

# Prediction of Employment in Public and Private Organized Sector in India

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## Abstract

The aim of this paper is to forecast the employment in Public and organized Private sector in India till 2018-19. Based on the data of employment in Public and Private sector in India from the year 1971-72 to 2005-2006, a short term forecast is made up to the year 2018-19. The Holt's Method for Exponential Smoothing is used for forecasting the employment in Public and organized Private sector in India. It is observed that, the mean square error is low in case of Holt's Method in comparison to Auto Regression Method of forecasting. This study will be useful for planners, policy makers and government in framing policies and norms as it will give the realistic view of the subject for planning appropriate strategy accordingly in public and organized private sector.

**Key Words:** *Forecast, Holt's Model, Public, Private Sector, Employment, Exponential*

**JEL Classification:** C32, D60, E01, E17

## 1. Introduction

Employment opportunities are increasing in India due to serious intervention by government in both public sector and private sector. Indian economy can be broadly classified into two heads Public sector where 51% of the stake is owned by Government and Private Sector which has 100% private ownership. After 1991 there has been a drastic change in the Indian economy as private sector was promoted which increased the employment opportunity in this sector. On the other hand public sector did not do that well due to various factors like corruption, Red Tapism etc (Bhalla, 2008). There is constant growth in employment in these two sectors but due to recession in 2006-07 India has going through economic slowdown and hence there is stagnation

in rate of employment but public sector has not been impacted as compared to private sector.

Employment in organized sector basically deals with public and private sector employment. High rate of growth of the services sector, especially, construction, banking, retail, software services, transport, airlines, telecommunications, entertainment, insurance etc have consistent positive factor in reducing unemployment rate by absorbing large number of employees (Joshi, 2004). On the other hand modernization, up gradation of technology in many industries has led to surplus labor and consequent unemployment. Many industrial companies are now absorbing fewer people and have been offering voluntary retirement packages which were attractive for employees who have served the companies for long but were no longer productive and efficient ones. Very high level of investments in new projects has absorbed large number of Indian labor. In fact in many sectors there is extreme shortage of skilled people in the country.

This study focuses on analyzing the trend in employment in both private sector and in public sector from year 1970-71 to till year 2005-06 and also forecasts the future requirements of these sectors. Forecasting helps in mitigating the risks which the companies face in the entire process so that it can form better policies for growth and improve the quality of plans based on it.

## 2. An Overview of public sector

Prior to Independence, there were few 'Public Sector' Enterprises in the country. These included the Railways, the Posts and Telegraphs, the Port Trusts, the Ordinance Factories, All India Radio, few enterprises like the Government Salt Factories, Quinine Factories, etc. which were departmentally managed (Raj, 1973).

The growth of public sector employment, in India, has extensively been debated on various grounds, and has particularly received wide attention since liberalization. In the early 1960s there was a tendency of growing share of public sector in the gross fixed capital formation and industrial investment in the developing countries, particularly India.

1956 Industrial Policy Resolution gave primacy to the role of the State which was directly responsible for industrial development. Consequently the planning process (5 year Plans) was initiated taking into account the needs of the country. The new strategies for the public sector were later outlined in the policy statements in the years 1973, 1977, 1980 and 1991. The year 1991 can be termed as the watershed year, heralding liberalization of the Indian economy (Rakshit, 2009). Public sector in India, covers major sectors such as agriculture, manufacturing, banking, and trade, was relatively higher than the private investment. The expansion of public sector in India started with the initiation of Planning Commission in 1950 and this sector gradually started to dominate core industries before liberalization was initiated in the early 1990s.

### 3. An overview of private organized sector

The growth rate of GDP originating in the public sector has always been higher than the growth rate of GDP originating in the private sector. Nevertheless, despite public sector registering higher growth rates than the private sector, the contribution of private sector to overall growth was always higher because of its significantly higher share in GDP. Only during the first half of nineties (1990H1) did both public and private sectors register growth rates of 4.9 percent each but in the second half 1990s, GDP growth in public sector again outpaced the private sector GDP growth. This was mainly a result of the increases in salaries and wages after the implementation of the Fifth Pay Commission's recommendations for Government employees. In a brief period between 1993-94 and 1996-97 the private sector grew faster (7.6 percent per annum) than the public sector (5.7 percent per annum). – a result of the FDI liberalization measures, industrial delicensing and external demand boost devaluation. However, this has not been sustained and the private sector is still in the throes of a downturn since 1997-98.

As opposed to the poor growth in private sector GDP, there has been a clear shift in the composition of investment in the favor of private sector. The share of private sector in total

investment shot up from 56 percent in 1990H1 to 71 percent by 1990H2. Sector analysis shows that the private sector was better placed in some areas (e.g. financial services, transport, community and social services) to respond to reform initiatives and consequently displayed buoyancy in investment and growth.

Direct impacts essentially relate to changes in the variables referred to above. Three types of direct impacts can be identified:

- Impact on livelihoods through expansion of employment or production opportunities
- Impact on access to essential requirements
- Impact on prices of essential requirements

Indirect impacts are the impacts that sectoral changes have on the processes by which poverty is eliminated. Sustaining the momentum of a poverty reduction process requires the initiation of certain structural changes in both individuals and the communities in which they live and carry out their economic activities. Two channels of indirect impacts can be identified.

- Impact on the processes of human capital formation and preservation amongst poor people
- Impact on social capital, or the community's inherent capabilities to improve the economic condition of its members.

### 4. Objective of the study

The objective of the study is to "Predict the employment in Public and organized Private sector in India". Our study will forecast the requirement of manpower both in Public and organized Private sector in the future. This study will also focus on the comparative analysis of manpower requirement in both the sector which will give better view and their respective performance in the organization.

### 5. Methodology: Holt's Method of Exponential Smoothing Adjusted for Trend

We have used Holt's Method as trend has been identified in the given data. To smooth the trend we choose Holt's method. This method will effectively smooth or reduce the trend from the data as it exponentially smooths the trend (Hanke, 2009).

The situations in which the observed data will have trend, a linear trend forecast function is needed. Holt (1957) developed an exponential smoothing method, that allows for evolving local linear trends in a time series and can be used to generate forecasts. When a trend in the time series is anticipated, an estimate of the current slope as well as the current level is required. Holt's technique smoothes the level and slope directly by using different smoothing constants for each. These smoothing constants provide estimates of level and slope that adapt over time as new observations become available. The three equations used in Holt's method are:

1. The exponentially smoothed series, or current level estimate:

$$L_t = \alpha Y_t + (1 - \alpha)(L_{t-1} + T_{t-1})$$

2. The trend estimate:

$$T_t = \beta(L_t - L_{t-1}) + (1 - \beta)T_{t-1}$$

3. Forecast p periods into the future:

$$\hat{Y}_{t+p} = L_t + pT_t$$

where

$L_t$  = new smoothed value (estimate of current level)

$\alpha$  = s smoothing constant for the level ( $0 < \alpha < 1$ )

$Y_t$  = new observation or actual value of series in period t

$\beta$  = s smoothing constant for trend estimate ( $0 < \beta < 1$ )

$T_t$  = trend estimate

p = periods to be forecast into the future

$\hat{Y}_{t+p}$  = forecast for p periods into the future

Holt's smoothing model is similar to the simple exponential smoothing model, except that the term ( $T_{t-1}$ ) has been incorporated to properly update the level when a trend exists.

i.e. the current level ( $L_t$ ) is calculated by taking a weighted average of two estimates of level

- one estimate is given by the current observation ( $Y_t$ )

- and the other estimate is given by adding the previous trend ( $T_{t-1}$ ) to the previously smoothed level ( $L_{t-1}$ ).

If there is no trend, then there is no need for the term  $T_{t-1}$  in Holt's model and is reducing it to simple exponential smoothing. The second smoothing constant,  $\beta$ , in second equation is used to create the trend estimate. Second equation of Holt's model shows the current trend ( $T_t$ ) is a weighted average (with weights  $\beta$  and  $1 - \beta$ ) of two trend estimates

- one estimate is given by the change in level from time t - 1 to t ( $L_t - L_{t-1}$ )
- and the other estimate is the previously smoothed trend ( $T_{t-1}$ ).

The second equation is similar to the first equation, except that the smoothing is done for the trend rather than the actual data. Third equation shows the forecast for p periods into the future. For a forecast made at time t, the current trend estimate ( $T_t$ ) is multiplied by the number of periods to be forecast (p) then added to the current level ( $L_t$ ). Note that the forecasts for future periods lie along a straight line with slope  $T_t$  and intercept  $L_t$ . The smoothing constants  $\alpha$  and  $\beta$  can be selected subjectively or by minimizing a measure of forecast error such as the MSE. Large weights result in more rapid changes in the component; small weights result in less rapid changes. To take the values of  $\alpha$  and  $\beta$  from 0 to 1 (e.g. 0, 0.1, 0.2, ..., 0.9, 1.0), then select the combination that provides the lowest MSE. To get started Holt's model, initial values for L and T must be determined. One approach is to set the first estimate of the smoothed level equal to the first observation. The trend is then estimated to be zero. In table 1 mean square error for private organized sector is less than the public sector.

## 6. Forecasting Results

**Table : 1**

Sector	Year	Forecasted Value (million)	MSE
Public	2018-19	17.79	0.1
Private	2018-19	9.26	0.0

## 7. Analysis

### Graphical Analysis of employment in Public Sector

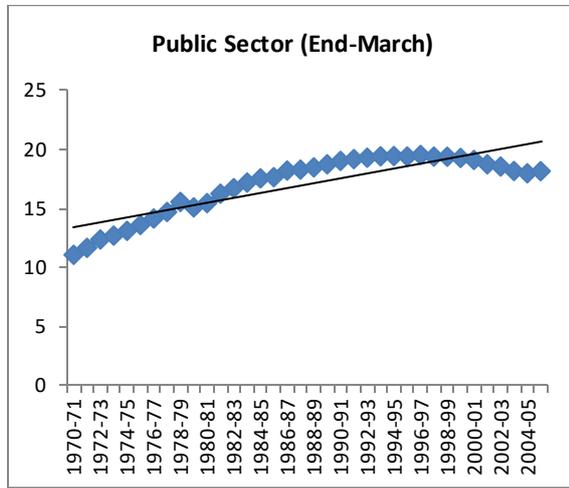


Figure 1 depicts the trend in employment in public sector. During 1972-73 phase a series of major changes at Central Government level occurred which included nationalization of insurance in 1972, takeover of coal industry in public sector in 1973 and Foreign Exchange Regulation Act (1973). On the eve of first five year plan, there were only five public sector enterprises, which were raised to 244 by the seventh five year plan.

Despite the substantial efforts of the government to raise the level of employment in the public sector, infact, the public sector was the focal point of criticism and attempt was done to open the economy for private participation in major economic activities. During the mid of 1970s and 80s, the rate of growth of employment was generally much lower than the labor force and the GDP was moving at an average of about 3 to 3.5 percent per annum during 1950-80, hence there is a slump in the number of people employed in Public sector (Bardhan, 1984).

The average employment growth during 1983-1988 has been only 1.55 per cent annum, although GDP grew at over 5 per cent per annum during this period. High growth rate between 1980 and 1990 were mainly due to over-borrowing and over spending. As a result, there was a sharp increase in the India's debt service ratio from 10.2 percent in 1980-81 to 35 percent in 1990-91 (Srinivasan, 1985). In addition, the foreign exchange reserve come down to \$1 billion in 1991 which was not sufficient to one month import. Indeed, in the late of the second phase India had undergone a massive

crisis which pushed India to initiate economic reforms.

There is a constant downfall during 1991-93 because of the reasons given below.

Following fiscal crisis in 1991, the public sector underwent some major structural changes with a greater emphasis on market forces. Henceforth, the role of public sector in major economic activities gradually declined and the private sector has been considered as an integral part of the economy. The structural measures include removing the restrictions on foreign direct investment, reduction in the number of strategic sectors reserved for the public sector, disinvestment of public sector units and financial sector reforms. It was generally seen that the tendency of transferring the public ownership to private sector and an enormous importance was given to private investment in core sectors of the economy

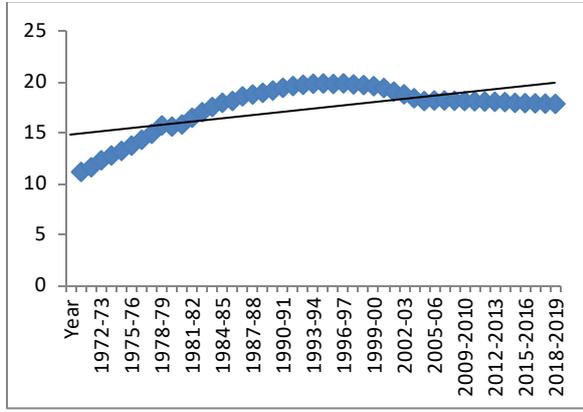
Significant structural changes in the form of sectoral contribution in the Indian GDP took place. The share of agriculture in the GDP has gradually declined, from about 57 percent in 1950-51 to 31 percent in 1989-90; and that of industries and services rising from 14 and 30 percent to 28 and 41 percent, respectively, during the same period.

Correspondingly, the share of the service sector in the GDP grew from 27.5 percent in 1950-51, to 40.6 percent in 1990-91; further increasing to 54.6 percent whereas the share of the secondary sector remained almost stagnant during the liberalization period.

On the other hand, agriculture and allied activities continued to experience a drastic decline, from 59.2 percent in 1950-51 to around 21 percent in 2000-01. Despite the substantial share of the services sector in the GDP of India, it seems the employment growth in this sector is relatively insignificant. This sort of phenomenon of disproportionate growth among the sectors, in the process of development, is a special phenomenon of the Indian economy.

### Analysis of Forecasted growth results of Public Sector:

Figure : 2



The forecasted part is shown in figure 2 and depicts that it is stable from 2009 to 2019 with no change. The reason for this stability can be as follows:

In current scenario of recession public sector is the only sector that is having a stable growth. With the inception of new MNC's Public sector is fading out and very few people are turning toward this sector. Hence there is no increase in employment rather its stable and there is no growth in this sector and it has reached a stagnation point.

### Comparison with private sector

Compared to the private sector employment, there was rapid growth of employment in the public sector during the period 1961-81, a relative slow down during 1981-91, and a declining trend during 1991-2001.

Public sector employment in manufacturing significantly increased its share in organized manufacturing employment, between 1961 and 1993-94, before declining in 1999-00. Of the total organized public and private sectors, public sector accounted for 70 lakhs in 1961 i.e. nearly 58 percent of the total organized sector employment.

- Community, social and personal services (52 percent),
- Transport, storage and communication (24 percent)
- Manufacturing (6 percent)

The above were the major economic activities in providing employment under public sector. By 1981, public sector employment had increased to 15.5 million, which accounted for about 68 percent of the total employment in the organized public and private sectors.

India recoded a slowdown in the public sector employment and a marginal decrease of 0.9 percent in 2001, over 2000. On the other hand, the employment in the private sector has increased by 0.1 percent. More aptly, there has been a transition from the public sector to the private sectors, but the volume of this transition is quite small.

### Graphical Analysis of employment in Private Sector (in million)

Figure: 3

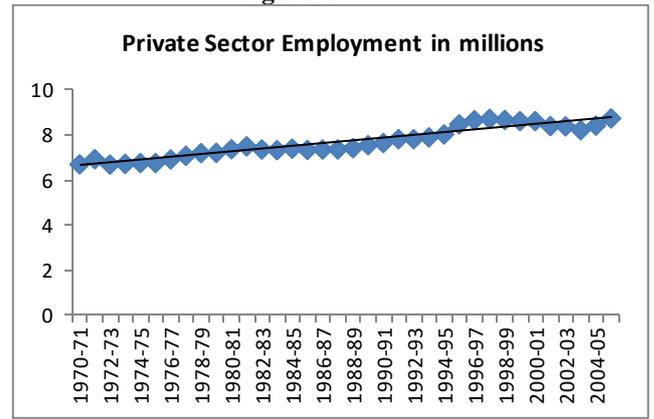


Figure 3 shows employment in private sector since 1970 to 2007. During 1970-73 there was a major shift from agriculture to industry (manufacturing) in terms of contribution in GDP. Lots of private manufacturing firms were established during these years and the employment was in peak during these years in this sector.

Whereas during 1973-83, in India, the trend was making roots in economy, contribution of private companies in employment was growing year by year as major companies like Reliance, Godrej and Tata were on the mode of expansion.

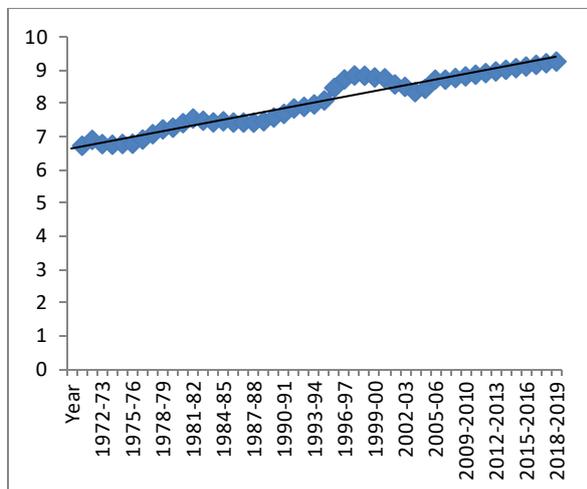
Recession of all-time hit India during 1983-93 phase and the private companies started cost cutting and Manpower cutting. Slow recruitment or low recruitment led to the fall in employment trend in India.

Dr. Manmohan Singh being Finance minister of India opened the economy of India during 1993-2001 for foreign traders. Many Big companies around the world like Honda, Fiat, and Suzuki came in India and set up manufacturing plants in India, leading to rise in employment.

Due to Tch and bubble burst there was severe problems for many private companies in 2001-06, leading risk in recruitment which caused low employment during that period.

## Analysis of Forecasted results of Private organized Sector (in millions)

Figure : 4



The forecasted part of the graph in figure 4 is showing an upward trend and moving along the trend line i.e. there is an increase in the employment in private sector. The reason for this can be as follows:

- Private sector provide better career prospect to the employees in monetary terms hence people are more attracted towards this sector

The above forecasted figure may not be viable because the market has just emerged from recession and hence the companies may not focus on recruiting new employees .

## 8. Conclusion

This study forecasts the employment in public and private sector and gives insight about futuristic

growth. In year 2018-19, the total no. of employees in Public sector will be 17.70 million and in Private organized sector will be 9.26 million. Hence forecasting the employment figures of these two sector will help us in knowing how the market will behave in post recessionary period, and what factors will play an important role in such movement. However there are certain limitations to the study, the major being that extending the models with more independent factors may result in better forecasting employment growth in public and private organized sector.

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