; and (vi) Growth of Indian economy has been driven largely by productivity which has adversely affected the growth of employment.

2.1 Introduction

The chapter critically reviews the past studies of wages and salaries of workers and employees of the government and public enterprises. However, no study, conducted in the past, has analyzed the impact of the implementation of recommendations of pay commissions on public expenditure on the salaries of public sector employees. In fact, periodic appointment of Pay Commissions is a unique feature of Indian polity and economy under the provision made in the constitution of the country.

Wages and salaries of workers and employees of the government and public enterprises in the planned socialist economies are the administered prices. Such countries have procedures and mechanisms of determining the wages and salaries of their public employees. Therefore, executive orders and fiats to determine the wages and salaries of

workers and employees are not totally arbitrary though certain element of subjectivity cannot be ruled out despite the fact that the specified norms and the state and stage of development of the economy may guide and govern the determination of pay and wages of employees and workers. For example, wages of the workers were deliberately kept low in USSR with a view to mobilize maximum surplus of output for the accelerated growth of the economy (Prakash, Shri, 1960).

As against this, wages and salaries of workers and employees are determined by demand for and supply of labor in the market based capitalist economies. However, wages and salaries are greatly affected by the periodic negotiations between trade unions and employers. Trade unions' demand for wages revolves round the (i) protection of real wages against inflation; (ii) coverage of the average cost of living by the negotiated wages and salary rates; and (iii) obtaining of an adequate share in the inter-temporal productivity gains in the process of growth. However, even the capitalist economies follow specified mechanisms for determining the salaries of their employees by executive fiats.

The wages and salaries of public sector's workers and employees in India are periodically fixed and revised upwards in accordance with the recommendations of pay commissions. However, the author of the thesis could not find any past study of the impact of pay commissions' recommendations on wages and salaries of Indian public sector's workers and employees. To the best of the knowledge of the author, no such study has been done for the public sector employees of India or any other country. Therefore, the chapter focuses on the review of studies of wages and salaries of workers and employees of public sector relative to the wages and salaries of workers and employees of private sector. This is explained by the fact that all such past studies have focused on the prevalence of differences in the wages and salaries of public and private sector employees. The chapter also includes review of some past recent studies of employment in India and it also contains the recapitulation and critical evaluation of the concepts and theories of employment and wage determination.

Income and prices, including factor rewards, are closely related to each other. Higher the national income, greater are the factor rewards and commodity prices. As national

income/GDP grows, wages and salaries also grow. Part of the growth is accounted by induction of new technology and consequent productivity gains, and a part of growth is explained by increase in consumption and investment. While consumption expenditure stimulates multiplier effect on growth, accelerator reflects growth effect of investment.

2.2 Questions Relating to Relations of Income and Factor Rewards

The postulated inter-relations between income and wages and salaries of workers and employees require answers to the following questions:

(i) What is wages and do wages of workers differ from salaries of employees?

(ii) How are the wages or salaries determined?

(iii)Does the theory of determination of wages and salaries of public sector's workers and employees differ from the theory of determination of wages and salaries of private sector's workers and employees? And,

(iv)Does the growth of income result in an increase in wages and salaries?

Answers to these questions also entail the explanation of the concepts of workers, wages, salaries and income.

2.2.1 Concepts of Workers, Employees, Wages and Salaries

The above heading contains four terms each of which needs explanation.

2.2.2 Concepts of Workers and Employees

The concepts of workers and employees are discussed sequentially.

2.2.2.1 Concept of Workers

The common sense meaning of the term 'Worker' refers to persons employed to perform specified tasks or jobs assigned to them by the employers. The tasks and jobs assigned to and performed by workers involve mainly manual and physical efforts and exertions. In management's parlance, such workers are defined as 'Blue Collar Workers' as the tasks and jobs that they perform are manual and considered to be menial.

2.2.2.2 Concept of Employees

Alfred Marshall (1992/1962) distinguished between physical and manual and mental labor and contrasted the work done by factory laborers with the work done by teachers, managers, supervisors, accountants, doctors, engineers etc. Those persons who perform manual work in the factory or work place are defined as workers or laborers. Those persons whose work or jobs involve mainly mental efforts are defined as employees. Teachers, advocates, doctors, and accountants are example of employees. Marshall also highlighted the difference between economically relevant and productive work with economically unproductive work.

He contrasted the efforts of a nursing sister involved in looking after her sick husband at home for which she is not paid with the same job performed by her at hospital/clinic for which she is paid. The same work at home is not paid, so it is not considered to be economically productive while this work done at the hospital is treated as productive. The above distinction, based on physical and mental efforts or knowledge based work and involvement of monetary and/or non-monetary reward, is used as the basis of the difference between the concepts of workers and employees in this study.

The term 'Employee' in common parlance refers to persons who are employed by the employers to work for them and carry out their orders. Employees are engaged to perform such specified tasks or jobs assigned to and performed by them which involve mainly mental and intellectual efforts and exertions for which monetary rewards are paid by employers. In managerial terms, employees are defined as 'White Collar Workers' who perform mental or intellectual tasks, involving responsibility for the outcomes of decisions and actions thereof. Employees constitute the human resources of both public and private sector organizations and institutions. Human resources are transformed into human capital through their deployment in productive activities. Thus, employees refer to managers who belong to different managerial cadres. They perform largely non-manual activities which involve smaller or larger degree of mental and intellectual work ranging from supervision to policy formulation and its implementation. The term employee, in administrative terminology, refers to non-manual workers employed for performing a variety of tasks related to the administration.

However, the term 'Employee' in economic parlance may refer to human resources who are deployed on productive work by the employers. Deployment of human resources in production activities transforms them into human/intellectual capital (Schultz, T. W., 1962, Prakash, Shri, 1977, 1978, 1994, Vakil and Brahamananda, 1953).

2.2.2.3 Public and Private Sectors

Public sector refers to all layers and levels of government including local, state, regional and central governments and their authorities, constituted under the legal framework of the country, and the institutions, organizations and enterprises owned and operated by them. Governments, their agencies, institutions and other bodies function within the framework of the rules and regulations put in place for the smooth performance of operations in accordance with the laid down procedures.

As against this, private sector comprises enterprises, associations, institutions, and organizations owned and operated by individuals or their groups. These enterprises and organizations make their own rules even though they have to abide by the legal framework of the country and conform to the public policy framework.

2.2.2.4 Concepts of Wages and Salaries

The twin concepts of workers and employees are associated with the concepts of wages and salaries. However, there exist important differences between the concepts of wages and salaries.

2.2.2.5 Concept of Wages

In commonsense parlance, the term 'Wages' stands for payments made to workers for the manual or physical work done by them for employers during the specified period of time. Wages are paid on the basis of number of hours/days/weeks during which work assigned by the employers is done by workers or laborers. In fact, just as the concept of labor/worker differs from the concept of human capital, the concept of wages as the reward of labor for its contribution to output differs from the concept of salary of employees as the reward of human capital for its contribution to output. Wage rate is expressed as payment per person per unit of time. Unit of time may be hours, days, weeks or months. Wage rates vary according to the nature, duration and place of work, and the

state of the labor and commodity markets. Under high price regimes, wage rates tend to be high. However, high wage rates enhance the cost of production which, in its turn, results in higher prices. Wages differ with number of hours worked, degree of difficulty and risk involved in work and skill required for the performance of the job. For example, the job of truck drivers and miners is more arduous and it involves greater risks than the work of, say, coolie or textile labor. Generally, laborers do not have job-security in competitive economies due to the policy of hire and fire.

2.2.2.6. Concept of Salary

As against wages, salary, in common parlance refers to the payment of *priori* agreed amount paid by employers to the employees for the performance of mental or intellectual work assigned to them. Salaries are determined and paid for the work done during the specified period, generally a month. As against this, wages are paid on hourly, daily, or weekly basis. However, the employees neither get less for working less number of hours/time, nor do they get more for working longer hours/overtime. The salaries are paid according to the agreed package between the employees and employers, but employees are entitled to certain other perks like earned leave, holidays, health cover, accommodation, transport and allowance for children's education etc. Salaries may differ according to the nature of job, skills, knowledge, cadre, level in occupational ladder and degree of responsibility required for the job performance, experience, prescribed rates and grades of pay and the state of the job market.

2.2.2.7 Diversity of Technical Meanings

The technical meanings of wages and salaries may differ between disciplines from the above connotations.

In the administrative terminology, both wages and salaries refer to the outgo or outflow of money from the coffers of employers to workers and employees while these outgo or outflows are the inflows of incomes or earnings for the workers and employees. Some expenses, over and above the wages and salaries, are incurred by employers on the hiring of workers and employees for the discharge of administrative duties or for the performance of the jobs for employers. The term 'Employers' may refer to the hiring

organizations of private enterprises or the public enterprises and institutions at micro level and government at macro level.

In accounting terms, both wages and salaries refer to the expenses incurred by employers on the hiring of workers and other manpower for getting specific tasks or jobs performed for which they are hired.

According to Michael T. Hannan, 'Wages and salaries include compensations in money of all employees of an enterprise for work done during the month. Wages and salaries comprise all income taxes, social security contributions, collected from employees as well as all diverse additional work (overtime wage, night work), bonuses and holiday bonuses, but exclude incentive stock options, exports, arising from the performance of the work and employer's social security liability'.

The above definition suffers from the following limitations: (i) The connotation of this definition is exclusively micro in orientation, and it limits its scope to micro applications and to the exclusion of macro applications; (ii) It overlooks the distinction between workers and employees, which obliterates the distinction between wages and salary, and the difference between labor and human capital; and (iii) it fails to distinguish between the self-employed persons and persons employed by others.

Clements, Benedict, Gupta, Sanjeev, Karpowicz, Izabela and Tareq, Shamsuddin (2010) define wages and salaries as follows: 'Wage and salary is 'income derived from human *labour*. Technically, wages and salaries cover all compensations made to employees for either physical or mental work, but they do not represent the income of the self-employed. Labor costs are not identical to wage and salary costs, because total labor costs may include such items as cafeterias or meeting rooms maintained for the convenience of employees. Wages and salaries usually include remuneration such as paid vacations, holidays, and sick leave as well as fringe benefits and supplements in the form of pensions or health insurance sponsored by the employer. Additional compensation can be paid in the form of bonuses or stock options, many of which are linked to individual or group performance. This definition is relatively clearer and broader than the earlier one, and it is relatively comprehensive. However, it also does not differentiate between wages and salaries due to obliteration of the distinction between manual and intellectual work

and labor and human capital though this very facet broadens its scope. However, this definition is implicitly restricted to private sector due to inclusion of such benefits as bonuses, stock option etc. in the domain of wages and salaries.

2.2.2.8. Economic Concept of Wages and Salaries

In economic parlance, ''Workers'' denote those who perform physical labor which is as essential a factor of production as capital. Therefore, wages refers to the reward or price paid to labor for its contribution to output of goods and services. Output entails accrual of income. The money received by employees and paid to them by employers for performing the assigned mental and intellectual tasks is referred to as 'Salaries'. Salaries are paid as the reward for the contribution of organizational and managerial work which contributes to output. Wage rates are normally much lower than the salary rates.

2.3 Self Employed Workers and Employees

Self-employed workers and employees, engaged in manual or non-manual work, earn incomes by performing specified tasks/jobs undertaken by them on their own. Self-employed employees are generally engaged in service activities such as private tuitions given by teachers, private clinics owned and operated by doctors, owner operated consultancy and guidance centers etc. Earnings of self-employed persons are neither wages nor salaries since they do not work for others and payments are not made to them by employers. In self-employment, employee and employer coincide in the same person or entity. Besides, self-employed persons may engage themselves in any of the three broad categories of sectors: primary, secondary and tertiary and the nature of work differs among these sectors. Employees and workers are classified in thousands of occupational categories.

2.4 Inflation and Real and Nominal Wages

Economic growth results not only in greater output/income, but it also results in higher commodity prices. The inflationary pressures and increase in income, emanating from growth, warrant increased payments to employees and workers as the reward for their contribution to the growth of output. Higher nominal wages and salaries are also warranted by the need to protect the real earnings of workers and employees on the one

hand, and to grant share in growth gains of income. Maintenance of real wages at the preceding period's level requires the increase in nominal wages and salaries proportional to inflation/increase in general price level. However, increase in nominal wages and salaries tend to lag behind the increase in general prices due to time lags involved in the rise in prices and hikes in nominal wages and salaries. The growth of wage and salary incomes holds at the macro level since both capital and labor/human capital contribute to inter-temporal growth of output/income, which warrants an increase in shares of both labor and capital in aggregate value added/income. However, the increase in wage and salary shares depends on the contribution of workers and employees relative to the contribution of capital to average/marginal increase in aggregate output/income or value added.

The above discussion has cleared the conceptual desk and it has paved the way to review the past studies.

2.5 Review of Past Studies

There exist several studies of public expenditure and its relations with public revenue, public debt and economic growth. Some studies of public expenditure in general and public expenditure on wages and salaries in particular have also been conducted in the past. Some country specific studies are also available on internet. However, the author of this study has not found a single study of the impact of the implementation of the recommendations of the pay commissions on public expenditure on wages and salaries for India and any other country. Periodic up-gradation of levels and structures of the salaries of public employees in conformance with the recommendations of pay commissions is unique to India. The implementation of Pay Commissions' recommendations not only institutionalizes the fixation and revision of wages and salaries of public employees, but it also overcomes the limitations of *ad hoc* and *piecemeal changes in prevailing salaries of public employees on the basis of impulses of the* market and its mechanism. However, the institutionalized mechanism of pay or salaries fixation of government/public employees makes the salaries administered prices on the one hand, and it makes short run wages and salaries rigid and neutral to market forces on the other. The sticky nature of salaries generates distortions in the structures of

pay and pay-grades which necessitates technical adjustments to be made by the pay commissions. The periodic revision imbibes technical correction of distortions and facilitates adjustment of prevalent pay, pay grades and their structures to the facts altered by inter-temporal changes which results in logical restructuring of relative wages and salaries of different cadres and the occupational categories of the public employees.

The review of literature is limited to those studies only which are relevant to this research investigation. Relevance refers to direct or indirect relation with the subject matter of research of this thesis. Employment is directly related to the growth of the economy while employment in the public sector and the level of salaries and their structure may be influenced by the state of the economy, state of the labor market and the employment in private sector and the level and structure of wages and salaries paid by the private sector to its employees belonging to different occupational categories and their skill and education profile. Therefore, the scholar has selected those studies for review which are accessible and which are directly or indirectly related to the above mentioned themes.

Diversity of Inter-Relation between Growth of Income, Growth of Employment and Growth of Labor Productivity

Researchers and analysts have been debating for decades whether the Indian economy has been going through the process of jobless growth of income without being clear about its concept. There seems to be a great deal of confusion among the analysts and researchers with regard to jobless growth. Consequently, several economists have been criticizing the public policies on this count without being clear about the concept and measurement of jobless growth. Prakash and Sharma (2018) have come out with not only literal explanation of growth of income with its diverse association with growth of employment but also with mathematical specifications of different relations. Therefore, we first discuss this aspect of debate. We reproduce hereunder the concepts and measurement of three different types of growth of income relative to the growth of employment which have been formulated by Amit Sharma and Shri Prakasj (2018).

Prakash and Sharma (2018) have classified growth of income relative to the growth of employment in three different categories: (i) Employment generation growth; (ii) Employment Neutral or jobless growth which may also be called growth of income with

zero employment growth. These mathematical specifications of the relations of growth of income with the growth of employment are reproduced hereunder.

1. Employment Generating Growth of Income

Employment generating growth of income occurs during the boom phase of business cycles. The concurrent growth of employment and income is associated with one of the following relations of relative rates of growth of income and employment:

$$R_{EMPt} > R_{GNIt}; \ Or \ \{R_{EMPt}/R_{GNIt}\} > 1 \qquad\qquad (1)$$

Growth of employment leads the growth of income. This is employment led growth of income. The proportion of employment increases more than the proportion of income as returns to labor decrease with every increase in output. Obviously, labor productivity tends to decline after crossing its peak value.

The second case is shown below:

$$R_{EMP} = R_{GNI}; \ Or \ \{R_{EMPt}/R_{GNit}\} = 1 \qquad\qquad (2).$$

This case *may be called employment balancing growth of income*. Employment and output increase at the same rate. Therefore, employment grows proportionately with income. Growth of output occurs under constant returns to scale with an unchanged technology. Optimum output is produced at the minimum average cost and marginal and average labor productivity is equal.

The following is the last case of employment generating growth of income:

$$R_{EMPt} < R_{GNIt}; \ Or \ \{R_{EMPt}/R_{GNIt}\} < 1 \qquad\qquad (3)$$

In this case, employment lagged growth occurs since employment grows at a lower rate than the rate of growth of income. Analysts like Devashish Mitra erroneously designate it as jobless growth.

In this case, production takes place under increasing returns to scale and Labor coefficient declines while labor productivity increases with every increase in output as the technology becomes more capital and less labor intensive.

In all 3 cases, the following conditions hold:

$$R_{GNIt}>0; \text{ and } R_{EMPt}>0 \qquad (4)$$

2. Employment Neutral Growth

In the true literal and technical sense, jobless or employment neutral growth refers to that process of growth under which following two conditions hold:

$$REMPt=0; \qquad (5a)$$

and

$$R_{LBPt}=R_{GNI}t>0 \qquad (5b)$$

Thus, jobless or employment neutral growth refers to that process of growth of income under which employment remains unchanged. Consequently, the rate of growth of income equals the rate of growth of labor productivity.

Employment neutral growth of income may also be depicted by the following relation so that there is no confusion between the concepts of jobless or employment neutral and employment lagged growth:

Growth of income with concurrent growth of employment but constant/unchanged technology is shown by the relation 6:

$$\Delta GNI_t=\Delta EMP_i*PRDTY_t \qquad (6)$$

3. Employment Displacing Growth of Income

Employment displacing growth of income occurs if the following conditions are satisfied:

$$R_{GNI}>0 \qquad (7a)$$

and

$$R_{EMP}<0 \qquad (7b)$$

This leads to relation 8:

$$R_{GNIt}= R_{PRDTYt} -R_{EMPt} \qquad (8)$$

R_{GNIt} equals productivity rate of growth net of employment loss.

These conditions should result in clarity of thought as well as appropriate measure of relation between the growth of income, growth of employment and growth of labor productivity.

Review of Past Studies

The author has reviewed eight studies, and three of these relate to inter-relations between the growth of income and growth of employment in Indian economy. These studies are representative of the typical Indian studies of relation between the growth of income and growth of employment. However, the review contains references to the findings of numerous studies which are not explicitly reviewed in the chapter.

Mitra, Devashish (2018), this paper is selected as the representative of all those studies, comments and notes which have been talking about and discussing the 'so called job-less growth' in Indian economy. The paper under review is totally empirical and it uses secondary data. However, it does not use any statistical method or econometric model of data analysis. Besides, the paper has not been published anywhere and it cites some data that are not consistent with each other.

The paper may be classified into two parts: first part attempts to show that Indian economic growth has been jobless growth. The author cites some reasons for this malady from other studies and the reasons are based on his own thoughts. Second part deals with the remedial measures to overcome or mitigate the so called jobless growth. This part also quotes the reasoning from other studies.

First contention of the author is that 1,35,000 jobs were created in 8 labor intensive sectors of Indian economy. These sectors were surveyed by Labour Bureau in 2015. Mitra contrasts this figure with the number of people in labor force as some people in labor force were already working and some were looking for jobs. According to him, labor force grew to over 10 million. These two figures, cited for implicit comparison, display not only author's confusion but the comparison involves two incomparable figures also. On the author's own confession, the newly created jobs related only to 8 sectors of the economy while the labor force of 10 million pertained to the entire population of the country and its economy. He does not show the proportion of the employed labor and the proportion of unemployed labor in the labor force. Then, how

does the figure of 1, 35,000 created jobs compare with the labor force of 10 million? How can the figures be an indicator of unemployment or joblessness? Besides, the number of 1, 35,000 newly created jobs does not mean zero growth rate of employment. As has already been explained in the earlier section, jobless growth stands for zero rate of growth of employment in the process of growth of income.

Mitra then moves to quote the Economic Survey. He states that the employment grew at an annual rate of 0.5 percent during the period from 2004 to 2012 in India while labour force grew at 2.9 percent. He does not mention here whether the growth rate of labor force is annual or it is for the entire 9 year period. In case it is for the entire period of 9 years, then the simple sum of annual rates of growth of employment comes to 4.5%. Besides, as he has included work force in labor force in his earlier statement, he should have also mentioned whether the cited growth rate is both for employed and unemployed.

To support his thesis, he cites another estimate according to which employment grew at 1.2 percent and labour force grew at 2.8 percent annually. As against this, India's GDP has been growing annually at an average rate of over 7 percent for a few years now. From above data, he concludes that 'All of these numbers together point to a clear case of jobless growth'. It may be pointed out that, at the most, these figures may be taken to show that the growth of employment has been lagging behind the growth of GDP in India. Hence, this is the case of job lagged rather than jobless growth of income.

Can Mitra cite the instances of such national economies from across the globe where employment grows more rapidly than GDP? If that were so, the political leaders of developed countries like Sweden, Italy, Britain, France, Germany and even US would have not been taking measures to control immigration. Immigrants are visualized by them as taking away the jobs from the citizens of these nations. Besides, unemployment rates in these countries would then have been hovering around zero.

Mitra then cites the so-called common knowledge that a sizeable proportion of the employed, especially in agriculture and non-formal manufacturing sectors of the Indian economy, is under-employed.

Let us remind Mitra about the scramble among the Punjab farmers to get hold of the immigrant labourers from other states at the railway stations of Ludhiana, Patiala etc. at

the peak of agricultural seasons. The institution of exchange labor had been evolved in states like Meghalaya to overcome labor shortage. These are not the instances of under-employment of labor in Indian agriculture. In areas of green revolution, mechanization of agriculture was the result of attempts to ensure timely completion of operation during the sowing seasons. Besides, the farmers supplement their agricultural incomes by secondary employment in animal husbandry, dairy farming, fishing and forestry, and other forms of casual employment.

Another postulation of Mitra states that 'to fully employ the growing labour force gainfully and productively, India will probably have to create tens of millions of modern-sector jobs over the next few years'. Perhaps, he is right or wrong. However, as a scientific statement of facts, one would like to know the database and the method or model used by Mita to estimate or to arrive at this conjecture. In our opinion, such speculative conjectures do not constitute a part of factual or scientific research.

His discussion of the impact of improvement in productivity on the growth of income is on right track. He opines that the rapid increase in productivity or output per worker results either from technical progress in particular sectors or it results from growth promoting structural change which refers to the rising shares of relatively more productive sectors whose growth results in increased employment while the shares in employment of less productive sectors shrink. To support this thesis, he cites the research findings of Rana Hasan, Sneha Lamba and Abhijit Sen Gupta of Asian Development Bank. They show that the growth of income in India has resulted from both these channels of productivity growth which has also reduced poverty in India.

Mitra emphasizes that the employment growth lagging behind the growth in working-age population embodies adverse economic, political and social consequences. He supports this contention by citing the recent agitations of Jats, Gujjars and Marathas for reservations in employment and education. In our view, these agitations are designed to overcome the handicaps that these caste groups encounter in job market due to the benefits derived by other caste groups. Such agitations may occur even if the growth of employment does not lag behind the growth of job seekers. In that case, competition will be for more lucrative and power conferring jobs.

Mitra then tries to find the reasons underlying the jobless growth, that is, employment lagged growth of income in India. He states that India's stellar growth of GDP during one and a half decades has mainly been propelled by the rapid growth of financial, retail, business services and information technology-enabled services. He supports this by citing the findings of Mitra- Reshad Ahsan that the average labour productivity in these sectors is 5-10 times in the overall Indian economy while their share in total employment is about 1.7 percent. He further opines that the high productivity of these sectors means that these sectors add a significant amount to the GDP. In the first instance, Mitra does not mention the proportion of GDP produced by these sectors. Secondly, small employment base also constricts the size of output and productivity level. This is clear from his contention itself. He says that the small base of these sectors also restricts their job creating capacity. However, the same small base, in our view, constrains their contribution to GDP.

Besides the above, we think that Mitra has omitted from his list the fast growing sectors of Indian economy such as health care services, pharmaceuticals, consumer durables including automobiles and their spare parts, insurance, banking and hospitality industry.

However, Mitra highlights an important aspect of Indian labor force which relates to the skills and education deficiency. Taking the long led times involved in education and training (Also See, Prakash, Shri, 1977, 1978), Mitra suggests that in the short and medium terms, the growth of labor-intensive manufacturing may be promoted to absorb India's growing labour force at reasonable productivity levels. However, as Mitra points out, India's manufacturing sector accounts for only around 15 percent of national employment. Besides, as highlighted by ILO,

The International Labour Organization says that 87 percent of India's manufacturing employment is in the informal sector which has low productivity levels. However, the same low productivity, in our view, accounts for such high proportion of total manufacturing jobs. As the saying goes, one cannot have the cake and eat it too. He also discusses export led growth model to overcome this malady. But let us, at the outset itself, point out that the export led growth model has been found to be inappropriate for a vast country like India and its hugely large economy (Among others, see, Prakash, Shri

& Anand Dhir, Sonia, 2013). Mitra recognizes the fact that low prices export good are needed to face competition in export markets. We may add that high quality of products is also an essential ingredient of successful export policy. But both these facets require continuous technological up-gradation, growth of productivity and improved technical attributes of export goods. However, these very facets constrain the generation of large employment opportunities in the Indian manufacturing. Mitra recognizes these.

Mitra has also discussed the difficulties of removing or reducing the dominance of informal sector in manufacturing. It may be concluded that Mitra's paper is an important study which has zealously analyzed the job-income growth problem in an interesting manner. Despite the shortcomings that have been highlighted in review, it adds to the literature on this topic.

Bhalla, Surjit (2018) The second part of the heading of this study has been chosen to alert the readers about the fake and misleading news and views about the growth of the Indian economy and employment during the period from 2014 to 2018. Bhalla is concerned with the propagandist approach of not only the political opponents of the ruling party but some analysts also who have vested interests of their own and who present distorted facts and manipulated data to malign the government. Bhalla opines that India has achieved the best ever macro-economic performance during the period from 2014 to 2018. Despite this, as he points out, fake news of scams, slow economic growth and inflation are propagated in public domain. He cites the write-up of C R Sasikumar and Sarfaraz Alam as an illustration of this: 'In a recent Financial Times article on the US elections, the author warns, "As midterms approach, election officials are learning to combat fake news, malware and troll farms". Therefore, Bhalla quips that 2018-19 is a national election year in India and hence, the political opposition has been harping on the de-monetization and other "bad" policies of the government which, according to them, have adversely affected the job growth of Indian economy.

The objective of Bhalla is to test the empirical validity of the critics' claim that the Indian economy is in a terrible shape and that despite the economic reforms like demonetization and GST or because of them, the government has struggled to create the jobs. The critics often say that the economy needs 8 to 12 million jobs per year to keep unemployment and

social tensions under control. The critics opine that as the Indian economy has been failing to create such number of jobs, its growth has been jobless and tardy.

As a rebuttal to this thesis, we may point out that 8 million jobs had not been created in one year even once in the history of independent India. The Indian economy had grown at a slow annual Hindu growth rate of 3% to 3.5% from 1951 to the end of the nineteen seventies, and the growth rate touched 5% only during the eighties. Besides, in the first half of the 1990s, Indian economy grew negatively. It is only after 1998 that the growth of Indian economy has been accelerated while the economy struggled to get out of the grip of recession from 2008 to 2013. It may be further added that the zero unemployment level equilibrium has never been achieved by any economy of the world. That is why Keynes opined that the economies are generally in equilibrium at less than full employment (Sharma, Amit & Prakash, Shri, 2018, Prakash, Shri, 1994). Besides, at the time of the national elections in May 2014, as Bhalla points out, 'India's macro-economy was in a shambles. CPI inflation was running at 9.4 per cent, and it had averaged 7.8 per cent over the previous 10 years of UPA rule. The previous five years, 2009-2013, had witnessed an average inflation rate of 9.7 per cent per annum. GDP growth had also slowed down from 7.7 per cent in UPA-I to 7.1 per cent in UPA-II. To rebut the critics view, Bhalla further points out that CPI inflation in 2017/18 was 6 percentage points (ppt) lower at 3.7 per cent whereas GDP growth was just 0.4 ppt lower at 6.7 per cent.

Incidentally, Jagdish Bhagwati also refuted the carping criticism of demonetization in an article published in Times of India. He used the quarterly data of the growth rates of GDP for a few quarters before demonetization and a few quarters after the demonetization. Shri Prakash (May, 2017) compared longer time series data of quarterly growth rates of GDP to show that despite the initial hiccups, demonetization did not adversely affect the secular growth rate of Indian economy.

Bhalla also addresses the question of jobless growth. The critics believe that jobless growth of Indian economy is the outcome of mismanagement of the Indian economy by NDA government and this mismanagement of the economy has resulted from faulty public policies. We think that it is a colored, biased and far-fetched view of reality. During the reign of Narasimha Rao's government with Manmohan Singh at the helm of

Finance Ministry, the Indian economists were crying hoarse about the jobless growth of the Indian economy. However, the research findings have shown that the growth of Indian economy has been dominated by the growth of productivity. Consequently, the growth of employment has lagged behind the growth of GDP. However, this cannot be called jobless growth (Prakash, Shri & Balakrishnan, Brinda, 2010, Sharma, Shalini, Sharma, Amit & Bhatnagar, Gunjan, 2013, Sharma, Amit, 2012, Sharma, Amit & Prakash, Shri, 2018).

Bhalla also looks at this issue in a historical perspective. He points out that during the period of UPA-1 and UPA-2, job growth was at the measly and extremely low and slow rate of 0.6 per cent per annum. Consequently, labour productivity was at a China-beating pace of over 7 per cent per annum for seven years. Bhalla, however, considers this to be not the reality. He opines that only reasonable conclusion is that the NSSO data are under-estimate of the job creation, and hence, employment growth during the UPA years.

Therefore, he uses the data relating to two separate age groups: 15-24 and 25-64. As the children below the age of 15 years are not legally allowed to take up jobs, they are assumed to be in schools. This seems to be the rationale of Bhalla's choice of the above 14 years of age groups.

Besides, he states that the reason for this separation of two age groups is that 'when you have increased enrolment in education by the young (and especially young women who are catching up with, and exceeding, the enrolment of men), then the employment and labour force definition should include the fact that you are attending school or college'. In our view, one should understand the difference between the concepts of (i) labour-force and workforce; and (ii) out of labor-force and in the labor force. Those who are in schools and colleges, irrespective of age and gender, are not a part of labor force. Besides, the aged and retired persons and housewives are also outside the labor force. There is no age tag for the housewives. This concept has always been used in measuring the labor force participation rates in India and abroad. We fail to understand why Bhalla is citing increased enrolments unless he knows that the critics are including such groups in labor force to present exaggerated figures of unemployment.

Bhalla used the data of two sources: the recent provident fund (EPFO) data (as first popularized by Soumya Ghosh and Pulak Ghosh) for the age group 15-24, and the CMIE employment data for the 25-64 age group. The EPFO data refers to the net additions of employees in the formal, provident fund payment sector. He points out that not all net additions to employment show new employment. We may point out that the rules of PF deduction widely differ among establishments of both public and private sectors. Some employers deduct PF contribution of their employees after the expiry of their probation period while the period of probation also varies between one to two years and in some cases, probation may also be extended by one year.

Moreover, for the young, given the difficulty and attraction of a formal sector job, it is unlikely that the 18-21 age group will have any job-hoppers. This may be wide off the reality, in the wake of worldwide economic slow-down, that many young Indian men and women got pink slips from employers and the new entrants into the jobs were an easy target of pink slips. Therefore, the above assumption of Bhalla may not always hold. However, Bhalla has considered the six-month period, September 2017 to February 2018, during which total net additions in the 18-21 age-group were 1.1 million and in the 22-25 group (college graduates), net additions were lower at 0.8 million. Even after allowing a reasonable amount of job-hopping (20 per cent), the EPFO data suggests that in 2017, 3 million jobs were added in the 15-24 age group.

He used the CMIE data for the 25-64 age group which suggests that total employment created in 2017 was a robust 12 million. Other estimate suggests that the total job-creation in 2017 was 15 million. However, he stresses that 'while this estimate may not be the truth, it is unlikely to be far away from the truth'.

However, Bhalla cautions to beware of trolls. He points out that reports about female labour-force participation (LFPRF) rates reveal that there are major problems with the CMIE data which are based on biased estimate of employment downwards. Consequently, CMIE data suggests that employment opportunities are so few in India that one half of the population, especially women, has almost completely withdrawn from the labour market. Now one fails to understand, we may point out, one half of what? Does it refer to those females who are already in employment, or those, who are still in

schools and colleges, or all the housewives in India. In our view, this is an imprecise statement of facts.

Bhalla shows that for the 15-64 age group, CMIE's estimate of LFPRF is 12.5 per cent — only one out of every eight women offers for work. We would like to ask the question 'do these figures include rural females? The LFPRF is thus 'the lowest in the world and declining. In 2015, the lowest LFPRF in the world was in Iran, 14.4 per cent; and the next lowest, Saudi Arabia, at 21.4 per cent. NSSO data (for 2011/12) had India's LFPRF at 27.2 per cent. However, CMIE has India's LFPRF, circa 2017, at 12.5 per cent.

Thus, this article is a welcome addition to the debate concerning jobless growth in India and the growth performance of Indian economy in recent years.

Amit Sharma, & Shri Prakash (2018) paper is based on an in-depth empirical research investigation. It thoroughly examines the nature, degree and direction of relation between the two key macro variables pertaining to employment and growth of GDP. The authors use labor productivity as the variable intervening between employment and GDP. The authors treat employment as an outcome of growth of GDP while the labor productivity is envisaged to positively influence growth of GDP and inversely affect the growth of employment and average labor cost in Indian economy.

The paper seeks answer to the question whether the growth of GDP in Indian economy has been employment generating, or employment neutral, that is, job-less, or even employment displacing. The answer to this is sought through rigorous analysis of data. The answer to the question will be a reinforcement or invalidation of the thesis proposed by several analysts and it may also refute or validate the thesis of Surjit Bhalla that 15.1 million jobs have been created in the economy during 2017, which is accounted by substantial growth of real gross national income (GNI). However, Bhalla has not directly related the growth of employment to the growth of income as has been done in this paper. Besides, as the saying goes 'one sparrow does not signal the dawn of spring', thus the same applies to the Bhalla's stand as he has used only one year data. This paper uses long time series data of both employment and GDP. Productivity is derived as the year on year ratio of GNI and employment.

The data relating to employment and gross national income (GNI) in 2004 constant prices has been taken from Economic Survey (Ministry of Finance) and CSO, Government of India. The paper covers the period from 1990 to 2015. The authors have not relied on any one single method or model of data analysis. This probably was done to ensure that the results they finally accept and approve are not in-built in particular method or model. These results are neither provisional, nor the results and empirical findings are inconclusive in nature. This probably is an important feature which distinguishes this research study from others. The following methods and models have been used in the study: (i) Descriptive statistics which comprise mean, error of the mean, median, standard deviation, variance, coefficients of variation, skewness, kurtosis, and range and minimum and maximum values of the distribution; (ii) t-test of difference between mean and median, (iii) growth curves; (iv) Dickey-Fuller test of stationary; (v) Engel-Granger test of co-integration; (vi) distributed and linear regression models; (vii)Step wise regression for evaluating multi-Collinearity; and (viii) decomposition model.

Another interesting feature of this study is the use of a model that decomposes growth of GNI into its component parts- growth of GNI accounted by labor productivity and growth of GNI accounted by the growth of employment. However, the decomposition model, in our opinion, is an inverse specification of the other model which treats employment as an outcome resulting from the growth of GNI. Can this model be considered as the dual of the model which treats employment as the function of GDP? In that case, it may be a non-traditional dual of the primal model of growth. Otherwise, the two models will not be consistent with each other. However, the decomposition model may be specified as the derivative of an identity. The authors might probably have this at the back of their minds.

The results of decomposition Model show that the year on year growth rates of GNI are largely driven by the year on year growth rates of labor productivity while the year on year growth rates of employment lag behind the year on year growth rates of GNI and labor productivity. However, the results do not show zero growth rates of employment for any year. Thus, the paper convincingly establishes that the growth of GNI has neither been jobless nor has it been labor displacing irrespective of the party in power. Moreover, the authors go a step further and examine the relationship between the twin year on year growth rates.

The results of Bi-variate regression show that year on year growth rates of employment are an inverse function of the year on year growth rates of GNI. This implies that an increase in the growth rate of income makes the growth rate of employment decline but it does not mean zero rate of growth of employment. The authors explain the inverse relation between the two sets of growth rates by the decline in public employment which neutralizes a proportion of growth of private sector employment and relative stagnancy of growth of total employment in some years. Decline in public sector employment is mitigated by the increase in private sector employment though public sector employs 272 persons per employee in private sector. We may infer that the continued but declining dominance of public over private sector employment accounts for apparent but not real jobless growth which numerous analysts have been talking about for decades.

Dickey-Fuller test reveals the time series of year on year growth rates of (i) employment, and (ii) employment to be non-stationary. However, the authors found the specification of distributed lag model with shift parameter preferable to the distributed lag mode without shift parameter on econometric and empirical grounds. The inter-temporally shifting function takes cognizance of the changing private-public sector composition of employment. Engel-Granger test shows year on year growth rates of GNI and employment and time to be well co-integration in the distributed 1 lag model with shift parameter.

The negative effect of growth of GNI on the growth of employment is completely swamped by the joint positive effect of temporal increase of lagged employment growth and upward temporal shift of the function caused by time which is considered to be the proxy of influence of explanatory variables excluded from the function. The authors mention better technology, better and higher education, leaner and meaner organization structure and improved techniques of managing men and materials as important variables. Therefore, the authors infer that the growth of employment in Indian economy has lagged behind the growth of GNI and productivity. Growth of Indian economy has been technology centric growth of productivity. Though GNI is positively related to labor productivity, yet the growth of GNI is the negative function of productivity. It implies that the productivity of labor has crossed its peak and it has consequently started

declining. It highlights the need for new technology. In our opinion, such interpretations arise from the deep understanding of the subject.

The authors conclude that their empirical results highlight the need for the upgrading of both the hard and soft technology to alter the course of declining productivity growth.

Clements et. al. (2010) study focuses mainly on the formulation of guidelines and development of indexes for governments to formulate wage and salary policy for public employees. Thus, the orientation and purpose of the study is basically policy formulation for the guidance, and indices have been developed for this. The authors have also enunciated the definition of wages and salaries which has already been discussed and appropriately evaluated in the conceptual framework of the chapter. However, more importantly, the study has identified the following indices as important parameters for analyzing public employment and wages and salaries of public employees.

2.5.3.1 Indicators of Compensation of Public Employees

The authors have proposed the following indicators to evolve the policy of wages/salary. These indicators may also serve the purpose of evaluating the current status as well as the changes occurring through time. The indicators may reveal the total public spending, including the spending on wages. Smaller the size of the government, lower is the public spending, including expenditure on the salaries of public employees. Similarly, greater the size of the government, greater is the total public spending, including public spending on the salaries of public employees.

However, the size of the government depends on the political system, level of centralization or decentralization of authority, degree and diversity of government's involvement in socio-economic affairs and the public revenue available for spending. However, in the capitalist market economies, public spending is generally lower than that in socialist and planned economies and the developing economies where the governments have to shoulder relatively greater degree of responsibility for growth and welfare due to the limited number of entrepreneurs and paucity of private capital. Moreover, the centrally controlled socialist economies incur greater public spending since private sector generally does not exist in such economies. The authors of this technical note and manuals do not explain the above logic of considering expenditure on salaries of public

employees as a proportion of total public spending. Therefore, the author of the thesis has included it as part of the review of literature.

In our opinion, the level of public expenditure is generally determined as follows:

TPE= AVGPEPD*NPD

TPE stands for total public spending, and AVGPEPD shows average public spending or per government department, its projects and programs spending, and NPD stands for number of departments and their programs and projects.

Given the AVGPEPD, every increase in NPD will increase TPE even if AVGPEPD is constant. Similarly, given the NPD, any increase in AVGPEPD leads to an increase in TPE though the proportion of change in TPE may differ from the proportions of changes in NPD and AVGPEPD. Total public spending on salaries and wages (TPSWS) is determined as follows:

TPSWS=AVGPSWS*NPEMP

AVGPSWS shows public spending per employee and NPEMP is the total number of public employees (Prakash, Shri and Choudhury, Sumitra, 1995, Prakash, Shri, 1985). Given the AVGPSWS, an increase in NPEMP results in an increase in TPSWS, and given the NPEMP, any increase in AVGPSWS results in an increase in TPSWS. However, the proportions of changes in three variables may differ from each other.

The authors of technical note and manuals have not considered these parameters and their impact on salary expenditure by the government though they aver that the total public spending on the salaries of employees differs among the countries and regions and these differentials may be accounted by the size or level of total public spending.

The authors of technical notes show that public spending on the employees' salaries accounts for one fourth of public expenditure in Europe, Asia and the Pacific, but it is as high as one third of total public expenditure in Africa, Middle East, Central Asia and the Western Hemisphere. These features and facets may suggest that the less developed or developing countries spend more on wages and salaries of public employees as a proportion of total expenditure since such countries may require larger number of public employees for administering development projects and programs and larger number of

spatial units and population may require more public spending on public servants. Even otherwise, public investment in health, education, irrigation, nutrition, sanitation, transport and other infrastructure is needed to propel private investment in these activities. Besides, market in the developing countries may not be adequately developed, and projects and programs of development are highly labor intensive (Prakash, Shri & Choudhury, Sumitra, 1994, Prakash, Shri, Kiangi, Richard Fue and Sharma, Sudhi, 2017).

2.5.3.2 Salaries of Public Employees as Proportion of Domestic Revenue

In our opinion, public revenue/ income raised by the government from domestic sources reflects the internal strength, national income, and hence, capacity to finance public expenditure from domestic resources. The long term financial viability of public spending depends on domestic public revenue since no country, like an individual, can live forever on loans and charities/aid. In fact, domestic public revenue displays the will and ability of the government to raise resources domestically to finance its operations on the one hand, and the resilience of the people and self-reliant and self-sustained growth of the economy through time on the other. The authors of the technical note and manuals rightly point out that the public spending on salaries of employees as a proportion of domestic revenue highlights the sustainability of outlays on wages and salaries without any external assistance/aid.

However, the developing and the least developed/poor countries may occasionally seek and obtain assistance from developed countries and/or international agencies for expanding government employment, especially in priority sectors. At times, funds may also be borrowed from foreign banks and other financial institutions for financing public employment. However, it cannot and should not be a regular feature of spending on public employment.

In fact, domestic public revenue, both actual and potential, delineates the ceiling or upper limit of public expenditure. The question arises what determines the upper limit of public expenditure on wages and salaries. The authors of the study have neither considered this question nor furnished any answer to this question. Domestic public revenue comprises tax revenue, fiscal deficit and public borrowings raised from indigenous sources.

Financing the creation of new job opportunities in public sector and/or maintaining of the current level of employment in government sector from public debt and/or fiscal deficit is not only unwarranted but it is also harmful to the economy and its growth. Such expenditure is mostly wasteful and unproductive. Therefore, we infer that the public spending on salaries and other perks of employees may be restricted to a small fraction of tax revenue (Prakash, Shri, Kiangi, Richard Foe & Sharma, Sudhi, 2017). This is also required to block the unrestricted operation of Wagner's Law which postulates that public spending grows on its own steam and cascading effect, and the public employees have an inherent tendency to multiply. Consequently, one finds disguised employment in government sector in many cases. That is why Stonier & Hague (1959) quipped that employment beyond technically required number obstructs work and reduces productivity since the workers and employees tend to walk over each other's feet to create their own leg space. Therefore, public spending on wages and salaries beyond a point has been considered as unproductive.

However, the authors of the notes mention only foreign aid and donations as the external source of funding of expansion of public employment. However, cash inflows for such purposes can neither be regular nor can the volumes be steady. It makes such inflows volatile. Domestic resources have to be found out, sooner than later, to finance public programs of employment generation. Even otherwise, domestic resources are needed to sustain higher spending on wages and salaries of public employees for moving the economy and society forward in time.

The authors of the study under review suggest that the government may hire workers temporarily to limit wage expenditure, or the work may be outsourced to private agencies in such circumstances.

The authors also cite some observed facts relating to this indicator. According to them, the ratio of central government's wages of employees to domestic revenues is higher in low-income than in middle-income countries. Besides, the ratio has the highest value in African countries and the Western Hemisphere where the public spending on salaries is about 30 percent of central government revenues. The authors also cite the case of West African Economic and Monetary Union (WAEMU) where the public spending on

compensation of employees is limited to less than 35 percent of tax receipts to ensure the compliance with the WAEMU governments' Convergence, Stability, Growth and Solidarity Pact of 1999. Though the CEMAC union has no explicit rule in this regard, yet the Commission used the secondary surveillance criteria for the imposition of this limit in 2008. This has been recommended to keep the balance between the growth of wage bill and growth of revenues (See http://www.banque-france.fr/fr/eurosys/zonefr/ page9.htm). Buli and Hamann (2007) and Gupta and others (2008) also highlighted the fact that high compensation to revenue ratios in some low-income countries reflect their weak revenue efforts.

2.5.3.3. Public Outlay on Wages/Salaries of Employees Verses Non-wage Public Outlays

Public outlay on wages of employees relative to expenditure on wages/salaries of employees of health and education sectors is treated as an important indicator of public expenditure. Both health and education sectors are relatively more human capital intensive than other sectors of the economy. Both health and education have historically been neglected sectors of public domain. However, both education and health were treated as exclusive concerns of individuals. The rich of the society could afford the expenditure on education of their children and the health of the family, but the poor of the society were left to their destiny. There was hardly any public investment in these sectors while businessmen have had no interest in investing in these sectors primarily due to poor returns to investment in health and education. Naturally, analysts, economists and policy makers also failed to pay attention to these sectors (for extensive review of literature, see, Prakash, Shri and Chowdhury, Sumitra, 1994, Prakash, Shri, 1995).

The authors of the study under review explain the importance of this indicator as the criterion of efficiency of spending since it encompasses costs of input mix of wage and non-wage expenditure. The authors opine that the spending on wages may be examined relative to expenses on such inputs as books, drugs, other operations and maintenance outlays. They also cite the evidence from a sample of about 55–70 countries which spent, on an average, 70 percent and 50 percent of total spending during 2001 and 2008 on these sectors. Besides, the authors consider these ratios to be relatively stable across

regions, income groups and across time. The lower share of employees' compensation in health expenditures is explained by the higher operations and maintenance outlays on such items as pharmaceuticals in this sector.

2.5.3.4. Issues in Assessment of Government Expenditures on Employees' Compensation

Public servants, unlike private sector workers, receive several s non-monetary benefits such as free access to health care, children's education and their own training costs services, travel, housing, etc. These are not treated as part of wages. Misclassification and under-estimation of the spending on employees' compensation also occurs when payments to government employees of public investment projects are shown under capital expenditure. Furthermore, some countries also classify outlays on temporary workers under spending on goods and services. Under-estimate of wages and salaries is also caused by payments drawn as wages of fictitious workers. Consequently, average wages may be greater than what is shown by wages and employment data and/or absenteeism. The authors also describe exclusion of autonomous entities that perform the core government functions, supported by central government transfers. Such entities include revenue authorities, debt management agencies, education boards, universities, hospitals, auxiliary health workers and general insurance providers, public sector banks, publically owned air lines, railways, road transport organizations, electricity boards etc. which have their own budgets. Incidentally, random surveys in 6 developing countries have shown as high absenteeism rates as 19 percent of teachers and proxy teachers and 35 percent of health workers (Banerjee, 2005; Chaudhury and others, 2006). Thus, this study highlights the inadequacy of database and the deficient system of accounting of public finances.

The above indicators relating to the public expenditure on wages and salary depend on total employment, its cadre and employment mix and skills/occupation wise wage/salary rates at different points in time. This probably prompted the authors to discuss indicators relating to public employment and average wage and salary rates.

2.5.3.5 Indicators of Government Employment

The following indicators are used in country specific analysis though some generalizations may be valid for all countries.

2.5.3.6. Public Employment as Proportion of Total Employment

This indicator reflects the size of government. Greater the share of public employment in total and private sector employment, larger is the size of the government at any given time and greater is the share of wages in total public expenditure. Besides, larger the size of the government, greater is the role, functions and spread of government over space and across social and economic activities relating to different sectors of the economy (See, Sharma, Amit & Prakash, Shri, 2018).

2.5.3.7 Public Employment as Proportion of Private Sector Employment

Government employment as a proportion of private sector employment reflects the role of public policy and public sector in national economy on the one hand, and it depicts the capitalist or socialist orientation of the economy on the other. Smaller is this ratio, greater is the role of the market and private sector in the generation of employment and growth of the economy. Similarly, greater is this ratio, greater is the dependence of the economy on the government for generation of employment opportunities and growth of the economy. However, the authors of the study under review have not explained these facets of this indicator (See, Sharma, Amit & Prakash, Shri, 2018).

2.5.3.8 Public Employment as Proportion of Population

This ratio shows the adequacy or inadequacy of public employment for facilitating the access of people to public services, especially health, education, potable water supply, electricity and transport. Empirical evidence cited by the authors also shows that the ratios of public employment are the highest in Europe and these ratios have the lowest values in Africa. The authors of the paper infer from such empirical evidence that the government employment as a percentage of the population is generally high in high-income countries and low in low-income countries. Such differences prevail across all levels of the governments. High government employment in high-income countries is accounted by the high public employment at the sub-national levels which is largely

influenced by employment in education and health sectors. This facet, in our opinion, implies that high income and resultant high public revenues enable the governments of high-income countries to spend more on both development and welfare of the people. Besides, high income and resultant high public employment results in greater spatial and population coverage by public services.

2.5.3.9 Factors Influencing Public Employment

The following main factors guide, govern and influence employment in government:

2.5.3.10 Size and Scope of Government

The authors of this study opine that the size of public employment depends on the size and scope of the functions of the government. According to them, government size is measured by the ratio of public spending to GDP or value added while the scope of the government activities is measured by the government's role in the production of goods and services across sectors and the degree and outreach of the regulations of the private sector activities. The authors aver that some governments may extend the scope of the public sector even beyond their affordability and long-term sustainability. We may add that, at times, government may extend the public sector and/ or control over such private sector activities which are neither feasible to operate nor are these desirable to control. For example, control over inter-state retail and wholesale trade in food grains in early nineteen seventies in India totally failed in no time. In several cases, the public investment has the crowding out effect on private investment.

The size and spread of the government may also be influenced by the openness of trade and degree of integration of nation in the world economy.

Health and education sectors employ a large share of the government labor force. Indicators such as student-teacher ratios and health workers per thousand persons or per lakh square meter area may be used to assess the staffing levels in these sectors.

In our opinion, health and education are not only more labor intensive than other sectors of the economy, but these sectors are also the largest employers of the educated manpower. Shri Prakash (1978) showed that the Indian education sector employed 61% of total educated manpower of the country in 1961. Education employs more people as a

share of population than the health sector. This is true across all regions/countries except Europe. Generally, high-income countries employ 4½ percent of population while low-income countries employ only 1½ percent of their population in these two sectors. In our view, public employment as the proportion of total labor force is a better indicator than public employment as proportion of total population because the total population is composed of children, aged and retired persons, housewives, physically and mentally disabled as well as those enrolled in education institutions who are out of labor market. Therefore, they are neither seeking jobs nor are they eligible for employment in public or private sector.

2.5.3.11 Government's Employment Guarantee Schemes

Several governments have policies guaranteeing employment for such segments of the population as rural people, university graduates, or graduates of teachers' colleges. Such schemes propel employment in general and public employment in particular. Such schemes make public sector bulgy with employment.

2.5.3.12 Wage and Salary Levels

The following are the last three groups of indicators discussed by the authors of the study under review.

2.5.3.13 Average Government Wages as Proportion of Private Sector Wages

It is a commonly observed fact that the private sector is the better pay master than the corresponding public sector enterprises and the government. Public sector is hemmed by constricting influence of rules and procedures of recruitment and regulation of pay fixation and promotion. Seniority prevails over performance in the grant of rewards and promotions. Private sector is generally governed and guided by competence and capability, performance and productivity. However, public employment offers job security, stress and strain free work environment and time bound promotion. Private sector jobs pose problems of life-work balance and adverse trade-offs between leisure and pleasure, several non-monetary perks and leave-travel allowance etc. which public employees receive. Several of these facets are not discussed by the authors of the study under review except the job security and some benefits in kind.

The authors, however, recognize the difficulties in constructing a comprehensive and appropriate indicator to compare the wages of private and public sector employees, especially in case of developing economies. They do recognize the job security and non-volatile nature of public sector employment. In fact, international economic slow-down in the wake of sub-prime crisis of U.S. in 2008 resulted in the issue of pink slips by private sector employers to a large number of their employees. It brought out the importance of public sector job security to the fore. Amita Bhati (2008) included job-security, pay package and time bound career advancement as the pivotal factors of job-satisfaction. Her postulates were empirically validated by the empirical observations of 2008 and thereafter all over the world.

The authors think that all the benefits such as deferred payments, pensions, disability and survivor's benefits, and other non-monetary and in-kind benefits received by the public employees need to be considered for comparison with private sector wages. The inclusion of all above benefits in the index may reveal public sector wages not to be lower than that of private sector. Therefore, government need not offer salaries at par with the private sector for retaining high-quality and high profile employees.

Recent studies also suggest that the differentials between public and private sectors' pay are negligible in Indonesia, France and the United Kingdom while Greece favors public sector's lower level employees. Public sector employees are favored in India which, in our view, is perpetuated by the implementation of pay commissions' recommendations of up-gradation of public sector employees' pay and grade structures.

2.5.3.14 Average Wages of Public Employees as Proportion of Per Capita GDP

Average government wages as the proportion of per capita GDP reflects the status and living standard of an average government employee in relation to the living standards of the general public. The indicator shows whether average wages of public employees are high/low relative to per capita GDP. Per capita GDP measures the capability and economic sustainability of the average wage level of public employees. As the indicator under consideration excludes the in-kind, non-monetary and intangible benefits given to government employees, it fails to portray the true picture and actual burden and drain on public resources spent on public employees. In our opinion, though the Indian central

government mitigates inflation effect on the real earnings of the employees of central government through bi-annual grant of DA/ADA, it fails to reduce the same allowances when the prices fall and when the economy is in the grip of recession. The authors of the paper fail to take cognizance of the need for this flexibility. The inability and/or unwillingness of the government to reduce the additional DA when prices fall lend empirical support to the hypothesis that once the public expenditure has been increased on any count, it does not fall afterwards due to its downward sticky nature.

2.5.3.15 Ratio of Highest to Lowest Public Sector Wages: Compression Ratio

The authors define the indicator as the compression ratio. The authors consider this ratio as a useful indicator of the adequacy of pay. Low value of the ratio suggests that the highly skilled and most qualified workers are underpaid while unskilled workers are overpaid. Besides, low compression ratios are positively associated with corruption. In our view, average wages and salaries should be compared with the average incomes and average level of prices which holds for both the highest and lowest wages. Such ratios will depict the adequacy or inadequacy of the lowest real wages for living reasonably well. Besides, there is the need for linking income policy with pricing (See, Bargain and Melly 2008; Disney and Gosling 2008; Filmer and Lindauer, 2001; Glinskaya and Lokshin, 2005; and Papapetrou, 2006).

The authors do not take note of the fact that the highest wage relative to the lowest public wage rate is an indicator of income inequalities. Greater the value of this ratio, greater is the degree of inequality of income distribution in public sector. This runs counter to the professed welfare objective of democracies and concerns for the inclusive growth.

2.5.3.16 Issues in Evaluating Wage Levels

The authors of the technical note also take into account certain issues and challenges posed by the analysis of compensation of public employees. They highlight the following important problems of accuracy of measurement of indicators.

The comparisons of indicators based on average wages in public and private sector generally overlook the differentials of human capital endowment both within and between public and private sectors. Differentials of education, knowledge, skills and

expertise between occupations are overlooked while the requirements for performing different economic activities both within and between public and private sectors are different and these differences are also overlooked in such comparisons. An indicator comprising completed education years, training and on the job learning/experience of employees in different occupations and segments of government may furnish different results. Such an indicator for public sector may be compared with a similar index of employees of private sector (For Indexing of this type, See, Sharma, Amit, 2012).

Weak statistics of real sector leads to under-estimation of nominal GDP in some low-income countries. It results in an over estimate of wages to GDP ratios. The limitation is overcome by OECD's alternative indicator which measures wage compression as the mean of salaries in the ninth decile divided by mean of salaries in the first decile. This prevents handful of salaries from making distribution of compression ratios skewed (OECD, 2007, also see Abed and Gupta, 2002; Van Rijckeghem and Weder, 2001).

2.5.3.17 Wage Drift

Wage-drift is another problem involved in the analysis of wages of public employees. The system of automatic promotion characterizes the careers of public employees. Consequently, average wage levels rise as the public sector workforce ages to become more experienced and larger proportion is accounted by the higher officials. Therefore, the compensation of employees increases even without increase in wage rate and total employment. Greater the proportion of aged and senior personnel in public sector workforce, greater is the 'wage drift' effect which can even exceed the growth rate of GDP.

2.5.3.18 Indexation of Inflation Effect

Indexation of wages to neutralize inflation effect makes the government wage levels high and inflexible. Indexation also complicates the management of macro-economic variables. The indexation of wages in Bosnia and Herzegovina during last two years resulted in high inflation which jeopardized fiscal sustainability. The authors also suggested some labor reforms to overcome the above mentioned limitations. However, the authors of this study have not discussed the theory of wage determination.

2.6 Evolution of Theory of Wages

Theory of wages and salaries has been evolved for long over the years. Therefore, it has gone through several stages and phases of modifications. Different streams and strands of thoughts extended or modified and even replaced the old theory by new theory due to intellectual development and to match theory with observed facts. As facts changed with the emergence of new forms of markets through time and over space, theory of wages also changed. However, one unified theory has been used all through to determine both the wages and salaries of employees with some modifications and/or adaptations. Therefore, the ensuing pages are devoted to the review of Hannan' article which deals with the theory of wages. This is also warranted by the fact that the implementation of the recommendations of pay commissions represents attempts to align wages and salaries of public employees both with the observed and emerging changes in the economy, especially increased incomes, improved living conditions of the people and changes in public policy.

2.6.1 Hannan, Michael T. (2018), "Wage and salary".

This is basically a review article which evaluates the various theories of wages though the evaluation is more descriptive than critical. However, the article is not a comprehensive review since it overlooked the theories of wages of Hicks, Joan Robinson and Vakil and Brahmananda. Vakil-Brahmananda's theory is encompassed in their basic goods model of development. Hannan thinks that classical school of thought proposed several theories of wages, and he clubbed all of them under the heading 'classical theories'. He discussed three main versions of classical and neo-classical theories of wages:

1. Subsistence Theory; 2. Wage Fund theory, and 3. Market Theory of Wages.

2.6.2 Subsistence Theory of Wages

Most of the authors of textbooks of economics agree that Adam Smith (1776), the founder of modern economics, formulated the ''*Subsistence Theory of Wages*''. Hannan, however, opines that Adam Smith (1776) propounded no definitive theory of wages though Hannan concedes that Smith anticipated the following theories of wages: 1. subsistence theory, 2. demand and supply based market theory, and 3. human capital

theory of wages. In our opinion, it is paradoxical to think that Smith anticipated the future theories without formulating any of his own theory howsoever loose, weak and non-synthesized. Smith opined that both workers and employers pursue their own self-interests, so labor moves to (firm, industry or place) where it is needed most. In other words, higher wages propels labor mobility to boost supply. In fact, Hicks also maintained this later in his equilibrium analysis of the labor market. Hicks opined that the wage differentials induce labor to move away from low wages entities to the higher wages entities and the labor movements continue till the wage rates are equalized between the firms and the industries. This has nothing to do with the subsistence or wage fund theories.

The subsistence theory stipulates that the wages may be fixed at the level which keeps the workers and their families alive. Thus, subsistence wages just suffices to meet the bare minimum necessities of workers and their families. Wages greater than the subsistence level, it is postulated, would induce an increase in population which would lead to increase in the supply of labor. Increased supply of labor, in its turn, would reduce the wage rate and the process of rising labor supply and declining wage rate would continue till the wages again equaled subsistence wage rate in the long run. This theory seems to have anticipated Malthusian preventive checks on population growth on the premise that the growth of population is accounted largely by the laboring class. The theory obviously overlooks the lapse of time which is required for the newly born children to grow up in order to join the labor market. Consequently, inter-generational effect of growth of labor supply is overlooked. It is also germane to recognize that an expanding economy pays higher than subsistence wages to propel labor supply which results from population growth for meeting increased demand for labor. Smith wrote that the wages paid to workers had to be enough to allow them to live and to support their families. Smith also postulated that workers require increased wages to bear the cost of acquisition of better skills and know-how which is the base of modern theory of human capital. Smith emphasized that the quality and skills of labor are the pivots of economic progress. Thus, Smith considered labor to be the driver of economic growth.

However, according to Hannan, Smith did not offer any precise analysis of supply of and demand for labor. Hannan, in our opinion, neglected several important aspects of

Smith's thoughts. Smith postulated that division of labor and economic progress go together and the sustained progress hinges on the skills of workforce. Smith, in fact, opined that in such cases where labor cannot afford the cost of education, it has to be borne by the society (Prakash, Shri, Kiangi, R. F. and Sharma, Sudhi, 2017). Hannan also overlooks Smith's labor theory of value and considers labor as the cost of capital. Both these facets of Smith's thoughts revolve round his wage theory. The wage cost and prices have been inter-linked by Smith in his labor theory of prices.

Hannan points out that the subsistence theories of wages focus exclusively on the supply of labor and these theories neglect the demand for labor. The theory postulates that the change in the supply of labor makes the real wages move up and down according to rise or fall in the supply of labor. Similarly, increased supply, caused by population growth, drives the real wages down to the minimum required for subsistence. The subsistence comprises basic needs of food, clothing and shelter. Ricardo formulated the concept of *natural price.* He opined that the "*natural price*" of labor equaled the price to be paid for the subsistence of laborers and for the perpetuation of their race. Ricardo, thus, conformed to the Malthusian theory of population growth that population adjusts to the means of living. According to Ricardo's subsistence theory, as Hannan points out, the market price of labor may diverge from its natural price in the short but not in long run. Wages greater than subsistence would induce the number of workers to increase till the wage rates are brought down to the cost of subsistence. However, wages below subsistence would reduce the number of workers and the wage rates would be pushed up. Hannan opines that the workers actually lived mostly near the subsistence level while population exceeded the means of subsistence at the time of the proposition of the subsistence wage theory.

However, Ricardo considered the natural price of labor to be flexible and changeable by the moderation of population growth to match the supply of food and other necessary items of the maintenance of labor. On the other hand, the "iron law of wages" maintained that wages would always be driven down by the excess of labor supply to the subsistence level.

2.6.3. Wage Fund Theory

In our view, both Smith and Ricardo can be considered to be the proponents of Wage Fund theory of wages which they linked to the cost of subsistence. It has been subsequently supported and refined by <u>Nassau William Senior</u> and <u>John Stuart Mill.</u> However, Smith also opined that the demand for labor increased in proportion to the increase of funds kept for the payment of wages. Smith, thus, considered wage fund to be a part of the working capital. Ricardo also maintained that the increased capital results in an increase in the demand for labor. Thus, Ricardo implicitly considers both fixed and working capital to influence the supply of labor. It may be pointed out that investment to produce more output leads to an increase in the demand for labor which should result in an increase in wages at the given point in time. It appears that the classical economists focused exclusively on log run die and they overlooked short run impact of changes. Smith conceived wage fund as the theoretical surplus of disposable income which could be used by the wealthy to employ others. On the other hand, Ricardo treated it as real capital, comprising food, clothing, tools, raw materials or machinery which are prerequisites of employment creation. However, Hannan still dubbed such views of Smith only as the fore-runners of wages-fund theory. Wages Fund theory stipulates the existence of a predetermined "fund" of wealth for the payment of wages. However, the size of the fund could be malleable through time though it is fixed at any given point in time. The average wage is determined as the ratio of the wage fund to number of workers employed. Therefore, given the number of workers employed, wages were high if the fund was high and wages were low when the fund was low. Conversely, given the size of wage fund, wages shall be low if the number of workers was high and wages shall be high if the number of workers was low. Thus, the wages varied directly with the variations of the fund for the given number of workers while wages varied inversely with the number of workers if the fund was fixed.

If, however, population increased more rapidly than the supply of food and other goods of necessities, wages would be driven to the subsistence level. Therefore, it was surmised that the laborers would benefit from their contribution to the growth of capital to enlarge the wage fund. As against this, the proponents of the theory expressed the view that the exorbitant demands on employers by labor or formation of labor union, that diminished

capital, would reduce the size of the fund which would push the wages down. This also implied that the legislation for rising the wages would fail since the higher wages for some workers paid from fixed fund would be at the cost of other workers.

According to Hannan, W. T. Thornton, F. D. Longe, and Francis A. Walker refuted the wage Fund Theory. They argued that the demand for labor was derived from the consumers' demand for products and it is not determined by the wage fund. Besides, the proponents of the wage-fund theory could not empirically verify if the employers maintained any fund which was related to capital. They did not explain the proportion of the labor's contribution to output to be actually paid as wages.

Wages are influenced by a number of factors including the bargaining power of laborers. The wages-fund theory, however, was upheld till the end of the 19th century notwithstanding the above criticisms.

2.6.4 Marxian Surplus Value Theory of Wages

Hannan also discusses the Marxian theory of wages after his review of classical theory. Karl Marx endorsed Smith-Ricardo's labor theory of value that the value of a product is based on the quantity of labor used in its production. However, the reason of support to the subsistence theory of wages by Marx differed from that of the classical economists. Marx perceived that the prevalence of unemployment among the workers rather than population pressure pushed the wages to the subsistence level. Marx imputed unemployment to the capitalists' greed. According to Marx, labor was treated as merely a commodity in capitalism, and laborers would receive a subsistence wage in exchange for work. Marx thought that the capitalists exploited workers by making them work for more hours on the job than what was needed for earning subsistence income. Marx defined the excess value of the product over subsistence cost as surplus value which was usurped by the capitalists. Marx, in our view, attributed the production of the surplus value to the efforts of labor and thus he laid down the foundation of the productivity theory of wages. Marx postulated that there existed an ever prevailing reason of the conflict between the interests of capital and labor in the capitalist economies.

2.6.5 Residual Claimant Theory of Wages

In our view, residual claimant theory is an anticipated version of modern accounting approach to explain the growth of income. The sum of contribution/productivity of labor and capital leaves a high residual which is not accounted by the growth of income/output (See, Kendrick, 1969, Ambrmovitz, 1968, Prakash, Shri, 1977, Sharma, Amit, 2012). This theory may also be associated with the controversy which gave rise to the Adding-UP Theorem. Adding-UP Theorem validated productivity theory of the determination of factors' rewards, including wages. However, Hannan does not highlight the above aspects of residual theory.

The residual-claimant theory, according to Hannan, postulates that the amount of output left after the payment of rewards to all other factors of production will go to the residual factor. Hannan opines that Smith implied such a theory of wages. Smith stated that the rent would be deducted first from the output and next from the profits while the residual will go to the labor as wages.

According to Hannan, Walker proposed the residual theory of wages in 1875. He speculated that the shares of the landlord, owner of the capital and entrepreneur were determined independently and were subtracted from the value of output while the remainder was left for labor as wages. However, the theory does not identify any factor or factors to which residual will accrue. Any of the factors may be designated as the residual factor on the assumption that rewards of other factors are independently determined. For example, Kendrick, Abramovitz and Solow imputed the residual output to technology while Schultz, Dennison, Vakil & Brahamananda, Prakash and several other economists explained it as the contribution of human capital that represents education endowment of labor. However, Hannan rightly observes that such theory of wages has not much value as an explanation of wage determination.

2.6.6 Theory of Bargaining

We may call it market theory of wage determination by supply and demand for labor. John Davidson (1898) propounded '*The Bargain Theory of Wages'.* The theory envisages the determination of wages as an extremely complicated process since it involves the configuration of interactions of numerous factors on which depends the relative

bargaining strength of the parties. According to Hannan, the bargaining theory of wages states that wages, hours and working conditions are determined by the negotiations between laborers and employers and the relative bargaining power of the two parties play the pivotal role in final agreement. Interestingly, Smith pointed out such a theory of wage determination. Smith observed that employers had upper hand in bargaining than employees as employers take a united stand to oppose employees' demands and oppose the loss of income for a longer period than the employees. This theory argues that no single rate of pay necessarily results from such negotiations since several rates within a band prevail. The wage rate cannot transgress the upper value of the band beyond which no employer hires workers. This maximum acceptable wage rate is influenced by such factors as labor productivity, intensity of competition, level of investment and employer's estimate of future business conditions. The lower limit of the range defines the rate below which the workers will not offer their services to the employer. Minimum wage legislation, workers' standard of living, employment situation, and workers' knowledge of rates paid to others affect the minimum value of the range. However, the upper and the lower limits are not fixed as either of the two may move upward or downward. The actual wage rate/rates within the range are determined by the relative bargaining power.

The bargaining theory is very attractive to labor. It also gives rationale for the existence of labor unions as the bargaining strength of a union is much greater than that of individuals. Hannan avers that historically laborers had succeeded in improving their conditions without the help of labor unions. He alludes that factors other than relative bargaining strength of the parties must have also been at work.

Hannan also considers the bargaining theory to be appropriate to explain wage rates in short-run, especially certain wage differentials. However, the theory fails to explain the changes in average wages over the long run. We may, however, dismiss this criticism of Hannan because (i) long run costs of commodities and prices are nothing but an envelope of the short run costs and prices. Similarly, long run changes of wages are an envelope of the short run changes in wages; (ii) If the supply and demand theory of the pricing of goods and services holds true both in short and long runs, there is no reason to believe that the supply-demand theory cannot explain long run determination of factor prices,

including wages. Both supply and demand functions of the factors are derived from the supply-demand functions of the goods and services.

2.6.7 Marginal Productivity Theory of Wages and its Critics

Replacement of the concept of economics as the science of wealth by the concept of economics as the science of wealth and welfare discredited the subsistence theory of wages (Marshall, 1892/1962). This resulted in the incorporation of not only the labor welfare but also the need for social justice in the corpus of economic analysis and its theory. This gave rise to the marginal analysis school of thought. The concept and theory of marginal productivity of wages was anticipated by Smith who postulated wage rates of labor to be related to labor productivity. The Austrian school of economic thought made great contribution to the development of marginal analysis which paved the way for the development of marginal productivity theory of factor rewards. Johann Heinrich Von Thünen, Philip Henry Wicksteed and John Bates Clark developed the concept and theory of marginal productivity of factor rewards. The year 1930s witnessed the refinements in the marginal productivity theory of factor rewards. Joan Robinson and Edward Chamberlin distinguished the marginal revenue from the marginal revenue product in perfect and imperfect competition. Marginal revenue in perfect competition equals price x output imputed to an additional worker while marginal revenue product in imperfect or monopolistic competition equals marginal revenue x output imputed to an additional worker. The price equals marginal revenue in perfect competition while marginal revenue is less than average revenue/price in imperfect or monopolistic competition. This brought out the difference between the factor pricing theories in perfect and imperfect competition.

Marginal analysis envisaged that just as the commodity prices are determined at the point of equality of marginal revenue and marginal cost, factor prices are also determined by the marginal revenue/output and marginal factor cost. The cost of giving up an alternative job opportunity rather than the subsistence living cost governs labor supply. However, the demand for factors, including labor, is the derived demand for goods and services. Demand for goods depends on commodity prices. Demand for labor also depends on the scale of production, investment and cost of production, including wage cost and revenue

expected from employing an additional labor. As all workers are assumed to be homogenous with regard to skills, experience and quality, marginal revenue, earned from the output produced by last worker, equals average revenue generated by all workers. Average and marginal revenue are defined as marginal and average productivity of labor. Employers cannot pay wages greater than the marginal productivity of labor. Thus, marginal productivity influences the demand for labor while marginal opportunity cost affects its supply. Wages is determined at the level at which marginal productivity equals marginal cost of labor supply. Thus, economic theory stipulates that the factor rewards are determined on the same criterion of demand relative to supply by which the commodity prices are determined. Marginal productivity represents employers' demand while marginal opportunity cost represents supply of employees.

Competitive market forces ensure that the workers receive wages equal to their marginal product. However, marginal productivity declines with every increase in employment, and homogeneity of all employees makes them substitutable. Therefore, all workers receive the same wages and employers increase employment till wages equals marginal productivity which maximizes profits. The employer continue hiring till each additional worker contributes more to total value of output than wages and the marginal cost equals marginal revenue earned from the sales.

2.6.8 Main Criticism of Marginal Productivity Theory

Hannan points out that the assumptions of the marginal productivity theory such as homogeneity of all groups of workers, complete knowledge of labor market and movement to the best job opportunities are unrealistic. Workers are neither homogeneous, nor are they interchangeable. Generally knowledge and mobility are imperfect and both these differ among the workers. Factors such as domestic ties, seniority, risk and uncertainty restrict movement from one to another job or from one to another occupation or place. The assumptions that employers measure productivity accurately and compete freely in the labor market are also far-fetched. Even the assumption that all employers attempt the maximization of profits may not hold always. We may add that Baumol and Williamson propounded the new theories of the firm which emphasize the maximization of sales rather than the maximization of profits or growth

and diversification as the drivers of the operations of the companies. Besides, as Hannan points out, the charitable institutions and governments do not pursue the profit motive. Validity of the theory necessitates full employment of labor and capital, and capital and labor must be easily substitutable for each other in competitive market.

Modern economies generally have monopolistic and oligopolistic market conditions where wages are determined through bargaining. Under such conditions, marginal-productivity cannot determine wages precisely. Hence, the critics hold the view that the marginal-productivity theory is completely untenable.

2.6.9 Purchasing Power Theory of Wages

The purchasing-power theory relates wages to the level of employment during different phases of the business cycles. The theory deals with the impact of consumption and investment on the oscillations of economic activities which affect both the wages and employment. The theory acquired relevance during the Great Depression of the 1930s when the lowering of wages did not increase employment as has been assumed by the theory, and Say's Law that supply creates its own demand failed. Maynard Keynes argued that (1) unemployment induced by depression was not explained by frictions in labor market which prevented the economy from attaining full employment equilibrium, and (2) the assumption that "all other things remained equal" is only a special case without having relevance to the real situation. Keynes related the changes in employment to changes in consumption and investment. He pointed out that the economy could be in equilibrium at less than full employment also.

The theory assumed that a decline in wages reduces consumption which results in reduction of demand for goods and services. Consequently, it makes demand for labor to fall. More rapid fall in wages than prices reduces real wages drastically which, in turn, reduces consumption. Consequently, unemployment will rise if the total spending, especially public expenditure and/or investment, is not increased to create employment. Then, entrepreneurs may be enthused by the lower wage costs as an incentive to earn more profits by increasing investment and employment. If, however, employers expect wages and prices to fall further, they may reduce investment and employment. At the

most, they may maintain status quo resulting in decline in total spending and employment.

If wages fall less rapidly than prices, real wages and consumption will rise. If investment is at least maintained, total spending in real terms will increase and employment will rise. In such cases, if entrepreneurs expect lowering of profit margin, they may reduce investment. Reduction in total spending will make employment fall. If wages and prices fall proportionately, no change in consumption, investment and employment will occur. Thus, the purchasing-power theory involves psychological and other subjective considerations along with the objectively measureable economic factors. The power of prediction of the theory and its impact on the business cycle depend upon political and economic factors. Public expenditure is only a part of total expenditure and taxation and public borrowings to finance expenditure adversely affect private consumption and investment.

2.6.10 Human Capital Theory of Wages and Salaries

Hannan opines that human-capital theory of wages emerged from an application of marginal-productivity theory. Its refinement came to be known as human-capital theory. The theory revolves round the concept that the workers are the carriers of information, knowledge and know-how. The idea that workers embody information and skills which contribute to production may be dated to Adam Smith. However, the building blocks for transformation of this idea into a well integrated and full-fledged theory goes to Vakil-Brahamananda, (1953), Schultz (1(962), Dennison (1969), Becker and others (For detailed review, see, Prakash, Shri, 1995).

Accounting approach to economic growth left a big residual which was attributed to technology or productivity (Kendrik, Abramovitz) while Schultz and Dennison imputed it to capital accumulation through investment in education. It is assumed that the growth of total value added/net income is basically the outcome of the growth of contribution of labor and capital. Therefore, the following identity should hold empirically (Sharma, Amit, 2012):

$GR_{Ot} = GR_{lt+} GR_{kt}$

GR stands for growth rate and subscripts o, l and k represent output/net-income, labor and capital, while t stands for time. However, the substitution of year on year growth rates in the identity showed

$GR_{Ot} > (GR_{lt+} GR_{kt})$,

and

$(GR_{lt+} GR_{kt}) = RS_t > 0$

RS_t, the residual factor had such high value as could not be dismissed to be non-significant (See, Dennison, Sharma, Amit, 2012).Theodore W. Schultz (1962) defined it as the contribution of human capital in the form of stock of knowledge, skills and experience possessed by workers though he initially called it the outcome of 'investment in man'. Both public investment and families make a major contribution to the acquisition of knowledge and skills through investment in education.

The acquisition of productive knowledge involves direct costs and earnings foregone due to sacrifice of the opportunities to earn wages. Becker hypothesized that such investments will be made only if the stream of benefits/earnings expected to flow in future exceeds the short-term costs of training and education. Age-education-earnings profile of the entire working life span emanating from such investment is the base of human capital theory of wages. Workers with lower formal education earn less than the workers with more education.

Wealthier families can lower the costs of human-capital formation for their children by subsidizing the education and training costs. Besides, wealthier and better-educated parents guide and shape the tastes and preferences of their children by inculcating a high regard for education and a desire to perform well in school. This translates into a higher rate of return on investment in knowledge and skills relative to that of children from less-advantaged families. In our opinion, it perpetuates income and wealth inequalities emanating from the inequalities of education through generations (Prakash, Shri, 1996).

Becker also introduced the important distinction between "general" human capital which is valued by all potential employers and "firm specific" human capital which involves skills and knowledge that have productive value in only one particular company. Shri

Prakash (1977) distinguished between general human capital accumulation acquired through formal general education, which is malleable and qualifies graduates for numerous occupations, and human capital accumulation through occupation/industry specific highly specialized knowledge providing education like law, medicine, teacher education, management, commerce, accountancy etc. Such education qualifies graduates for one particular occupation. However, excess or short supply of specific level and type of education may lead to substitution of one by another level and type of education (Prakash, Shri, 1977, Lawma, 1991).

The above review of the study of Hannan reveals that either he is unaware of Indian studies or he has overlooked the same. Therefore, the following few paragraphs may complement Hannan's study. Few other aspects of human capital theory of wages are also discussed.

Just as the laborers are the employees, managers, administrators and other ranks of white collar workers, including CEOs, directors and even chair-persons are also employees of their employers in a broad sense since all these draw salaries from their employing entities. Therefore, the rewards or salaries for the services rendered by managers, administrators and other ranks of different categories are similar to the wages as the reward of labor. The proponents and supporters of human capital theory of wages have highlighted the following similarities in physical and human capital (Prakash, Shri, 1977, 1978): (i) Services of human capital stock are inter-temporally used in production just like the services of physical capital stock; (ii) Humans are the carriers of soft technology, comprising skills, knowledge, know-how to do how, on the job learning, experience and expertise just as the machinery and equipment are the carriers of hard/physical technology; (iii) human capital bears the impact of wear and tear of ageing and sickness which needs investment in nutrition and health care just as continuous use of machinery and equipment in production results in wear and tear which needs the spending on repairs and maintenance to keep these in working condition; (iv) Knowledge, know-how and expertise of human capital tends to become obsolete with the lapse of time just like the technology, embodied in old machinery and equipment, becomes old and obsolete. Both these forms of capital need replacement by the new, better and more advance stock of

machinery and human resources endowed with new technology and knowledge and skills.

However, there is one vital difference between human and physical capital: the technology endowment of physical capital becomes old and obsolete with the passage of time but skills, know-how, knowledge and expertise endowment of human capital increases with time (Prakash, Shri, 1978). It is, therefore, inferred that the salaries of managers, administrators and other ranks of human resources may be determined like the interest rate or return to investment in physical capital. Education-age-earning profile displays the returns to investment in education and training. This aspect differentiates the theory of determination of salaries from the theory of wages as well as the theory of interest (Prakash, Shri, 1995, Prakash, Shri and Balakrishnan, Brinda, 2008).

The factors such as the employers' capacity to pay, mandatory minimum wages and salary rate(s), place of work and organization of employment, package of perks, temporary or permanent nature of job, job security, other working conditions such as nature and degree of responsibility attached to the job, relative scarcity or surplus of the given type of available human resources influence the demand for and offer of salary package (Cf. Smith, Adam, 1773). Incidentally, scarcity of manpower of any given level and type may be overcome by immigrants while surpluses may be moderated by migration just as the surplus or scarcity of capital goods may be moderated by exports and imports (Prakash, Shri, 1977, 1978).

2.6.10.1 Contribution of Labor and Human Capital

Net income or value-Added comprises wage payments to labor and human capital and profits or interest to capital. Therefore, the shares of wages and profits/interest of capital are inversely related. Greater the wage share, smaller is the share of profits and vice versa. This neo-classical postulation mixes the concepts of interest of capital and profits of enterprise on the one hand, and wages of labor and returns to human capital on the other. However, the new theory postulates that the value added comprises wages of labor, interest of capital and profits or Economic Value-Added (EVA) of enterprise (For determination of EVA, See, Prakash, Shri and Sharma, Shalini, 2008).

Glinskaya, Elena and Lokshin, Michael (2005) the paper deals with the changing differentials of wages of public and private sector workers in India. The often repeated assertion or hypothesis that the private sector workers and employees are much better paid than their counter parts in public sector is probably examined empirically by the authors of this study for the first time. This hypothesis is also a part of the rationale of the appointment of pay commissions after an interval of 10 years. The authors of this study use the data collected from 1993-94 and 1999-2000 from Employment and Unemployment Surveys of India. The authors mainly focus on the differentials of wages and salaries of the workers employed in public and private sectors in India, but the paper also evaluates the factors which influence workers' decisions to join public or private sector. In our view, the preference for public sector jobs has been prevailing in India since times immemorial. However, this preference was greatly accentuated, especially among the educated, during the British rule when Western education was directly linked to employment in the government sector. However, the learning of the language of administration has always endowed the learners with the privilege of being the part of administration. This is conveyed by the popular saying that 'padhen farsi beechen tail, yeh dekho kudrat ke khel.' It means that those who had learnt and had the knowledge of Persian are now vending oil after the establishment of British rule when English was made the language of administration (Prakash, Shri, 1996).

The commonly prevalent view is that the public sector jobs have been preferred because the government employees command greater respect, empowered with authority, enjoy job security, get time bound automatic promotions and retirement benefits. However, the preference has been tilting towards the private sector after the globalization of the Indian economy.

However, the authors estimate three econometric models to determine the wage differentials between private and public sector employees from the data. Each econometric model is based on different assumptions about the process of the selection used by the job seekers in the job market.

Empirical results, derived from all three models, show that the differences in wages between public sector workers and workers employed in the formal and informal casual private sectors are positive and high. On an average, the premium attached to public over private formal sector jobs ranges from 62% to 102%. It has been observed that the average wages of public sector workers exceeds that of private formal and informal-casual sector jobs by as much as 164% and 259% respectively. However, these differentials vary between the results furnished by three different models. Unlike the private-public sector positive wage differentials only for low skilled public sector workers in Indonesia, Italy, U.K. and France, public sector workers in India receive much greater pay packages than those received by the private sector workers across all levels of skills and education.

Interestingly, the evaluation of wage differentials, based on the estimates derived from similar methodologies, across the globe shows that the greatest differentials between the wages of public sector workers and workers in the formal private sector prevail in India. Besides, the wage differentials in India are higher in rural than urban India. This implies that private sector pays much lower wages to its workers than the rural public sector workers, but it pays even lower than the wages received by private sector workers in urban India. It also implies that the private sector jobs in rural India are much lower than urban India relative to the number of job seekers. This may also reflect the lower levels of education and skills in rural private sector which is dominated by agriculture and related activities. However, the authors have not drawn any of the above inferences from empirical results.

However, the wage differentials in rural private and public sector are greater among women than men. The wage differentials are also higher for low-skilled workers. Inter-temporal wage differentials tended to increase from 1993-1994 to 1999-2000. Thus, in our opinion, these results of the study lend empirical evidence to support the rationale of the preference to public rather than private sector employment in India. In addition to factors underlying preferential choice of public sector employment, cited above from Prakash, the authors of this paper provide some of the most important economic factors for this preferential treatment of public sector jobs in India. The results of this study have

refuted the hypothesis that the public sector is not a better pay master than the private sector.

Filmer, Deon, and Lindauer, David L. (2001), Deon Filmer and David L. Lindauer formulated the following hypotheses for empirical evaluation of the almost universally shared view that Indonesia has had a low-pay civil service:

(i) The civil servants in Indonesia had been and are greatly underpaid at all levels of the government and across different ranks and positions; and

(ii) Low pay of civil servants and corruption in Indonesia were and are still casually related in all echelons of the government.

The authors of the paper also posed the following questions to empirically test the above hypotheses:

(i) Since the concepts of 'Low and High' are relative in nature; the question, 'salaries of civil servants in Indonesia are and were low relative to what and whom? , acquires importance.

(ii) Were/are the salaries of the employees of the government of Indonesia low relative to international or domestic levels?

(iii) Are all 4.6 million civil servants including the armed services and police personnel or only those at higher ranks lowly paid?

(iv) Is low pay the key determinant of corruption?

The authors used the data of Indonesia's Central Bureau of Statistics' large Household Surveys of 1998 Sakernas and 1999 Susenas in empirical analysis. It is surmised that income and price policies should be consistent with each other where the public income delineates the upper limit of expenditure. These are well established canons. Therefore, the authors could have compared the average pay of civil servants with per capita income and per capita public revenue of Indonesia. Pay/income of the workers of different occupations and ranks and positions occupied by the public sector employees relative to the employees of private enterprises reflect the pattern of income distribution between public and private sectors. In our view, it also demonstrates the relative importance and

contribution to income, but other parameters of comparative method of analysis are overlooked.

Filmer-Lindauer's Evaluation of Past Studies

The authors examine the past studies of the subject to furnish the backdrop of their own findings and demonstrate the empirical validity of their hypotheses.

Smith (1975) stated that "Indonesian public officials are among the most poorly paid in the world", and the official salaries covered only half of the public employees' 'minimal essential monthly needs' in 1970 (pp. 722-23). Smith considered low salary as the key determinant of corruption in Indonesia. Gray (1979) wondered, "How Indonesian civil servants would survive if the civil servant confines himself only to the official nominal salary plus automatic cash supplements" in 1970 (p. 85). Gray pinpointed the sources of illegal income of public officials, but unlike Smith, he did not consider low salaries as the cause of corruption.

On the other hand, Wirutomo (1991) found the pay of relatively unskilled rank I public workers on par with the pay of private sector employees in 1984. However, the ratios of private to government pay for more skilled workers of Rank II and the highest government rank IV were 2.7:1 and 5.2:1. The World Bank's report (2000) for the Consultative Group on Indonesia also found the public-private pay gap growing at the highest ranks during late 1990s. Besides, the report also showed that "where civil service clerks make about half that of their private sector counterparts, director-generals make one-tenth to one-fifteenth" (p. 14). The Indonesian government officials supported such views. Thus, inter-temporal gulf between the pay packages of private and public sector employees increased in Indonesia.

We may add that the consistently rising gap between the salaries of civil servants and private sector employees of equal ranks should have resulted in the decline in the preference for government employment if the avenues for corruption were not increasing. Alternatively, it may be inferred that the slow and low growth of job opportunities in private sector must have been forcing the youth of Indonesia to willy-nilly accept the government jobs available and accessible to them.

The Committee of Four (1970) attributed the widespread public corruption to low salaries. The articles, published in the Straits Times, (March 30 and April 4, 2000, Singapore) attributed such views to policy makers which resulted in the grant of huge increase of 1000% in allowances to some structural staff in April 2000. Thus, one may infer that attribution of corruption to low salaries by the policy makers might have been prompted by self-interest.

Contrary Evidence

Indonesian civil servants comprised professionals as functional staff and about 10% of all civil servants occupied top managerial positions as structural staff (Smith, 1975). Total civil servants, including the armed forces and police personnel, were 4.6 million. Smith's survey of 600 public officials showed their 'monthly expenditure needs' to be lower than the official salaries. Clark and Oey-Gardiner (1991) concluded that the official salaries of faculty of Indonesia's public universities were less than the market wages of private sector.

Both Filmer and Landour dismiss the above evidence and opinions of policy makers, managerial and professional ranks and academicians about low and inadequate pay of public employees as unconvincing and insufficient to validate the thesis that low public salaries accounted for corruption. It may also be surmised that the concepts of low and high are relative terms. Therefore, in our view, it is important to specify the norm or standard to measure the relative low or high salary. Per capita disposable income of the country may be one such variable for normalization of public salaries. Alternatively, one may consider per capita expenditure of the people of Indonesia to evaluate the adequacy or inadequacy of civil salaries.

It is, therefore, not surprising that the critics of the views and opinions of the protagonists of the thesis that the low civil salaries were responsible for corruption dismissed the thesis as erroneous. The critics thought that such studies used erroneous methods and inadequate data to determine the adequacy of public pay. Filmer-Landour consider expenditures of public servants more than their official income as endogenous to their illegal earnings, and it only shows their proclivity to use legal/illegal ways of earning extra income rather than inadequate pay being the reason of corruption.

Wirutomo (1991) used the sample of 79 North American, European multinational and local big private firms in Jakarta and 80 percent of these firms belonged to banking, information technology, insurance and pharmaceuticals sectors. In our view, such small sample of firms may not be representative of either the domestic firms of these industries or the choice of public rather than private sector having been made by the Indonesian civil servants.

Multinationals and large domestic private and public concerns pay wages higher than that paid by the domestic smaller enterprises *ceteris paribus*. Big firms earn huge economic rents in the protected product markets and enjoy economies-of-scale. Graham (2000) from cross country data found that multinationals pay their workers more than market wages to (i) attract or retain the efficient workers, (ii) minimize labor unrest, (iii)response to direct government pressure, and (iv) such firms pay "too much" relative to reservation wages of employees (Graham, 2000). In our view, the multinational companies carry human capital scarcity induced high wage propensity of home to the host developing countries which prompt them to offer greater than the market wage in the host country.

Filmer-Landour's Findings

Filmer and Landourused the data of Indonesia's Bureau of Statistics' two large household surveys of 50,000 households which had 28,000 observations, and the samples covered one third of 90 million workers. Two thirds of the labor force, not covered by these surveys, is self-employed or family workers engaged in agriculture or the informal sector. From the analysis of this huge sample data, Filmer and Landour infer that

(i) Average earnings of government employees are comparable to those of private sector employees in Indonesia;

(ii) Three-quarters of the total public sector workers, having high school education or less, earn a pay premium more than the private sector workers. This finding is in consonance with the similar finding for India.

(iii) Civil servants with more than a high school education earn less than the pay of corresponding private sector workers. However, their average premium conforms to the public and private pay differentials in other countries and it is much less than the

commonly assumed premium. We may add here that the private sector's pay packages vary among their cadres according to the actual or perceived productivity and/or relative surplus or scarcity of the given type of manpower in the market. Therefore, greater pay package of public sector employees with the given level of education is unearned rent accounted by in-built bias in policy. Hence, this rent element should be eliminated from the salaries of public sector employees;

(iv) Average government earnings at 414,000 rps./month exceeds the national non-government average of 274,000 rps./month. This is not surprising since the government jobs are more education-intensive than the private sector jobs.

(v)The above inferences are based on empirical results which are neutral between different econometric specifications. These results make the hypothesis that low pay is the cause of government corruption doubtful.

(vi)Change in the structure of compensation as the main instrument to address corruption would not solve the problem though it may be important for civil service reform; and

(vii) The conclusion that the Indonesia's civil servants are poorly paid and have been so for decades, propounded by government officials and policy analysts, is based on anecdotal evidence and casual empiricism.

Filmer and Landour used alternative econometric models, including government dummy regression, to derive above conclusions from the analysis of data.

Claudio Lucifora and Dominique Meurs (2004) the authors point out that only a few studies have analyzed the job and pay conditions across sectors. Most of these studies used the dummy variable regression to estimate the public-private sector differentials of wages. Some studies estimated separate equations for public and private sectors to calculate the implied wage differentials by the Oaxaca-Ransom methodology. Some studies specified the choice of sector for employment jointly with wage determination. Subsequently, these studies corrected the estimate of the coefficients of the public-private sector differentials of wage variation which depended on the choice of sample. The results furnished by these studies vary a great deal between the methods of data analysis. We may add that the

results may also vary according to the size and expanse of database and the degree of diversity it encompasses.

These studies used several definitions of the public sector, and chose different specifications and the identification strategy in simultaneous equation modeling. The authors observed that the public sector not only accounts for the sizeable proportion of total employment but the public expenditure also plays a significant role in economic performance of OECD countries. In our view, public expenditure on the salaries of public sector employees directly depends on the level and structure of public expenditure. This is in addition to other roles and functions of public expenditure.

However, the goods and services offered for sale and institutional mechanism of pay determination differ significantly between public and private sectors in these countries. Substantial pay differentials exist between gender and skills differences in public and private sectors which also greatly influences the length of workers' queues for jobs, 'time spent in the waiting and job search' during unemployment, recruitment, retention and incentives in the competitive labor market. Within the sector, positive wage differentials are greater for women in public sector than men while pay dispersion is lower in public than private sector. Public sector pay gaps are sensitive to the sample data, empirical specification of the model and the chosen group of workers (Gregory and Borland, 1999).

2.7 Variables Results of the Study

Lucifora Claudio et al. show that for a given distribution of differences and dispersion of pay between sectors, use of conditional mean has serious limitations. Therefore, Poterba and Rueben (1994) proposed the quantile regression to analyze the pay differentials for relatively low wage distribution in public sector of U.S. Mueller (1998) formulated and applied decomposition model to several quantiles of pay differentials of workers in the public and private sectors in Canada. Blackaby and Murphy's wage equations were used by Godderis, (1988) and Hartog and Osterbeek, (1993) for analysis of U.K.'s data. Disney and Gosling (1998, 2003) used fixed variable effect model to derive the estimators from the panel data of public-private sector pay differentials. Nawata (1996) and Manski (1993, 1995) showed the demerits of these methods and models since the public-private sector pay gap varies along the distribution. It is greater for the lowest

relative to the top decile. However, the differential decreases monotonically from the lower to the higher wage distribution in Germany (O'Leary 1999, Disney and Gosling 1998, and Melly, 2002).

The sample data, used in the paper, comprises non-agricultural employees aged between 15 and 70 years. The study under review applies both non-parametric (kernel) and quantile regression methods for empirical evaluation of the public-private pay gaps from micro level data of France, Britain and Italy. The distribution of the wages across the sectors is analyzed.

The results show that the public-private (hourly) wage differentials are sensitive to the quantile used in the analysis while the premia varies between gender and skills. The public relative to private sector pays more to low skilled workers in all countries. However, public sector payment to greater skilled and higher educated workers is lower than that of private sector. First inference is similar to that for Indonesia, but the second inference contradicts that for Indonesia. This paper reaffirms that the skills and education based pay differentials are more pronounced for females than males in all the sampled countries.

The paper made the following important contribution to the existing stock of knowledge:

(i) Unlike the other past studies, the paper focuses on three different countries and examines the influence of institutional differences involved in the process of pay fixation which affects pay differences of public sector workers.

(ii) Like the Indonesian study, this paper also encompasses results of other studies. However, one aspect of the study makes it different from the Indonesian study that it not only encompasses the analysis of data of Great Britain, France and Italy but it also cites the important results of empirical studies of other countries such as Canada and Germany;

(ii) The other past studies used only parametric methods to estimate the public-private sector pay gap. This paper used both non-parametric and quantile regression methods to determine the distribution of wages across the sectors.

(iii) The public-private (hourly) wage differentials are sensitive to the choice of quantile

in the database while the premia varies with the gender, skills and education.

(iv) Decomposition of the predicted wage gaps for different quantiles furnishes relatively more accurate magnitudes of wage gap which are attributable to differences of returns to skills and education between the public and private sectors.

(v) Public sector pays more to low skill workers in all the sampled countries, but it pays less to high skill workers. The differentials are more for females than males; and

(vi) Oaxaca-Ransom type decomposition method of wage differentials by quantile shows over 60 percent of the total differential to be explained by the above observed characteristics, but the differentials increase over the entire range of wage distribution.(vii) The unexplained part of the wage differentials between the public and private sectors symmetrically decreases to almost zero at the highest quantiles. It suggests that the differences in the unobserved characteristics are more important at the lower quantiles.

Besides, the authors discussed the following factors of public sector pay-gaps in detail in an inter-country comparative framework.

Institutional Differences in Public Sector Pay

The authors draw the following important inferences from the observed facts of the year 1998 for all three countries of the study:

(i) The rules governing the pay and terms and conditions of employment differ between the public and private sectors in all countries. The different institutional rules of pay determination in public sector in the three countries show that the collective bargaining and the private sector pay as the base and standard of comparability and other factors affect the public- private wage differentials;

(ii) The changes in the recent years for enhancing the competition and efficiency of public sector notwithstanding, the selection criteria and procedures of recruitment and promotion of workers to adjust wages upwards, wage profiles, career advancement, collective bargaining and trade unions significantly affect pay differences between the public and private sectors in all three countries;

(iii) Specific education qualification is prescribed for all levels of public sector jobs and

recruitment is done through open competitive examination in Italy and France. Besides, public employees enjoy life-time contracts and time-bound seniority based promotion. Permanency or job security distinguishes public from private sector employment at all levels of government. Most of these features characterize public sector employment in India also.

(iv) Decentralization of power caused significant variation in recruitment criteria and pay levels of civil servants among different departments of public sector in Great Britain where several public services were outsourced also.

(v) Regulation of private sector is generally much lower than that in public sector in all three countries. However, strict job protection and extensive coverage of collective agreements and centralized system of pay determination prevail in Italy and France. Pay determination is highly decentralized in Great Britain; unions are weaker and job protection is fairly low (OECD, 2000). Consequently, pay inequality is greater while lower pay and lower employment in public sector prevail in Great Britain than France and Italy (OECD, 1996; Lucifora, 2000).

(vi) Inter-country institutional differences affect the differentials of structure and magnitudes of the public sector pay gap. Collective bargaining in the private sector results in industry wage minima and employment conditions in France. Though unions participate in national wage negotiations in public sector, yet the outcome is not legally binding on the government. Besides, the civil servants cannot participate in collective bargaining and their pay is set by statutes with the same pay scales for all public sector workers (Guillotin and Meurs, 1999). However, in Italy, collective bargaining in the private sector takes place at industry level and the public sector wage levels and wage adjustments are determined at the central level (Dell Aringa and Della Rocca, 1996).

(vii) Civil servants are covered by review bodies, index linking, decentralized and centralized collective bargaining. Such policies as out-sourcing and competitive tendering contributed to progressive 'privatization' of pay determining procedures (Bender and Elliott, 1999). Private sector pay is used as a reference point for pay determination in public services in some parts of Great Britain. France and Italy do not use such comparability principle but the cost of living and public budget conditions are the

reference points. Minimum wage legislation is relevant in Great Britain and France, but it does not operate in Italy.

Stylized Facts of Public-Private Pay

The authors aver that greater the number of public sector activities, which private sector cannot or does not undertake, lower is the substitutability in the goods and services provided by each sector. Consequently, more difficult is comparability and greater becomes the scope of pay differences between the public and private sectors. "Auroux Law" of 1982 and 1993 civil service reform widened the scope of collective bargaining in public sector pay negotiations of all the eight functional sub-sectors and conferred the power of negotiation on public sector employees on an independent agency-Agenzia per la reppresentanza sindacale nel pubblico impiego -ARAN.

The police and armed forces, university professors and other academic staff, judges and prosecutors and senior civil servants and the majority of doctors, nurses and teachers are employed in public sector while insurance salesmen, assembly workers, stock and bond dealers are employed in private sector. Besides the above, following important facts are highlighted by the authors:

(i) Average differences of qualification and job contents, reflected by pay differences between public and private sector, equal11.5, 28.5 and 16.1 percent respectively in France, Italy and Great Britain.

(ii) Pay differentials are reduced to 5-6 percent in all countries after the adjustment for personnel and job characteristics.

(iii) Minimum rates of pay for the least skilled workers are higher in public than private sector in all countries. Presence and more effective use of union power and State's offer of fair pay to the least skilled under the protection of law exercise influence on wage fixation. Influence of these factors reduces swage dispersion in the lower part of the distribution in public relative to private sector (Bender and Elliott, 1999).

(iv) The wages of the most senior public servants are generally substantially lower than those to individuals with comparable skills and responsibility in the private sector largely due to public opposition to high rates of pay for public servants (Katz and Kreuger, 1991;

Lucifora, 1999).

(v) The combined effects of the above two factors make the public sector wage structure flatter than that of private sector. Larger proportion of low paid individuals, monopsony and discrimination in private sector sharpen this effect further (Bazen, Gregory and Salverda, 1998).

(vi) Adoption of private sector pay as standard and the prevailing imbalance together make the public sector pay more than the opportunity wage cost of unskilled and low skilled labor.

(vii) Though labor market failures are less relevant for skilled individuals in private sector, yet the rates paid to high skilled workers in public sector are less than those warranted for attracting, retaining and motivating such workers in public sector. These distortions in relative pay on both sides of the distribution make the decisions of human resource management and recruitment intricately difficult.

(viii) The work package and work environment, comprising job security, probable risk, injury at work and other working conditions affect the workers' compensation (Hamermesh and Wolfe, 1990; Sandy and Elliott, 1996).

(ix) Such heterogeneous workers' attributes across sectors as preference for public sector, desire to be a civil servant and preference for work in non-profit sector are overlooked in private-public sector pay inequality in the past studies.

Empirical Findings of Past Studies

The paper lists the following findings of the past empirical studies of public and private sectors' wage differentials in Great Britain, Italy and France:

(i) On an average, civil servants earn more than the comparable workers in the private sector in Great Britain (Rees and Shah, 1995; Disney and Gosling, 1998, 2003; Blackaby, Murphy and O'Leary, 1999; Bender and Elliott, 1999).

(ii)If human capital variables are kept constant, the average differential is close to 5 percent although it is much higher for females (15-18 percent) as compared to men (2-5 percent). However, approximately half of the differential is explained by differences in the observed characteristics of workers.

(iii) Relatively large positive differential between the public and the private sector exists in Italy (Cannari *et al.*, 1989; Brunello and Dustmann, 1997; Bardasi, 1996; Lucifora, 1999; Comi, Ghinetti and Lucifora, 2002).

(iv) Adjustment for a set of variables reduces the differential for men to 10%, but it is still greater for females at 18-20 percent.

(v) However, 90% of the wage gap is attributable to differences in the characteristics possessed by workers while only small differences exist in returns to these facets between the sectors.

(vi) Only a few studies investigated the issue of public sector pay differentials in France. Insee, (1999) and Fournier (2001) showed the existence of positive (negative) premium involved in the choice of the sector by the job seekers. However, a positive premium exists for low (high) skilled and female workers in public sector in France.

(vii) Decomposition methods furnish similar results for all countries. Small wage differential exists if differences in characteristics are controlled for adult males, and more significant positive differential exists for females.

(viii) The descriptive statistics show that on an average, the civil servants are older, more educated and work shorter hours than those employed in private sector in all countries.

(ix) Public sector employs more females, more part timers and has a larger share of white-collar workers.

(x) Both males and females employed in public sector earn higher hourly wages.

(xi) Both unconditional and conditional dispersion of wages differs in public and private sector. The standard deviation of (log) hourly wages in the public sector/private sector is 0.533 (0.604), 0.422 (0.465) and 0.365 (0.381) respectively in Great Britain, Italy and France.

(xi) Hourly wage dispersion, especially in the private sector, is wider in Great Britain than Italy and France. The authors fitted non-parametric kernel density function to determine distribution of hourly wages across sectors. Estimated densities show that hourly wages in public sector in all three countries have greater mean and a lower dispersion for private sector.

(xii)OLS estimate of public sector dummy regression from panel data of public-private sector pay gap has a statistically significant positive coefficient in all countries. Use of a larger set of variables reduces the estimated gap and differences across countries.

(xiii)Gender wise sample database reveals larger public sector wage gap for females than for males.

Critical Comment on Method of Data Analysis

The authors pooled the data of public and private sectors comprising diverse occupations, skills, education and gender profile. Regression modeling on such highly diverse cross section suffers from not only heteroscedasticity but also from the influence of variable means and variances over the sample. Results have, however, not been tested for heteroscedasticity which renders the inferences drawn from regression models as doubtful due to unreliability of test statistics of parameters in such cases. Data should have been corrected by variances of the variables of the models. The authors could have used the variances of quantiles for this purpose.

2.11 Conclusion

The reviews of past studies, contained in above papers, confirm the view of the author of this study that

(i) No study of the impact of the implementation of recommendations of pay commissions on the wages and salaries of public sector employees has been conducted in India and abroad. Though Claudio Lucifora and Dominique Meurs examined the effect of institutional differences of the public-private sector pay gaps and differences, they do not discuss the effect of institutional set up on the periodic revision of wages and salaries under any mandatory provision. This is in spite of the fact that they mention the review of wage rates by independent agency; and

(ii) Very few studies of public-private sector pay- differences have been done in the past.

The main findings of the review are as follows:

(i) Public sector pays more to unskilled and low skilled workers than the private sector;

(ii) Private sector pays more to more skilled and higher educated persons than the public sector; and

(iii) Preference to public over private sector for employment is guided and governed by such non-monetary factors as job-security, time-bound seniority based promotions and benefits like pension, leave, absence of risk and pressure for performance.

Though only few selected past studies have been reviewed in the chapter, yet the results of larger number of studies have been discussed in the studies that have been reviewed. Besides, the reviewed studies covered the empirical results of data analysis of countries such as Canada, France, Great Britain, Germany, Indonesia, Italy and India.

In addition to this, a wide range of theories of wags/salaries and indexes for comparative analysis of pay differentials have been examined. Besides, the review of past studies has enabled the scholar to acquire an understanding of what has already been done in the past by numerous scholars in this field of research. In addition to the above, the review in the chapter has covered the policies and practices followed in India, Indonesia, Great Britain, France, Germany, Canada and Italy. Thus, the review covers two emerging market and developing economies on the one hand, four OECD developed countries and Canada, which is also a developed economy. Coverage by review of different countries is important in view of the fact that despite the similarities within the developed or developing or emerging market economies, level of development, economic structure and the roles and functions of the public-private sectors and institutional set-up differ significantly between the countries. The findings of the studies reviewed in the chapter, thus, authenticate the choice of the topic for an in-depth research. It also shows that the outcomes of this research may be expected to fill up some gaps in the current stock of knowledge of the topic of research.

All the above have provided useful guidelines for empirical analysis in this study. Besides, the benchmark has also been identified for research.

CHAPTER THREE:

APPOINTMENT OF PAY COMMISSIONS FOR UPWARD REVISION AND RATIONALISATION OF SALARIES OF GOVERNMENT EMPLOYEES

3.0 Overview of the Chapter

The chapter largely reproduces and explains the modality of appointment of pay commissions at a regular interval of ten years to review and upward revise the grade pay, grade pay structure, number of grades and allowances payable to Indian civil servants/employees of each grade, including police and armed forces personnel and the pensions of pensioners. The chapter discusses the rationale underlying the constitutional provision for the constitution of pay commission after the lapse of specified period of time. The objective, functions and scope of pay commission comprise the recommendations of the mechanisms of determination of (i) Basic pay and allowances of current and future government employees, and basic pension and allowances admissible to the past and future retirees from public services; (ii) Nature, number and magnitudes of all allowances; (iii) The band of minimum and maximum pay of all civil servants, armed forces and police personnel; (iv) Annual increments in new pay matrix for each grade pay; (v) Incentive scheme and time bound career advancement, which has to be based on the prior determined performance bench marks; and (vi) Number and magnitudes of allowances admissible to present and future employees and pensioners.

The contents of the chapter are based largely on the Government of India's Gazette Notification of February 28, 2014. The research study has explained the stated rationale of the Government for the appointment of pay commissions by the Government of India. However, the author of this study has postulated ten different reasons of the rationale and the reasoning for the appointment of pay commissions. These are based on author's own knowledge and the understanding of the process of periodic appointment of pay commissions every ten years.

3.1 Introduction

Appointment of Pay Commissions under the constitutional provision of independent India is a unique feature. The scholar learnt this from an extensive search of literature on internet/U-tube and libraries. However, he could not find even one single study which deals with the determination of wages and salaries of government employees on the basis of recommendations of pay commissions though the countries have some mechanism of

fixing the wages and salaries of the government employees. Government of India appoints Pay Commission every ten years under its constitutional obligation.

The constitution makers of India have had a long term perspective of the welfare of all the sections of the people and segments of the society on the one hand, and ensuring the continued and sustained development of the economy and transformation of the society on the other. In our opinion, as there are provisions for reservations in employment for weaker sections of the society, that is, scheduled tribes, scheduled and other backward castes, they also took care of protecting the financial interest of the government employees in general and central government and public sector employees in particular. They have also taken a special care of the financial interests of the personnel of armed forces and police.

3.2 Determination of Wages and Salaries of Public and Private Sectors

Wages and salaries of the workers and employees of the government and public enterprises in the planned socialist economies are generally administered prices which are determined by executive orders or administrative fiats whereas the wages and salaries of workers and employees of private sector are determined by the forces of demand for and supply of labor in the capitalist market economies. Wage and salary rates are settled through the periodic negotiations between trade unions and employers of the private sector in the developed capitalist economies. Trade unions' demand for hikes in wages revolves round the protection of their real wages against inflation and the accessing of the share in inter-temporal productivity gains. Productivity gains accrue periodically to the enterprises though the structural changes in the organization of men and materials, use of better managerial techniques and improvement in production techniques (Prakash, Shri & Balakrishnan, Brinda, 2008, 2010). These paradigms are probably also followed by the Pay Commissions in the recommended changes in the pay packages and grades of government employees since the Government of India has also been appointing administrative reforms commissions from time to time and the Pay Commission's postulate promotion and career advancement on the basis of prior determined performance benchmark for government employees. Besides, the constitutional mandate for the appointment of Pay Commissions, political compulsions of democracy and the

need for ensuring the commitment of bureaucracy to perform their assigned tasks, discharge apportioned duties and responsibilities effectively and efficiently, and other economic factors also account for the appointment of Pay Commission for the purpose of revising public servants' pay packages upwards.

3.3 Research Questions

The subject of the chapter necessitates the exploration of the answers to the following questions:

(1) What is the need for the appointment of Pay Commissions for periodically revising and upgrading the pay, grade and structure of compensation of public employees in India? In other words, what is the rationale of appointment of Pay Commissions for re-determining the wages and salaries and pay structure of civil servants every five/ten years?

(2) What are the roles and functions assigned by the Government to the Pay Commissions?

(3) What is the impact of implementation of the Pay Commission's recommendations on the salaries and wages of public employees?

The scholar attempts to find answers to the above questions through the use of logic and empirical evidence. The answer to the first question is based mainly on the logic and general observations about the changes in the economy that actually occur and are expected to occur during the period that lapses between the constitution of the two consecutive Pay Commissions. The answer to the second question requires analysis of the terms of reference and the number and nature of recommendations of the Pay Commission which are approved by the Government for implementation with effect from the pre-determined date. The third question involves the analysis of the pay differentials of the public employees that emerge from the implementation of Pay Commissions' recommendation. In other words, the pay during the pre and post Commission's recommendations has to be used to determine the pay differentials of public employees in the periods before and after the implementation of the recommendations made by the Commission.

3.4 Rationale of Appointment of Pay Commissions

This study focuses mainly on the impact of implementation of recommendations of the Pay Commission on the wages and salaries of government and other public sector employees. The study also examines the relationships between gross national income, public and private sector employment.

The basic question is why, in the first instance, does the government appoint Pay Commission at all and then why does the government appoint Pay Commission after the lapse of a period of ten years? The ensuing paragraphs furnish answer to these twin questions.

Public expenditure on wages and salaries of the public sector's employees is financed from the public income, but only a fraction of total public income is spent on wages and salaries of current employees and the pensions of past employees. Income of the government comprises public revenue which is derived from taxes, fees and fines, public debt, fiscal deficit, donations and grants and aid. In a broad sense, the income of public enterprises may also be treated as a part of public income. Public income is only a fraction of GDP/GNI while per capita public revenue is a small proportion of per capita GDP/GNI. Wages and salaries of workers and employees of public sector is the part of public expenditure. Obviously, the expenditure on wages and salaries, paid by the government to its employees, is only a fraction of total public expenditure on all items and/or lines of public expenditure. But the public expenditure increases with the growth of public revenue which, in turn, increases with the growth of GDP/GNI. Just as expenditure on wages and salaries is a fraction of total public expenditure, similarly, public expenditure is a fraction of GDP/GNI. Besides, the growth of public expenditure on wages and salaries is a fraction of the growth of total public expenditure and the growth of public revenue though public expenditure on salaries is directly affected both by the average salaries and the level of current public employment and the number of pensioners. The expenditure on wages and salaries at any given point of time equals the product of the number of persons employed and pensioners and the average rates of wages and salaries. Similarly, annual increase in the expenditure on wages and salaries equals the average annual increments multiplied by the number of employees brought

forward from previous year plus additional DA & ADA granted bi-annually by the government to neutralize inflation effect on real earnings of public servants plus new entrants multiplied by their average pay. Pension granted to pensioners equals average pension multiplied by the total number of pensioners including both past and additional number of pensioners joining the ranks in the current year.

But why does government of India periodically appoints Pay Commissions and implements their recommendations? The answer to this question is partly political, partly constitutional and partly economic in nature. The Constitution of India entailed an obligation for the central government to appoint Pay Commission every five years. The provision of appointment of Pay Commission at a regular interval of five years was probably intended to make the commencement of new five year plan to coincide with the appointment and implementation of recommendations of the Pay Commission so as to confer benefits of development on public functionaries. If all segments of the population, except the government workers and employees, gain the benefits of development, it will entail discrimination against the civil servants which will not only adversely affect them economically but psychologically also. There is a saying that the dissatisfied and frustrated workers and employees are a liability for employing establishments which adversely affects the performance and productivity. Moreover, it weakens the motivation and commitment of employees to give their best to the employing organization. As against this, satisfied employees are an asset for employers. This also holds true for the governments and their employees. This is only a partial answer to the question.

However, the hurly-burly of Indo-Chinese and Indo-Pakistani wars of sixties and early seventies together with two successive years of crop failures probably made the government of India over-look this obligation, and therefore, the then government flouted the constitutional obligation. As a result, no pay commission was appointed by the governments during this period. This lapse was subsequently rectified by the delayed appointment of Pay Commission. However, the government amended the constitution to cover up its failure to appoint Pay Commission every five years. The new constitutional provision changed the rules for appointment of Pay Commission after the lapse of ten years. The provision of appointment of Pay Commission every five years was thus

replaced by the provision of appointment of Pay Commission after every ten years during the 1970s.

The other answer to the first question is two-fold, and it is furnished by the ensuing paragraphs. Government of India appoints Pay Commission every ten years under its constitutional obligation. Besides the constitutional mandate for the appointment of Pay Commission, political compulsions of democracy and for ensuring the commitment of bureaucracy to perform their functions effectively and efficiently, there are other economic factors which, in our view, account for the appointment of Pay Commission. The author of the thesis considers the following 11 economic factors which constitute the base for the appointment of Pay Commission periodically.

(1) Wages and salaries in the planned economies are the fixed administered prices of labor and human capital, and hence, wages and salaries do not change with the alterations in the state of the economy in general and the conditions of labor market in particular in the planned economies. Therefore, the wages and salaries of public servants have to be fixed and revised upwards by public order and executive fiats. The market mechanism of pay fixation of public employees has to be replaced by some administrative or institutional mechanism. Pay Commission represents such an institutionalized mechanism of review and fixation of pay packages of the employees of the government. The government cannot afford to follow the market mechanism of pay fixation since the conditions in the labor market are the mirror image of the conditions in the commodity markets which fluctuate rapidly. Pursuit of these fluctuations in pay fixation of government employees may impart instability to the public administration.

Implementation of the recommendations of the Pay Commission constitutes the public order and executive fiats to meet this objective of adjustment of the wages and salaries of public sector employees to the long run changes in the state of the economy and its labor market from time to time.

(2) As the economy grows and public revenue increases, paying capacity of the government increases. Therefore, the growth gains have to be shared with the public sector workers and employees. This is warranted by the considerations of equity and welfare of the population as a whole, including public servants. Besides, the government

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is constrained to ensure the full commitment of its employees to perform their assigned tasks and apportioned responsibilities efficiently and effectively. The periodic pay hikes of public employees provide such financial incentive to public employees.

(3) Generally, private sector pays more than what public sector employees receive in the comparable cadres. Besides, the annual increments in wages and salaries paid by the private sector to its employees are several times the annual increments in the salaries of the public sector. In fact, the amounts of increments granted to private sector employees are in the multiple of thousands, and these increments seem to be guided and governed by the changes in labor market, gains of productivity and profits earned during the year. As compared to this, annual increments in several pay grades, recommended by the Seventh Pay Commission, are Rs 200/. Then, private sector employees receive bonus and performance related financial benefits. The periodic upward revision of pay and structure of pay grade according to recommendations of Pay Commissions acts as the barrier to public-private sector pay differentials to rise to the level which makes the retention of current and recruitment of new public employees difficult for the government. It also prevents capable human capital to migrate from public to private sector jobs.

(4) Government grants DA and Additional DA bi-annually to its employees and workers, including pensioners, in the months of January and July of each year with a view to partially neutralize the effect of inflation and protect real incomes of its employees. It also compensates government employees to some extent for the low annual increments relative to the private sector employees. Cumulative accumulation of DA and ADA over the years brings out an anomalous situation in which basic pay across occupations, cadres and pay grades of public employees becomes lower than the cumulated sums of DA and ADA. This divergence between DA/ADA and basic pay needs elimination. This anomaly becomes all the more undesirable because all such benefits as annual increments in Basic Pay, Pension, Gratuity granted to the retiring employees, DA/ADA, PF contribution, house rent, travel allowance etc, admissible to the employees are linked to their basic pay. Both these reasons impel the government to appoint the Pay Commission whose recommendations result in the absorption of great proportion of DA/ADA in basic pay.

(5) Categories of jobs and cadres and the corresponding grades of pay and pay grades tend to increase abnormally through time and it becomes administratively and otherwise tenuous. Pay Commission reduces the number of cadres, their pay grades and grade structure through rationalization and amalgamation of cadres and pay grades into fewer categories than before.

(6) Existing Grades and Pay structure reflect the status of the economy of the country at the time when these pay and grades were determined 10 years ago. But the lapse of time of one decade radically improves the status of the economy through year on year growth of GNI and per capita GNI. This leads to an increase in the capacity of the country and its government to pay more to its employees, and to move up the occupational and income ladders so as to raise the living standards of public servants. For example, Indian economy has come out of the status of the developing to the emerging market economy during the post liberalization, privatization and globalization era. All these reasons necessitate up-gradation of pay, pay grades and structure of salaries and wages of public servants.

(7) Need for maintaining the momentum of economic growth requires the maintenance of zeal and commitment of bureaucracy to enhance their efficiency and performance. Periodic upward pay revision provides the impetus to this.

(8) Growth of Indian economy has largely been driven by productivity which revolves round better technology, improved organizational structure and advance techniques of administration. It warrants employment of more and better educated manpower. This necessitates consistent hikes in pay packages of public employees to attract the qualified, competent and talented persons to the government. This becomes even more important by the fact that higher and better educated and more skilled employees of private sector get much better and higher pay packages than those employed in government and public enterprises. In order to prevent the gulf between the salaries of public and private sector employees from widening further, enhancing of pay packages of public servants becomes the need of the economy. The need for such upward revisions of pay is justified by the fact that basic goods industries like cement, oil and steel and basic economic infrastructural enterprises like public sector banks have witnessed their employees

leaving them to join private sector enterprises of the same sector after the liberalization and privatization of the economy. Influx of MNCs after globalization of Indian economy has resulted in unprecedented increase in pay packages of professionally qualified manpower which prompted big/large Indian companies also to offer competitive pay packages to retain and recruit competent employees. This further widened the gulf between the wages and salaries of public and private sector employees. This gulf is, partially if not fully, bridged by the implementation of the pay commission's recommendations to raise the pay and grades of public servants.

(9). Growth of GDP/GNI results not only in an increase in the size of the economy but it also enhances the diversity, complexity and intricacy of the economy tremendously. Periodic induction of new technology in administration further makes the development administration more complex and intricate than before. For example, computerization and digitalization have radically transformed the nature and intricacy and complexity of administrative operations which have become more knowledgeable, especially the knowledge of managing information technology and skill intensive. To cope with this challenge of change, public functionaries have to continuously raise their knowledge and skills while new recruits have to be more and better educated than the older employees. New technology makes several occupations obsolete which render these redundant while new occupations emerge in the economy. Such occupations require more and better educated who need to be better rewarded for the same (Prakash, Shri, 1977, 1978, Sharma, Amit, 2012).

(10) Many workers and employees of the government are involved not only in the routine administration, but they also formulate and implement policies. They have to face the risk of failure, and both micro and macro social costs of failure are very heavy. Therefore, the public employees have to be rewarded for the increased intricate work involved in the policy and growth related administration. It is also recognized that development administration is qualitatively different from routine or civil administration as development administration involves shift of paradigm of growth and the implementation of development policy at the grass roots. This has to be understood in the context of decentralization of responsibility of development from center to states and from states to districts. At the district level, District Magistrate (DM), formerly known as District

Collector, is responsible for the development of the district. Responsibility of development devolves on to block development officer (BDO) from DM, and it devolves from BDO to Gram Panchayat and its Sarpanch. Over and above this, policy formulation at the center, states and districts involves different levels and types of skills, know-how and knowledge. Therefore, the Pay Commissions are expected to keep the degree of responsibility, risk of mis-delivery of policy package, and efficiency of implementation in the context of prevailing facts of the economy. The recommendations of the Pay commission are assumed to be based on all above considerations. Hence, the public functionaries have to be rewarded for the increased and relatively intricate and sophisticated work involved in the growth related administration.

(11) According to the marginal productivity theory, factor rewards, including wages and salaries of workers and employees, are directly proportional to their respective marginal productivity. Researchers have shown that human/intellectual capital, especially the higher and professionally educated man-power, makes much greater contribution to the growth of GDP/GNI than the technology or physical capital (Schultz, T. W., 1962, Prakash, Shri, 1977, Prakash, Shri and Balakrishnan, Brinda, 2008, 2010, Sharma, Amit, 2012, Sharma, Shalini, Sharma, Amit and Bhatnagar, Gunjan, *2012).* Growth of Indian economy has largely been driven by the growth of productivity which revolves round better technology, improved organizational structure, and advance techniques of administration. All these factors warrant employment of more and better educated manpower. This necessitates consistent hikes in pay packages of public employees to attract the talented employees to the government. This becomes even more important by the fact that private sector employees with higher education and greater skills get much better and higher pay packages than those employed in government and public enterprises. In order to prevent the gulf between the salaries of public and private sector employees from widening further, enhancing of pay packages of public servants becomes the need of the economy. The need for such upward revisions of pay is justified by the fact that basic goods industries like oil and steel and basic economic infrastructural enterprises like public insurance companies and public sector banks have witnessed their employees leaving them to join private sector enterprises of the same sector after the liberalization and privatization of the economy (Bhati, Amita, 2008).

All the above considerations might have induced the Constituent Assembly/Parliament to include the provision of appointment of Pay Commissions after the lapse of stipulated time period in the India constitution between the appointment of two successive Pay Commissions. It made it incumbent on the government to appoint Pay Commissions.

3.5. Roles and Functions of Pay Commissions

The Seventh Pay Commission was appointed through the Gazette Notification, issued by the Ministry of Finance, Government of India, on February, 28, 2014. The commission comprised 4 members, including Justice Ashok Kumar Mathur as Chairman, Mrs Meera Aggrawal as Secretary, Mr Vivek Rai and Mr Rathin Roy as members.

The notification decreed that the Commission was required to submit its report along with the recommendations within a period of 18 months after its constitution though it was free to submit interim report(s) before the end of its term. The Commission was to recommend the date of implementation of its recommendations. The commission was left free to devise its own procedure of working and it could appoint such Advisors, Institutional Consultants and experts as it may consider necessary for the particular purpose. The Commission was empowered to get the requisition of such information and evidence from relevant ministries and departments as it considered necessary. The Gazette Notification decreed that the Ministries and Departments of Government of India shall furnish such information and documents and other assistance as may be required by the Commission during its tenure. The Government of India expressed the trust that State Governments, Service Associations and other concerned statutory bodies shall extend their fullest cooperation and assistance to the Commission.

The ensuing paragraphs are totally based on the Government of India's Gazette Notification of February 28, 2014. The terms of reference furnished the following framework for the functioning of the Commission:

(1) The Pay Commission shall be guided and governed by its terms of reference which laid down the objectives, functions, principles and broad guidelines for its working in the formulation of its recommendations to the Government of India.

(2) The Commission was required to consider the desirability and feasibility of implementation of the changes it recommended for implementation within its defined time-frame. The terms of reference of the Seventh Pay Commission also entrusted the following tasks to it:

(i) To examine, review, evolve and recommend changes that are desirable and feasible regarding principles to govern emoluments, structure, including pay, allowances and other facilities/benefits in cash or kind having regard to the rationalization and simplification therein as well as the specialized needs of various Departments, Agencies and Services in respect of the following categories of employees; (1) Central Government Employees-industrial and Non-industrial; (2) Personnel belonging to the All India Services; (3) Personnel of the Union Territories; (4) Officers and employees of Audit and Accounting Department; (5) Members of regulatory bodies (including RBI) set up under the Acts of Parliament; and (6) Officers and employees of Supreme Court.

(ii) To work out the framework of an emolument structure linked with need to attract the most suitable talent to Government service, promote efficiency, accountability and responsibility in the work culture and foster excellence in the public governance systems to respond to the complex challenges of modern administration and the rapid political, social, economic and technological changes, with due regard to the expectations of stakeholders, and to recommend appropriate training and capacity building through a competency based framework.

(iii) To examine the existing schemes of payment of bonus, keeping in view, *inter alia*, its bearing on performance and productivity and recommend general principles, financial parameters and conditions for an appropriate Incentive Scheme to reward excellence in productivity, performance and integrity.

 (iv) Review the variety of existing allowances presently available to employees in addition to pay and suggest their rationalization and simplification with a view to ensuring that the pay structure is so designed as to take these into account.

(v) To examine the principle which should govern the structure of pension and other retirement benefits including the revision of pension in the case of the employees who have retired prior to the date of effect of these recommendations, keeping in view that

retirement benefits of all Central Government employees appointed on or after 01-01-2004 are covered by New Pension Scheme (NPS).

(vi)The recommendations to be made by the commission should keep the following factors in view:

(a) Economic conditions in the country and fiscal prudence;

(b) Maintaining availability of adequate resources for development and welfare of the people;

(c) Likely impact of recommendations on the finances of State Governments which usually adopt the recommendations of the Commission with some requisite modifications;

(d) Prevailing emolument structure and retirement benefits available to employees of Central Public Sector undertakings, and

(e) The best Global practices and their adaptability and relevance in Indian conditions.

The above principles and criteria have not only defined the nature and scope of the functions of the Commission but these have also furnished the operational framework and pay fixation mechanism to be followed by the Commission.

3.6. Objectives and Operational Guidelines

The scholar has inferred the following objectives and operational guidelines from the promulgation of the Gazette Notification for the appointment of the Seventh Pay Commission:

3.6.1 Operational Guidelines

The Seventh Pay Commission has to evolve a comprehensive and intricate mechanism to determine the (i) Minimum and Maximum pay of civil servants, personnel of police and armed forces. These values have a direct bearing upon the degree and direction of inequalities in the dispensation of salaries and pay grades and their structure for the employees of the government. It may further be said that such inequalities in the distribution of salary income may probably accentuate the inequalities of distribution of salary income among the employees of private sector which may be spurred to raise its

own bar to attract the competent professionally qualified personnel. (ii) Maximum number of pay grades; reduction in the existing number of pay grades by assimilating some of the current grades in fewer new grades; (iii) Pay structure; (iv) Merger of part or whole of the prevailing number of allowances in basic pay and fix the minimum and maximum pay of each grade at a level higher than the current level. However, there is no guidance for the Commission to fix the difference between the current and recommended minima and maxima. In our view, the government left it to the discretion of the Commission; (v) Magnitude and total number of annual increments to reach the maximum from the minimum pay grade in a period of about 10-12 years; (vi) Reduce the number of allowances and fix the magnitude of each allowance at a new level in accordance with the new basic pay structure; (vii) Creation and maintenance of relativity of pay grades of senior and junior cadres and parity between pay grades of equivalent cadres in different segments of the government.

3.6.2 Objectives

The Commission was expected to seek the fulfillment of the following objectives through the implementation of its objectives:

(i) Upward revision of pay and pay grades, pay structure, and pay fixation should strike a balance between the public resources and the fulfillment of constitutional responsibility of the government in conformity with the general perspective;

(ii) The maintenance of balance among different cadres;

(iii) Elimination of imbalance between the basic pay and DA/ADA and Dearness Pay to retirees;

(iv) Striking the balance between the needs of development and people's welfare on the one hand and the payment of fair pay and protection of the share of public employees in development benefits on the other;

(v) Ensuring the incentives required for the promotion of efficiency and productivity with integrity. Low pay is often cited as the cause of corruption among civil servants. It may be noted that the Senior Indonesian Civil servants and other analysts have been building pressure on the government by emphasizing the low pay of civil service as the main

cause of corruption. But the thesis has been refuted by the findings of empirical research. We may emphasize that dishonesty, and hence, corruption is more a part of moral character of the people than their riches or poverty; and

(vi) Complete rationalization and simplification of pay- package and structure of pay grades.

3.6.3 General Perspectives and Mechanisms of Pay Fixation

The Pay Commission has to evolve a comprehensive and intricate mechanism of upward revision of grades and the formula for the fixation of pay in each grade pay of individual employees. In addition, the Commission has to strike a balance between the payments liability devolving on the Government to upward revise the pay and pay grades of its employees every ten years on the one hand, and the public resources required to discharge its duty to the employees as its constitutional responsibility in the general perspective. The maintenance of the balance among different cadres and pay relativity is among the important principles guiding the pay fixation.

Pay Commission follows certain procedure and norms in the fixing of new pay grades and level of income in each grade. One foremost part of this principle is that a major proportion of DA/ADA and DP is merged in the basic pay and basic pension respectively. It results in an increase in the basic pay and basic pension substantially. Basic pay and basic pension are further escalated by the conferment of benefits of growth of income and improvement in the administrative efficiency and productivity, if any, of the civil servants and pensioners. New rates of DA/ADA/DP are also fixed on the basis of prevailing inflation rate and the proportion of earlier DA/ADA/DP which has not been merged in the basis pay and basic pension.

The pay fixation of individuals depends on the cadre one belongs to, current position held, completed number of years of service, and the current basic pay in existing grade is also added to the basic pay. Besides, one to three increments are added to the newly fixed basic pay in new grade according to the years of service. Bunching is also taken into account for adjustment of current to the new basic pay in the revised grade. One increment in new grade is added for every three completed years of service up to the maximum of three increments in new grade pay.

New annual increments are determined in each grade pay separately. Three components are taken into account in pay fixation: (i) merger of current DA/ADA/DP, (ii) fixation in new grade pay, and (iii) one to three increments for completed years of service. All these three components, taken together, lead not only to great increase in current public expenditure on wages and salaries of employees but it also results in corresponding increase in current and future total public expenditure and an increase in future public expenditure on salaries and pensions on regular basis.

The implementation of pay commission's recommendations from the recommended date retrospectively involves very heavy expenditure because the lump-sum payment of arrears of the past has also to be made. Generally, few years lapse after the acceptance and approval of the Pay Commission's recommendations and their actual implementation which makes payment of arrears a heavy drain on public exchequer.

The makers of Indian Constitution and the framers of policy have had a long term prospective of the growth of the economy and welfare of all sections of the people and segments of the society. Just as they made the provision of reservation of posts in public sector for the scheduled tribes, Scheduled Castes and Other Backward Castes, they also took care of the protecting of the financial interest of the government employees in general and central government and public sector employees in particular. They also recognized the fact that as the economy grows with the passage of time, inflationary pressure in the economy reduces purchasing power of money which results in the reduction in the real wages and salaries of government employees who belong to the fixed income category. It has been empirically observed all over the world that inflation, low are high, is an inevitable concomitant of economic growth.

Therefore, real earnings of the civil servants, including police and armed forces personnel, have been protected at least partially by the provision of the grant of payment of DA/ADA to current public servants and DP to pensioners. All three allowances are based on basic pay and basic pension. Such allowances are linked to change in the whole-sale price index. DA/ADA and DP are granted bi-annually, and the grant of these allowances is linked to the biannual increase in the wholesale price index. Dearness Pay (DP) to pensioners is also linked to basic pension. When these allowances become

several times more than their initial value and more than 50% of basic pay or pension, then a part of these allowances is merged in basic pay/pension at the time of pay revision.

Besides the above reasoning, the fact that the government employees acquire greater understanding, experience, expertise, skill, knowledge and insights about their responsibilities and assigned tasks with age and experience also need recognition and financial reward. These parameters of competence and ability need recognition, inducement and incentives. Over and above, annual increments require recognition and financial grants.

3.6.4 Theoretical Reasoning

The marginal productivity theory states that the factor rewards should be determined according to the marginal productivity of factors of production. Besides, researches have shown that the human capital/ manpower, especially the educated manpower, makes much greater contribution to growth than technology or physical capital (Schultz, T. W. 1962, Prakash Shri, 1977, 1978, Prakash Shri and Balakrishnan, Brinda, 2008, 2010, Sharma, Amit, 2012, Sharma, Shalini, Sharma, Amit and Bhatnagar, Gunjan, 2012).

It is also recognized that the development and welfare administration is qualitatively different from routine or civil administration as development administration involves the paradigm of growth and the implementation of development policy at the sector level and the grass roots. This has to be understood in the context of the decentralization of responsibility of development from the center to states and from states to districts. At the district level, District Magistrate, formerly known as District Collector, is responsible for the development of the district. From DM, the responsibility of development devolves on the block development officer (BDO) and from BDO to Gram Panchayat and its Sarpanch. Over and above this, policy formulation and its implementation at the center, state and district levels involves different levels and types of skills, know-how and knowledge. Therefore, the Pay Commission is expected to keep the degree of responsibility, risk of mis-delivery and efficiency of implementation in the context of prevailing facts of the economy. The recommendations of the Pay commission are assumed to be based on all the above considerations. All these aspects have been taken

care by the constitutional provision for the appointing of the Pay Commission every five years. However, due to the failure of the Government of India to appoint the commission in the nineteen seventies, the periodicity of the appointment of Pay Commission was extended from five to ten years. This was done by the Act of Parliament. Ever since 1986, when the recommendations of the Fourth Pay Commission were implemented, three more Pay Commissions have been appointed.

Implementation of recommendations of Pay Commission, as has been pointed out earlier, involves heavy drain and liability on public exchequer which is generally reflected in the annual budgets of the central government. However, some part of the financial burden and the responsibility of implementing the Pay Commission's recommendations has also to be borne by the state governments.

3.7 Core Recommendations of Seventh Pay Commission

The Seventh Pay Commission recommended that its recommendations may be implemented with effect from January 01, 2016.

1. The commission used Aykroyd formula to fix the minimum pay of the Government employees and fixed it at ₹18,000 per month while the recommended maximum Pay for Apex Scale is ₹2, 25,000 per month and ₹2, 50,000 per month for Cabinet Secretary and others presently at the same pay level. Thus, the ratios of these maximum to minimum pay are 12.5 and 13.89 respectively. The Commission did not mention any policy or principle underlying these ratios recommended by it. Therefore, these ratios represent a high degree of inequality in income distribution among the government employees. Incidentally, the pay structure and pay grades recommended for the armed forces are not the part of the above recommendations.

(2) The Commission expected that the implementation of its recommendations will have the total financial impact of ₹1,02,100 crore in the financial year 2016-17 over and above the expenditure as per the ''Business As Usual" scenario.

(3) The commission split the above financial burden in two parts: Financial burden on account of (i) increased public expenditure due to increased pay was expected to be 39,100 crore, (ii) increased public expenditure due to increased allowances was expected

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to be ₹ 29,300 crore, and (iii) increase in the public expenditure on account of increased pensions would amount to ₹33,700 crore.

 (4) The Commission expected the total financial burden to be shared among the Central Government and Railway Budgets as follows: ₹73,650 crore will be borne by the General Budget and ₹28,450 crore will be the share of the Railway Budget. The above division is redundant as the Railway Budget is now a part of the General Budget. The split in the General and Railway budget has been the legacy of the colonial rule. Under the British, Indian railways were owned and operated by more than one private company which might explain the separation of these two budgets. Despite the nationalization of all private companies and their amalgamation into one single entity, the separation of railway budget was continued by all the governments before the present government.

(5) The overall increase in pay & allowances and pensions over the ''Business As Usual" scenario will be 23.55 percent. Of this, the increase in pay will be 16 percent, increase in allowances will be 63 percent, and pension will increase by 24 percent. According to the Commission, the financial burden shall be the least on account of pay hikes. Ione may ask, 'in what sense shall the expected increase in financial burden due to hikes in the salaries and pensions of government employees in accordance with the recommendations of Seventh Pay Commission be the least'? Do the proportionate increases in total expenditure represent the minimum increase? There is no way to answer this question affirmatively. It may probably be inferred that the recommended increases are considered to be the minimum by the Commission. It is probably this reason which persuaded this Government to further hike the increase from 23% to 30% across the board.

A recent decision of the Cabinet of the Government of India recommended that the Government will award 30% rather than 23% hikes in salaries and pensions to its employees as a part of the Pay Commission's recommendations. This may probably be accounted partly by the inflation since 2016.

(6) The ratio of the public expenditure on salaries (Pay + Allowances + Pension) to GDP entails an increase of 0.65% points which is much lower than the corresponding ratio of 0.77% in case of VIth Central Pay Commission's recommendations (VICPC). It seems

that the Commission did not consider the cyclical fluctuations of year on year growth rates of GDP in the estimation of the above ratios.

(7) The Commission dispensed with the earlier system of pay bands and grade pay and a new pay matrix has been evolved to replace it. The problems associated with the old grade pay structure are resolved to bring in greater transparency by subsuming the old in new grade pay matrix.

(8) The status of the employee was earlier determined by grade pay while it will now depend on the employee's level in the pay matrix.

(9) The Commission recommended a fitment factor of 2.57 to be applied uniformly for all employees.

(10) The rate of annual increment of 3% was retained, but the modified assured career progression (MACP) based on performance bench marks was made more stringent from the "Good" to "Very Good". The Commission recommended that those employees who fail to meet the bench mark for MACP or regular promotion in the first 20 years of their service should not get annual increments. But no other changes in MACP were recommended. In our opinion, such employees should be compulsorily retired rather being carried forward.

(11). The Military Service Pay (MSP), which is a compensation for the various aspects of military service, will henceforth be admissible to the Defense Forces Personnel only. But as before, MSP will be payable to all ranks up to and inclusive of Brigadiers and their equivalents. The current and the revised MSP rates per month are as follows: Present/Proposed i. Service Officers-₹6,000/₹15,500; II. Nursing Officers-₹4,200/₹10,800; III. JCO/ORs-₹2,000/₹5,200; iv. Non Combatants (Enrolled) in Air Force-₹1,000/₹ 3,600. Thus, the recommended current MSP are 2.58; 2.57; 2.6 and 3.6. Thus, two of these ratios diverge from the fit factor of 2.57 which may probably be imputed to errors of rounding up. In our view, a couple of recommended upward revisions are discriminatory; why had the Commission not recommended the minimum pay of Rs. 18000/ pm even to the highly educated personnel in nursing services.

(12) Short Service Commissioned Officers may be allowed to exit the Armed Forces at any time between 7 and 10 years of service with a terminal gratuity equivalent to 10.5 months of reckonable emoluments. They will also be entitled to a fully funded one year Executive Program or an M.Tech program at a premier Institute.

(13) The Commission recommended a revised formulation for lateral entry/resettlement of defense forces personnel which keeps in view the specific requirements of the organization in which such personnel will be absorbed. For lateral entry into CAPFs, an attractive severance package was recommended.

(14) Parity between field and headquarters staff was recommended for similar functionaries: Assistants and Stenos.

(15) Systemic change in Cadre Review for Group A officers was recommended.

(16). The Commission recommended abolition of 52 allowances altogether. Other 36 allowances were abolished as separate identities to be subsumed either in an existing allowance or in newly proposed allowances. Allowances relating to Risk and Hardship are to be governed by the newly proposed nine-cell Risk and Hardship Matrix, with one extra cell at the top, viz., RH-Max to include Siachen Allowance. The current Siachen Allowance per month and the revised rates recommended are as follows- Present/Proposed: i. Service-Officers: ₹21,000/₹31,500; ii. JCO/O Rs ₹14,000/ ₹21,000. The ratios of the proposed to old pay grade are 1.5 and 1.5. As it is the ceiling of risk/hardship allowances, no individual RHA with an amount higher than this allowance will be paid.

(17) In view of the upwards revised basic pay, Commission recommended House Rent Allowance of 24%, 16% and 8% of new Basic Pay for Class X, Y and Z cities respectively. The Commission also recommended the rate of HRA to be raised to 27%, 18% and 9% respectively when DA crosses 50 percent; and to be raised to 30%, 20% and 10% when DA crosses 100 percent.

(18) Compensation for housing for PBORs of Defense, CAPFs and Indian Coast Guard is presently limited to the authorized married establishment which deprives many users. Therefore, HRA coverage was expanded to cover all.

(19) Any allowance which is not mentioned in the report shall cease to exist.

(20) Emphasis was placed on simplifying the process of claiming allowances.

(21) All non-interest bearing Advances were abolished while interest-bearing advances, only for Personal Computer Advance and House Building Advance (HBA), were retained. But HBA ceiling was increased to ₹25 lakhs from the present ₹7.5 lakhs.

(22) Central Government Employees Group Insurance Scheme (CGEGIS) rates of contribution were kept unchanged for long. So, these were enhanced suitably: CGEGIS Present/ Proposed Level of Employee

(i) Monthly Deduction: (₹), (ii)Insurance Amount and Monthly Deduction (₹) 10 and above 120 1,20,000 5000 50,00,000 6 to 9 60 60,000 2500 25,00,000 1 to 5 30 30,000 1500 15,00,000.

(24) Introduction of a Health Insurance Scheme for Central Government employees and pensioners was recommended. However, meanwhile, for the benefit of pensioners residing outside the CGHS areas, CGHS should empanel those hospitals which are already empanelled under CS (MA)/ECHS for catering to the medical requirement of these pensioners on a cashless basis. All postal pensioners should be covered under CGHS. All postal dispensaries should be merged with CGHS.

(25) The Commission recommended a revised pension formulation for civil employees including CAPF personnel as well as for Defense personnel who have retired before 01.01.2016. This formulation will bring about parity between past pensioners and current retirees for the same length of service in the pay scale at the time of retirement.

(26) The past pensioners shall first be fixed in the Pay Matrix being recommended by the Commission on the basis of Pay Band and Grade Pay at which they retired at the minimum of the corresponding level in the pay matrix.

(27) This amount shall be raised to arrive at the notional pay of retirees by adding number of increments he/she had earned in that level s/he was in service at the rate of 3%.

(28) In case of defense forces personnel, this amount will include Military Service Pay as admissible.

(29) Fifty percent of the total amount, so arrived at, shall be the new pension.

(30) An alternative calculation will be carried out which will be a multiple of 2.57 times of the current basic pension. The pensioner will get the higher of the two.

(31)The commission recommended the enhancement of the ceiling of gratuity from the existing ₹10 lakh to ₹20 lakh. But the ceiling on gratuity may be raised by 25 percent whenever DA rises by 50 percent.

(32) Disability Pension for Armed Forces: The Commission recommended the reverting to a slab based system for disability element instead of existing percentile based disability pension regime.

(33) The Commission also recommended uniform application of the revised rates of lump sum Ex-Gratia compensation for next of kin (NOK) in case of death arising in various circumstances relating to performance of duties for the defense forces personnel and civilians including CAPF personnel.

(34) The Commission is of the view that in case of death in the line of duty, the force personnel of CAPFs should be accorded martyr status at par with the defense forces personnel.

(35). New Pension System: The Commission received many grievances relating to NPS. It has recommended a number of steps to improve the functioning of New Pension System (NPS). It has also recommended establishment of a strong grievance redressal mechanism.

(36) The Commission has recommended a consolidated pay package of ₹4,50,000 and ₹4,00,000 per month for Chairpersons and Members of select Regulatory bodies respectively. In case of retired government servants, their pension will not be deducted from their consolidated pay. The consolidated pay package will be raised by 25 percent as and when Dearness Allowance goes up by 50 percent.

(37) For Members of the remaining Regulatory Bodies, normal replacement pay has been recommended.

(38) The Commission has recommended introduction of the Performance Related Pay (PRP) for all categories of Central Government employees based on quality of results;

Framework Documents; reformed Annual Performance Appraisal Reports; and some other broad Guidelines. The Commission has also recommended that the PRP should subsume the existing Bonus schemes.

(39). There was no unanimity of the views among the members about the following:

(i) An edge is presently accorded to the Indian Administrative Service (IAS) and the Indian Foreign Service (IFS) at three promotion stages from Senior Time Scale (STS) to the Junior Administrative Grade (JAG) and the NFSG. The Chairman recommended it to be extended to the Indian Police Service (IPS) and Indian Forest Service (IFoS). But Mr Vivek Rai thought that financial edge is justified only for the IAS and IFS while Dr. Rathin Roy, Member, wanted the abolition of financial edge accorded to the IAS and IFS.

(ii). The Chairman and Dr. Rathin Roy, Member, recommended the empanelment under the Central Staffing Scheme of All India Service officers and Central Services Group A officers having completed 17 years of service while no "two year edge" vis-à-vis the IAS be there. However, Shri Vivek Rae disagreed with this.

The dimension of financial burden of the salaries and pensions along with the biannually increase in payment of ADA/DP may be gauged from the fact that as per statement of Finance Minister, Govt. of India, in his Budget Speech in Parliament on 1, February, 2018, there are 2.5 crore government and public sector employees as on date. Of these, 1.48 crore are current employees and 61 lakh were past pensioners and remaining 41 lakh are new pensioners. (Times of India, 8-3-18: Grant of DA/ADA and Dearness Pay to Pensioners).

3.8 Conclusion

The following main inferences and conclusions may be drawn from the elaborate explanation and discussion of the recommendations of the Seventh Pay Commission:

(i) In this study, twelve different reasons have been advanced for the appointment of Pay Commissions by the Government of India at a regular interval of ten years. Most of these reasons are based on the author's own logic.

(ii)Rationalization and simplification of the grade pay, grade pay structure, DA/ADA and other allowances, including the reduction of their numbers are the most important reasons for the appointment of Central Pay Commissions (CPC).

(iii) Containment of inequality in the mandated earnings of different layers and levels of grade pay of the public employees between prior determined or recommended minimum and maximum pay is an important facet of the recommended grade pay structure.

(iv) Seventh Pay Commission stipulated Rs 18000/ per month as the minimum and Rs 4.5 lakh per month as the admissible maximum band of pay grade variation.

(v) The maximum recommended pay to the highest level civil servants has bridged the gap between the salaries of the highest level employees of private sector, especially CEOs of large companies, whose pay may be as high as more than 1 crore p.m. in some exceptional cases.

(vi) A factor of 2.57 had been used to upgrade the basic pay and pension after fixing it in the grade.

(vii) A ceiling of 50% of basic pay is imposed on DA/ADA/DP and any excess over this has to be merged in basic pay.

(viii) A ceiling has also been imposed on the number of allowances and their number has been reduced by subsuming some currently admissible in newly approved allowances.

(ix) Differences of opinion with regard to the bringing of parity in the edge in empanelment available to IAS did not permit unanimous decision about the same.

(x) Transparency, efficiency, productivity and integrity have been emphasized on the one hand, and time bound promotion and Career Advancement have been linked to the performance bench marks on the other,

(xi) Biannual grant of DA/ADA/DP and the periodic upward revision of salaries of the public employees are designed to protect the (a) real earnings of the public employees against inflation and (b) confer the growth gains on the government employees in order to ensure inclusive growth, social justice and equity.

(xii) The Seventh Pay Commission estimated that the government will have to spend 23.55% extra over and above the business as usual.

(xiii) Total expenditure required for the implementation of the recommendations of the Seventh Pay Commission is estimated to be ₹1,02,100 crore in the financial year 2016-17 over and above the expenditure as per the ''Business As Usual'' scenario.

((xiv) The Seventh Pay Commission recommended that the promotions and career advancement may be based on performance and the bar was raised from good to very good performance.

Thus, on the whole, the commission has performed a stupendous task which is not only intricate and complex as it involves the balancing acts of apparently some conflicting objectives but it is also economically feasible.

Note: The chapter is largely based on the Seventh Pay Commission's Report Notified in the Gazette of Government of India.

CHAPTER FOUR:

IMPACT OF NATIONAL INCOME AND PUBLIC EXPENDITURE ON
EMPLOYMENT AND ITS PUBLIC-PRIVATE SECTOR COMPOSITION IN INDIAN
ECONOMY

4.0 Overview

The chapter focuses on the analysis of the impact of Gross National Income and Public Expenditure on total employment and its public and private sector components. It also examines the ratios of public and private sector employment to total employment and public sector to private sector employment. The results of summary statistics of employment, public and private sector employment, public expenditure and gross national income are briefly discussed.

Growth of total employment, public and private sector employment, gross national income and public expenditure is examined to determine the direction and magnitudes of inter-temporal changes. Growth trend of all three ratios is determined to detect and to anticipate the inter-relations of change.

Stationarity of time series of total employment, employment in public and private sectors, gross national income and public expenditure of Indian economy is evaluated by Random Walk Model and Dickey-Fuller test.

The results show that the time series data of total, public and private sector employment approximate normal distribution with extremely low skewedness and concentration. The coefficients of variation of all 6 time series data are relatively very low. But the time series of GNI is non-stationary at 0.05 probability level while time series of public expenditure displays negative trend. Total employment depends on lagged total employment and GNI while employment in public sector depends on lagged public sector employment and public expenditure. But the function of employment in public sector shifts downwards to the left over the years since the employment in public sector has been declining consistently. Consistent decline in public expenditure and public sector employment implies a decrease in public expenditure on salaries of public employees even though per public employee expenditure may be rising due to consistent rise in pay packages. Negative change in private sector employment is determined by lagged private sector employment and private income/expenditure. The results of Engel-Granger test of co-integration show the variables to be well co-integrated in the chosen distributed lag models.

4.1 Introduction

Output/income at any given point in time depends on the quantity and quality of factor inputs, technology of production, organization of productive activities and techniques of management of both men and materials. Therefore, the growth of output/income through time and over space requires increase in the quantity of factor inputs and improvement in their quality, change in or replacement of old by more advance technology, improvement in organization structure and techniques of management of both men and materials. However, it is generally not possible to change all the above factors and parameters together at the same time due to the fixity of fixed capital, including machinery and equipment, and the technology machinery and equipment embodies. Machinery and equipment are non-malleable factors while labor/human capital and materials are, by and large, malleable factor inputs. Consequently, one or some of the variables/malleable factors of production are generally changed at the given point in time.

Therefore, one of the two alternative approaches to growth may be followed: (i) Factor multiplication process; or (ii) Factor transformation process of the raising of output inter-temporally. Under factor multiplication process, technology, quality of factor inputs, organization structure and managerial techniques remain invariant through time. Consequently, production function shifts upwards to the right as the scale of operations increases. But input-output coefficients remain constant. Under the factor transformation process, production function changes both in nature and location which results in change in the input-output coefficients. Technological change lies at the base of factor transformation process of growth. Induction of advance technology warrants employment of better and higher educated human capital, and consequently, better skilled and higher educated manpower and increased productivity become the main drivers of growth of output. (Sharma, Amit & Prakash, Shri, 2018, Prakash, Shri & Balakrishnan, Brinda, 2008). Consequently, human capital plays an important role, if not more critical role than that played by physical capital (Cf. Schultz, 1960, Dennison, E.F., 1969, Prakash, Shri, 1977, 1995, Sharma, Amit & Prakash, Shri 2018). As productivity is stipulated to be the determinant of wages/salaries, productivity propelled growth may be expected to result in increased salary expenditure both in public and private sectors.

4.2 Theory of Employment

Theory of employment did not receive much attention of the classical economists due to their blind faith in the efficacy and effectiveness of Say's Law of Markets which states that supply creates its own demand. Therefore, they assumed that the economy always remains in stable equilibrium at full employment. This theory is, thus, a denial of the possibility of existence of unemployment which is a perennial problem of all modern economies, irrespective of their developed or developing nature. However, the centrally planned socialist economies have been an exception to the general global scenario of persistence of unemployment at low or high level of income and its growth. Therefore, less than full employment equilibrium prevails in the world economy.

The classical economists' Iron Law of Wages stipulated that the supply of labor increases if the wages are greater than the cost of subsistence, but increased labor supply makes wages decline till it equals subsistence cost of living. A highly unrealistic assumption underlines the theory. It implicitly assumes that the increase in population caused by a stimulus of increased wages coincides with the supply of labor which overlooks the time lag between child birth and increase in labor force. Dichotomy between the facts and theory of such unrealistic employment, especially during the worldwide depression of early thirties, discredited the Say's Law of Market totally. It also paved the way for the acceptance and approval of Keynes' General Theory of Employment, Money and Interest Rate. Keynes' theory highlighted that the Aggregate Supply Function (ASF) equals Aggregate Demand Function (ADF) in equilibrium. Generally, the equality between ASF and ADF occurs at less than full employment. Thus, Keynes recognized the existence of unemployment in the state of general equilibrium of the economy. He postulated that the deficiency of aggregate demand results in dis-equilibrium that causes unemployment in labor market. He suggested that an increase in public expenditure in general and public investment in particular mitigates insufficiency/deficiency of aggregate demand. The periodic occurrence of demand recession in the globalized world economy has been a regular feature since then.

However, recession and inflation have historically been mutually exclusive both conceptually and empirically till the oil inflation of early and late seventies (Prakash,

Shri, 1981, Sharma, Shalini, 2005, Sharma, Sudhi & Prakash, Shri, 2014, Sharma, Sudhi, 2016).

Hicks (1965, 1973) distinguished between the theories of flex and fix prices in modern economies to recognize the cleavage between the behavior of cost based fix prices and demand driven flex prices. The emergence of a new feature of coexistence of recession in fix-price sectors, and hence, unemployment or want of growth of employment in the midst of inflation in flex-price sectors of the economy at the same time has emerged in post oil inflation period of early seventies (Mathur, P. N., 1973, Prakash, Shri, 1981, Prakash, Shri & Goel, Veena, 1985, Sharma, Shalini, 2005, Sharma, Sudhi & Prakash, Shri, 2014). This has also resulted in the theoretical and empirical refutation of Philips' hypothesis that inflation leads to decline in unemployment and increase in employment (Prakash, Shri & Sharma, Sudhi, 2013, Sharma, Sudhi & Prakash, Shri 2014). But the theory of employment still remains among the emptier theoretical boxes of both micro and macro-economics. All the same, the above discussion provides the theoretical backdrop of the modern day problems of inflation and employment/unemployment. This is despite the fact that the democratic countries with market economies and planned economies with autocratic political regimes remain concerned with the control of unemployment.

The above discussion constitutes the theoretical-empirical context of the study.

4.3 Sources of Data

The study is based on secondary data all of which have been taken from Economic Survey, Ministry of Finance, Government of India and the web site of Directorate of Employment and Training, Government of India, New Delhi.

4.4 Methods and Models

The study uses multiple methods and models rather than depending upon the results of one single method or model of data analysis. Methods and models are selected according to the objectives of the study and the nature and expanse of data. The following statistical methods and econometric models have been used: (i) Descriptive statistic to portray basic features and facets of data base of the study; (ii) Ratios and proportions are used to

normalize the data by the control of size effect and for the evaluation of relative inter-temporal changes in the core variables associated with the public and private sectors of the Indian economy.; (iii) Random Walk Model and Dickey-Fuller test are used to determine whether time series of given data sets are stationary; (iv) Time trend and growth curves are estimated to evaluate the differential rates of growth of basic variables of the study; (v) Since the time series of different data sets are found stationary at first difference, Distributed Lag Model (DLM) has been preferred to other forms of model specification. DLM incorporates the first lag of the dependent variable as one of the determinants. The model also facilitates the derivation of long run structural equilibrium model from the short run reduced form equilibrium model. Besides, DLM is not a-theoretical model like VAR. These advantages are not available with the error correction model also.

4.5 Analysis of Empirical Results

Empirical results are reported sequentially but thematically. First, results of descriptive statistics are discussed. It is followed by the evaluation of results of Dickey-Fuller test of stationarity. The results of the growth curves along with the trend growth of ratios of the core variables are taken up next. Lastly, the results furnished by the distributed regression models are discussed.

4.5.1 Important Facets and Features of Observed Values of Employment

The time series of total employment comprises the series of employment in private and public sectors of Indian economy. Ratio of (i) private sector employment to total employment; (ii) public sector employment to total employment; and (iii) public sector employment to private sector employment are derived from the data pertaining to total, public and private sector employment. Thus, total employment is used to normalize employment in public and private sectors.

Incidentally, private sector employment and pay packages have been used as the reference or bench mark in some of the past studies. Therefore, private sector employment is used in this study also to normalize public sector employment. However, the rationale behind this is different from the rationale used in the past studies which relate mostly to developed market economies. Indonesia is an exception to this. However,

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India has been diluting the pivotal role of public investment and public sector employment by promoting private investment and private sector employment. Therefore, these ratios are conceived to capture the change in the role of two sectors in employment generation. These ratios highlight the relative roles of private and public sectors in the generation of employment and the growth of the economy through time. Besides, the ratios are scale free and are appropriate for inter-temporal and inter-sector comparisons in the market economy in transition which may still be quasi planned economies. In the planned economies, however, the structure of employment and economy are dominated and even controlled by the government. This warrants an evaluation of the changing role of public expenditure and public sector in the growth of employment and GNI in the economy.

4.5.2 Changing Total and Public Sector Employment

Before the discussion of the results of summary statistics, some basic features and facets of three observed ratios, mentioned above, are discussed.

A perusal of the table 4.1 in the Appendix reveals that (i) total employment in the Indian economy has been almost stagnant though it appears to have increased highly sluggishly and nominally; (ii) Employment in public sector has also displayed extremely low and slow change. These inferences may be verified empirically by an examination of three ratios of employment.

4.5.3 Ratios of Private Sector and Public Sector Employment to Total Employment in Indian Economy

Like all other ratios, the ratios of private sector and public sector employment to total employment in Indian economy are less than 1 since their sum equals unit. Consequently, the changes in these two ratios are inversely related to each other, and increase in one ratio leads to an equal decline in the other ratio if the sum remains constant. If, however, the total employment either increases or decreases, the changes in the two ratios may be uni or opposite directional. On the whole, employment in private sector as the proportion of total employment, as expected, has been rising over the years, and correspondingly, the employment in public sector as the proportion of total employment has been declining

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over the years. Thus, the role of the government and public sector in India economy has been diminishing over the years.

4.5.4 Ratio of Private Sector Employment to Total Employment in Indian Economy

The examination of the ratio of private sector employment to total employment, reported in table 4.1 in the Appendix, shows that(i) The ratio increases from 29% to 40% from 1990 to 2012. It is an increase of 11 percentage points over a period of 23 years. Thus, the ratio increases approximately by 0.45 percentage points per annum; (ii) The ratio stagnates at 29% from 1990 to 1995 after which it increases to 30% in 1996; (iii) The ratio increases to 31% next year. However, it again stagnates at 31% of total employment for 8 years. (iv) After stagnating for a block of 14 years between 29% and 31%, the ratio of employment in private sector to total employment rises by 1% each year until it reaches its maximum value of 40% of total employment in 2012.Thus, the share of private sector employment in total employment increases very sluggishly by 2 percentage points for 14 years even though the NEP was adopted in 1990-91 under which the program of liberalization, privatization and globalization of Indian economy had been implemented. It seems that employment reforms had been kept in abeyance for pretty long. The year 1996-97 appears to have been the bench mark for the sustained growth of employment in private sector relative to public/total employment. An apparent reason is that the tertiary sector, especially financial sectors such as banking, insurance, mutual funds, retail etc., was thrown open to private players, including foreign investors.

However, LPG has brought about a qualitative and structural change in the job market whereas illiterates, less educated, children and women lost their jobs, and new jobs in private sector emerged for more and better educated males (Prakash, Shri, 2008, Sharma, Amit, 2012, 2018). Besides, persons with higher professional and technical education replaced people with general education (Sharma, Amit, 2012).

Implementation of structural adjustment programs is generally spread over several years. Besides, due to the entry of numerous multinational corporations and greatly increased prices and quality of products and intensity of competition, more than 1 million small enterprises were closed and more than 10 million jobs were lost during the first few years of the operation of the policy of economic reforms (Prakash, Shri, 1994). Consequently,

great proportion of newly generated jobs in private sector was neutralized by the job-loss in public sector and small indigenous private enterprises.

4.5.4.1 Ratio of Public Sector Employment to Total Employment in Indian Economy

The Appendix table 4.1 reveals that (i) As total employment is the sum of employment in private and public sectors, inter-temporal changes in the ratio of public sector employment to total employment behaves reciprocally to each other. Consequently, an increase of 11 percentage points in the share of private sector employment results in the decline of 11 percentage points in the share of public sector in total employment, and hence, the ratio has decreased from 71% to 60% during the period covered by the study. Thus, it represents substantial decline in the domination of public sector over labor market.

The change may be attributed to three important factors: (1) Decline in the job opportunities, especially for the educated, in the public sector pressured people to explore job opportunities in private sector; (2) An attitudinal change and change in the mindset of professionally and technically qualified graduates and post graduates induces younger generation to explore job opportunities in business establishments; and (3) Performance based quicker career advancement further reinforces people's preference to private sector over public sector jobs (Sharma, Amit & Prakash, Shri, 2018). (ii) Like the ratio of private sector employment, the ratio of public sector to total employment stagnates between 71% and 69% and declines consistently thereafter.

4.5.5 Ratio of Public to Private Sector Employment in Indian Economy

The ratio of public to private sector employment is even more important than the previous two ratios since it directly measures the role of public sector in employment generation relative to private sector in the globalized Indian economy. It is generally believed that private sector pays more to its employees than the public sector and higher and better educated, more skilled and better performing employees rise in the occupational ladder much more quickly in private than public sector where performance may transgress seniority in promotions. Promotions are based on seniority and push and pull factors alone rather than performance, that is, efficiency and productivity in public sector. While public sector assigns greater weight to formal educational qualifications,

private sector prefers skills and performance. However, job security and post-retirement benefits provided by public sector to its employees may make private sector employees envious of their public sector cousins. This may induce job seekers to prefer public to private sector jobs in the labor market, especially during the phases of economic slowdown when private employers issue pink slips to employees (Bhati, Amita, 2008). Even otherwise also, public sector jobs have been preferred in India for long. The Appendix table 4.1 shows that the ratio of public to private sector employment ranges from 248 % in 1990 to 147% in 2012. Thus, the ratio has declined by as many as 101 percentage points during a period of 24 years in the globalized Indian economy. Thus, the ratio of public to private employment has been declining by 4.20 percentage points per annum. Despite radical decline in the role of public sector as an agent of economic growth and generation of employment in Indian economy, public sector continues to be the major hub of employment. Consistent rise in employment in the private relative to public sector has kept the economy away from sliding into the complete trap of jobless growth.

4.6 Descriptive Statistics

Descriptive statistics comprises the summary results of central tendency and dispersion which compress the huge non-systematically scattered data into few meaningful statistics. These statistics not only invest data with useful meanings but the values also display important features and facets of the distribution of values of the variables. Besides, these statistics furnish tools for further manipulation and analysis of data by various statistical methods. Measures of central tendency and dispersion, especially average and standard deviation, play pivotal role in the use of both parametric and non-parametric methods of data analysis. Most of the parametric statistical methods of data analysis are based on the assumption that the values of the variables are normally distributed. Besides, time series models also require the data series to be stationary. Stationary time series is characterized by the constant values of the mean and variance while the covariance is not likely to be affected by the point of time at which it is calculated.

If the t-test shows the difference of mean and median to be zero, the time series may be stationary. Besides, these statistics may also highlight the degree and direction of

inequalities in the distribution of the values. These considerations prompted the author to analyze the results of descriptive statistics of the core variables.

4.6.0 Descriptive Statistics of Total and Private Sector Employment

The summary results of Descriptive Statistics of total employment and private sector employment are reported in the tables 4.2 (a) and 4.2 (b).

Public Sector Employment(Lakh)		Private Sector Employment(Lakh)	
Table 4.2(a)		*Table 4.2 (b)*	
Mean	276.0069565	Mean	89.14608696
Standard Error	1.732137458	Standard Error	2.497374807
Median	275.25	Median	86.46
Mode	-	Mode	-
Standard Deviation	8.307039422	Standard Deviation	11.97698882
Sample Variance	69.00690395	Sample Variance	143.4482613
Kurtosis	0.060692807	Kurtosis	1.127772139
Skewness	0.544501255	Skewness	1.364546165
Range	32.26	Range	43.88
Minimum	263.53	Minimum	75.82
Maximum	295.79	Maximum	119.7
Sum	6348.16	Sum	2050.36
Count	23	Count	23

Source: Author's Calculation

4.6.1 Descriptive Statistics of Total Employment

The table 4.2 (a) shows that (i) on an average, Indian economy employs 27.6 million persons while the median employment level is 27.5 million which is only 0.1 million less than the mean employment level. It implies that the mean and median do not significantly differ from each other. Therefore, the inter-temporal distribution of employment may approximate the normal distribution. The inference is empirically evaluated by

t test:t= $\{(M-M_e)/SE_m\} \sqrt{(n-2)}$

M refers to mean, Me stands for median, SE m shows standard error of the mean from the sample, and n is sample size. The calculated value of t of the difference between mean and median is 1.67<1.98, and it is not significant statistically at 0.05 probability level. Therefore, the time series of total employment may be taken to be approximately normal and the distribution is not skewed and concentrated. The 0.06 and 0.54 low values of the coefficients of kurtosis and skewness support this. The coefficient of variation (CV) is also as low as 3.01%. These results also suggest that the time series of total employment may be stationary.

4.6.2 Descriptive Statistics of Employment in Private Sector

The table 4.2 (b) shows that (i) Average and median level employment in private sector is 8.92 and 8.65 million persons respectively. The value of t statistics of the difference between mean and median is 5.18 which is greater than the corresponding critical value, t=1.98 at 0.05 probability level of significance. Therefore, the assumption that the mean and median levels of private sector employment are equal is rejected. The distribution of private sector employment between the years is not normal/symmetrical. The distribution may be skewed and concentrated around the narrow space of mode. However, the inference is not supported by the low values of 1.36 and 1.13 of the coefficients of skewness and kurtosis which are lower than the corresponding range of 3 and -3. The coefficient of variation also has a value of 13.44^%. Therefore, the inter-temporal distribution of employment in private sector is neither skewed nor concentrated. The time series of private sector employment may be stationary.

4.6.3 Descriptive Statistics of Employment in Public Sector and Ratio of Private Sector Employment to Total Employment

The summary statistics of the ratios of employment in public sector and private sector employment to total employment are reported in tables 4.2 (c) and 4.2 (d):

Table-4.2(c) PUBEMP		Table 4.2(d)PVT%	
Mean	186.8626087	Mean	0.322278764
Standard Error	1.499711727	Standard Error	0.007294912
Median	187.73	Median	0.310587233
Mode	-	Mode	-
Standard Deviation	7.192364776	Standard	0.034985171
Sample Variance	51.73011107	Sample Variance	0.001223962
Kurtosis	-1.597059012	Kurtosis	0.418979023
Skewness	-0.313705164	Skewness	1.195751357
Range	20.11	Range	0.117543245
Minimum	175.48	Minimum	0.28713575
Maximum	195.59	Maximum	0.404678995
Sum	4297.84	Sum	7.412411561
Count	23	Count	23

Source: Author's Calculations

4.6.3.1 Descriptive Statistics of Employment in Public Sector

The table 4.2(c) shows that the mean and median levels of employment in public sector are 18.69 and 18.77 million respectively, and these values do not differ significantly from each other. The calculated value of t statistics of the difference of mean and median level of employment in public sector is $0.58 < 1.98$. Therefore, the hypothesis that the mean and median levels of employment in the public sector are approximately equal is supported by the empirical evidence. The inter-temporal distribution of employment in public sector is thus symmetrical which is generally neither highly skewed nor concentrated around the mode. The low negative -0.334 and -1.6 values of the coefficients of skewness and kurtosis imply mildly negative skewed and concentration of high values towards the left of the curve. This suggests declining trend of public sector employment towards the later years of the observed period. The CV also has a low value of 3.85%. It implies low degree of variation of observed employment in public sector per unit of mean.

4.6.3.2 Descriptive Statistics of Ratio of Private Sector Employment to Total Employment

The results of summary statistics of the ratios of private sector employment to total employment are shown in table 4.2(d). The table shows that on an average, private sector provides employment to 32% workforce while median level employment at 31% of the total is a little less than mean employment. Mean and median values do not significantly differ from each other since the calculated value of t=0.60<1.98. Therefore, the values of the ratio may be treated as normally distributed over the years. But the C.V. has a low value of 10.87% which means substantial degree of variation of observed values of the ratio per unit of mean. The series of ratios is neither skewed nor concentrated as the coefficients of skewness and kurtosis are 0.42 and 1.2 respectively. The C.V. also has a moderately high value of 10.87% per unit of mean.

4.6.4. Descriptive Statistics of Ratio of Public Sector Employment to (i) Total Employment and (ii) Private Sector Employment

The results of summary statistics of ratios of public sector employment to (i) total employment, and (ii) private sector employment are reported in tables 4.2 (e) and 4.2(f) respectively.

4.2 e				4.2 f	
PBEMP%					
Column1				Column1	
				PUB?PVY%	
Mean	0.677727606			Mean	2.134771978
Standard Error	0.007294707			Standard Error	0.064235197
Median	0.689412767			Median	2.219707362
Mode	#N/A			Mode	#N/A
Standard Deviation	0.034984186			Standard Deviation	0.308061181
Sample Variance	0.001223893			Sample Variance	0.094901691
Kurtosis	0.418607627			Kurtosis	-0.168564569
Skewness	-1.195647315			Skewness	-0.91771983
Range	0.117543245			Range	1.011578865
Minimum	0.595321005			Minimum	1.471094403
Maximum	0.71286425			Maximum	2.482673267
Sum	15.58773493			Sum	49.09975549
Count	23			Count	23

4.6.4.1 Descriptive Statistics of Ratio of Public Sector Employment to Total Employment

The table 4.2 (e) shows that the mean and median values of the ratio of public sector employment to total employment are 0.678 and 0.689 respectively and this shows that the public sector still continues to be the main source of employment generation in Indian economy despite the lapse of nearly three decades after the adoption of the policy of liberalization, privatization and globalization. However, the mean and median values of public sector employment do not seem to differ significantly. This is validated by the calculated value of t of the mean and median difference: t=1.51<1.98 for 0.05 probability level of significance. The distribution of the values of the ratio of public sector employment to total employment converges towards normal distribution. However, the coefficient of skewness is -1.196 which indicates a little bit of hump on the left side of the distribution, and the coefficient of kurtosis is as low as 0.42. The value of C.V. is also as low as 5.2%. All these facets of the distribution may suggest that the time series of the values of the ratio may be stationary.

4.6.4.2 Ratio of Public Sector Employment to Private Sector Employment

The mean and median of the ratio of public sector employment to employment in private sector are 2.135 and 2.22 which seem to be approximately equal. As the calculated value of t statistics of the mean and median difference is t: 1.33<1.98 for 0.05 probability level of significance, the distribution of the values of the ratio between the years may be taken to approximate normal distribution. The coefficients of both skewness and kurtosis are negative and less than 1, and their values are -0.92 and –0.17. It means that the distribution is neither skewed nor concentrated. However, the value of C.V. is 14.55% which appears to be a bit on higher side. All these values suggest that the time series of the ratio may be stationary.

4.6.5 Descriptive Statistics of Public Expenditure

The summary results of descriptive statistics are reported in the table 4.2(g) given below.

Table 4.2 (g) PUBEXP	
Summary Statistics PUBEXP	
Mean	15.53
Standard Error	0.252938
Median	15.5
Mode	-
Standard Deviation	1.21305
Sample Variance	1.471491
Kurtosis	0.208709
Skewness	0.429211
Range	4.94
Minimum	13.58
Maximum	18.52
Sum	357.19
Count	23

Source: Author's Calculation

The table 4.2 (g) shows that the mean and median values of public expenditure differ only nominally, and the difference between the two values is as low as 0.03. Therefore, the difference cannot be significant statistically. This is supported by the value of t statistics of the difference of mean and median values of public expenditure which is as low and high as 57<1.98 and it is not statistically significant at 0.05 probability level. The distribution of public expenditure appears to approximate normal distribution. Besides, the coefficient of variation has also such low value as 7.81%. The inter-temporal values of public expenditure vary between the minimum value of 13.58 and the maximum value of Rs 18.52 lakh crore over a period of 22 years. But the coefficients of both skewness and kurtosis are much less than 1, and their values are 0.42 and 0.21 which imply that the inter-temporal variation of public expenditure is neither skewed nor highly concentrated. The time series may be stationary.

4.6.6 Descriptive Statistics of GrossNational Income (GNI)

The table 4.2 (h) depicts the results of summary statistics of Gross National Income (GNI)):

Table 4.2 (h) Summary Statistics of GNI

Mean	2913316
Standard Error	495654.3
Median	2154680
Mode	-
Standard Deviation	2377075
Sample Variance	5.65E+12
Kurtosis	0.709818
Skewness	1.207505
Range	8436695
Minimum	496197.2
Maximum	8932892
Sum	67006269
Count	23

Source: Author's Calculation

The table 4.2 (h) of summary statistics of GNI shows that the mean is significantly greater than the median, and the value of t-statistics of the difference of mean from median is 7.10>1.95, critical value for statistical significance at 0.05 probability. It means that the inter-temporal distribution of GNI significantly diverges from normal distribution. Consequently, the distribution is expected to be highly skewed and high values are concentrated in the arrow space around the mode. But these inferences are not supported by the calculated values of the coefficients of Skewness and Kurtosis which have low values of 1.21 and 0.71 and these are lower than the critical values. The coefficient of variation has a high value of 81.6%. It indicates wild oscillations of GNI between the years.

4.7 Results of Random Walk Model and Dickey Fuller Test

Dickey-Fuller test has been used to evaluate the stationarity of time series data. The following three versions of Random Walk Model constitute the base of Dickey-Fuller test:

1. $\Delta Y_{it} = \delta Y_{it-1} + U_t$;

2. $\Delta Y_{it} = \beta_0 + \delta Y_{it-1} + U_t$

3. $\Delta Y_{it} = \beta_0 + \delta Y_{it-1} + \beta_1 T + U_t$

The above three are RWM without drift, with drift, and with drift and stochastic trend. δ is the coefficient of drift which makes the first difference between two consecutive values of the series diverge from zero., and $\delta = 1 + P$; and P is the root of the equation. If P<1, then the series is stationary at first difference. If P =1, or P>1, the root is said to lie in the unit root circle which makes the time series non-stationary (Harvet, A.C., 1981). But the models based on non-stationary time series yield spurious results (Yule, Y.A., 1927).

4.7.1 RWM of Total Employment at First Difference with Drift

The results of only acceptable RWM are reported. The OLS estimate of RWM equation of total employment at first difference level without drift does not reveal the time series of total employment to be stationary. Therefore, the following RWM equation of total employment at first difference level with drift is estimated;

4. $\Delta TEMP_t = 21.203 - 0.0725 TEMP_{t-1}$; R2=0.5964; F=29.56, P*=2.54E-05

  t: (5.91) (-5.43)

The above RWM function of first difference of total employment fits the data reasonably well. The negative coefficient of correlation and regression coefficient of lagged total employment are statistically significant even at as low probability level as 0.003. The equation explains approximately 60% of total variation of first differences of the total employment which is moderately high. The root, P=0.9275 of the equation is significantly less than 1. The time series of total employment emerges stationary. Therefore, the results of regression modeling of total employment are likely to be empirically valid.

4.7.2 RWM of Private Employment at First Difference with Drift

The OLS estimate of RWM equation of private employment at first difference without drift does not reveal the series of private employment to be stationary. Therefore, the following RWM equation of private employment at first difference with drift is estimated by OLS:

5. $\Delta PRIVTEMP_t = -11.1663 - 0.150\ PRIVTEMP_{t-1}$; $R^2 = 0.3592; F = 11.21; P* = 0.0032$

t: (-2.82)   (-3.35)

The above RWM function of first order differences of private employment on lagged private employment fits the data reasonably well, but the function explains only 36% of total variation of first order differences of private employment. The negative correlation between first order difference of private employment and lagged private employment is statistically significant at the low probability value of 0.003. Besides, the negative regression coefficient of lagged private employment is also highly significant which means that the root of the equation p=0.85<1. Therefore, the results of regression modeling of private employment are likely to be empirically valid.

4.7.3 RWM of Public Employment at First Difference with Drift and Stochastic Trend

The OLS estimates of RWM equations of public employment at first difference with and without drift do not reveal the time series of public employment to be stationary. Therefore, the following RWM equation of public employment at first difference with drift and stochastic trend is estimated by OLS:

6. $\Delta PUBEMP_t = 53.8870 - 0.2678 PUBEMP_{t-1} - 0.3687T$; $R^2 = 0.4576$; $F = 8.015$; $P* = 0.003$

t: (3.15) (-3.09) (-3.98)

The estimated RWM equation of public sector employment at first difference with drift and stochastic trend fits the data well. The negative coefficient of multiple correlation and both the negative coefficients of lagged public sector employment and stochastic trend variable, t are statistically significant at probability lower than 0.01. The root of the equation is p=0.7322<1. The root of the equation lies outside the unit circle. The time series of public employment is empirically found to be stationary at first difference.

Therefore, the regression modeling based on time series of public sector employment is likely to furnish acceptable and genuine rather than pseudo results.

4.7.4 RWM of Public Expenditure at First Difference

The estimated equations of Random Walk Model at first difference with and without drift do not reveal the time series to be stationary. Therefore, the following equation of RWM Model at first difference with drift and stochastic trend is estimated by OLS;

7. $\Delta PUBEXP_t = 2.6868 - 0.1978\ PUBEXP_{t-1} + 0.1368T; R^2 = 0.18274; F = 2.013; P = 0.11$

t: (1.59) (-1.89) (1.50)

The coefficient of lagged public expenditure is negative and it is statistically significant at slightly greater than 0.11 probability level. The intercept and the coefficient of time are not significant statistically. But the coefficient of lagged public expenditure emerges significant at 0.07 probability level. Probability greater than 0.05 is accepted since, as has been argued by Engel-Granger, even if one or more variables included in a regression model are non-stationary individually, yet their linear combination represented by the linear regression may still be stationary jointly. Therefore, the regression model which includes public expenditure either as dependent or independent variable may furnish genuine results.

4.7.5 RWM of Gross National Income (GNI) at First Difference

The OLS estimate of RWM of GNI at first difference with drift and stochastic trend is given hereunder:

8. $\Delta GNIt = 813349.5 - 0.2401GNIt-1' + 949.38T; R2 = 0.130; F = 1.48; P = 0.253$

t (1.52) (1.60) (1.16)

The above RWM function fits the data poorly, and it explains only 13% of total variation in first difference of GNI. F statistics is significant at only 0.25 probability level which is much greater than 0.05 probability. Though the coefficient of lagged GNI is negative, which indicates that the root of the equation is 0.76 that lies outside the unit circle, yet the difference from 1 is statistically not significant at 0.05 probability level. Therefore, the results furnished by this Random Walk model of GNI at first difference suggest that

the regression which has GNI either as dependent or independent variable may be subjected to Engel-Granger test of co-integration.

4.8 Growth Curves and Time Trend

The growth rates of core variables possess three important characteristics: (i) As rates are the ratios of change to base value, irrespective of whether the base is initial value of the variable or shifting value in year on year growth rates, rates are normalized values; (ii) Normalization of absolute change by base value renders the growth rates neutral to size effect; and (iii) Normalization of absolute change by base value makes the growth rates amenable to comparison. However, the trend growth rate of any economic variable may be estimated by any one of the following econometric/statistical methods/models:

(i) Averaging of Year on Year Growth Rates

$$GR_{yt} = \Sigma \, (Y_t - Y_{t-1})/ \, Y_{t-1} = \{\Delta Y_t/ \, Y_{t-1})$$

GR_{yt} is the average rate of growth of Y from year t-1 to t=T. The average of the year on year growth rates over the period from t=1 to t=T is determined as follows: $GR_{ya}= \Sigma GR_{yt}/T$.

The above method takes year on year variations of observed growth rates into account. But no econometric method is involved in this process.

(Ii) OLS Estimate of Average Trend Growth Rate

The OLS estimate of the following linear trend equation of Y is derived first:

$$Y_t = \beta 0 + \beta \, 1 T + U_t \tag{A}$$

Incidentally, OLS estimate of regressions is derived at the average values of the dependent and independent variables. Therefore, $\beta 1$ measures the average change in the value of Y per unit of time. So, $\beta 1 = \Delta Y_t$. The trend growth rate is, therefore, the ratio of $\beta 1$ to the estimate of average value of Y which is given by the following:

$Y^{\wedge}_t = \beta_0 + \beta_1 \, M^{\wedge}_T$. Thus, the following is the average trend growth rate of Y:

$$G_{ytr} = \{\beta_1/(\beta_0 + \beta_1 M^{\wedge}_T)\} \tag{B}$$

M^T=[{T(T+1)/2}/T}] is the mean number of years, and Y^ is the estimates of average value of Y. This relation is used for the estimation of trend growth rates of three ratios of employment.

(III) OLS Estimate of ACGR From Growth Curve

The following Semi log-Linear function is derived from the exponential growth curve:

$$\ln Y_t = \alpha_0 + \alpha_1 T + U$$

$\alpha 1$ measures the annual compound rate of growth of Y.

4.8.1 Inter-temporal Growth of Total Employment

Growth of income has conventionally been positively linked to investment accelerator and consumption multiplier. However, the secular economic growth is envisaged to move with the passage of time irrespective of developed or developing status of economies. In addition to the changes in consumption and investment, the growth of income also involves changes in the values of several variables, especially employment. Though employment has conventionally been treated as a direct function of growth of income, yet the production function treats the output as the function of capital and labor, that is, employment. Modern economies are, however, observed to have been associated with three different types of processes of growth of income/output: (i) Employment generating economic growth though the employment may grow proportionately, less or more proportionately than income; (ii) Employment neutral growth when the economy grows with no growth of employment; and (iii) Employment displacing growth when growth of income results in negative change in employment. The growth of economy revolves round the growth of factor productivity, especially labor productivity and deployment of capital in place of labor intensive technology (Prakash, Shri & Balakrishna, Brinda, 2010). The above precepts prompted the author to examine the pattern of growth of employment.

OLS estimate of growth curve of total employment is reported hereunder:

9. $\ln \text{TEMP}_t = 2.4296 + 0.0009T$; $R^2 = 0.2351$; $F = 6.46$; $P^* = 0.019$

t: (484.93)   (2.54)

The growth function does not fit the time series data of total employment very well as it explains only 23.5% of total change in total employment during the period of slightly less than two and half decades. Thus, 75.5% of growth of total employment remains the part of residuals/random factors. It may probably be explained by the following factors (1) Public sector has acquired the commanding heights of the Indian economy during the era of planned economic development. But the processes of liberalization, privatization and globalization after the adoption of New Economic Policy in 1990 stultified the growth of public sector which diluted the pace of increase in employment generation in public sector.

It was the leading sector both in employment generation and the growth of economy till then; (2) Though the private sector expanded and generated more employment than public sector, yet its growth of output was dominated more by the growth of productivity than employment; (3) The pace of structural reforms has been tardy which also slowed down the economic growth in general and the growth of investment, output and employment in private sector in particular; (4) However, the coefficient of correlation and regression coefficient of time are statistically significant in the estimated growth curve. It prevents the rejection of the function on statistical and theoretical grounds; (5) The Annual Compound Rate of Growth (ACGR) has, however, as extremely low value as 0.1% per year. This lends empirical support to the inference that the Indian economy has been experiencing job neutral growth. However, the growth of total employment has lagged far behind the growth of GNI, and it implies that the growth of Indian economy has been driven largely by the growth of productivity. This inference conforms to the findings of Prakash-Balakrishnan (2010) and Sharma, Shakini, Sharma, Amit, Bhatnagar, Gunjan (2011) and Sharma, Amit (2012).

4.8.2 Inter-temporal Growth of Private Sector Employment

The following is the estimated growth curve of employment in private sector

10. ln PRIVEMPt= 1.8625 + 0.007T; R2=0.7589; F=66.1; P*=6.35E-09

t: (157.5)   (8.13)

The equation 10 shows that (i) the growth curve fits the data of private sector employment exceedingly well. It explains 76% of total growth of employment in private sector of Indian economy from 1990 to 2012. Thus, 24% of total growth of private sector employment still emerges as a part of residuals or estimation errors. The explained proportion of growth of private sector employment is slightly more than 3 times the corresponding proportion of variation of total employment explained by the growth curve. (iii) The coefficient of correlation and regression coefficient of time are statistically significant at nearly zero probability. (iv) The private sector employment grows at an annual compound rate of 0.7%, Thus, private sector employment grows 7 times more rapidly than total employment in the economy.

4.8.3 Inter-temporal Growth of PUBEMP Sector Employment

The following is the estimated growth curve of employment in public sector:

ln PUBEMP, t=2.2967 - 0.0021T; R2=0.7345; F=58.1; P*=1.37E-7

t: (5600.6) (-7.6)

The growth equation 11 of public sector employment shows that (i) The growth curve fits well to the public sector employment data also. The estimated curve explains 73.5% of total variation of year on year growth of public sector employment in India, but the growth of public employment is lower than the growth of employment in private sector explained by the growth curve; (ii) The correlation coefficient and regression coefficient of time are statistically significant at almost zero probability; (iii) The ACGR of public sector employment is less than the ACGR of private sector employment; (iv) The ACGR of public sector employment is, however, 2 times the value of ACGR of total employment; (v) Low ACGR of total employment may be explained by the higher base value and averaging of growth of employment over private and public sectors.

4.8.4 Inter-temporal Growth of Gross National Income

Growth of gross national income may be considered to guide and govern the growth of employment while growth of consumption and investment may be treated as the base of growth of gross national income. However, the level and pattern of growth of most of the social and economic variables are linked to time (Prakash, Shri, 1978). In view of the

above, the annual compound rate of growth of gross national income has been treated as the function of time. The OLS estimate of the growth curve of GNI is reported hereunder:

12. ln GNI, t=5.66+0.055T;R2=0.993;F=3061.136;

t: (417.0) (55.33)

The growth curve fits the data of GNI well. The growth function explains 99.3% of total inter-temporal growth of GNI. The coefficients of correlation and time are highly significant statistically. The coefficient of time shows that the GNI has been increasing consistently at an annual compound rate of growth of 5.5% which is much greater than the growth of total employment and private and public sector employment. This supports the earlier inference that the growth of the Indian economy has largely been dominated by the growth of productivity which made growth of income employment neutral. The inference is more rigorously tested by distributed lag model.

4.8.5 Inter-temporal Growth of Public Expenditure

The adoption of New Economic Policy in 1990-91 and the introduction of reforms with structural adjustment programs heralded a new dawn in the Indian economy. It resulted in the replacement of an economy, dominated by public sector and exhaustively controlled private sector through extensive permit and licenses, by the globalized economy which was subjected to liberalization, privatization and globalization. The new economic regime resulted in the dilution of the state monopolies and increased price and quality competition in the emerging market economy which was going through the process of transition. Withdrawal and/or reduction in the undertaking of economic activities by the public sector resulted in the consistent growth of private investment and consequent growth of output and employment in private sector. Consequently, these policy changes led to the decline in public expenditure and public sector employment. This must have reversed the positive changes by consistent negative changes in the public expenditure. Consequently, the total public expenditure has been oscillating between the years, and both the magnitude and direction of change are altered almost consistently between the years. This feature of change might have adversely affected the trend of change, and hence, the growth rate of public expenditure. This might have also adversely affected the

salary expenditure of the government and its agencies. This constitutes the backdrop of analysis of this segment.

The following is the OLS estimate of the growth curve of public expenditure:

13. $\ln PUBEXP_t = 1.2273 - 0.00312T; R2 = 0.3954; F = 13.73; P = 0.0013;$

t: (106.41) (-3.71)

The growth curve fits the data reasonably well as the growth function explains nearly 40% of the overall growth of the public expenditure in the Indian economy. The coefficient of correlation and the regression coefficient of time are significant statistically. But the total public expenditure declines consistently at an annual compound rate of 0.3%. Therefore, GNI and PUBEXP are expected to be inversely related. But PUBEMP and PUBEXP are likely to be directly related since both these tend to decline over the years.

4.8.6 Time Trend and Growth of Three Ratios

The trend equation of the three ratios is represented by the following equation:

$RAT_{it} = \alpha 0 + \alpha 1T + U$

Where RAT shows the three ratios, i=1, 2, 3 and R1=PRIVEMP/TEMP; R2=PUBEMP/TEMP; and R3= PUBEMP/PRIVEMP. The average growth rate has been derived by the application of formula given in equation B. The average of years from 1 to 24 is 12. The OLS estimates of the three ratios on time are reported below:

14. $RAT1 = 0.266 + 0.005T; R2 = 0.818, F = 94.11, P* = 3.284-09$

t: (40.4)   (9.2)

15. $RAT2 = 0.7334 - 0.0043T; R2 = 0.8176, F = 94.1, P* = 3.296-09$

t: (11.3)   (-9.2)

16. $RAT3 = 2.6434 - 0.0424T; R2 = 0.8708, F = 142.9, P* = 0.0$

t: (54.1)   (-11.89)

The relations 14 to 16 show that the (i) Trend equations of 3 ratios, defined above, fit the data well. The functions explain 82% to 87% of total inter-temporal variation of the three

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ratios of private and public sector employment to total employment and the ratio of public sector employment to private sector employment. (ii) The correlation coefficient and regression coefficient of time of all 3 ratios are highly significant practically at 0 probability. It means that 100 out of 100 such samples, drawn from similar populations, shall yield results similar to these. (iii) The trend of change in the ratio of private sector employment to total employment in Indian economy has been positive. The ratio of private sector employment to total employment has, however, been increasing only by 0.005 lakh per annum, that is, by an annual average rate of growth of 1.49%. (v) However, the significant trend coefficients of ratio of public sector employment to total employment and its ratio to private sector employment are negative. This means that both these ratios have been consistently declining over the years. (vi) The average rates of annual decline in the ratios of public sector employment to total employment and to private sector employment are 0.52% and 0.0131%. Thus, the consistent decline in the ratios of public sector employment with two different bases comes to 0.5313, leaving the net positive effect of private sector employment on total employment to rise only by 0.96% per annum.

These facets of employment growth in Indian economy has prompted the debate about employment less or employment displacing growth (Among others, See, Prakash, Shri and Balakrishnan, 2010, Sharma, Amit and Prakash, Shri, 2018).

4.9 Distributed Lag Model of Total Employment as A Function of Gross National Income (GNI)

Total employment comprises employment in public and private sectors of the economy. Consequently, the sum of proportionate shares of two sectors in total employment equals one, and hence, increase in the share of one sector in total employment leads to decline in the share of other sector. Two important properties of public sector employment, as has been discussed earlier, are the job security and assured post -retirement benefits. Besides, jobs in the public sector are related to formal educational qualifications prescribed for each job. However, in the absence of proper labor reforms and consequent absence of the policy of hire and fire, employment in private sector has also a certain degree of stickiness despite the high manpower turnover (Shrivastava, Shivani, 2016). Therefore,

the preceding period's employment becomes the bench mark of current change in employment. Therefore, total employment (TEMP) has been treated as a function of lagged total employment and gross national income (GNI). The OLS estimate of the distributed lag model of total employment is reported below:

17. $TEMP_t = 265.015 + 0.8074 TEMP_{t-1} + 2.38E\text{-}06 GNI$; $R^2 = 0.790$; $F = 9.64$; $P = 0.0011$

t: (35.58)   (5.66)   (4.38)

The function fits the data well. The explained proportion of variation is approximately four-fifths of total inter-temporal variation of total employment. The coefficient of multiple correlation is highly significant statistically since the value of F-statistics is 9.64 which is significant at 0.0011 probability. It suggests that almost 100% of repeated samples from the sampled population are likely to furnish similar results. All three regression coefficients, including the intercept, are statistically significant at less than 0.05 probability level. This shows that the function is satisfactory on all counts.

The regression coefficient of GNI is also highly significant though the increase in total employment in response to unit increase in GNI is very small. This is explained by the consistent decline in employment in the public sector which makes total employment rise nominally in response to change in GNI. Increase in private sector employment not only totally swamps the decline in public sector employment but it also makes total employment rise through the years. However, the observed total employment stagnates for a couple of years before registering increase in few successive years.

The highly significant positive coefficient of lagged total employment captures the effect of preceding period's employment on current total employment. This reflects two aspects: (i) Past employment is the bench mark which is not allowed to fall; and (ii) employment is downward sticky irrespective of the sector of employment.

4.9.1 Distributed Lag Model of Total Employment as a Function of GNI and Time

The tendency of periodic stagnation of total employment before it increases again may be the consequence of the inter-temporal shifting of the employment function. This proposition has been empirically evaluated by the incorporation of time as an additional

determinant of total employment. The coefficient of time in the augmented function represents the parameter of temporal shifts of the employment function.

The following is the OLS estimate of the reduced form of the Distributed Lag Model of Total Employment as a function of gross national income (GNI) and time:

18. $TEMP_t=55.2187+0.8067TEMP_{t-1}+2.9E\text{-}06GNI_t-0.8101T; R2=0.9126;$ $F=62.65;$ $P=1.00606E\text{-}9$

t   (2.21)   (8.83)   (4.18) (-3.39)

The equation 18 shows that the augmented distributed lag model of total employment fits the data better than the function 16. The inclusion of time as an additional explanatory variable of total employment increases the explanatory power of the function by slightly more than 12.3 % points.   The function explains as much as 91.3% of total variation of total employment over the years. The significant negative coefficient of time supports the thesis that the total employment function has been consistently shifting downward to the left independently of any influence of first two pre-determined variables by 0.81 units per year. This decline dilutes the positive impact of other two determinants on total employment. Other three positive regression coefficients, including intercept, are also statistically significant. One unit increase in the preceding year's employment boosts current employment by 0.807 units. This empirically validates the hypothesis of base year effect on current employment. The impact of preceding year's employment is much greater than the impact of growth of gross national income in the short run. Though the current output/gross national income positively affects employment, yet the income response of employment is relatively nominal in magnitude.

The coefficient of adjustment of short to long run equilibrium of employment and income has a relatively very low value of $\lambda=0.1933$. Therefore, the adjustment of actual to desired/long run equilibrium takes relatively long time. Approximately 67% of total adjustment, needed to transform short run into long run equilibrium of employment and income, is realized in five years.

The following is the long run structural equilibrium equation of employment and income:

19. $TEMP_t=276.1+0.0000015GNI_t-41.91T$

The above relation shows that the short run response of employment to change in income converges towards its long run response.

4.9.1.1 Result of Engel-Granger Test of Co-integration

One or more core variables of the theoretical time series models are invariably found to be non-stationary. An option to overcome the problem is to use first or greater order differences as the data base of time series modeling in the practical applications. But such models as they are based on higher than second order differences loose practical economic sense. For example, difference of difference is an extremely difficult concept to apply to theoretical or practical problems of an economy. Engel-Granger found a useful solution for this tricky econometric problem. They postulated that even if one or more variables of an economic system are individually non-stationary, their linear combination in a regression model may still be stationary, provided that the residuals of the estimated regression model are stationary. In such cases, the variables of the model are said to be co-integrated in the model equation and the results are accepted as genuine. Since the time series of GNI has been found to be non-stationary, Engel-Granger test is applied to the residuals of the reduced form equation 18. The following is the OLS estimate of the RWM of residuals of model equation 18:

20. $\Delta U_t = -0.042 - 0.39867 U_{t-1}$; $R^2 = 0.2008$; $F = 4.77$; $P = 0.042$

t: (-0.076) (-2.185)

The above equation shows that the negative coefficient of the lagged residuals is statistically significant. Therefore, the root, $P = 1 - 0.3987 = 0.6013 < 1$ of this equation lies outside the unit circle. Hence, the model equation 18 is accepted to represent genuine relation between total employment and GNI. Incidentally, the residuals are the mirror image of the core variables of the regression in general and the dependent variable of the model in particular. The Engel-Granger test suggests that all the variables of the augmented distributed lag model of employment on GNI and time may be considered to be well co-integrated in the regression. Therefore, the results furnished by the model are accepted.

4.9.2 Distributed Lag Model of Public Sector Employment as Function of Total Public Expenditure

Public expenditure comprises the following lines of the public spending on (i) public consumption; (ii) public investment; (iii) public administration, including salaries of civil servants and armed forces, employees of public enterprises and regulatory bodies, commissions and committees appointed by the government from time to time and all other public agencies like Union Public Service Commission, Judiciary etc. All such expenses are bracketed under the revenue account while public investment is covered under capital account of the union government. Obviously, employment in public sector depends largely on public expenditure, especially revenue account expenditure. It is widely recognized that employment in public sector, including public enterprises, is characterized by job security. Therefore, once a person has been recruited, she/he goes out of service after retirement, death, or voluntarily relinquishes the job prematurely. But public expenditure has generally been relatively downward sticky though the planned economies in transition from controlled to market economies shed excessive dependence on public expenditure for growth and employment generation. This reasoning suggests treating public employment as the distributed lag function of public expenditure. The following is the OLS estimate of the DLM function of public employment:

$$21. PUBEMP_t = -19.4720 + 0.6218 PUBEMP_{t-1} + 1.0504 PUBEXP_t;$$
$$R^2 = 0.9519; F = 188.2; P = 3E-13$$

$$t: (1.74 \ (2.6) \ (19.38)$$

The equation 21 is the reduced form short run equilibrium relation of public employment and public expenditure. Equation 21 fits the data excellently. The coefficient of multiple correlation is highly significant statistically and the function explains 95% of total variation of public sector employment in India over the years. The reduced form regression coefficients of lagged public employment and current public expenditure are statistically significant. A unit increase in public expenditure increases public employment by1.05 units in the short run. But the coefficient of adjustment, λ, of actual to desired level of public employment equals 0.3782 which means that the adjustment of actual to long run desired employment is relatively slow. Approximately 90% of total

adjustment, warranted by transforming short run into long run public employment and public expenditure equilibrium, takes 5 years. This is partly explained by the long lead time involved in the creation and recruitment of employees in public sector. Besides, the vacancies resulting from death, retirement and other reasons of attrition also cannot be filled up instantaneously. The following equation represents the long run structural equilibrium of public sector employment and public expenditure:

$$22.\ PUBEMPt = 51485.99 + 2776.31\ PUBEXPt$$

The equation shows that public employment is greatly responsive to increase in public expenditure. It is, therefore, reasonable to infer that the public sector employment during the regime of NEP has not increased due to continuous decline in public expenditure. As none of the variables of this equation is a part of non-stationary time series, Engel-Granger test has not been applied. Besides, the distributed lag model of public sector employment as the function of public expenditure has not been found to be shifting, and hence, the results of regression model with shift parameter are not reported.

4.9.3 Distributed Lag Model of Private Sector Employment as a Function of Gross Private National Income (GPNI)

The same reasoning that is used for preferring DLM to analyze the interrelation of total and public sector employment with their respective determinants prompts the author to evaluate the relation of private sector employment with its determinants by the OLS estimate of DLM. However, Private Expenditure/Gross Private National Income (GPNI) rather than GNI or public expenditure, which is used as determinants of total and public sector employment respectively, is used as the determinant of private sector employment. The assumption that the observed expenditure approximates long run or permanent income is used as the determinant of private sector employment (See, Friedman, Milton, Stone, Richard, 1953, Prakash, Shri & Sharma, Shalini, 2006). Private Expenditure or Gross Private National Income is derived as the difference between GNI and Public Expenditure. As tax revenue, fiscal deficit, public borrowings, disinvestment in public enterprises, interest income, and other receipts are assimilated in total public expenditure/income of the government, difference between GNI and public expenditure is assumed to approximate Private Income/Expenditure (GPNI).

The following is the OLS estimate of private sector employment as the distributed lag function of GPNI:

23. $PVTEMP_t = 9.5465 + 0.8681 PVTEMP_{t-1} + 1.18789E-06 GPNI; R^2 = 0.9792; F = 447.73; P = 1.04022E-16$

t: (1.18), (8.09) (2.82)

The function fits the data extremely well since the function explains 98% of total variation of private sector employment. The coefficient of multiple correlation is statistically significant at practically 0.00 probability level. Besides, the regression coefficients of lagged private sector employment and gross private national income are also highly significant statistically. Current private sector employment increases by 0.89 units in response to one unit increase in preceding year's private sector employment. This empirically supports the thesis that the employment in private sector is relatively downward sticky and upward flexible. But the private sector employment increases sluggishly in response to an increase in GPNI. This may probably be explained by the (i) periodically occurring business cycles which make both income and employment oscillate substantially over the years between the different phases of business cycles; and (ii) demand recession adversely affects private investment, especially in manufacturing and tertiary activities. Even otherwise, marginal propensity to consume is generally less than one and consumption multiplier may generate employment only indirectly through its growth effect. Both these factors debilitate employment generation in the economy in general and especially in secondary and tertiary sectors under private control.

The above reasoning suggests that the employment function of private sector may be shifting between the years. Therefore, the distributed Lag model of private sector employment as the function of GPNI and time is examined.

4.9.4 Distributed Lag Model of Private Sector Employment as a Function of Gross Private National Income (GPNI) and Time

The OLS estimate of the short run reduced form equation of DLM of private sector employment as the function of GPNI and Time is reported hereunder:

24. $PVTEMP_t = 15.3704 + 0.8093 PVTEMP_{t-1} + 2.33211E\text{-}06 GPNI - 0.3957T, R2=0.9845; F=383.77; P=1.69858E\text{-}16$

t :   (2.04)   (8.28)   (3.96)   (-2.51)

The DLM function 24 fits the data slightly better than the DLM function 23 without shift parameter. It explains 98.5% of total variation of private sector employment which is 0.53% more than the proportion of variation explained by the function 23. This empirically supports the postulation that the private sector employment function shifts consistently downwards. The coefficients of multiple correlation, intercept and the positive coefficients of lagged private sector employment, GPNI, and time are statistically significant. But the sum of positive coefficients of lagged employment and GPNI exceeds the value of negative shift parameter. Consequently, private sector employment increases over the years in the short run. But the lagged employment exercises much greater influence on current employment than GPNI.

The coefficient of adjustment of short to long run equilibrium of private sector employment and GPNI, λ,=0.20, is quite low. Consequently, only 67% of the required adjustment of short to long run equilibrium is completed in 5 years. The following is the long run structural equilibrium equation of private sector employment:

25. $PRIVTEMP_t = 76.85 + 0.0000012 GPNI_t$

This function shows that the long run response of private sector employment to an increase in GPNI is greatly sluggish. It supports the thesis that the growth of Indian economy has been dominated by productivity, but it has been largely employment neutral.

4.9.5 Engel-Granger Test of Co-integration

Since GPNI has been derived as the excess of gross national income (GNI) over public expenditure and GNI series is non- stationary at 0.05 probability, Engel-Granger test of co-integration is applied to the residuals of relation 24 in order to validate the results of the regression model. The following is the OLS estimate of the regression equation of the first order differences of the residuals on lagged residuals:

26. $\Delta U_t = 0.05678 - 0.5722 U_{t-1}; R2=0.2934; F=7.89; P=0.011$

t: (0.19) (-2.81)

Ut shows the residuals of the DLM function 24 of private sector employment. The equation 26 of Engel-Granger test shows that PVTEMPt, PVTEMPt-1, PGNIt and Time are well co-integrated in the distributed lag model 24. Therefore, the results furnished by the model 24 are valid and acceptable.

4.10 Findings and Conclusions

The following are the main findings of the chapter:

(1) Inter-temporal distribution of total employment, public and private sector employment does not significantly diverge from normal distribution.

(2) Inter-temporal distribution of GNI diverges from normal distribution, and consequently, its time series is not stationary at 0.05 probability level.

(3) Total employment consistently stagnates for 3-5 years before it increases again.

(4) Public sector employment consistently declines while private sector employment grows over the years at a sluggish rate.

(5) The ratios of public sector employment to total and private sector employment decline through time.

(6) Total employment is the positive function of lagged total employment and GNI. But total employment increases nominally in response to an increase in GNI.

(7) Public sector employment significantly depends on public expenditure while GPNI is the significant determinant of private sector employment.

(8) Preceding year's total, public and private sector employment influence current employment more than the GNI, public expenditure and GPNI.

(9) The functions of total and public sector employment are downward shifting to the left through the years.

(10) An implication of the above results is that the salary expenditure of the government relative to public expenditure may decline through time though the per employee salary expenditure may rise consistently.

CHAPTER FIVE:

**IMPACT OF IMPLEMENTATION OF PAY COMMISSIONS'
RECOMMENDATIONS ON PUBLIC EXPENDITURE ON WAGES AND
SALARIES OF GOVERNMENT EMPLOYEES OF INDIAN STATES**

5.0 OVERVIEW

It is constitutionally mandatory for the Government of India to appoint the Pay Commission to review and upward revise the salaries of Government of India's employees every ten years. State governments have to follow the leads of the Government of India with regard to the salaries of their employees. As Public Employees play pivotal role in the formulation and implementation of policy and programs of economic development and social transformation, they should have share in development gains. The roles and functions of public servants in the economies are almost similar to those of CEOs and Managers of private enterprises. Upward revision of pay of public employees is also warranted by the gulf between the growth of real and nominal incomes, caused by inflation, which is almost an inevitable concomitant of economic growth. As the prices of commodities and rewards of production factors and aggregate incomes move in sync with each other, the salaries and pay grades of public employees need upward revision while multiplicity of pay grades, ranks and numerous allowances attached to basic pay require simplification and rationalization. The main objective of economic growth has been the consistent increase in per-capita income required to raise the living standards of the people. Besides, the need for consistent rise in real wages and salaries warrants not only neutralization but also complete swamping of the increased cost of living. This necessitates periodic upward revision of salaries of public sector employees.

The chapter focuses on the determination of relation between total public expenditure on all items and lines and public expenditure on wages and salaries of employees of state governments. The study is based on panel data relating to time series of total public expenditure and salary expenditure of states. Dickey-Fuller test of unit root shows time series of salary expenditure and total public expenditure to be stationary at first difference. Besides, the time series of public expenditure on employees' salaries and total public expenditure approximate normal distribution and both the series are nominally skewed and marginally concentrated. Total public expenditure and expenditure on salaries of public employees of 30 states and union territories increased at statistically significant high annual compound rates of growth. The positive trend coefficient of the ratio of salary expenditure to total public expenditure is significant for 8 states/UTs while the negative trend coefficient of the ratio is significant for Bihar. Thus, 21 trend

coefficients of the ratio are not significant. Ten non-significant negative trend coefficients of the ratio of salary expenditure to total public expenditure suggest that the ratio has remained constant, and hence, pay commissions' recommendations do not seem to have been affected by the spatial units. But the elasticity coefficients of salary expenditure with respect to total public expenditure indicate significant positive relation between year-on-year growth rates of these variables. Public expenditure of all 30 spatial units has been significantly affected by the implementation of the Pay Commissions' recommendations.

Public employees' salaries and wages are determined by the lagged salaries and current total public expenditure, but the adjustment of observed to the desired level of salaries-wages is spread over about 5 to 7 years. However, the short run equilibrium is found generally to converge towards long run equilibrium.

Key Words: Pay Commission; Impact; Public Expenditure; Public Employees; Wages & Salaries

5.1 INTRODUCTION

Income and prices, including factor rewards, are closely related to each other, and these two variables generally move together. Higher the gross national income (GNI), greater are the factor rewards and commodity prices. But the factor rewards are determined by the supply relative to demand. Demand for factors of production depends on employers' capacity to pay which, in turn, depends on income/output produced by the factors of production. Employers push their demand for labor/manpower up to the point at which marginal productivity of labor equals wages/salaries. The supply of labor depends on the opportunity cost. Marginal productivity equals wages which, in its turn, equals opportunity cost of supply of labor. Opportunity cost is measured by the earnings foregone from the next best alternative available job to labor.

Contribution of labor to output/income, that is, productivity plays pivotal role in the determination of the demand for labor. But income or gross/ net value-added comprises wages/salaries paid to labor and profits/interest paid to capital. This is shown by relation

$$V=WL+rPK \qquad\qquad (1)$$

V is value-added, W is average wage rate, L is total employment, r is average interest rate, P is average price of capital stock and K is total stock of capital. In input-output model, V, L, P, and K are vectors. Equation 1 implies that the wage share of labor and interest/profit share of capital are inversely related. Greater the wage share, smaller is the share of interest/profit in value added at any given point in time:

$$(WL+rPK)/V=1$$

Or

$$w+R=1;$$

Or

$$1-R=w \qquad\qquad (2)$$

R and W are wages/salary and profit/interest shares in total value add.

However, both wage and interest shares may increase in absolute terms if the value added grows through time though the rates of growth of shares of wages and interest may differ. Economic growth results not only in greater output/income, but it also results in higher factor rewards and greater commodity prices.

Equilibrium is attained at the point where the cost of living equals marginal productivity of labor. Marginal Productivity represents the saturation point of demand for labor/workers by employers while cost of living represents the supply price of workers/employees, including those employed in government/public sector. Incidentally, the cost of living may differ from the earnings foregone from the best available alternative. However, in case of the unemployed, this opportunity cost is zero, so the cost of living may be treated as the alternative cost.

Does the above theory apply to the salaries of public employees and their share in income? The answer to this question is intricate because the government, unlike private enterprises, engaged in commodity production and supply of services, is not a profit seeking entity. Governance of a country or state does not relate to commodity production though public enterprises produce public or merit goods and provide some essential

services to the people. Besides, the salaries and wages of public employees are administered by administrative orders and executive fiats which are governed and guided by rules. Hence, the determination of the salaries of public employees is guided and governed by rules and regulations formulated by the government from time to time for this purpose. Appointment and implementation of the recommendations of pay commissions is a part of the procedure and mechanism of the determination of salaries of public employees. Public employees belong to fixed income human capital group. This combined with the inflationary pressures generated by growth in the economy warrants increase in salaries to not only protect but also raise the real earnings of public employees to enable them to gain their share in the growth gains of the economy.

Public employees, as already mentioned, except those employed in public enterprises in industrial or other production sectors, do not produce any commodity or service. Therefore, it is difficult to measure the productivity of government employees. It may probably be surmised that the disposal of a stipulated number of files per unit of *a priori* determined time may be a proxy of productivity of routine administrative functions of the public employees. For example, during the eighties, stenographers were expected to type 20 pages per working day in addition to taking dictation and maintenance of the files.

The outcomes of successful implementation of policy decisions may be conjured to be the output, and hence, productivity of such employees who are entrusted with the task of policy management. Therefore, the productivity of such public employees may probably be treated only as notional which may be reflected by their average pay package.

It may, however, be noted that government employment has had been having magnetic allurement to job seekers in India since the linking of Western education to government jobs by Macaulay. Job security, time bound promotions, career advancement and power and prestige attached to government service are greater force than pay, and these considerations influence the choice exercised between private and public sectors by the job seekers in labor market in India (Prakash, Shri, 1996a).

5.2 Focus and Objectives

This study examines the impact of implementation of recommendations of Pay Commissions, especially the Sixth/Seventh Pay Commissions, on public budget/public expenditure and GDP/GNI or its growth.

It also focuses on state-wise differentials of the impact of implementation of Pay Commission's recommendations on public expenditure.

The study evaluates the nexus between the earnings of government employees and total public expenditure.

The chapter examines inter-temporal variation of employees' earnings from salaries and growth of public expenditure. It involves evaluation of the impact of recommendations of Pay Commissions on the earnings of employees.

The implementation of pay commissions' recommendations involves the use of public resources. As it involves more than usual salary expenditure for the government, the government has to mobilize additional resources for the discharge of its constitutional obligation. Income of the government is represented by public revenue which comprises revenue from taxes, fees, fines, public debt, fiscal deficit and grants/aid. Wages and salaries of workers and employees are the part of total public expenditure, especially expenditure on revenue account. Obviously, wages and salaries paid by the government to employees constitute only a fraction of GDP, tax revenue and total public expenditure on all items. Public expenditure increases with the growth of public revenue which, in turn, depends on the growth of public expenditure and GDP/GNI. This raises the question whether public revenue sets the upper limit to public expenditure or public expenditure needs to propel additional revenue generation through greater efforts of resource mobilization by the government. Individuals and organizations generally face income constraints as they cannot raise their incomes at will. Unlike the individuals and organizations, the governments do not encounter a similar income crunch as the government can mobilize resources to meet their expenditure needs/requirement subject to the limit set by GDP/GNI (See, Prakash, Shri & Chowdhury, Sumitra, 1994, Prakash, Shri, Kiangi, Richard Fue and Sharma, Sudhi, 2017).

However, the theories of wages and employment may be applicable in their received form neither to the wage rates nor to the size of employment in government because (i) Job security/ permanency does not permit retrenchment of those recruited on permanent basis; and (ii) Public sector wages and salaries are administered prices which are inelastic to the changes in the market forces of demand and supply. Number of employees of the government and public enterprises is, however, negatively affected by attrition caused by deaths and retirements, and it is positively influenced by the recruitment rates which depend upon the filling up of vacancies created by deaths and retirements and creation of new posts to meet manpower needs of development. Manpower required for the management of the development is accounted by the launching of new projects and schemes, establishment of new departments, creation of more divisions and administrative districts, and /or creation of new states, etc. Appointment of new committees and commissions and creation of new regulatory bodies also generate additional manpower needs. But the proportionate increases on the above counts are relatively small. The growth of the number of public employees is also governed by the autonomous operation of Wagner's Law and/or policy change. For example, transition of a planned into market economy is expected to adversely affect the public sector employment and its growth. But the change in size and structure of public employment directly affects the public expenditure on salaries and allowance of public employees. This big-bang change in the level, salary rates and structure of pay grades emanates from the implementation of the recommendations of pay commissions every ten years.

5.3 Marginal Productivity and Factor Rewards

The Economic theory states that factor rewards should be determined on the basis of their marginal productivity. However, researches have shown that human capital or man-power, especially the educated man-power, makes much greater contribution to growth than technology and physical capital (Schultz, T. W., 1962, Prakash, Shri, 1977, Prakash, Shri and Balakrishnan Brinda, 2010, Sharma Amit, 2012, Sharma, Shalini, Sharma Amit and Bhatnagar, Gunjan,, 2012,). It is also recognized that the development administration is qualitatively different and relatively more intricate and complex than the routine civil administration. Development administration involves paradigm of growth and the implementation of development policy at the grass roots. This has to be understood in the

context of decentralization of responsibility of development from center to state in 1971 with the appointment of state Planning Boards at state level, but the responsibility for development was further devolved from the states to districts. At the district level, District Magistrate, formerly known as District Collector, is responsible for the development of the district. Similarly, the responsibility of development devolves from D.M. on to block development officer (BDO). With the passage of Panchayat Bill in Parliament, the responsibility of development has devolved from BDO to Gram Panchayat and its Sarpanch. Over and above this, policy formulation at the center, state and district involves different levels and types of knowledge, skills and expertise. This necessitates replacement of general administrators by professionally and technically qualified personnel at all levels of administrative cadres. This accounts for increasing proportion of engineers, technologists, legal and medical experts among the successful candidates in civil services examinations in India. It is also explained partly by lateral entry of professionals in civil services. Incidentally, graduation is prescribed as the minimum essential qualification for admission to civil services competitive examination. However, not only general education and postgraduates but professional and technical education graduates and post graduates are also now successfully competing in these examinations. Consequently, the growth of Indian economy has largely been driven by consistent growth of productivity which is explained by the up-gradation of educational qualifications and replacement of general education graduates and post graduates by professionally and technologically qualified graduates and post graduates in employment (Sharma, Amit 2012).

The Pay Commissions are expected to keep the degree of responsibility, risk of mis-deliverance of service and/or policy objectives, efficiency of implementation in the context of prevailing facts and development status of the economy in the recommendations which it makes for upward revision of pay packages of public employees. The recommendations of the Pay Commissions are assumed to be based on several complex factors which have already been discussed in third chapter.

Implementation of recommendations of Pay Commission involves heavy drain or liability on public exchequer and the annual budgets of the Central Government for the years of implementation of the pay commission's recommendations reflect this. However, a part

of the burden of financial responsibility of implementing Pay Commission's recommendations has also to be borne by the state governments.

5.4 Data Base of Study

The chapter uses secondary data obtained from the Government sources. The State-wise time series data from 2007-8 to 2014-15 has been taken from the Website of the Ministry of Planning and Program Implementation, Government of India. The data covers the period of implementation of sixth pay commission.

Thus, the data-base comprises the panel of cross section and time series. The data relates to (i) total public expenditure; and (ii) public expenditure on salaries and wages of public employees of states. Such data-base poses technical problems and complexities of its own. Cross section econometric models encompass the problem of heteroscedasticity while time series modeling faces the twin problems of auto-correlation and stationarity. But the panel data modeling offers four alternative models each of which entails its own strengths and weaknesses. Econometric modeling on the basis of such data-base is, thus, an intricate and complex exercise.

5.5 Focus of Study

The chapter focuses on the determination of

(i) Growth of public expenditure on employees' salaries in 30 states and union territories;

(ii) Growth of total public expenditure on all items of expenditure in 30 states and union territories;

(iii) Time trend of public expenditure on employees' salaries as proportion of total public expenditure in 30 states and union territories; and

(iv) Relation between total public expenditure and public expenditure on wages and salaries of public employees in 30 states and union territories.

5.6 Methods and Models of Data Analysis

The study uses descriptive statistics as the preliminary step of data analysis. Descriptive or summary statistics comprises the calculated values of mean, standard error of mean, median, standard deviation, variance, coefficients of skewness and Kurtosis, minimum

and maximum values and the range. Thus, these statistics comprehensively display the basic features of each data set. Descriptive statistics compresses the large number of observations into few critical values that capture the essence, nature and spread of distribution and/or concentration of high values in a narrow space around the mode. The results of the summary statistics may also be used to estimate the t value of difference between the mean and median to determine if the distribution converges or diverges from normality. Past studies have shown that the t-statistics of the difference between the mean and median of the given distribution furnishes a reliable result about normality of distribution as is provided by Jack-Bera test (Sharma, Sudhi, 2014, Kiangi, Richard Fue, 2016, Negi, Gautam, 2016, Ramadhani, Khalid, 2018).

The results of descriptive statistics relate to the following sets of data base: Separate time series data of (i) total public expenditure of each state; (ii) public expenditure on salaries of public employees of each state; and (iii) separate cross section data of each year on (iv) total public expenditure; (v) public expenditure on salaries of public employees; and (vi) panel data of all states and years on total public expenditure; and (vii) panel data of all states and years on public expenditure on wages and salaries of employees.

Besides the descriptive statistics, the study has used the following methods and models.

Expenditure on wages and salaries depends on the number of persons employed, average wages and salaries of public employees including pensioners, annual increments, sum of additional DA and ADA granted bi-annually by the government to its employees and pensioners for neutralizing inflation effect on real earnings. This is shown by the relation given hereunder:

$$TPEWS_t = (AVWSR_t * NPEMP) \tag{3}$$

$TPEWS_t$ denotes total public expenditure on wages/salaries and pensions, AVWSR is average wage and salary rate across all ranks and their grade pay, including pensions and all allowances thereof, NPEMP shows total number of employees and pensioners of all ranks and t stands for time.

Equation 3 can easily be decomposed into parts (Prakash, Shri & Chowdhury, Sumitra, 1994, Sharma, Amit, 2012). :

$$\Delta TPEWS_t = (\Delta AVWSR_t * NPEMP_t) + AVWSR_t * \Delta NPEMP_t \qquad (4)$$

Equation 4 overlooks interaction effect of change in the salary rate and number of employees together. Equation 4 may be transformed into growth accounting equation as follows:

$$\Delta TPEWS_t / TPEWS_{t)} = (\Delta AVWSR_t * NPEMP_t) / \{AVWSR_t * NPEMP\} +$$

$$(AVWSR_t * \Delta NPEMP_t) / \{AVWSR_t * NPEMP_t\}$$

$$= (\Delta AVWSR_t / AVWSR_t) + (\Delta NPEMP_t / NPEMP_t)$$

Or

$$G_{TPEWSt} = G_{AVWSRt} + G_{NPEMPt} \qquad (5)$$

The study has also used the following econometric models: Growth curves of (i) total public expenditure of each state and (ii) public expenditure of each state on salaries of public employees. The growth curve is specified hereunder:

$$\ln Y_{it} = \alpha_0 + \alpha_1 T + U_t \qquad (6)$$

$Y_{it,,}$stands for i-th, variable growth rate of which is estimated, and $_i = 1, 2$. 1 stands for total public expenditure, and 2 refers to public expenditure on salaries of public employees. T refers to time, t-, and the time period covered by the study is from 1990 to 2008. The period covers the years of implementation of recommendations of fourth to sixth pay commissions. State wise data on salary expenditure is not available to us. The Fifth pay commission was appointed in 1998 and sixth commission came into being in 2008.

Since the study is based on secondary panel data, the data have been evaluated for unit root by Dickey-Fuller (D-F) test based on three versions of Random Walk Model (RWM). The three versions of RWM model are estimated for each state separately for both total public expenditure and public expenditure on wages and salaries of public employees. The test has been applied at level as well as first differences of the time series.

RWM models at first difference are spelled out hereunder:

$$\Delta Y_t = \delta Y_{t-1} + U_t \qquad (7)$$

$$\Delta Y_t = \beta_0 + \delta Y_{t-1} + U_t \tag{8}$$

$$\Delta Y_t = \beta_0 + \delta Y_{t-1} + \beta_1 T + U_t \tag{9}$$

Y refers to total public expenditure/public expenditure on salaries of public servants, β_0 stands for the coefficient of drift which measures the divergence of Y_t from Y_{t-1} and U_t represents the influence of random factors which make the first difference $\Delta Y_t = (Y_t - Y_{t-1})$ non-zero. $\delta = 1 + P$, and P is the root of the equation. Unit value of the root implies that the time series are non-stationary and the results of regressions estimated from such time series are spurious.

The chapter also uses Distributed Lag Model (DLM) with partial adjustment hypothesis to determine the relation between expenditure on salaries of public employees and total public expenditure. The following equations constitute the Distributed Lag model:

$$TPSLWE^*_t = \alpha_0 + \alpha_1 TPE_{1+}U_t \tag{10}$$

TPSLWE* is the desired or warranted expenditure on salaries of public employees as per their marginal productivity/recommendations of Pay Commission. But paucity of resources, delay in acceptance and approval of the Commission's recommendations, further delays in implementation of new pay grades, time lags involved in the detailed calculations for the fixation of new pay in the new grade of level and cadre and rank wise calculation of all employees account for the divergence of desired from observed values. Besides, working out of arrears and actual payments to be made may also involve further lags. Therefore, the desired adjustment of actual to warranted value is assumed to be a fraction of total adjustment. This leads to the following equations of DLM. This equation is defined as short-run adjustment equation:

$$(TPSLWE_t - TPSLWE_{t-1}) = \lambda(TPSWE^*_t - TPSLWE_{t-1}) \tag{11}$$

$$TPSWE^*_t = (1/\lambda)\{TPSLWE_t (1-\lambda)TPSWE_{t-1}\}$$

Substitution of the above value of $TPSWE^*_t$ in equation 9 leads to the following equation:

$$(1/\lambda)\{TPSWE_t - (1-\lambda)TPSWE_{t-1}\} = \alpha_0 + \alpha_1 TPE_{1+}U_t$$

Re-organization of terms yields the following relation:

$$TPSWE_t = \lambda\alpha_0 + (1-\lambda)TPSWE_{t-1} + \lambda\ \alpha_1 TPE_1 + \lambda U_t$$

Or

$$TSPWE_t = II_0 + II_1 TPSWE_{t-1} + II_2 TPE_1 + II_3 \qquad (12)$$

Where $II_0 = \lambda\alpha_0$, or $\alpha_0 = II_0/\lambda$, =; $\lambda = (1-II_1)$; $\alpha_1 = II_2/\lambda$; and $U_t = II_3/\lambda$

$0 < \lambda < 1$ holds and λ is the coefficient of adjustment per unit of time. If $\lambda = 1$, the lagged value of the dependent variable, occurring among the determinants on the right hand side, vanishes and the observed and warranted values coincide. It implies that the series is stationary at level and inclusion of lagged value of the dependent variable among its determinants is redundant. It will make DLM inappropriate in such cases. If $\lambda = 0$, no adjustment is required as the observed and warranted values coincide. Generally λ, the coefficient of adjustment, is greater than zero but less than 1. Greater the value of the coefficient of adjustment, λ, quicker is the adjustment and less time period is required for complete adjustment. Similarly, lower the value of the coefficient, slower and lower is adjustment process and relatively more time is taken in completing the adjustment of actual to desired change. Equation 12 is the reduced form equation of the SEM and its coefficients are reduced form parameters from which the values of the structural parameters are derived. Therefore, structural equation 10 represents long run equilibrium relation while the reduced form equation 12 shows short run but transitory equilibrium.

5.7 Theoretical Thrust Underlying DLM

Several theoretical and practical reasons have been cited to justify the inclusion of lagged value of the dependent variable as the pre-determined variable in regression analysis (Gujarati, & Sangeetha, (2006). Besides these, one may justify the inclusion of past public expenditure as its own determinant (Sharma. Amit & Prakash, Shri, 2018, Prakash, Shri, Kiangi, R. F. & Sharma, Sudhi, 2017, Prakash, Shri & Chowdhury, Sumitra, 1994) : (i) Past expenditure on all items and lines, including wages and salaries, constitutes the bench mark of current expenditure; (ii) Like the consumption expenditure, public expenditure in general and expenditure on salaries of public employees in particular is upward flexible but downward sticky; (iii) As has been shown in the equations reported in earlier section, total public expenditure on salaries depends on the level of employment

and average salary, but it is not practically possible to reduce wages/salaries rates either in public or private sectors. Besides, job security and permanency make the level of employment in government and public enterprises absolutely downward sticky at least in the short run. Attrition accounted by deaths and retirements may facilitate decrease in employment in public sector provided that resultant vacancies are not filled up. Outsourcing is another alternative to reduce employment in public sector, but it may affect salary expenditure to a limited extent; (iii) Operation of Wagner's Law makes the task of controlling expansion of bureaucracy extremely difficult; and (iv) Consistent growth of income and increased complexity of policy formulation and implementation in an expanding and diversifying economy necessitate employment of more and better educated, more skilled and better paid workers which entails greater wage and salary rates than before. This is further reinforced by inflation and productivity growth.

5.8 Empirical Results

The results of data analysis are discussed sequentially. Therefore, the results of RWM and descriptive statistics are taken up for discussion first. It will be followed by the discussion of results furnished by growth curves, and finally, the results of DLM will be taken up for discussion.

5.9 Discussion of Results of Three Versions of RWM at First Difference

The results furnished by Dickey-Fuller test show that the time series of salaries-wages and total public expenditure are non-stationary at level. However, both these series are found to be stationary at first difference. The Dickey-Fuller test of stationarity is satisfied in most of the cases by second or third versions of Random Walk model which contain the coefficient of drift alone and the coefficients of both drift and stochastic time trend. These results also suggest that the regression model of public expenditure on employees' salaries should include first lag of the dependent variable among its determinants. Distributed lag model is preferred for data analysis for this reason and it is also based on strong theoretical grounds.

5.10 Discussion of Results of Descriptive Statistics: Public Expenditure on Salaries

The discussion of results of summary statistics of public expenditure on employees' salaries focuses on the (i) divergence or convergence of observed from normal distribution; (ii) Degree of variation per unit of mean, measured by the coefficient of variation (CV); and (iii) Degrees of skewedness and concentration of high values around the mode. The calculated values of t statistics of the significance of difference between mean and median are used to evaluate the validity of the assumption that the mean and median of normal distribution are equal. The coefficients of skewness and kurtosis are used to evaluate whether the distribution is skewed and concentrated. The state and union territory wise summary statistics along with t-statistics of mean-median difference and CV of public expenditure on salaries are reported in Appendix tables 5.5 and 5.6.

The results reported in tables 5.5 and 5.6 show that the (i) inter-temporal distribution of public expenditure on salaries of employees largely converges towards normal distribution since the calculated values of t for all states and Union Territories are much lower than the critical value of 1.98 at 0.05 probability level of significance; and (ii) the values of CV vary between low value of 28% to moderately high value of 44.3%. These results suggest that the distribution of salaries of public employees approximates normal distribution. Consequently, the distribution of salaries among the different cadres, grades and levels as well as years may be only marginally skewed and should have low degree of concentration of high values around the mode.

These inferences are supported by less than unit values of the coefficient of skewness for all the States and UTs except one for which the coefficient has a value of 2.27. Besides, the coefficient of kurtosis has a value of one or less than one for all States and UTs except 5. The values of the Kurtosis are 2.1, 2.11, 2.4 and 2.61 in 4 cases and 5.7 in one case. Thus, only one case may be considered to have high degree of concentration of high public expenditure on salaries.

The age structure of staff and officers in these 5 exceptional states and union territories seems to be dominated by higher age senior professionals.

The low variation and even spread of values over the years and among the states may be explained by the mandatorily determined minimum and maximum salaries which

constrains the range of variation. These results also point towards the likelihood of the time series being stationary.

5.11 Discussion of Results of Descriptive Statistics of Total Public Expenditure

The results of descriptive statistics along with the calculated values of t test of the significance of the difference between mean and median and coefficient of variation (CV) of total public expenditure are reported in appendix tables 5.2.1, 5.2.2 and 5.2.3.

A perusal of the results reported in these tables mentioned above shows that the (i) Calculated t-statistics of mean and median difference of total public expenditure on all lines and items have values lower than even one which is much less than the critical value of 1.98 at 0.05 probability level of significance. Therefore, the null hypothesis that the values of mean and median of total public expenditure are statistically different from each other is rejected for all states and union territories. This also implies that the observed inter-temporal and inter-spatial distribution of total public distribution tends to approximate normal distribution. The results furnished by this t—test of normality have been found to be valid by the results of application of more powerful Jack-Bera test by such scholars as (Sharma, Sudhi, 2016, Khalid, 2017, Negi, 2017, Khalid, 2018).

The above results also suggest that the time series of total public expenditure may be stationary. In view of the above, it may be expected that the observed distribution of total public expenditure may neither be highly skewed nor it may display high degree of concentration of highly extreme values in the narrow space of mode. These inferences are examined by the evaluation of CV and coefficients of skewness and kurtosis.

(ii) The calculated values of CV of total public expenditure vary from the low 16.37 to moderately high 43.8$%. But the values of CV of most of the states hover around 24% to 29% and 30 to 35%. Thus, these results lend empirical support to the inference that the observed values inter-temporally fluctuate per unit of mean in a moderate band. Therefore, the observed temporal distribution of total expenditure on all lines and items may be expected to display low degree of skewedness and concentration. This is examined by the calculated values of coefficients of skewness and kurtosis.

(iii) The calculated values of the coefficient of skewness of total public expenditure either equal unit or are less than unit for all States and Union Territories. It implies that the total public expenditure is evenly spread over the years and spatial units.

(iv) The coefficient of Kurtosis has 1.6, 1.8, and 1.9 values for three spatial units though for the rest of the states and union territories, total public expenditure is evenly spread over the years. It may, therefore, be safely inferred that the public expenditure does not display marked degree of concentration of high values in few years. However, the few cases where the coefficient has a value in excess of unit relate to the year of belated implementation of the recommendations of sixth pay commission.

5.12 Estimated Growth Curves of Public Expenditure on Salaries Of Employees

The exponential growth curve, transformed into semi-log form, has been estimated by OLS from the annual public expenditure on salaries of employees of 30 States and Union Territories for which data were available from 2006 to 2012. The coefficient of time in these growth curves furnishes an estimate of annual compound rate of growth (ACGR). The OLS estimates of State/UT wise ACGR are reported in the table 5.1 given hereunder. The results are analyzed in the ensuing paragraphs. Table: 5.1 ACGR of Public Expenditure on Salaries

UT/State	ACGR	State	ACGR	State	ACGR
Arunachal	10.59	Jharkhand	6.16	Andhra	6.69
Assam	6.74	Kerala	3.99	Chatisgarh	7.88
Himachal	6.25	Maharashtra	7.43	Haryana	7.16
.J & K	8.333	Panjab	6.98	Karnataka	5.58
Manipur	8.51	TamilNadu	7.83	M.P.	7.70
Mizoram	8.08	West Bengal	7.12	Odissa	6.19
.Sikkim	5.18	Pudicherry	5.88	Rajasthan	5.71
Uttarakhand	7.48	Meghalaya	6.31	U.P.	5.41
Bihar	6.81	Nagaland	7.24	Delhi	6.18
Gujarat	8.74	Tripura	5.77		

Source: Author's Calculations

The perusal of the estimated growth curves (only ACGR reported here) shows that (i) The growth curve fits the data of public expenditure on employees' salaries well, and the explained proportion of variation of public expenditure on employees' salaries ranges from as high as 89% to 99% of the total inter-temporal variation. The explained proportion of variation is 89% of total inter temporal variation only for U.P., but for the remaining 28 units, it is generally greater than 90%.

(ii) The coefficient of correlation is highly significant statistically while the intercept is not significant in any case. It implies that time alone is the determinant of the growth of public expenditure on employees' salaries. Incidentally, almost all the critical variables of developing economies, like the Indian one, change with time (Prakash, 1977).

(iii) The coefficient of time, that is ACGR, is statistically highly significant in all the 29 cases covered by the study. (iv) The magnitude of ACGR ranges from the minimum 3.99% for Kerala to the maximum 10.55% for Arunachal Pradesh. (v) The values of ACGR are slightly greater than 5% for Sikkim, Puducherry, Tripura, Karnataka, Rajasthan, and U.P. However, Sikkim, Pondicherry and Tripura are small in size in terms of geographical area, population and economy. It limits their size of bureaucracy and its growth, and hence, the growth of expenditure on salaries. However, U.P. is large both in terms of population and geographical area though it is economically laggard. Rajasthan is also relatively large in geographical area but it is, like U.P., a laggard economically. This result may probably be explained by relatively limited government revenue which limits the growth of public expenditure on salaries. Alternatively, one may be tempted to interpret the result as an outcome of increasing efficiency and productivity of bureaucracy over the years. It may also be accounted by the relative preponderance of lower age junior officers.

However, such inferences require direct empirical evaluation. (vi) The value of ACGR exceeds 6% quite a bit for 9 states/UT: these are Assam, Himachal, Bihar, Jharkhand, Panjab, Meghalaya, Andhra, Odissa and Delhi. These states differ in population, geographical area and growth performance of their economies. This may probably be explained by an increasing role of the government in the regulatory and administrative sphere. It is also probable that these results are explained by relatively low value of the

base. (vii) Another 4 states including J & K, Manipur, Mizoram and Gujarat record an annual compound growth rate of more than 8%. (viii) ACGR varies between more than 6% to more than 10% for 22 out of 30 states and union territories. These growth rates are quite high both in relative and absolute terms. But a better and clearer picture may emerge from the discussion of results of growth of total public expenditure which may be treated as a proxy of both national income and public revenue. Expenditure is, in fact, the proxy of long run permanent income.

5.13 Estimated Growth Curves of Total Public Expenditure

Public expenditure comprises a myriad of items and lines of expenditure while expenditure on salaries of public employees is only one but an important item. In the first instance, need for total public spending determines the public revenue/income requirement. Individuals and households cannot spend more than their incomes over prolonged periods of time due to their inability to increase income at will. Therefore, the relative fixity and rigidity of individual incomes delineates the upper limit of individual expenditure. That is why individuals' expenditure may be treated as a proxy of income (Stone, Richard, 1954). As against the individual expenditure and income which are a bit sticky upward, public expenditure and public revenue/income are downward rigid and inflexible and are quite upward flexible.

Once public expenditure increases even for disaster management in the times of difficulty, it is not possible to reduce it even after the period of disaster and distress is over (Peacock and Wiseman, 1961, Prakash, Kiagi and Sharma, 2017). For individuals, expenditure is limited by their incomes. As against the individuals, governments generally raise income/revenue according to their spending needs. Governments can raise revenue by)1) increasing tax rates; (2) introducing new taxes; (iii) borrowing from institutions and individuals both nationally and internationally; (iv) Finally, by resorting to increased fiscal deficit (Prakash, Shri, Kiangi, Richard Fue and Sharma, Sudhi, 2017, Prakash, Shri & Chowdhury, Sumitra, (1994). But the role of public activities and policies expands and tends to become more complex and intricate as an economy grows, resulting in an increase in public expenditure. Administrative machinery also expands and encompasses ever increasing activities and areas of socio-economic operations. In

view of these considerations, the growth curves of total public expenditure of 30 states and union territories are estimated by OLS. The estimated annual compound rates of growth, furnished by the coefficients attached to time, are reported in table 5.2 given below.

Table: 5.2- ACGR of Total Public Expenditure on All Items/Lines

State	ACGR	State	ACGR
Arunchal	5.72	Assam	7.55
H.P	5.24	J& K	6.11
Manipur	6.80	Meghalaya	8.27
Mizoram	6.55	Nagaland	7.62
Sikkim	6.94	Tripura	5.65
Uttarakhand	6.01	A.P.	5.63
Bihar	7.52	Chattisgarh	7.90
Goa	9.28	Gujarat	6.94
Haryana	6.29	Jharkhand	6.78
Karnataka	6.48	Kerala	6.39
M.P.	7.74	Maharashtra	5.87
Odisa	6.95	Punjab	4.90
Rajasthan	6.73	Tamil Nadu	6.83
U.P.	6.76	West Bengal	5.83
Delhi	4.65	Puducherry	2.82

Source: Author's Calculations

The perusal of results furnished by the estimated growth curves of total public expenditure suggests that (i) The curve fits the data of all states and union territories excellently; (ii) The proportion of total inter-temporal and inter-spatial variation of total public expenditure ranges from a little more than 97% to a little more than 99%. Thus, the residuals explain hardly any proportionate change in total public expenditure over the years and between the states; (iii) The intercepts of all 30 growth curves have emerged statistically not significant. It implies that no variable excluded from the regression

influences the growth of total public expenditure. Thus, time emerges as the catch all determinant of growth of public expenditure. This lends empirical evidence to the postulate that public expenditure is downward fixed and upward consistently flexible; (iv) The coefficient of time, yielding estimate of ACGR, is statistically significant in all cases though the significance at 0.07-0.08 probability level is accepted in some cases; (v) Coefficient of correlation is also statistically significant in all cases; (vi) The magnitude of ACGR ranges from the minimum value of 2.82% for Puducherry to the maximum value of 9.28 for Goa; (vii) The second highest growth rate of 8.27% is recorded by Meghalaya while the second lowest rates of growth of 4.65% and 4.9% are shown by Delhi and Punjab respectively. Six states registered ACGR of more than 5% but less than 6%. But total public expenditure grew at ACGR of more than 6% and less than 7% in 14 states and union territories. Five states/UTs show ACGR of more than 7% and less than 8%. Thus, as many as 19 or 63.33% of total spatial units fall in the moderately high growth of total public expenditure, and 3 or 10% of total units depict low growth of total public expenditure.

On the whole, the above results provide empirical evidence to support the following four hypotheses that the growth rates are affected by (i) base value; (ii) size of the economy which is measured by SDP, population and geographical area; (iii) already achieved level of public expenditure, and (iv) ACGRs vary between the states and union territories.

5.14 Regression of Ratio of Employees' Salaries to Total Public Expenditure

The expenditure on public employees' salaries as a proportion of total public expenditure neutralizes the size effect of total public expenditure. The ratio of expenditure on public employees' salaries to total public expenditure shows salaries expenditure per unit of public expenditure. It measures the change in expenditure on salaries relative to the inter-temporal change in total public expenditure. The ratio may, therefore, be taken to reflect the pace and direction of changes in these two variables of public finance. Moreover, this ratio may also be treated as a broad indicator of inter-relation between salaries and total public expenditure. The inter-temporal growth of the ratio may conform to one of the following behavioral traits: (i) The ratio increases if the expenditure on salaries grows more rapidly than the total public expenditure; (ii) the ratio remains constant if the rates

of growth of expenditure on salaries and total expenditure are equal; (iii) the ratio decreases over the years if the total public expenditure grows more rapidly than the expenditure on salaries. These behavioral traits reflect the nature and direction of possible inter-relatedness of these two variables. Therefore, the ratio has been regressed on time and the OLS estimates are reported in table 5.3.

State	β_0	β_1	t_0	t_1	R^2	F	P
Arunachal	15	2.341	4.09	2.71	0.5947*	7.34	0.04
H.P.	28.76	0.735	30.18	3.45	0.7093*	1.9	0.02
Manipur	24.12	1.144	9.67	2.05	0.4681	4.2	0.09
Mizorm	26.95	1.015	1	3.19	0.6700*	10,15	0,024
Sikkim	36.79	-1.17	6.10	-0.87	0.1319	0.76	0.42
Uttrakhand	26.63	0.87	7.94	1.16	0.2189	1.34	0.3
Bihar	22.82	0.34	29.40	-1.98	0.4385	3.90	0.1
Goa	23.13	-2.16	.33	-2.23	0.4974**	4.95	0.07
Haryana	23.25	0.44	9.66	0.81	0.1172	0.66	0.45
Karnataka	17.12	-0.33	14.97	-1.29	0.2486	1.65	0.25
Sal%ExpMadhya	20.31	0.004	12.17	-0.01	2.22E-05	0.01	0.999
Sal%Exp Odisha	26.79	-0.45	10.01	-0.75	0.1018	0.57	0.49
Assam	37.09	-0.66	11.25	-0.9	0.1384	0.80	0.41
J & K	25.48	1.66	20.72	6.03	0.8792*	36.40	0.002
Meghalaya	39.5	1.24	1.96	-1.01	0.1699	1.03	0.36
Nagaland	32.48	0.37	20.72	1.05	0.1796	1.09	0.34
Tripura	34.68	0.08	17.16	0.18	0.0068	0.034	0.86
A.P	19.63	0.492	2.06	0.46	0.1862	1.144	0.33
Chatishgarh	22.06	0.01	9.12	0.01	3.49E-05	0.0002	0.99
Gujarat	15.69	0.72	5.86	1.2	0.2245	1.45	0.28

Jharkhand	26.31	-0.35	9.8	-0.58	0.0632	0.37	0.59
Kerala	29.37	-1.13	5.95	1.02	0.1732	1.05	0.35
Maharastra	26.97	1.095	15.42	2.8	0.6108*	7.85	0.04
Rajasthan	27.11	-0.60	9.14	-0.91	0.1415	0.824	0.41
U.P.	20.19	-0.65	2.45	-1.81	0.2183	1.4	0.29
Tamil Nadu	21.16	0.54	15.71	1.81	0.3946	3.26	0.13
West Bengal	27.27	0.82	7.90	1.06	0.1826	1.12	0.34
Delhi	11.96	0.39	5.14	1.09	0.1929	1.2	0.34
Pudicherry	18.72	18.72	13.59	5.54	0.86*	30.71	0.003
Panjab	23.39	23.39	9.06	9.06	0.5312***	5.66	0.06

Source: Author's Calculation

Note: * Significant at 0.05 probability level; ** Significant at 0.07 probability level; ***Significant at 0.06 probability level.   Greater than 0.05 probability level of significance accepted due to limited degrees of freedom in such cases.

A perusal of the results reported in table 5.3 above shows that the (i) function fits the data well only in 8 out of 30 cases. The coefficient of correlation and regression are significant in these cases; (ii) seven of these statistically significant coefficients are positive, but the coefficient of time for Bihar turns out to be negative. Thus, Bihar is the state where expenditure on salaries relative to total expenditure has registered a declining trend. The regression coefficient turns negative if the two variables of the regression move in opposite direction. In this case, time always moves forward which implies that the negative change has occurred in salaries expenditure relative to total public expenditure despite the fact that all states were expected to implement the recommendations of Sixth Pay Commission with effect from 2006, the base year of data. As a matter of fact, the dependent variable is relative in nature and salaries' expenditure cannot decline without substantial decline in employment. It may, therefore, be inferred that the decline in the ratio of salary expenditure to total public expenditure in Bihar is the outcome of more rapid growth of total public expenditure than salary expenditure; (iii) In other 7 out of the above 8 cases, public expenditure on salaries has significantly increased more rapidly than the total public expenditure. Thus, the expenditure on salaries in these seven spatial

units has been positively affected by the implementation of recommendations of the sixth pay commission; (iv) The negative coefficient of time is statistically not significant in 10 spatial units. The regression coefficient turns both negative and non-significant if either dependent variable or independent variable or both the variables are almost constant. But time always moves forward, and it is the ratio of salary expenditure to total public expenditure that has been constant in these 11 states/UTs. This occurs if both the numerator and denominator change proportionately. However, it is not probable because it implies near constancy of non-salary expenditure both on revenue and capital accounts; (v) Non-significance of positive coefficients of time in 12 spatial units implies that these states have not been affected by the recommendations of pay commission.

5.15 Elasticity of Salary Expenditure to Total Public Expenditure

The inferences of the preceding section require further empirical evaluation. Therefore, the State/UT wise elasticity of salary expenditure with respect to total public expenditure has been analyzed. Elasticity coefficient measures the degree and direction of responsiveness of the dependent variable to the unit change in the value of the independent variable. Elasticity coefficient is the ratio of proportionate change (growth rate) in the dependent variable to the proportionate change (growth rate) in the independent variable. In this case, total public expenditure represents independent factor and salary expenditure is treated as the dependent variable. The elasticity coefficients are derived as the ratio of OLS estimate of ACGR of salary expenditure to OLS estimate of ACGR of total public expenditure. Incidentally, growth rates of both variables are statistically significant in all 30 cases. Therefore, the elasticity estimates show statistically significant values. The magnitudes of elasticity coefficients may be taken to represent strong, moderate or low and weak relation between these two variables.

The elasticity coefficients are reported in table 5.4.

Table-5.4: Expenditure Elasticity of Salaries of Public Employees

#	State	Sal/Tep	#	State	Sal/Tep
1	Arunachal	54.01%	16	Assam	112.02%
2	Himachal	83.84%	17	J & K	73.32%
3	Manipur	79.91%	18	Meghalaya	131.06%
4	Mizoram	81.06%	19	Nagaland	105.25%
5	Sikkim	133.98%	20	Tripura	97.92%
6	Uttarakhand	80.35%	21	A.P.	84.16%
7	Bihar	110.43%	22	Chattisgrah	100.25%
8	Goa	169.03%	23	Gujarat	79.41%
9	Haryana	87.85%	24	Jharkhand	110.06%
10	Karnataka	116.13%	25	Kerala	160.15%
11	M.P.	100.52%	26	Maharashtra	79.00%
12	Odisa	112.28%	27	Punjab	70.20%
13	Rajasthan	117.86%	28	Tamil Nadu	87.23%
14	U.P.	124.95%	29	West Bengal	81.88%
15	Delhi	75.24%	30	Puducherry	47.96%

Source: Author's Calculations

The table 5.4 shows that (i) the values of elasticity coefficients are much greater than 1 in 13 and 1 in 1 state. It means that the implementation of sixth pay commission's recommendations has greatly impacted the salary expenditure via increased total public expenditure; (ii) Percentage increase in public expenditure on employees' salaries has been much more than the corresponding increase in total public expenditure; (ii) In nine States/UTs, 100% increase in public expenditure evokes an increase of 80 to 97% in public expenditure on salaries. This may be accounted by the fact that most of the states pay much lower allowances to their employees than what is paid by the Government of India to its employees; (iii) In another 5 states, an increase of 100% in total public expenditure leads to an increase of 75% to 79% in the public expenditure on salaries of employees; (iv) An increase of 47% and 54% occurs in public expenditure on salaries of employees in only Arunachal Pradesh and Puducherry in response to an increase of 100% in public expenditure.

The analysis of the above results suggests that public expenditure on salaries is directly related to total public expenditure which, in its turn, is affected by the implementation of pay commissions. The nature, magnitude, direction and lead structure of this relation is examined by DLM.

5.16 OLS Estimate of Distributed Lag Model

The following is the OLS estimate of the Distributed Lag Model equation:

$$SLWE_t=165.892+0.778SLWE_{t-1}+0.079TPE_t; \ R^2=0.9974; \ F=38589.4 \qquad (13)$$

 t: (0.64)   (15.67)   (7.89)

The OLS estimate of DLM equation 13 depicts the short run equilibrium of salary expenditure and total public expenditure.

Short Run Equlibrium

The OLS estimate of the reduced form DLM equation 13 shows that (i) The Distributed Lag model fits the data excellently on all counts. The function explains 99.74% of total inter-temporal and inter-state variation of public expenditure on salaries of employees; (ii) Residual/random factors, thus, hardly explain 0.26% of total inter-temporal and inter-state variation of public expenditure on salaries of employees, which is almost zero statistically; (iii) The non-significant intercept implies that such variables, which might be theoretically important determinants of public expenditure on employees' salaries, do not significantly influence the expenditure on salaries of public employees. This empirically validates the choice of DLM and specification of its functional form; (iii) The statistically significant positive multiple correlation between current public expenditure on employees' salaries with lagged public expenditure on employees' salaries and total public expenditure on all items and lines of expenditure is highly statistically significant practically at 0.00 probability level. It means that 100 out of 100 samples will furnish results similar to these results; (iv) Corresponding to one unit, that is, Rs one crore increase in lagged public expenditure on employees' salaries, public expenditure on employees' current salaries increases by as much as Rs 0.778 crore in the short run if total public expenditure on all items remains constant. This lends credence to the thesis that public expenditure on employees' salaries is downward sticky and upward mobile, and the preceding period's expenditure on salaries constitutes the benchmark for current expenditure on salaries. But corresponding to one unit increase in total public expenditure on all items, current public expenditure on employees' salaries increases by as little as Rs

0.079 crore which is independent of any influence of lagged salary expenditure in the short run.

The above results empirically validate the thesis of base effect on proportionate change in the value of a variable. Besides, the model furnishes empirical evidence to support the thesis that public expenditure on employees' salaries is downward sticky but upwards flexible. Pay Commissions' recommendations for periodic upward revision of salaries of public sector employees constitute institutional framework for upward flexibility and downward stickiness of public sector wages and salaries. This property of human capital's reward is further reinforced by increase in productivity caused by change in technology, on the job learning and experience, induction of better and higher educated youngsters in civil services and income gains derived from the growth of national income.

Long Run Structural Equilibrium

The structural equation 10 encompasses long run equilibrium of public expenditure on salaries and total public expenditure. Estimates of structural parameters of equation 10 are derived from the OLS estimates of reduced form parameters of equation 13: $\lambda=0.222; \alpha_0=747.26$; and $\alpha_1=0.3558$.Therefore, the long run structural equilibrium equation is as follows:

$$SLWEt^* = 737.26 + 0.3558 \, TPEt \tag{14}$$

The equation 14 shows that an increase of Rs one crore in total public expenditure leads to an increase of Rs 0.356 crore in the expenditure on public employees' salaries in the long run. It implies that a little more than one third of increase in total public expenditure is subsumed by increase in current salaries of public employees. This is much greater than the marginal (proportionate) public expenditure on salaries incurred by the governments of U.K., France, Italy, Asia Pacific and OECD countries (See, Chapter two). Thus, Government of India's marginal propensity to spend on employees' salaries is quite high. Along with the job security, power and prestige commanded by public servants may be the important factors of allurement of civil services in India. However, the competitive examinations conducted for recruitment are quite stiff which makes the success rate low.

Results of Step Wise Regression and Multicollinearity

Though the sign, significance and magnitudes of the coefficients of DLM suggest that the estimated regression function is free from multi-collinearity, yet step-wise regression is used to ensure that the estimated model does not actually suffer from multi-collinearity. This will also facilitate the delineation of influence of the two explanatory variables separately, and independently of each other by the exclusion of the other explanatory factor from the regression.

OLS estimate of regression of current $SLWE_t$ on lagged $SLWE_{t-1}$ is give hereunder:

$$SLWE_t=103.058+1.163\ SLWE_{t-1};\ R^2=0.9966;\ F=59533.5;\ P^*=1.6E\text{-}251 \qquad (14)$$

t:　　(0.35)　　(243.99)

The function fits the data quite well. The positive coefficients of correlation and lagged $SLWE_{t-1}$ are statistically significant. The proportion of total inter-temporal and inter-state variation of $SLWE_t$ is 99.67^% which is not only very high but also only a few points less than that furnished by DLM. It implies that the lagged value of $SLWE_{t-1}$ is the highly relevant and significant determinant of public expenditure on salaries of public employees. The result is in tune with the fact that the stock and annual flows of public employees differ from each other.

But the total stock of employees at any time is equal to the stock brought forward from the preceding year plus new recruitment minus those who have gone out of service due to attrition, that is, death and retirement. This also shows that the lagged expenditure on salaries represents committed part of public expenditure. The exclusion of TPE_t as the determinant of $SLWE_t$ has altered neither the sign nor the significance of the regression coefficient while the proportion of total variation explained by this function is less than the proportion of total variation explained by DLM. It means that neither TPE_t nor $SLWE_{t-1}$ emerges as redundant determinant of current public sector salaries. This shows that the DLM function is free from the malady of multi-collinearity.

But the other regression equation also needs evaluation. The following is an OLS estimate of $SLWE_t$ as the function of TPE_t

$$SLWE_t=332.055+0.235TPEt;\ R^2=0.9943;\ F=41368.2;\ P^*=4.6E\text{-}267$$

t: (0.99)   (203.39)

This function also fits the data well on all counts. Besides, the explained proportion of variation is, as expected, high but slightly lower than the total variation explained by DLM. Signs and significance of the coefficients have not been altered by the dropping of lagged $SLWE_{t-1}$ as the determinant of $SLWE_t$. Thus, both these regression functions, taken together, conclusively show that DLM is not affected by multi-collinearity.

Results of Park Test of Heteroscedasticity

The results of Park test, applied to the estimate of DLM, show that the function is also not afflicted by heteroscedasticity. OLS estimate of log of error squares on TPE is given below:

$$\ln U^2 = 27.535 + 0.3728; R^2 = 0.0333; F = 0.234; P* = 0.7879$$

t: = (-0.049)   (0.27)

The model of Park test poorly fits the data and the coefficient of TPE is not statistically significant. Therefore, it is inferred that DLM is free from heteroscedasticity. Since the DLM passes through the diagnostic tests, its results may now be accepted.

Engel-Granger Test of Cointegration-

Since the series are stationary at first difference and non-stationary at level, the results furnished by the estimation of DLM are subjected to Engle-Granger (E-G) test of co-integration. If the results satisfy the E-G co-integration test and the coefficients of regression and correlation of DLM are statistically significant, the results are accepted as genuine.

The OLS estimate of regression of residuals of DLM at level is reported below:

$$U_t = 0.346 + 0.038U_{t-1}; R^2 = 0.0014; F = 0.286; P* = 0.59 \tag{15}$$

t: (0.001) (0.072)

The model does not fit the data at all. It does not furnish any evidence of the validity of co-integration of the variables in the DLM regression. Therefore, the regression of the residuals of DLM at first difference of errors is examined. The following are the OLS estimates of the same:

$$\Delta U_{t-1}=0.347--0.962\ U_{t-1};\ R^2=0.4726;\ F=179.22;\ P^*=1.33E-29 \qquad (16)$$

t: (0.001)   (13,39)

The function fits the data of first differences of residuals of DLM well. Therefore, the variables in the DLM may be considered to be well integrated. Hence, the results may be treated as genuine.

Adjustment Process of DLM

The value of λ, the coefficient of adjustment of the observed to warranted value of Salary expenditure has as low value as $\lambda =0.222$, and it is much lower than unit. It implies that the adjustment of actual to warranted expenditure on salaries of public employees involves long lags and delays. This conforms to the long lead time involved in the appointment of pay commissions, submission of their recommendations to the government and the approval and implementation of the same in the democratic polity of India. The following is the actual period wise percentage of adjustment:

Period:	I	II	III	Completed	Residual Total
I	0.222	……	0.222	0.778	
II	0.222	0.173	…….	0.395	0.605
III	0.222	0.173	0.134	0.529	0.471
IV	0.222	0.173	0.134	0.663	0.337

The above table reveals that 89% of total adjustment of actual to desired change in public expenditure on salaries of public employees is accomplished in five years. Thus, there is a great deal of the spread of adjustment of actual public expenditure on salaries of employees to its long run equilibrium relation with public expenditure on all items. Incidentally, actual total public expenditure on all items may be treated as the long run public revenue/income.

Advantages of DLM

The time series of both the variables are found stationary at first difference. Therefore, the length of lag is one and Distributed Lag Model is used. DLM takes care of not only the need for inclusion of one lag in the model but it also facilitates differentiating between reduced form and structural equations of the model on the one hand, and it enables the researcher to distinguish short run equilibrium from long run equilibrium relation on the other hand.

However, the adjustment of current/lagged value to its desired level is spread over more than five periods. However, the short run equilibrium tends to converge towards the long run equilibrium. It may, therefore, be surmised that the system may reach near long run equilibrium at the most in seven years.

5.17 Conclusions

Main findings of the Chapter lead to the following conclusions:

(1)The time series of public expenditure on employees' salaries and total public expenditure approximate normal distribution and consequently both the series are nominally skewed and marginally concentrated;

(2) Time series of total public expenditure and expenditure on public employees' salaries are stationary at first difference;

(3) Total public expenditure and expenditure on public employees' salaries incurred by all 30 states and union territories have increased at statistically significant high annual compound rates of growth;

(4) The positive trend coefficient of the ratio of salary expenditure to total public expenditure is significant for 8 states/UTs while the negative trend coefficient of the ratio is significant for Bihar. Thus, 21 trend coefficients of the ratio are not significant;

(5) Ten non-significant negative trend coefficients of the ratio of salary expenditure to total public expenditure suggest that the ratio has remained constant, and hence, pay commissions' recommendations do not seem to have affected these spatial units significantly;

(6)However, elasticity coefficients of salary expenditure with respect to total public expenditure indicate significant positive relation between the year on year growth rates of these variables;

(7) Public expenditure of all 30 units has been significantly affected by the implementation of the Pay Commissions' recommendations;

(8) Public employees' salaries are determined by the lagged salaries and current total public expenditure;

(9) But the adjustment of observed to desired level of salaries is spread over 5 to 7 years.

CHAPTER SIX:

DIFFERENTIALS OF SALARIES OF GOVERNMENT EMPLOYEES BETWEEN SIXTH AND SEVENTH PAY COMMISSIONS

6.0 Overview

This chapter focuses on the determination of the differentials of (i) Pre-Revised Basic Pay and Revised Basic pay as per the recommendations of Sixth Pay Commission, and (ii) the differentials of total pay post the revision after the implementation of recommendations of Sixth and Seventh Pay Commissions. The chapter also evaluates the impact of the implementation of the recommendations of Seventh Pay Commission on the salaries of the government employees. Tools of descriptive statistics and t test of mean differences are used as analytical tools.

The chapter also contains the results of dummy variable regression model. The dummy regression captures the impact of Sixth Pay Commission on salaries before the implementation of its recommendations. The second dummy regression model captures the impact of Seventh Pay Commission on the revised salaries under the Sixth Pay Commission. This regression involves the comparison of salaries post Sixth and post Seventh Pay Commissions. As the implementation of the Seventh Pay Commission is still awaited, the scholar has used the level wise recommended total pay as the actual pay, as per the recommendations of the Seventh Pay Commission.

6.1 Introduction

The value of a variable differs from its initially given value if it changes through time or across space. The difference is then measured from its base or initial value. However, two or more variables may depict differences if their values change and their initially given values were not equal. Two or more variables may change simultaneously in multiple ways, and the changes in the values of different variables may occur jointly or individually independently and separately. The joint changes in values of the variables may occur simultaneously or sequentially. Variables which change in such manner are said to be related though the relation may or may not be causal. These aspects of changes and differences are important because the chapter focuses on the differentials of salaries of government employees that are imputable to the impact of implementation of the recommendations of the Sixth and Seventh Pay Commissions respectively. However, conceptually, both Impact and Effect refer to the changes in the values of one variable in response to the changes in other variable(s). Impact is short run and it captures only the

direct changes in the values of the dependent variable in response to the changes in the exogenous or independent variable of the system while the effect of change in the causative factor/variable is long run and total. It comprises both the direct and indirect changes in the affected variable in response to the changes in the causal factor.

The impact of change in one variable on the values of the other variable(s) may be analyzed in alternative ways: One may use the regression modeling or other parametric methods in case of partially or wholly cardinally measured variables. But the sign and signed rank tests, or rank correlation coefficient may be used in case of ordinally measured qualitative variables. Alternatively, Mill's method of comparison may be used in both these cases. The comparative method, in fact, comprises the (1). Method of Agreement; and (2).Method of Dis--agreement. However, socio-politico-economic scenarios are intricate and complex since more than one factor are present. Due to the multiplicity of factors several of which may appear together with the changes in the values of two or more variables, it makes it difficult to isolate and identify the true causative factor(s) of change in the affected variable. Therefore, Mill suggests that if the two scenarios are as follows:

$$A, B, C,, D \sim E \qquad (i)$$

and

$$ABC = / = E \qquad (ii)$$

In the first case, the outcome E is noted to be present when A, B, C and D all are present together with it. But in the second case, outcome E is absent with the absence of D. Therefore, D is identified as the true causative factor of E (For details See, Prakash, Shri, 2005). This method is used in the chapter to compare pre and post revised average basic pay of different cadres and scales, but the results of summary s/ descriptive statistics are used. These results furnish more information than merely the cadre wise average basic pay both before and after the implementation of recommendations of the Pay Commissions; the presence or absence of revision, that is, pre and post commission is the factor D as the causative factor in this case. The differentials of these sets of two average pay are imputed as the outcome of revision as per the recommendations of Sixth Pay Commission. This is further supported by dummy/policy regression model.

The data has been taken from the website of the Department of Personnel.

6.2. Analysis of Empirical Results

Empirical results are analyzed sequentially.

6.2.1 Descriptive Statistics of Pre-Revised Basic Pay before Sixth Pay Commission

First, the results of descriptive statistics of the Pre and Post Revised Basic Pay and Total Pay, as per the recommendations of Sixth Pay Commission, are taken up for discussion.

The results are reported in tables 6.1, 6.2 and 6.3 respectively given below:

Table 6.1 Basic Pay in the pre-revised scale Sixth Commission

Mean	9713.256
Standard Error	269.1288
Median	8550
Mode	13500
Standard Deviation	5975.63
Sample Variance	35708152
Kurtosis	-0.23264
Skewness	0.756686
Range	27450
Minimum	2550
Maximum	30000
Sum	4788635
Count	493
Confidence Level (95.0%)	528.7836

Source: Author's Calculations

The average pre-revised basic pay is 1.14 times the value of the median basic pay. This suggests that the distribution of pre revised basic pay among cadres in different scales and grade may be non-symmetrical, so it may diverge from normal distribution. This is rigorously tested by t-test of the statistical significance of the difference between the

mean and median which are equal in normal distribution. The value of t test is calculated as follows:

t=[{ /M-Me/}/S] *Sq.root of491

M shows mean and Me depicts the median pay while S is the standard error of the mean. The assumption is that the mean and median of normal distribution is used as the hypothesis. The calculated value of t 95.69 is much greater than the table value of 1.98 for 0.05 probability level. This result is not surprising since the public employment is characterized by steely hierarchy and the basic pay and pay grades reflect the position and power of the individual employee in the hierarchical ladder. One can expect the distribution of the basic pay of employees of different cadres to be greatly marked by inequality of earnings, therefore the distribution is likely to be greatly skewed and high values are extremely concentrated in and around the narrow space of the mode. These inferences are, however, not supported empirically by the less than unit values of the coefficients of skewness and kurtosis. The coefficient of variation is also moderately high as its value is 61.52%, but the variance has a high value of 35708152.

6.2.2 Descriptive Statistics of Revised Basic Pay after Sixth Pay Commission

The calculated values of summary statistics of the Basic Pay Revised after Sixth Pay Commission are shown in the table 6.2 given hereunder:

Table 6.2 6TH pc Revise Basic pay	
Revised pay in the running pay band	
Mean	18079.65517
Standard Error	590.9945365
Median	15060
Mode	23490
Standard Deviation	13122.20825
Sample Variance	172192349.3
Kurtosis	3.017437636
Skewness	1.52907115
Range	85560

Minimum	4440
Maximum	90000
Sum	8913270
Count	493
Confidence Level (95.0%)	1161.184502

Source: Author's Calculations:

The table 6.2 reveals that (i) the mean revised basic pay is 1.20 times the value of the median. Thus, the difference between the revised mean and median basic pay is greater than the corresponding difference between the unrevised mean and median basic pay.

(ii) The calculated value of t statistics is consequently as high as 113.18 which is much greater than the theoretical/table value and it is highly significant at zero probability level. This suggests that the distribution of the revised basic pay among the different cadres and scales is greatly non-symmetrical. Hence, the distribution of mean revised pay among cadres and scales diverges from normal distribution.

(iii)The result of the t-test suggests that the distribution of the mean basic revised pay among cadres and scales may be greatly concentrated. The greater than 3 value of the coefficient of Kurtosis supports this inference. It implies that the high values of the revised mean basic pay are really highly concentrated around the narrow space of mode. The revised basic pay, thus, depicts much greater degree of concentration than the pre revised average basic pay. This means that the revised average basic pay of highly placed personnel in the bureaucratic hierarchy has received much greater benefit of pay revision than the employees of lower cadres. It means that the inequality of distribution of the salaries among the government of India employees has increased after the implementation of the recommendations of Sixth Pay Commission.

The above results may be looked at in proper theoretical and empirical perspective. The review of past studies, including the Indian study, shows that the government employees are belonging to low cadres/scales of low occupational categories, which are dominated by persons with no or low education, low knowledge and no training, and are much better paid than such employees of private sector. As against this, the highly educated personnel

with high skills, high knowledge and abundant training are less paid than the corresponding employees of the private sector. Therefore, the revised average basic pay of different cadres may be considered to have corrected the historical distortion in the pay structure of the employees of the government of India. Besides, the liberalization and privatization of the Indian economy has thrown up stiff competition not only in the commodity markets but it has also offered quite stiff competition to the government in the labor market. The opening up of sectors such as oil, steel, banks and insurance to the private players has induced quite a few employees to leave the public enterprises to join the private companies (Bhati, Amita, 2008, Balakrisnan, 2010).

Besides, the government and public enterprises used to attract the professionally and highly qualified persons before the adoption of NEP. The government monopoly no more dominates in the labor market of the educated. Therefore, the government has to raise the salaries of the professionally qualified personnel in order to attract the talented to the public service. The same result may also be looked at a bit differently. The revised high average pay of the highly placed professionals in the hierarchy conforms to the Pareto Law of Income Distribution. The Law states that ''the probability of movement of those having high income to next higher income group is much greater than the probability of movement of those having low income to move to next higher income.''

(iv) However, the distribution of the revised average basic pay seems to have moderately long tail to the left as the distribution is mildly positively skewed.

(v)The coefficient of variation is as high as 72.68% which is also much greater than the C.V. of pre-revised basic pay.

(vi) The calculated value 27.15 of the t-statistics of the difference of the pre and post revised average basic pay is much greater than the table value. Therefore, the difference of the mean basic pay before and after revision significantly differs from zero at practically zero probability.

These results imply that the implementation of the recommendations of Sixth Pay Commission has positively and significantly affected the average basic pay of all employees of the government belonging to different cadres and scales.

6.2.3 Descriptive Statistics of Revised Total Pay of Employees of Government of India after Sixth Pay Commission

The results of summary statistics of the revised average total pay of the employees of the government of India who belong to different cadres and different scales are reported in the table 6.3.

Table 6.3 Sixth PC Total Pay	
Total Pay	
Mean	22851.76
Standard Error	702.6012
Median	19590
Mode	22200
Standard Deviation	15600.28
Sample Variance	2.43E+08
Kurtosis	1.342555
Skewness	1.229271
Range	84260
Minimum	5740
Maximum	90000
Sum	11265920
Count	493
Confidence Level (95.0%)	1380.469

Source: Author's Calculations

Total pay is inclusive of all such allowances as DA/ADA/DP, transport, housing allowances etc. However, the major proportion of DA/ADA/DP is merged in the revised basic pay and the number of admissible allowances is reduced in the process of rationalization and simplification of pay structure. The perusal of the results reported in table 6.3 given above shows that

(i) The average total pay of the employees of different cadres after revision is 1.67 times more than the median total pay. The ratio of the mean total pay to the revised median

total pay is lower than the corresponding ratio of the revised mean basic pay to the revised median basic pay. Thus, it seems that the distributional inequality embodied in the revised basic pay is mitigated to some extent by the total pay. It is probably accounted by the reduced differentials between the pre and post revised allowances admissible to the employees of the central government.

(ii) The t-statistics of the difference of mean and median income is 102.83 which is much greater than the theoretical/table value. The difference of revised mean from revised median income is, thus, found to be statistically different from zero. This implies that the distribution of revised mean pay among different hierarchical categories of the employees is not symmetrical. Hence, the distribution of revised mean total pay like the distribution of revised average basic pay diverges from the normal distribution.

(iii) The divergence from normal distribution suggests that the distribution of revised mean total pay may be concentrated. The coefficient kurtosis reveals the distribution of the revised mean total pay to be only moderately concentrated. This result supports the inference of the lower inequality of revised total than the revised mean basic pay.

(iv) The coefficient of skewness also reveals the distribution of the mean total pay to be mildly but positively skewed.

(v) The coefficient of variation is also found to be a bit in consonance with the coefficients of kurtosis and skewness. It has a value of 68.35%. This indicates relatively high variation among the mean total revised salaries of the employees of the central government.

All the above results lend credence to the thesis that the implementation of the recommendations of the Sixth Pay Commission has significantly raised the basic and total salaries of the government of India. However, the higher echelons of bureaucracy seem to have gained much more than the lower levels and cadres placed in lower scales.

6.3. Dummy Regression Modeling of Impact of Sixth Pay Commission's Policy on Basic Pay of Employees of Government of India

The results of summary statistics and the inferences drawn from thereof are good as far as these go. These results do furnish evidence to support the thesis that the basic and total

pay of the employees of the central government have increased a great deal after the implementation of the recommendations of the Sixth Pay Commission. However, these results do not directly depict the impact of the policy of appointing and implementing the recommendations of the pay commissions. In other words, the causal relation between the pay commission's recommendations and the increase in the salaries of the public sector employees is missing from these results. Therefore, the dummy variable regression technique is used to determine the relation between the implementation of the Sixth Pay Commission's recommendations and the changes in the average basic pay from pre to post revised stage.

Cadre wise average basic pay before the revision and after the revision is the dependent variable, and both pre revised and post revised average basic salaries are arranged sequentially in a column. The policy (Commission's recommendations) is treated as the dummy D which is assigned value 1 for the grade/cadre wise revised average basic pay band and it has zero value opposite the pre revised average pay bands. Thus, the column headed as D comprises zero as the values for the pre-revised and 1 for the revised basic pay bands. The dependent variable is denoted by BSP and j ranges from 1 to 493. Thus, the size of the sample is 986 which is quite large.

An important aspect of the large sample regression modeling may be mentioned before the results of Dummy variable regression model are discussed:

(i) Larger the sample size, greater is the probability of discerning and discovering significant relation between the dependent and independent variables of the regression; and

(ii) Larger the sample size, smaller tends to be the value of the significant coefficient of correlation, and hence, the coefficient of determination also tends to be low. The reasons are that (i) the large size of the sample makes the variance of both the dependent and independent variables high; (ii) the probable reversals of trend dilute the values of the mean of the variables involved in regression; and (ii) both the mean and variances play important role in regression modeling. In fact, the product of the standard deviations of the dependent and independent variables appears in the denomination of the formulae of the calculation of the correlation and regression coefficients.

The above observations have to be kept in view in the discussion of the results of the regression.

The OLS estimate of the policy dummy regression equation 1 is reported hereunder:

1. $BSP_j = 9713.26 + 8366.40D; R^2 = 1443, F = 165.98; P = 3.28191E-35$

t: (21.15)   (12.88)

The function fits the data well since

(i) Coefficient of correlation is statistically significant practically at zero probability level.

(ii) The intercept is highly significant. Incidentally, the coefficient of intercept captures the influence of such factors as are excluded from the regression but some of these factors greatly influence the change in the dependent variable. In this case, the pre-revised average basic pay of employees of different levels, cadres and scales embodies the influence of factors such as the number of years of service, educational qualifications and skills, and the cadre into which the employees entered first. Besides, the intercept is autonomous which is independent of any influence of the independent variable(s) of the regression. Therefore, this value may also be treated as the minimum value of the dependent variable even if the value of the independent variable is zero. Thus, Rs. 9713.27 is the minimum value of the average basic pay, irrespective of the cadre to which an employee belongs. (iii) The coefficient of the dummy, D is also significant practically at zero probability level. This indicates that the implementation of the recommendations of the Sixth Pay Commission has significantly affected the basic pay of each cadre. In fact, corresponding to one unit increase in the pre revised basic pay of the employees of a given cadre, the revised basic average salary increases by Rs. 8366.40.

(iv) Interestingly, the sum 17704 of the intercept and the coefficient of the dummy approximately equals the mean basic pay after the revision. *Thus, the dummy based regression model has captured the essence of the data base.*

6.4. Analysis of Results of Impact of Implementation of Recommendations of Seventh Pay Commission

The results of analysis of the impact of the implementation of the Recommendations of the Seventh Pay Commission are reported in two parts: Results of summary statistics; and the results of the application of dummy regression model to the data of total salaries revised as per recommendations of Sixth and Seventh Pay Commissions.

6.4.1 Summary Statistics of Revised Salaries of Different Levels and Pay Grades of the Employees of the Government of India

The analysis of the results of the summary statistics of the salaries of the government of India's employees as per recommendations of the Seventh Pay Commission is reported hereunder.

The calculated values of the summary statistics of salaries recommended by Seventh Pay Commission for Central government employees of different levels, Grade and cadres are reported in the table 6.4 which is given below:

7th Pay commission

Revised	
Mean	91286.87
Standard Error	2322.702
Median	75900
Mode	47600
Standard Deviation	54768.51
Sample Variance	3E+09
Kurtosis	-0.5404
Skewness	0.722396
Range	232000
Minimum	18000
Maximum	250000
Sum	50755500
Count	556
Confidence Level(95.0%)	4562.362

Source: Author's Calculations

The perusal of the results reported in table 6.4 shows that

(i)The mean of the salaries recommended by the Seventh Pay Commission for Central government's employees of different levels and grades within levels and cadres has as

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high a value as Rs. 91286.87 which is 1.20 times the median salary. This ratio of mean to median salaries recommended by the Seventh Pay Commission is exactly equal to the corresponding ratio of the basic pay revised as per recommendations of the Sixth Pay Commission. The average salary is 20% more than the median salary which implies inequality of salary income distribution among different levels and pay grades which the employees belong to.

(ii) The calculated value of t-statistics is as high as 225.24, which is statistically significant at zero probability level. This implies that the distribution of recommended salaries is not symmetrical, and hence, it diverges from the normal distribution.

(iii) The coefficient of variation also has as high value as 59.995%. This shows that the salaries of employees of different levels and grades widely oscillate away from the mean. This also suggests substantial inequality in the recommended pay and pay grades.

(iv) The coefficients of kurtosis and skewness are less than one. It means that the distribution of the recommended salaries is neither skewed nor concentrated. It seems that iniquitous distribution of basic and total pay under Sixth Pay Commission's recommendation has been amended a bit by the Seventh Pay Commission.

6.4.2 Dummy Regression Modeling of Salaries of Government Employees Revised under Sixth and Seventh Pay Commissions

The policy of appointing and implementing the recommendations of the pay commissions at regular intervals is basically qualitative or attributional in nature. Either the policy is in operation or the policy is inoperative. Thus, the policy variable is like the presence of a trait in an entity or the trait is not possessed by the given entity, and hence, it is absent from the scene. This property makes the approval, acceptance and implementation of the recommendations of pay commission amenable to the dummy regression modeling. The model comprises the cadre/scale and level/ grade wise revised/recommended salaries for the employees of central government under the sixth and seventh pay commissions as the dependent variable of the system. The Dummy variable D_1 is the independent variable of the model. The dummy variable D_1 is assigned the value 1 corresponding to the level-wise recommended/revised salaries under the Seventh Pay Commission while the dummy

takes zero as its value corresponding to the revised averages of total salaries of different cadres and scales under the sixth pay Commission.

The OLS estimate of the regression model is reported as equation 2:

2. $RVSDSAL_j = 22851.26 + 68435.11\ D_1; R^2 = 0.4068;\ F = 718.01;\ P = 7.1819E\text{-}21$

t: (12.90)   (26.8)

RVSDSAL stands for the revised salaries of the central government employees; revisions of the salaries have been effected under the Sixth and Seventh Pay Commissions, while D_1.stands for the dummy. The equation 2 shows that

(i) The model fits the data very well, and the coefficient of correlation is statistically significant at practically zero probability level.

(ii) The intercept is not only highly significant statistically but it also has as high value as Rs 22851.26. The autonomous value, represented by the intercept, practically approximates the average of the total salaries of different cadres after revision under the sixth pay commission norm. It means that this amount of the salary is the minimum benchmark for the revision of the salaries under the seventh pay commission norms.

(iii) The positive coefficient of the dummy is also significant and has a high value of 68435.1. Thus, corresponding to an increase of 1 in the base, the revised salaries will increase by Rs 68435.1.

(iv) Interestingly, the sum of the intercept and the coefficient of the dummy approximately equal the average salaries revised under the seventh pay commission. Thus, the model captures the basic essence of its data base.

All the above results of summary statistics and dummy regression display the overall impact of recommendations of the seventh pay commission.

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.637811							
R Square	0.406803							
Adjusted R Square	0.406236							
Standard Error	41284.42							
Observations	1049							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	1.22378E+12	1.22378E+12	718.0121954	7.1818E-121			
Residual	1047	1.78451E+12	1704402992					
Total	1048	3.00829E+12						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	22851.76	1859.356577	12.29014649	1.58347E-32	19203.2751	26500.25431	19203.2751	26500.25431
D	68435.11	2553.953775	26.79574958	7.1818E-121	63423.6551	73446.55649	63423.6551	73446.55649

6.5 Findings and Conclusions

The findings and conclusions drawn from the implementation of the recommendations of Sixth and Seventh Pay Commissions are reported separately and sequentially.

6.5.1 Findings and Conclusions Drawn from Impact of Sixth Pay Commission on Salaries of Employees of Government of India

The following conclusions may be drawn from the findings of the above analysis:

(i) Distribution of the averages of the basic pay of different cadres of central government both before and after the revision as well as average total salaries of all cadres are not normally distributed.

(ii) The revision of the basic and total pay has increased the inequality in the distribution of salary income among the higher and lower echelons of bureaucracy.

(iii) Those belonging to higher echelons of bureaucracy have gained relatively much more than what has been gained by the lower cadres after the implementation of the recommendations of the Sixth Pay Commission.

(iv) The implementation of the policy of the appointing of and the implementing of the recommendations of the sixth pay commission has positively and significantly affected the salaries of all the employees of the government of India irrespective of their cadres.

6.5.2 Findings and Conclusions Drawn from Impact of Seventh Pay Commission on Salaries of Employees of Government of India

The main findings and the conclusions drawn from the impact of the recommendations of the Seventh Pay Commission on salaries of central government are reported hereunder.

(vi)The mean of the salaries of all levels and pay grades, recommended by the Seventh Pay Commission for the Central government employees, is 20% more than the median salaries. The ratio of mean to median salaries recommended by the Seventh Pay Commission equals the corresponding ratio of the revised average to median basic pay of the Sixth Pay Commission. This displays the inequality of distribution of salary incomes among different levels and pay grades of the employees.

(vii) The statistical significance of the calculated value of t-statistics of difference between mean and median salaries shows the distribution of recommended salaries to diverge from the normal distribution.

(viii) The high value of the coefficient of variation shows that the salaries of employees in different levels and grades widely oscillate away from the mean. This also suggests substantial inequality in the recommended pay and pay grades.

(ix) The coefficients of kurtosis and skewness show that the distribution of the recommended salaries is neither skewed nor is it concentrated. It seems that in-equitous distribution of basic and total pay under Sixth Pay Commission's recommendation has been amended a bit by the Seventh Pay Commission.

(x) The policy of the appointing and the implementing of the recommendations of the Seventh Pay Commission, like the policy of the Sixth Pay Commission, has positively and significantly affected the salaries of the employees of all levels and pay grades of the government of India.

(xi) The model fits the data very well, and the coefficient of correlation is statistically significant at practically zero probability level.

(xii) The intercept is not only highly significant statistically but it also has as high value as Rs 22851.26. The autonomous value, represented by the intercept, practically approximates the average of total salaries after revision as per sixth pay commission

norms. It means that this amount of the salary is the minimum benchmark for the revision of the salaries under seventh pay commission norms.

(xiii) The positive coefficient of the dummy is also significant and has a high value of 68435.1. Thus, corresponding to an increase of 1 in the base, the revised salaries will increase by Rs 68435.1.

(xiv) Interestingly, sum of the intercept and the coefficient of the dummy approximately equal the average salaries revised under the seventh pay commission. Thus, the model captures the basic essence of its data base.

CHAPTER SEVEN:

FINDINGS AND CONCLUSIONS

7.0 Introduction

This is the last chapter of the thesis. It represents the final destination of the journey undertaken to investigate the topic of research. The chapter offers an opportunity to recapitulate all that has been done; what has been accomplished and how it does compare with what was desired and planned to be achieved. The chapter necessitates the highlighting of the future scope for research and the implications of the findings for public policy, if any. The chapter, however, does not require anything new to be done. The chapter, therefore, focuses on the recapitulation of what has already been done in the earlier chapters. The recapitulation of findings and conclusion is done chapter wise.

7.1 Overview

The author of the thesis could not find any study of the impact of implementation of the pay commission's recommendations on the expenditure on salaries of employees of the governments and public sector enterprises, which is the topic selected for research. Therefore, the review of literature in the chapter focuses on such studies of wages and salaries of government and public sector's workers and employees which could be found and accessed by the author. The chapter, in fact, reviews five studies of wages and salaries of workers and employees of governments and public enterprises relative to the wages and salaries of employees and workers of private sector. These studies, however, cover five countries, comprising two emerging market economy, one developing economy and three developed capitalist economies of OECD. These studies relate to India, Indonesia, U.K., Germany and France. Besides, three studies of employment, a closely related area, are also included in the review. The number of studies reviewed is, thus, limited but the studies cover vast segments of world's population and three different types of economies. The review also examines the concepts and theories of core variables that constitute the subject of investigation of this thesis.

Wages and salaries of workers and employees of the governments and public enterprises in planned socialist economies are the administered prices which are determined by executive orders and fiats even though the executive orders passed to fix salaries and wages of employees may be governed and guided by certain norms and the state of development of the economy. Besides, the wages and salaries of workers and employees

of private sector are determined by the demand for and supply of labor in market economies. Wages and salaries are also affected by periodic negotiations between the trade unions and employers. Trade unions demand for wages revolves round the (i) protection of their real wages against inflation; and (ii) the coverage of their average cost of living. Moreover, the unions also strive hard to obtain an adequate share in inter-temporal gains in productivity in the process of growth.

So far as India is concerned, Pay Commissions' recommendations determine the levels of wages and salaries, pay grades and pay structure of the employees of the government, public enterprises and public agencies' employees. However, the search for past studies for inclusion in the review reveals that no study of the impact of pay commissions' recommendations on the salaries of public employees has been conducted so far in India or abroad. The fact is that the appointment of pay commissions for periodically upward revising the pay, pay grades and pay structure of government employees is a unique constitutional feature of Indian polity and economy. Besides, only few studies of public-private sector pay gap and salary differences in public and private sectors have been conducted so far. However, the studies reviewed in the chapter show that (i) Sharp differentials in wages and salaries paid to public and private sector employees exist; (ii) Unskilled and low skilled workers are paid more in public than private sector, while higher educated and highly skilled workers receive more pay in private than public sector; (iii) Institutional factors play pivotal role in the determination of private and public sector pay differentials; (iv) The governments account for greater proportion of total employment and substantial positive pay differentials in salaries of employees exist both between and within private and public sector; (v) Total employment has grown very sluggishly in India economy since employment in public sector has been consistently declining as a proportion of total employment in India; (vi) here exists great deal of differences of opinions among Indian analysts with regard to jobless or employment neutral growth in India; and (vi) Growth of Indian economy has been driven largely by productivity which has adversely affected the growth of employment.

7.2 Chapter Three: Conclusion

The following main inferences and conclusions may be drawn from the elaborate explanation and discussion of the recommendations of the Seventh Pay Commission:

(i) In this study, twelve different reasons have been advanced for the appointment of Pay Commissions by the Government of India at a regular interval of ten years. Most of these reasons are based on the author's own logic.

(ii)Rationalization and simplification of the grade pay, grade pay structure, DA/ADA and other allowances, including the reduction of their numbers, are the most important reasons for the appointment of Central Pay Commissions (CPC).

(iii) Containment of inequality in the mandated earnings of different layers and levels of grade pay of the public employees between prior determined or recommended minimum and maximum pay is an important facet of the recommended grade pay structure.

(iv)Seventh Pay Commission stipulated Rs 18000/ per month as the minimum and Rs 4.5 lakh per month as the admissible maximum band of pay grade variation.

(v)The maximum recommended pay to the highest level civil servants has bridged the gap between the salaries of the highest level employees of private sector, especially CEOs of large companies, whose pay may be as high as more than 1 crore p.m. in some exceptional cases.

(vi) A factor of 2.57 had been used to upgrade the basic pay and pension after fixing it in the grade.

(vii) A ceiling of 50% of basic pay is imposed on DA/ADA/DP and any excess over this has to be merged in basic pay.

(viii) A ceiling has also been imposed on the number of allowances and their number has been reduced by subsuming some currently admissible in newly approved allowances.

(ix) Differences of opinion with regard to the bringing of parity in the edge in empanelment available to IAS did not permit unanimous decision about the same.

(x) Transparency, efficiency, productivity and integrity have been emphasized on the one hand, and time bound promotion and Carrier Advancement have been linked to the performance benchmarks on the other.

(xi) Bi-annual grant of DA/ADA/DP and the periodic upward revision of salaries of the public employees are designed to protect the (a) real earnings of the public employees against inflation and (b) confer the growth gains on the government employees in order to ensure inclusive growth, social justice and equity.

(xii) The Seventh Pay Commission estimated that the government will have to spend 23.55% extra over and above the business as usual.

(xiii) Total expenditure required for the implementation of the recommendations of the Seventh Pay Commission is estimated to be ₹1,02,100 crore in the financial year 2016-17 over and above the expenditure as per the ''Business As Usual'' scenario.

((xiv) The Seventh Pay Commission recommended that the promotions and career advancement may be based on performance and the bar was raised from good to very good performance.

Thus, on the whole, the commission has performed a stupendous task which is not only intricate and complex as it involves not only the balancing acts of apparently some conflicting objectives but it is also economically feasible.

Note: The chapter is largely based on the Seventh Pay Commission's Report Notified in the Gazette of Government of India.

7.3 Chapter Four: Findings and Conclusions

The following are the main findings of the chapter:

(1) Inter-temporal distribution of total employment, public and private sector employment does not significantly diverge from normal distribution.

(2) Inter-temporal distribution of GNI diverges from normal distribution, and consequently, its time series is not stationary at 0.05 probability level.

(3) Total employment consistently stagnates for 3-5 years before it sluggishly increases again.

(4) Public sector employment consistently declines while private sector employment grows over the years at a sluggish rate.

(5) The ratios of public sector employment to total and private sector employment decline through time.

(6) Total employment is the positive function of lagged total employment and GNI. However, total employment increases nominally in response to an increase in GNI.

(7) Public sector employment significantly depends on public expenditure while GPNI is the significant determinant of private sector employment.

(8) Preceding year's total, public and private sector employment influences current employment more than the GNI, public expenditure and GPNI.

(9) The functions of total and public sector employment are downward shifting to the left through the years.

(10) An implication of the above results is that the salary expenditure of the government relative to total public expenditure may decline through time though the per employee salary expenditure may rise consistently.

7.4 Chapter Five: Conclusions

Main findings of the Chapter lead to the following conclusions:

(1) The time series of public expenditure on employees' salaries and total public expenditure approximate normal distribution and consequently, both the series are nominally skewed and marginally concentrated;

(2) Time series of total public expenditure and expenditure on public employees' salaries are stationary at first difference;

(3) Total public expenditure and expenditure on public employees' salaries incurred by all 30 states and union territories have increased at statistically significant high annual compound rates of growth;

(4) The positive trend coefficient of the ratio of salary expenditure to total public expenditure is significant for 8 states/UTs while the negative trend coefficient of the ratio is significant for Bihar. Thus, 21 trend coefficients of the ratio are not significant;

(5) Ten non-significant negative trend coefficients of the ratio of salary expenditure to total public expenditure suggest that the ratio has remained constant, and hence, pay commissions recommendations do not seem to have affected these spatial units significantly;

(6) However, elasticity coefficients of salary expenditure with respect to total public expenditure indicate significant positive relation between the year on year growth rates of these variables;

(7) Public expenditure of all 30 units has been significantly affected by the implementation of the Pay Commissions' recommendations;

(8) Public employees' salaries are determined by the lagged salaries and current total public expenditure;

(9) However, the adjustment of observed to desired level of salaries is spread over 5 to 7 years.

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