An economic analysis of mulberry raw silk production in traditional and non-traditional states of India

*Tariq Ahmad Bhat and \textsuperscript{2}Tapan Choure

\textsuperscript{1} Ph.D Scholar SOS in Economics Vikram University, Ujjain (M.P.)
\textsuperscript{2} Prof. and Head SOS in Economics Vikram University, Ujjain (M.P.)

Sericulture is cottage based industry which combines both the features of agriculture and industry. India has tremendous potential for silk development but yet unexploited, however development is not far away. The current study is an attempt to analyse the share between traditional and non-traditional states and between the states on the basis of mulberry silk production and mulberry cultivation. Regression analysis, coefficient of variation, growth rate was used to attain the objectives of the study. It was found that the traditional states hold the maximum share both in mulberry cultivation during 2012-13 was (82.90%) as well as production of raw silk (96.49%). In which Karnataka, Andhra Pradesh and West Bengal contributes maximum production among traditional states, while as Maharashtra, Manipur and Madhya Pradesh are the leading contributing states among the non-traditional states in total raw silk production in India.

Keywords: Traditional and Non-traditional states, mulberry cultivation, raw silk and regression analysis

INTRODUCTION

In the early phase of the century, Japan was ruling the world silk market by producing 70% of world's total production. But from mid seventies the Japanese silk production started declining and Chinese silk production increased steadily to bridge the Gap created due to the withdrawal of Japan (Datta and Nanavaty 2007). Nowadays China is the largest producer of silk production followed by India and India is largest consumer of silk production in the world and constitutes about 8% of global market output. India is among the developing nations of the world, it has a good climate conditions which allows it to grow all the five commercial silk types such as mulberry silk, Eri silk, Muga silk, Oak Tasar and Tasar silk, but maximum contribution constitutes mulberry silk. Mulberry silk is most famous and popular due to its inborn sheen and lustre and produced from an insect called Bombyx Mori. Mulberry silkworm is to be divided into three types depending upon the number of generations per year and was termed as uni-voltaire (one generation), bi-voltaire (two generations) and multi-voltaire (many generations). The mulberry silk is grown in different temperate and tropical zones of India and mulberry silk worm wholly and solely depends upon the mulberry leaves. In India tropical sericulture in most places, but its temperate sericulture is being limited to Kashmir valley and other sub-Himalayan zones. The mulberry silkworm is entirely domesticated silk type and has achieved greater benefits from research on mulberry and silkworm varieties. .

Sericulture is cottage based industry which combines both the features of agriculture and industry. India has tremendous potential for silk development but yet unexploited, however development is not far away (Dewangan et al 2011). After few decades of planning and with the establishment of central silk board Bangalore, sericulture has shown an increasing trend. With the result, sericulture is not restricted to traditional states only but now sericulture is showing increasing trend in non-traditional states as well.

*Corresponding author: Tariq Ahmad Bhat, Ph. D Scholar in S.O.S in Economics Vikram University, Ujjain (M.P.). Email: tariq0920@gmail.com, Tel.: 08827307387
Sericulture, an age old craft in India is practiced in a vast geographically diversified areas including, temperate (Kashmir), sub-tropical (Jammu, Himachal Pradesh, Uttar Pradesh, North- Eastern Region) and Tropical (West Bengal, Bihar, Orissa, Madhya Pradesh, Andhra Pradesh, Tamil Nadu and Karnataka. India is the Second largest producer and largest consumer of silk in the World and has the distinction of producing all the five varieties of silk viz. Mulberry silk, Eri silk, tasar silk, Oak tasar and Muga silk. In 2012-13 Mulberry accounts for 90%, Eri 8.0%, tasar 1.9%, and Muga 0.7%, of the total raw silk production of 23679 MTs in the country.

Sericulture is practiced as subsidiary occupation from ancient times but before few decades it has gained a momentum in its growth due to the fact that it is no longer confined to traditional area, now providing gainful employment even in non-traditional sericulture areas. However the traditional states still retains the control over supply of mulberry silk by contribution 96.46% during 2012-13, irrespective of the fact that non-traditional states constitutes about 20% of land area under mulberry cultivation. The maximum contribution comes from Karnataka (43.82%), Andhra Pradesh (34.92%) then West Bengal (10.68%), Tamil Nadu (6.32%), J&K (0.76%), while none of the non-traditional states contributes more than 1%. However as far as area under cultivation is concerned some of the non-traditional sericulture states has equal or less than 3% during 2012-13. The non-traditional states contribute only less than 4% in total mulberry raw silk production and mulberry cultivation area constitutes 16.10% during 2012-13 (CSB 2012-13). This clearly shows the inefficiency of production in raw silk by the non-traditional states of India. The difference between traditional and non-traditional states is due to differing costs of production of mulberry leaves and rearing silkworm.

Objectives
1. To find out the share of traditional and non-traditional states of India in the mulberry cultivation and raw silk production.
2. To analyse the instability and growth in raw silk production in traditional and non-traditional states of India.

Hypothesis

Null Hypothesis: There is no significant relationship between mulberry raw silk production and mulberry cultivation.

Alternative Hypothesis: There is significant relationship between mulberry raw silk production and mulberry cultivation.

MATERIAL AND METHODS

The present study makes use of secondary data from the relevant publications, Reports, records and internet. The Study is all about India’s traditional and non-traditional states. The traditional states are those states, which are practicing sericulture from ancient times while as non-traditional have adopted this practice recent times. The different tools which have been used in this analysis are T-test, Coefficient of variation and growth rate. The OLS regression model was used to find out the relationship between the mulberry raw silk production and mulberry cultivation.

Regression Equations

\[ Y = \alpha + \beta X \]

\[ \Sigma Y = n\alpha + \hat{\beta} \Sigma X \]

\[ \Sigma XY = \alpha \Sigma X + \hat{\beta} \Sigma X^2 \]

Where \( Y \) = Mulberry Raw Silk production in India
\( \alpha \) = Intercept or Constant term
\( \beta \) = Slope Coefficient
\( X \) = Mulberry Cultivation
\( \mu \) = error term or disturbance term

Coefficient of Variation

\[ CV = \frac{\sigma}{\bar{X}} \times 100 \]

RESULTS AND DISCUSSION

Mulberry Raw Silk Production in Traditional States

In traditional list only five states are there Karnataka, Andhra Pradesh, Jammu and Kashmir, Tamil Nadu and West Bengal. This group of states holds the grip over the mulberry silk production and mulberry cultivation in India. The traditional states produce 96.49% of raw silk from 80.90% of acreage during 2012-13. The total production of raw silk during 2012-13 was 18096 MTs, in which Karnataka (Silk Bowl of India) produces 8219 MTs (43.82%) and emerges as the leading Mulberry Silk producer in India. The other contributing states according to their share in total mulberry silk are Andhra Pradesh (34.92%), West Bengal (10.67%), Tamil Nadu (6.32%) and Jammu and Kashmir (0.76%). As far as mulberry cultivation is concerned, maximum area under cultivation comes from Karnataka (40.15%), Andhra Pradesh (23.19%), West Bengal (7.40%), Tamil Nadu (8.95%) and Jammu and Kashmir (4.06%) (Central Silk Board). It is clear from the above analysis that there is direct relation between area under mulberry cultivation and mulberry raw silk. From Table 1; it is clear that contribution among the Traditional states and contribution in all over India is almost equal. It is due to the fact that non-traditional states contribution is less than 4% in total mulberry raw silk in India.
The area wise share of cultivated increments and raw silk production has increased in both mulberry in traditional states, and the story is totally different as that of non-traditional states. The percentage share in mulberry cultivation and raw silk production in non-traditional states is shown in Table 2, it can be inferred from the table that percentage share is remaining almost constant during 2005-06 and 2012-13, both in mulberry cultivation and raw silk production in different states of non-traditional zone. However, some of the states showed increments in mulberry cultivation are Assam, Meghalaya, Manipur and Maharashtra etc, while other states have shown increasing trend but with slow pace. Kerala and Himachal Pradesh are those non-traditional states which have shown decreasing trend in mulberry cultivation.

Growth and Instability in Mulberry Raw Silk and Mulberry Cultivation in Traditional and Non-Traditional States

The growth and coefficient of variation in mulberry raw silk production and mulberry cultivation in both traditional and non-traditional states were analysed and results are shown in Table 3 and figure 1.1. The mulberry raw silk has increased significantly at the rate of 21.43%, while as area under mulberry cultivation in India has grown marginally at the rate of 3.92 % per year, therefore it is clear that productivity has shown increasing trend (table 1.3). In spite of decreasing mulberry acreage in Karnataka (-14.82%) and West Bengal (-13.04%) during the period from 2005-06 to 2012-13, but still the raw silk production has increased at the rate of 10.01% and 28.97% respectively during the same period. Tamil Nadu, Andhra Pradesh and Jammu and Kashmir have increasing production of raw silk as well as area under mulberry cultivation. Tamil

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Andhra Pradesh</td>
<td>34.8</td>
<td>34.92</td>
<td>36.2</td>
<td>22.07</td>
<td>23.19</td>
<td>27.69</td>
</tr>
<tr>
<td>Jammu And Kashmir</td>
<td>0.61</td>
<td>0.76</td>
<td>0.78</td>
<td>3.14</td>
<td>4.06</td>
<td>4.84</td>
</tr>
<tr>
<td>Karnataka</td>
<td>48.37</td>
<td>43.82</td>
<td>45.42</td>
<td>48.99</td>
<td>40.15</td>
<td>47.93</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>4.78</td>
<td>6.32</td>
<td>6.54</td>
<td>3.69</td>
<td>8.93</td>
<td>10.68</td>
</tr>
<tr>
<td>West Bengal</td>
<td>10.05</td>
<td>10.67</td>
<td>11.06</td>
<td>7.79</td>
<td>7.40</td>
<td>8.83</td>
</tr>
<tr>
<td>Sub Total (A)</td>
<td>98.61</td>
<td>96.49</td>
<td>100</td>
<td>85.68</td>
<td>83.76</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 1. Share of Traditional States in Mulberry Cultivation and Raw Silk Production in India

Source: Central Silk Board
Table 2. Percentage Share of Non-Traditional States in Mulberry Cultivation and Raw Silk Production in India

<table>
<thead>
<tr>
<th>STATE</th>
<th>% Share in Mulberry Raw silk during 2005-06</th>
<th>% share of Mulberry Raw during 2012-13</th>
<th>% Share Mulberry Raw Silk Production in Non-Traditional States in 2012-13</th>
<th>% Share of Raw Under Mulberry Cultivation in 2005-06</th>
<th>% Share of Under Mulberry Cultivation in 2012-13</th>
<th>% Share Mulberry Cultivation in Non-Traditional states in 2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arunachal Pradesh</td>
<td>0.006</td>
<td>0.01</td>
<td>0.30</td>
<td>0.13</td>
<td>0.79</td>
<td>0.79</td>
</tr>
<tr>
<td>Assam</td>
<td>0.05</td>
<td>0.09</td>
<td>2.73</td>
<td>2.52</td>
<td>3.87</td>
<td>23.87</td>
</tr>
<tr>
<td>Bihar</td>
<td>0.019</td>
<td>0.06</td>
<td>1.97</td>
<td>0.22</td>
<td>0.32</td>
<td>1.98</td>
</tr>
<tr>
<td>Chhattisgarh</td>
<td>0.019</td>
<td>0.03</td>
<td>0.91</td>
<td>0.25</td>
<td>0.38</td>
<td>2.35</td>
</tr>
<tr>
<td>Himachal Pradesh</td>
<td>0.103</td>
<td>0.13</td>
<td>3.79</td>
<td>0.8</td>
<td>0.67</td>
<td>4.17</td>
</tr>
<tr>
<td>Jharkhand</td>
<td>0.006</td>
<td>0.01</td>
<td>0.30</td>
<td>0.04</td>
<td>0.10</td>
<td>0.67</td>
</tr>
<tr>
<td>Kerala</td>
<td>0.077</td>
<td>0.01</td>
<td>0.30</td>
<td>0.63</td>
<td>0.02</td>
<td>0.16</td>
</tr>
<tr>
<td>Madhya Pradesh</td>
<td>0.148</td>
<td>0.51</td>
<td>14.71</td>
<td>0.93</td>
<td>1.07</td>
<td>6.64</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>0.284</td>
<td>0.90</td>
<td>25.79</td>
<td>0.79</td>
<td>0.94</td>
<td>5.79</td>
</tr>
<tr>
<td>Manipur</td>
<td>0.881</td>
<td>0.61</td>
<td>17.45</td>
<td>3.07</td>
<td>3.44</td>
<td>21.20</td>
</tr>
<tr>
<td>Meghalaya</td>
<td>0.019</td>
<td>0.05</td>
<td>1.66</td>
<td>0.56</td>
<td>1.00</td>
<td>6.15</td>
</tr>
<tr>
<td>Mizoram</td>
<td>0.038</td>
<td>0.15</td>
<td>4.55</td>
<td>2.26</td>
<td>1.25</td>
<td>7.71</td>
</tr>
<tr>
<td>Nagaland</td>
<td>0.006</td>
<td>0.02</td>
<td>0.60</td>
<td>0.2</td>
<td>0.29</td>
<td>1.83</td>
</tr>
<tr>
<td>Orissa</td>
<td>0.012</td>
<td>0.01</td>
<td>0.45</td>
<td>0.22</td>
<td>0.25</td>
<td>1.54</td>
</tr>
<tr>
<td>Punjab</td>
<td>0.025</td>
<td>0.01</td>
<td>0.30</td>
<td>0.35</td>
<td>0.45</td>
<td>2.80</td>
</tr>
<tr>
<td>Sikkim,</td>
<td>0</td>
<td>0.01</td>
<td>0</td>
<td>0.07</td>
<td>0.10</td>
<td>0.80</td>
</tr>
<tr>
<td>Tripura</td>
<td>0.025</td>
<td>0.07</td>
<td>0.30</td>
<td>0.45</td>
<td>0.87</td>
<td>0.63</td>
</tr>
<tr>
<td>Uttarakhand</td>
<td>0.09</td>
<td>0.12</td>
<td>2.27</td>
<td>0.48</td>
<td>0.88</td>
<td>5.39</td>
</tr>
<tr>
<td>Sub Total (B)</td>
<td>1.39</td>
<td>3.51</td>
<td>3.49</td>
<td>11.43</td>
<td>17.10</td>
<td>5.43</td>
</tr>
<tr>
<td>Total A+B</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Source: Central Silk Board

Figure 1. Percentage Growth Rate in Mulberry Cultivation and Raw Silk during 2005-06 and 2012-13

Source: Compiled from Table 3

Nadu has achieved 60% growth rate in raw silk production which is almost double than growth in mulberry cultivation. As far as non-traditional states is concerned highest growth rate was achieved by Madhya Pradesh both in acreage as well as mulberry raw silk production during 2005-06 to 2012-13. The growth rate in mulberry raw silk production in different non-traditional states list has shown increasing trend except few such as Kerala and Punjab. The Table 3 also shows that area under mulberry in non-traditional states has grown rapidly due to the growing demand of silk items and its allied production. With the result that some of the states like Bihar, Madhya Pradesh, Maharashtra, and Meghalaya and Uttar Pradesh whose area under cultivation has grown more than 200% per annum.
Table 3. Coefficient of Variation in Mulberry Cultivation and Raw Silk Production in Traditional and Non-Traditional States of India

<table>
<thead>
<tr>
<th>STATE</th>
<th>Coefficient of Variation in Mulberry Cultivation</th>
<th>Coefficient of Variation in Raw Silk Production</th>
<th>% Growth Rate in Mulberry Raw Silk Production from 2005-06 to 2012-13</th>
<th>% Growth Rate in Mulberry Cultivation from 2005-06 to 2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRADITIONAL STATES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Andhra Pradesh</td>
<td>8.10</td>
<td>9.13</td>
<td>21.85</td>
<td>9.18</td>
</tr>
<tr>
<td>Jammu And Kashmir</td>
<td>8.10</td>
<td>23.26</td>
<td>48.42</td>
<td>23.37</td>
</tr>
<tr>
<td>Karnataka</td>
<td>2.91</td>
<td>14.22</td>
<td>10.01</td>
<td>-14.82</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>10.25</td>
<td>24.40</td>
<td>60.38</td>
<td>120.63</td>
</tr>
<tr>
<td>West Bengal</td>
<td>5.15</td>
<td>7.63</td>
<td>28.97</td>
<td>-13.04</td>
</tr>
<tr>
<td>SUB TOTAL (A)</td>
<td>3.89</td>
<td>70.08</td>
<td>18.77</td>
<td>1.24</td>
</tr>
<tr>
<td>NON-TRADITIONAL STATES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arunachal Pradesh</td>
<td>62.52</td>
<td>11.14</td>
<td>100</td>
<td>-2.43</td>
</tr>
<tr>
<td>Assam</td>
<td>24.12</td>
<td>33.14</td>
<td>125</td>
<td>59.67</td>
</tr>
<tr>
<td>Bihar</td>
<td>56.47</td>
<td>18.29</td>
<td>333.34</td>
<td>51.64</td>
</tr>
<tr>
<td>Chhattisgarh</td>
<td>34.79</td>
<td>27.71</td>
<td>100</td>
<td>51.12</td>
</tr>
<tr>
<td>Himachal Pradesh</td>
<td>14.45</td>
<td>33.82</td>
<td>56.25</td>
<td>-22.4</td>
</tr>
<tr>
<td>Jharkhand</td>
<td>45.98</td>
<td>50.28</td>
<td>100</td>
<td>160.25</td>
</tr>
<tr>
<td>Kerala</td>
<td>57.11</td>
<td>61.09</td>
<td>-83.34</td>
<td>-95.5</td>
</tr>
<tr>
<td>Madhya Pradesh</td>
<td>45.35</td>
<td>33.70</td>
<td>321.73</td>
<td>199.55</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>42.06</td>
<td>39.25</td>
<td>286.63</td>
<td>22.27</td>
</tr>
<tr>
<td>Manipur</td>
<td>24.11</td>
<td>4.49</td>
<td>139.58</td>
<td>16.23</td>
</tr>
<tr>
<td>Meghalaya</td>
<td>86.55</td>
<td>31.09</td>
<td>266.67</td>
<td>83.53</td>
</tr>
<tr>
<td>Mizoram</td>
<td>65.14</td>
<td>46.28</td>
<td>400</td>
<td>-42.62</td>
</tr>
<tr>
<td>Nagaland</td>
<td>58.78</td>
<td>14.20</td>
<td>300</td>
<td>50</td>
</tr>
<tr>
<td>Orissa</td>
<td>61.06</td>
<td>25.48</td>
<td>50</td>
<td>16.41</td>
</tr>
<tr>
<td>Punjab</td>
<td>40.32</td>
<td>40.15</td>
<td>-50</td>
<td>32.65</td>
</tr>
<tr>
<td>Rajasthan</td>
<td>106.02</td>
<td>7.75</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>Sikkim</td>
<td>98.84</td>
<td>48.02</td>
<td>200</td>
<td>37.14</td>
</tr>
<tr>
<td>Tripura</td>
<td>42.74</td>
<td>33.18</td>
<td>275</td>
<td>102.73</td>
</tr>
<tr>
<td>Uttar Pradesh</td>
<td>60.40</td>
<td>--</td>
<td>501.52</td>
<td>--</td>
</tr>
<tr>
<td>Uttarakhand</td>
<td>20.66</td>
<td>26.74</td>
<td>64.28</td>
<td>87.97</td>
</tr>
<tr>
<td>SUB TOTAL (B)</td>
<td>35.71</td>
<td>13.97</td>
<td>210.11</td>
<td>20.36</td>
</tr>
<tr>
<td>TOTAL (A+B)</td>
<td>7.14</td>
<td>3.28</td>
<td>21.43</td>
<td>3.92</td>
</tr>
</tbody>
</table>

Source: Central Silk Board

The instability in mulberry cultivation and mulberry raw silk production both in traditional and non-traditional states were analysed. It was found that overall mulberry cultivation was remained stable during 2005-06 to 2012-13. Non-traditional states are more stable in mulberry cultivation than traditional states. The coefficient of variation in mulberry cultivation overall in traditional states are 70.08% which is much higher than overall coefficient of variation (13.97%) in non-traditional states. Whereas mulberry raw silk production in traditional states in India has shown stability than non-traditional states and this stability was mainly due to low coefficient of variation in different states like Karnataka (2.91%), West Bengal (5.5%), Andhra Pradesh (8.10), and Jammu and Kashmir (8.10%). The non-traditional states are unstable than traditional states in terms of mulberry raw silk production. The coefficient of variation (CV) of mulberry raw silk production (35.71%) in non-traditional states is higher than national CV (7.14%) figure as shown in Table 3.

Table 4 shows that OLS regression model was applied on different state’s time series data of mulberry cultivation area and mulberry raw silk production of different years from 2005-06 to 2012-13. However the results are different, some of the states showed direct relationship between these two variables while as some have shown inverse or insignificant results. The * (star) figures of the above table shows significant results, so that it can be concluded that mulberry cultivation has direct impact on mulberry raw silk production and results are significant at 5% level of significance. Those states which are significant at 5% level of significance shows higher R² values such as Andhra Pradesh has...
R² 80%, Tamil Nadu R² 78%, Assam R² 73% dependence on mulberry cultivation. It may be concluded from the above table that Karnataka and West Bengal are the leading producers of raw silk in India, but the result in these two states are insignificant because of the reason that in both these mulberry cultivation showed decreasing trend (Table 3) and raw silk production showed increasing trend from 2005-06 to 2012-13. Therefore the reason behind this is that increasing trend may be due to increasing productivity and other one is, most of the reebers from Karnataka are purchasing cocoons from other states such as Jammu and Kashmir etc. and value added them in Karnataka in the form of raw silk i.e. why the relationship between these two variables showed insignificant. Same is the case of Jammu and Kashmir which has increasing trend both in area as well as raw silk production (Table 3), but result is insignificant as shown in Table 4. The raw silk reebers are few in number but the cocoon sellers are huge in number in Jammu and Kashmir, the result is low price of cocoons and attracts reebers buyers from different parts of the country to purchase cocoons from Jammu and Kashmir cocoon markets mainly from Karnataka, this leads to the drain of value addition part of silk and ultimately the farmers are losing their profits, which belongs to them.

Conclusion

The growth and magnitude of instability in mulberry cultivation and mulberry raw silk production both in traditional and non-traditional states of India was analysed. The area under mulberry cultivation has registered a marginal growth in India. But the remarkable growth rate in raw silk production was achieved due to higher growth rate in non-traditional such as more than four times (210%). Traditional states are more unstable as far as mulberry cultivation than non-traditional states of India. In case of raw silk production traditional states are more stable than non-traditional states and more than that of India as well.

REFERENCES


Accepted 25 October 2014


Copyright: © 2014. Bhat TA, Choure T. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are cited.

Table 4. Regression Model Summary of Major mulberry Raw Silk Producing States of India

<table>
<thead>
<tr>
<th>States</th>
<th>R²</th>
<th>T-Value</th>
<th>β</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andhra Pradesh</td>
<td>0.80</td>
<td>4.12</td>
<td>0.860</td>
<td>0.006*</td>
</tr>
<tr>
<td>Karnataka</td>
<td>0.33</td>
<td>0.88</td>
<td>0.339</td>
<td>0.412</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>0.78</td>
<td>3.108</td>
<td>0.786</td>
<td>0.021*</td>
</tr>
<tr>
<td>Jammu and Kashmir</td>
<td>0.31</td>
<td>1.666</td>
<td>0.562</td>
<td>0.147</td>
</tr>
<tr>
<td>West Bengal</td>
<td>0.44</td>
<td>-1.211</td>
<td>0.056</td>
<td>0.27</td>
</tr>
<tr>
<td>Assam</td>
<td>0.73</td>
<td>2.614</td>
<td>0.730</td>
<td>0.04*</td>
</tr>
<tr>
<td>Madhya Pradesh</td>
<td>0.77</td>
<td>2.963</td>
<td>0.772</td>
<td>0.025*</td>
</tr>
<tr>
<td>Manipur</td>
<td>0.90</td>
<td>5.090</td>
<td>0.904</td>
<td>0.002*</td>
</tr>
<tr>
<td>Uttar hand</td>
<td>0.64</td>
<td>2.082</td>
<td>0.648</td>
<td>0.085*</td>
</tr>
</tbody>
</table>

All the star figures are significant at 5% level of significance.