Regional Disparity and Convergence of the Growth of Output of Indian Pharmaceutical Industry: Evidence based on Structural Break Unit Root Test

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Abstract

This paper applies a recent development in estimation and testing of Structural Break in econometric time series model, using unit root test to estimate the break point of the growth of output of Indian Pharmaceutical Industry for the period 1983-84 to 2007-08 by using state level data from Annual Survey of Industries and employing endogenous structural break analysis. The distinguishing feature of this method is that the break point is not dependent on the prior belief of the researcher; rather it is endogenously determined depending on properties of the time series. The results of estimation suggest that for most of the states the endogenously determined break point turned out to be the years after the signing of TRIPS agreement in 1995. An interstate and regional variation of the growth of output is strongly evident. The growth of output of sixteen among the seventeen selected states converges towards a deterministic trend, out of which seven show positive movement. The study clearly identifies the regions and the states whose performance is satisfactory and others showing relatively poor performance and hence needs special attention.

1. Introduction

1.1 Indian Pharmaceutical Industry (IPI) has undergone a massive makeover–from a modest beginning of "process patents regime" in the seventies to a modern and WTO compatible regime under the TRIPS Agreement in 2005. It ranked 3rd in volume and 14th in value in the global pharmaceutical market (Kalani, 2011).

1.2 During the period 1990s some significant changes occurred in the Pharmaceutical sector with the introduction of trade liberalization measures like amendment of FERA and MRTP Acts and delicensing of the drugs, reserved for production by the public sector. During this period Government of India signed the TRIPS agreement which came into existence with World Trade Organisation (WTO) established on 1 Jan1995 replacing the General Agreement on Tariff and Trade (GATT). The private sector grew rapidly along with increase in the competition among the domestic firms and foreign companies. As a result production of IPI increased manifold along with a sharp and steady increase in export. Net export as a percentage of total exports has also increased (Chaudhuri 2005).

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Since 2005, India has started full-fledged product patent regime in pharmaceuticals and are to develop new drugs themselves or to collaborate with the MNCs as manufacturing or marketing partners for the new drugs developed by the MNCs (Chaudhuri 2005).

Given the high growth of this industry the following questions can be raised:

- What is the nature of the growth of output of IPI?
- Is there any change in the growth of output in the period after the signing of TRIPS agreement?
- Whether the outputs of states are converging towards a stationary process having deterministic trend?
- Is there any regional variation of the growth of output of IPI?

1.3 The literature survey revealed that not much attempt has been made to analyze the behaviour of IPI quantitatively. Mention may be made of few studies like Singh (1989), Nagarajan and Barthwal (1990), Majumder (1994), Madanmohan (1997), Kumar (2001), Chaudhuri (2005), Chaudhuri and Das (2006), Ghose and Chakraborty (2008), Mazumdar and Rajeev (2009), Mazumdar, Rajeev and Ray (2009), Saranga and Banker (2010), Chakraborty and Ghose (2011, 2010) and Ghose and Chakraborty (2012).

1.4 Singh (1989), Madanmohan (1997) and Kumar (2001) in their study using firm level data focused on different aspects of IPI like export, import and net import, technology, profitability, patterns of MNCs activity and plant exit process. Majumder (1994), Chaudhuri and Das (2006), Mazumdar and Rajeev (2009), Mazumdar, Rajeev and Ray (2009), Saranga and Banker (2010) and Ghose and Chakraborty (2012) were concerned with the measurement of productivity or efficiency of the industry. Studies which attempted to analyze the growth performance of the industry or to test for exogenous and endogenous structural break using modern time series approach are due to Nagarajan and Barthwal (1990), Chaudhuri (2005), Ghose and Chakraborty (2008), Chakraborty and Ghose (2010) and Chakraborty and Ghose (2011).

1.5 But none of them looked either at the variation in the growth of output among different states or at the variation in the growth of output among different regions.

1.6 Indian plans have been always concerned with the removal of economic backwardness of the country and make it a developed economy. They have taken care to ensure equal development across different states as well as different regions such that the weaker sections of the population benefit from the economic progress of the country. Hence analysis of growth process for different states and the regions will be meaningful and helpful for identifying the states and the regions for which the growth performance is not satisfactory and thus proper measure can be taken for promoting growth for those backward states and regions.

1.7 The present paper contributes to the literature from the above perspective and tests for endogenous structural break in the series of output based on unit root test of IPI for 17 major selected states of India as well as for All India for the period 1983-84 to 2007-08.

1.8 The contribution of the present study is that it might be the first attempt to employ endogenous structural break analysis based on unit root test by using Amit Sen's (2003) approach to find out the nature of growth process of output of IPI. This paper also tests whether the states are converging towards a stationary process having deterministic trend in terms of the output of IPI as well as the variation in the growth of output among different states and among different regions.

1.9 The format of the present study is as follows: Section 2 gives the methodology and data sources. Section 3 presents the result of analysis. Section 3.1 represents interstate analysis, whereas regional level analysis is presented in Section 3.2. Section 4 summarizes the conclusion of this study.

2. Methodology and Data Source

2.1 Methodology

2.1.1 Regarding the nature of macroeconomic data a major debate has been going on until Nelson and Plosser (1982) published in their seminal work, that the underlying process is Difference Stationary (DS) rather than Trend Stationary (TS). For a TS process the effect of random shock is temporary around a trend whereas for a DS process this random shock has a permanent effect. Moreover in case of DS process the variance of the series depends on time.

2.1.2 The unit root test due to Dickey and Fuller (1979, 1981) can detect whether a series is DS or TS. To understand this process the following regression equation is considered:

$$\Delta Y_t = \delta_0 + \delta_1 t + \nu Y_{t-1} + U_t \text{ where } U_t = \alpha U_{t-1} + \varepsilon_t$$

The test procedure is as under:

- The null hypothesis is $H_0: \nu = 0$. Rejection of the null hypothesis implies that the underlying series is TS and failure of the rejection implies that the underlying series is DS. But the coefficient of Y_{t-1} does not follow the standard t distribution which was solved by Fuller by getting limiting distribution of this coefficient and finally these distributions were approximated empirically by Dicky (1976). From a much larger set of replications McKinnon (1990) has derived critical values.
- A TS process and statistically significant coefficient of time implies that there exists a trend in the series.
- Statistically significant constant term suggests that there exists a drift in the model.

If ΔY_t depends on ΔY_{t-j} (where j=1, 2, K, K<T) then the above test procedure is called as Augmented Dickey Fuller test.

2.1.3 Perron (1989) in his path breaking work has shown that the standard unit root test is not consistent against trend stationarity in the presence of structural break and has

suggested a procedure which is appropriate for testing unit root in presence of one time structural break in the series which is assumed to be exogenously determined from consideration of visual examination of the plots of the data.

2.1.4 But Zivot and Andrews (1992) argued that Perron's procedure for finding out the break point is not an appropriate method, because Perron's method was based primarily on visual inspection of data. He argued that the break point should be endogenously determined and can be evaluated considering the models as follows:

$$\text{Model A: } Y_t = a_1 + b_1 DU_t + c_1 t + d_1 Y_{t-1} + e_1 \Sigma \Delta Y_{t-1} + e_t$$
$$\text{Model B: } Y_t = a_2 + g_2 DT_t + c_2 t + d_2 Y_{t-1} + e_2 \Sigma \Delta Y_{t-1} + e_t$$
$$\text{Model C: } Y_t = a_3 + b_3 DU_t + c_3 t + g_3 DT_t + d_3 Y_{t-1} + e_3 \Sigma \Delta Y_{t-1} + e_t$$

where

$$DU_t = 1 \quad \text{if} \quad t > T\gamma$$
$$= 0 \quad \text{otherwise}$$

$$DT_t = t - T\gamma \quad \text{if} \quad t > T\gamma$$
$$= 0 \quad \text{otherwise}$$

The following are the important points:

- Model A allows an endogenous break in the level of the series, Model B permits an endogenous break in the rate of growth and Model C admits both changes in the level as well as growth.
- If DT_t is positive (negative) and significant, then it is concluded that there has been an acceleration (deceleration) in the growth.
- T stands for total time period and γ stands for time break, i.e., $\gamma = T_B/T$.
- The parameters of the i^{th} regression are denoted by a_i, b_i, c_i, d_i, e_i, g_i and T_B is the break point.
- The above three regressions can be estimated by OLS method and with the break fraction γ ranging from 2/T to (T-1)/T.
- Regarding the choice of the lag value, Perron has suggested the following procedure: One should start with a reasonably high value of k, and choose that particular k, say k*, such that the value of the statistic for k* is greater than 1.64 in absolute value and for all other is less than 1.64.

2.1.5 However, the present paper does not follow Perron's procedure in case of the choice of lag as this procedure is sensitive to a particular value of 't' statistic around 10% level of significance. Rather the paper uses visual descriptions of the series and in particular the figures of the correlogram. It suggests that the series is AR(1) type with the autocorrelations dying out and only the first partial correlation coefficient being significant, for all the major states of India as well as All India over the entire sample period.

- From the estimated regression the value of the 't' statistics for testing the null hypothesis $d_i=1$ can be obtained.
- Zivot and Andrews (1992) proved that among the overall T-2 regressions one can choose that year as break point year which gives us the minimum value of the 't' statistics corresponding to the coefficient of Y_{t-1}.
- Choose that model as the best fitted model which gives us the minimum 't' value of the coefficient Y_{t-1}.
- The estimated results are compared with the critical values given by the Zivot and Andrews to determine the nature of the series.

2.1.6 Again Sen (2003) argued that Zivot and Andrews (1992) procedure can be improved by considering maximum 'F' statistic instead of taking minimum 't' statistic and also argued that Model C has a higher power than either Model A or Model B. So Sen (2003) considered model C and suggested the test based on the maximum F statistic, having the following form:

$$F^{Max} = Max_{T_b \in \{[\lambda_0 T],[\lambda_0 T]+1,\ldots,T-[\lambda_0 T]\}} F_b(T_b)$$

The test procedure is as below:

- Among the overall T-2 regressions choose that year as break point year which gives us the maximum value of the 'F' statistics corresponding to the coefficient of Y_{t-1}.
- After finding out the break point one can compare the results with the critical values provided by Amit Sen (2003) to determine the nature of the series.

2.2 Data Source

2.2.1 The present paper uses the data on output measured by gross value added (Y) in real terms for All India (AI) as well as for 17 major selected states of India namely Andhra Pradesh (AP), Assam (AS), Bihar (BI), Gujarat (GU), Haryana (HA), Himachal Pradesh (HP), Jammu & Kashmir (JK), Karnataka (KA), Kerala (KE), Maharashtra (MH), Madhya Pradesh (MP), Orissa (OR), Punjab (PU), Rajasthan (RA), Tamilnadu (TN), Uttar Pradesh (UP) and West Bengal (WB) for the period 1983-84 to 2007-08 obtained from the various issues of "Annual Survey of Industries, Summary Results for the Factory Sector" and uses Wholesale Price Index published by the Central Statistical Organisation, Government of India to deflate the output series in real terms.
The seventeen sample states are classified in different regions as under:

(A) Eastern Region: AS, BI, WB and OR

(B) Northern Region: HA, HP, JK, PU and UP

(C) Southern Region: KA, KE, AP and TN

(D) Western Region: GU, MH, MP and RA

3. Estimated Results of Endogenous Structural Break Analysis Using Amit Sen's Approach

3.1 An Interstate Analysis

- For all the states considered in the present study except BI i.e. for the sixteen states the underlying series is of TS type implying convergence towards a stationary process. The underlying process is DS for BI suggesting existence of a stochastic trend in the output level and hence no definite conclusions can be said about the pattern of the output trend or about the break point of the series. Further existence of TS series for all the sixteen states in turn implies *variability of the series remains constant over time*. For BI we have a DS series suggesting that the *variability of the series is not constant*. The performance of **BI is very poor** because for this state growth process follows a stochastic trend suggesting that no definite conclusion can be made on the nature of the growth process and also the output series does not possesses constant variability over time. However, the coefficient of time is positive but not statistically significant showing one cannot infer about the change in the variability of the output series.

- The break points for all the sixteen states showing TS process like **AP, AS, GU, HA, HP, JK, KA, KE, MP, MH, OR, PU, TN, RA, UP and WB** corresponds to 1997-98 except KA, PU and WB. The break point years are 1995-96, 1988-89 and 1994-95 respectively for KA, PU and WB. Thus only for PU the break point is strictly before TRIPS as well as before the starting of liberalization process.

- **The results of analysis of sixteen states(excluding Bihar) can be listed under different categories as follows:**

Group-A: *This group consists of only one state **HP** where the growth of output increases for the entire period of study as well as after the break point. However there is a fall in the level of output after the break point.* These observations can be justified in the sense that for HP the coefficient of time turns out to be positive and statistically significant implying a positive significant trend for the entire period of study. The growth dummy is also positive and significant suggesting that the growth rate has increased after the break (1997-98). However, the intercept dummy is found to be negative and significant showing movement of output in negative direction after the break. Thus after the break point although growth of output increased but the level of output has declined. Thus, on the whole more or less the performance of HP is satisfactory as it performed very well in terms of the entire sample period and moderately well after the break point.

Group-B*: It consists of **AS, GU, HA, MH, KE and OR** where there is a positive output trend for the entire period of study but no definite conclusion can be said about the growth of output after the break point. Also there occurs a fall in the level of output after the break point*. The reasons for these observations are: in case of **AS, GU, HA, MH, KE and OR,** a positive and significant time coefficient is found suggesting a positive output trend for the entire period of study. The coefficient of growth dummy is found to be positive and insignificant, so no definite conclusion can be said about the growth of output

after the break (1997-98). There is evidence of a fall in the level of output after 1997-98 as the intercept dummy is negative and significant. *Hence the performance of these states is satisfactory for the entire sample period but not so after the break point.*

Group-C: ***UP and JK*** *forms this group. Here one cannot surely conclude about the trend of output for the entire period of analysis. But after the break point, the growth of output increases and there is a fall in the level of output.* The above observation can be justified in the sense that for **UP and JK** the coefficient of time dummy turned out to be positive but not significant. Hence no definite conclusion about the trend of output can be made for the entire sample period. But the coefficient of growth dummy is positive, whereas the intercept dummy is negative and both are statistically significant. So after the break point, 1997-98 the growth of output increases and there is a fall in the level of output. *So these two states performed to some extent satisfactorily after the break but not so satisfactorily for the entire period of analysis.*

Group-D: *Only two states* ***KA and PU*** *form this group. There occurs a negative output trend for the entire sample period and the output decreases at an increasing rate. But the level of output increases after the break point*. The reasons for these observations are: KA **and PU** witnessed negative and significant coefficient of time implying a negative significant trend in output for the entire sample period. Also a positive and significant coefficient of growth of output is obtained. Hence, for these states the output decreases at an increasing rate. Also there is evidence of a rise in the level of output after the break points of these two states, i.e., 1995-96 and 1988-89 respectively as intercept dummy is found to be positive and significant. *Hence these states performed poorly for the entire sample period but after the break the performance is moderately satisfactory.*

Group-E: *This group comprises of* ***MP, RA, TN and WB*** *where one cannot definitely conclude about the trend and growth of output for the sample period and also after the break point. But there is a fall in the level of output after the break.* The above findings can be justified as follows: For **MP, RA, TN and WB**, the coefficient of time although obtained positive but is not significant. Therefore no definite conclusions can be inferred about the trend of output for the entire sample period. The break points are 1997-98 for MP, RA and TN and 1994-95 for WB. The coefficient of growth dummy is also found to be positive and insignificant. So no definite inference can be made regarding the growth of output after the break point. But there is evidence of a fall in the level of output after the break point as the coefficient of intercept dummy is negative and statistically significant. *Therefore these states performed poorly both for the entire sample period and also after the break point.*

Group-F: *Only* ***AP*** *forms this group. Here one cannot definitely infer either about the trend of output for the entire period of study or about the growth of output after the break point and also regarding the change in the level of output after the break point*. This observation can be justified in the sense that the state **AP** shows all the three coefficients i.e. the coefficient of time, growth dummy and intercept dummy to be positive but insignificant. As a result no inference can be made either about the trend of output for the entire period of study or growth of output after the break point and also regarding the existence of break in the level of output after the break point, 1997-98. *Hence AP is a bad performer both for the entire sample period and also after the break point.*

- In case of **All India** the output series is of TS type and hence converges towards a stationary process. The break point is found to be 1997-98 i.e. the period after the signing of the TRIPS agreement in 1995. The coefficients of time and growth dummy although found positive but are not significant. So no definite conclusion can be made regarding the output trend and on the growth of output for the entire period of study and also after the break point. But the intercept dummy is found to be negative and significant suggesting a fall in the level of output after 1997-98. The rate of growth of output at All India level is 1.52%.

3.2 The Regional level Analysis

- The interstate analysis as described above will permit us to have some idea regarding the regional behavior of the output of IPI:

Eastern Region: All the **Eastern region** states follow TS process except **BI**. Our earlier discussion shows that **AS and OR** belongs to **Group B** where *there is a positive output trend for the entire period of study but not so after the break point. Also there occurs a fall in the level of output after the break point* 1997-98. Thus these two states performed satisfactorily for the entire sample period but not satisfactory after the break point. The state **WB** belongs to **Group E** where one cannot *definitely infer about the trend and growth of output either for the entire sample period or after the break point 1994-95. But there is a fall in the level of output after the break point.* Thus on the whole WB is a bad performer. Among the four states belonging to **Eastern region** only the performance of **AS and OR** are moderately good, as both these states showed positive and significant trend in the output level for the entire sample period. Further, all the states of the eastern region are not good performer in the regime after the signing of TRIPS agreement.

Western Region: In case of **Western region** all the states are of TS type. **GU and MH** belongs to **Group B** *where there is a positive output trend for the entire period of study but nothing can definitely be said about the growth of output after the break point. Also there occurs a fall in the level of output after the break point.* This implies that GU and MH is satisfactory performer for the entire sample period but acted poorly after the break point. For the other two states belonging to Western region **MP and RA** corresponds to **Group E** *where one cannot definitely conclude about the trend of output for the entire sample period and also about the growth of output after break point. Further there is a fall in the level of output after the break point.* Thus among the states under **Western region** MP and RA are bad performer as their performance is not satisfactory either with respect to the entire period of analysis or after the break point. Only **GU and MH** performed satisfactorily as they showed positive and significant trend for the entire period under consideration.

Northern Region: It witnessed the existence of TS process for all the states. The state **JK and UP** belongs to **Group C.** *Here one cannot definitely conclude about the trend of output for the entire period of analysis. But after the break point, the growth of output increases and there is a fall in the level of output.* So these states performed moderately well after the break point but are bad performer for the entire period of study.

The other state **PU** corresponding to northern region belongs to **Group D** *where there occur a negative output trend for the entire period of study. The growth of output decreases at an increasing rate and the level of output increases after the break.* So **PU** is a bad performer in the sample period but showed more or less satisfactory performance after the break. The remaining state **HA belongs to Group B** shows a positive output trend for the entire sample period. But no definite conclusion can be made about the growth of output after the break point. After the break there is a decline in the level of output. So HA performed well in the sample period but performed badly after the break. For **HP**, there exists a positive significant trend and the growth of output increases for the entire period of study as well as after the break point but there is a fall in the level of output after 1997-98. So HP performed very well for the entire sample period but acted moderately well after the break. Thus out of five **Northern region** states **HP** performed very well for the entire period. **JK and UP** performed moderately after the break point because their output growth increases but the level of output falls after the break point. For **PU** although bad performance is seen for the sample period as the output falls at an increasing rate but after the break it acted moderately as the level of output increases after the break point.

Southern Region: Among the **Southern region states**, all being of TS type, for **KA**, *there occurs a negative output trend for the entire sample period and the output decreases at an increasing rate. But the level of output increases after the break point.* So **KA** is a bad performer in the sample period but showed moderately satisfactory performance after the break. **KE belongs to Group** B *where there is a positive output trend for the entire period of study but no definite conclusion can be said about the growth of output after the break point. Also there occurs a fall in the level of output after the break point*. Therefore KE performed satisfactorily in the sample period but poorly after the break. The other state AP corresponding to southern region belongs to **Group F** where one cannot say anything definitely either about the trend of output for the period of analysis or about the level or growth of output after the break point. So AP acted very badly in both the sample period and also after the break. The state TN in the southern region belongs to **Group E** *where one cannot definitely conclude about the trend and growth of output for the sample period and also after the break point. But there is a fall in the level of output after the break.* So TN is a bad performer both for the entire period of analysis and after the break.

The result of four states of **Southern region** reveals that only the performance of **KE** is satisfactory for the sample period as it shows positive and significant movement of output. But for **KA** although bad performance is seen for the sample period as the output falls at an increasing rate but after the break it acted moderately as the level of output increases. AP and TN is a bad performer both for the entire period of analysis and after the break.

- Coming to the break points of different states belonging to different regions shows that in case of **Eastern region** the lowest break point year is 1994-95 for WB and highest break point year is 1997-1998 for AS and OR. Break point year 1997-98 is same for all the states i.e. GU, MP, RA and MH in case of **Western region**. For **Northern region** 1988-89 is the lowest break point year for PU and 1997-98 is the highest break corresponding for HA, HP, JK and UP. For **Southern region** the lowest break point year is 1995-96 for KA and 1997-98 is the highest break point year for KE, AP and TN.

4. Conclusion

4.1 This paper applies a recent development in estimation and testing of structural break in the econometric time series model to measure interstate and regional variation in the output of IPI for the period 1983-84 to 2007-08. The states are classified into different regions namely Eastern, Western, Northern and Southern. The distinguishing feature of this method is that it is not dependent on the prior belief of the researchers regarding the occurrence of the break point. Rather the study tested for endogenous structural break in the series using Amit Sen's(2003) approach and finds out the break point of the series of output for each of the 17 selected major states and also at All India level. It then examines whether All India and the states are converging towards a stationary series having deterministic trend. The following conclusions emerge from the analysis:

- All India and the states considered in the present study except BI shows convergence towards stationary process having constant variability over time.
- For all the sixteen states showing TS process the break point occurred after 1995 i.e. period after TRIPS agreement except PU, thus highlighting the role of TRIPS agreement in promoting the growth of IPI. In case of PU the break point occurred before 1991-92, i.e. the period when policies of liberalization were introduced in the Indian economy
- An interstate and regional variation of the growth of output is strongly evident.

4.2 The study of the growth of output of Indian Pharmaceutical Industry by using modern time series technique clearly identifies the states whose performance are satisfactory and other states showing relatively poor performance and hence needs special attention. However, it is to be noted that the growth of output of sixteen among the seventeen selected states converges towards a deterministic trend and seven states shows a positive movement. One of the limitations of the present study is that the reasons behind the emergence of break point of different states as well as for All India are not properly been explored. This pharmaceutical output specific study of states as well as for All India is the agenda of our future research.

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Table 1 : Endogenous Structural Break Analysis for Output of IPI by Amit Sen's Approach

Place	Cons-tant	DU_t	T	DT_t	Y_{t-1}	ΔY_{t-1}	F-Value	Break Point	Under lying Series
AI	0.559 (0.665)	-0.204*** (3.766)	0.0152 (0.808)	0.015 (1.399)	-0.091 (0.586)	0.449*** (4.826)	12.586***	1997-98	TS
AP	0.264 (0.562)	-0.807*** (2.637)	0.004 (0.039)	0.079 (0.811)	0.011 (0.029)	0.557*** (3.253)	9.557**	1997-98	TS
AS	-0.418	-1.678*** (0.653)	0.065** (2.776)	0.127 (1.924)	-0.162 (1.451)	0.497*** (0.603)	16.318*** (4.381)	1997-98	TS
BI	-1.936 (1.235)	1.753*** (2.221)	0.071 (0.760)	-0.145 (1.456)	-0.431 (1.461)	0.345*** (2.112)	6.236	1995-96	DS
GU	-0.028 (0.033)	-1.513*** (4.597)	0.086** (1.926)	0.032 (0.416)	-0.098 (0.402)	0.463*** (3.706)	13.826***	1997-98	TS
HA	-0.247 (0.619)	-1.449*** (3.499)	0.081** (1.935)	0.072 (1.098)	-0.143 (0.546)	0.453*** (3.389)	11.643***	1997-98	TS
HP	-1.833 (1.473)	-4.651*** (2.308)	0.355** (1.983)	0.625** (1.999)	-1.284** (1.962)	0.064 (0.281)	13.786***	1997-98	TS
JK	-0.186 (0.192)	-2.633*** (2.432)	0.036 (0.415)	0.394*** (2.696)	-0.153 (0.745)	0.452*** (4.693)	14.288***	1997-98	TS
KA	2.465*** (2.947)	1.023*** (3.892)	-0.054*** (2.025)	0.087** (1.896)	-0.609*** (2.367)	0.247*** (2.001)	14.101***	1995-96	TS
KE	-0.071 (0.252)	-1.517*** (4.622)	0.065** (1.931)	0.048 (0.645)	-0.094 (0.542)	0.466*** (5.343)	19.135***	1997-98	TS
MH	0.077 (0.088)	-1.116*** (5.658)	0.058** (1.958)	0.028 (0.611)	-0.073 (0.394)	0.461*** (3.968)	15.523***	1997-98	TS
MP	-0.048 (0.196)	-0.989*** (4.615)	0.018 (0.232)	0.061 (0.687)	0.061 (0.211)	0.543*** (4.183)	15.465***	1997-98	TS
OR	-0.876 (1.348)	-2.385*** (3.944)	0.124** (1.821)	0.072 (0.522)	-0.002 (0.007)	0.489*** (3.383)	11.921***	1997-98	TS
PU	2.171* (1.776)	2.774*** (4.243)	-0.519*** (2.036)	0.526** (1.988)	-0.492*** (2.582)	0.288*** (2.651)	14.005***	1988-89	TS
RA	-0.329 (0.605)	-2.498*** (3.836)	0.051 (0.701)	0.122 (0.979)	0.292 (1.285)	0.619*** (5.568)	14.226***	1997-98	TS
TN	-0.504 (0.911)	-1.428*** (3.798)	0.031 (0.546)	0.079 (0.944)	0.156 (0.157)	0.566*** (4.172)	12.213***	1997-98	TS
UP	-1.260*** (2.344)	-1.824*** (5.395)	0.033 (0.943)	0.155* (1.890)	0.308* (1.721)	0.656*** (5.772)	15.482***	1997-98	TS
WB	-1.493 (1.668)	-1.487*** (2.569)	0.052 (0.827)	0.041 (0.401)	0.413 (1.320)	0.669*** (5.425)	17.397***	1994-95	TS

***, ** and *represents significant at 1%, 5% and 10% level of significance respectively