Output Elasticity of Employment in Sericulture: A District –Wise Analysis of Jammu Division

M. Vasim Khan

Assistant Professor (Senior Grade),
School of Economics, Devi Ahilya University, Indore,
m.vasim.khan@gmail.com

Mohd. Ibne Manzoor

Research Scholar**,**
School of Economics, Devi Ahilya University, Indore,
binimanzoor@gmail.com

ABSTRACT

Indian economy needs agro-based labor intensive industry to fight with issues of unemployment and low productivity of agriculture.Sericulture is an agro-based industry as well as labor intensive, in this regards, in this regards, it fulfills these both conditions. Considering this, in order to know the employment elasticity of cocoon production especially in Jammu division of India, this research work is articulated. The district-wise analysis of Jammu division from 2008 to 2019 shows that the production of cocoon especially A quality cocoon production has been increasing with the pace of 6.5 per cent per annum. Moreover, employment in this industry is also enlarging. Ancova regression analysis suggests that employment elasticity of output is closer to the unit elastic value, while in dummy analysis found that low quality(B, C and D) cocoon production retards the employment generation in sericulture industry. Thus, this research paper hereby suggests that focused should be given on the technology advancements and risk management for sericulture industry so that problem of low quality cocoon production could be fixed, which will ultimately help in generating the employment especially women employment in this sector.

Keywords: Cocoon Production, Sericulture, Employment Generation, Output Elasticity of Employment, Economy of Jammu

INTRODUCTION

Two major characteristics of Indian economy which are a boon and at the same time, may become curse for the economy are agro-dominant status and second labor-abundant country. In fact, average farming monthly income in India is meagerly Rs. 6427, i.e.agriculture is not able to accrue profits from the market and unemployment especially youth unemployment is a biggest bothersome issueof Indian economy. In this situation, agro-based labor intensiveindustry is a prominent solution to fight with these two burning issue. In this connection, Sericulture fulfills these both conditions, it is anagro-based industry as well as labor intensive.On the one side, it provides opportunities to grower to earn more through agri-allied activities while on the flip side it generates labor intensive indoor jobs especially for women.

Since, sericulture requires a specific type of geographical and climatic condition for production of cocoon and valley of Jammu and Kashmir is found to be one of the best suitable geography for the Sericulture. It is also evident in Sanskrit literature that the original home of silk is Kashmir.

Considering these comparative and competitive advantage in production of cocoon due to uniqueness and specialty of Jammu and Kashmir, Government has been making efforts to promote the sericulture activities in J & K through various initiatives and schemes like Supply of Rearing Kit; Cluster Development Programme; Cluster Plantation; Marketing support to cocoon growers and even Health Insurance for women who are engaged in silkworm rearing.

Sericulture continues to be subsidiary occupation for about 20000 rural families in the state and main occupation of around 10000 rural families. Most of these families belong to economically backward sections of the society. Taking these things into the consideration, this paper is articulated to know the level of grade wise cocoon production and employment in Jammu division and also to determine the output elasticity of employment especially in sericulture.

The remainder of this paper is as follows: second section reviews the related research work, third section describes the research methodology and nature of the research, fourth section analyzes the data and fifth section concludes the findings and suggest amicable policy implications.

REVIEW OF LITERATURE

Silk production activities are generally part of informal sector and labour-intensive in nature. In fact, about 90 percent of theemployment includes land less and marginal farming families. Several studies have focused on the technology advancements and upgradation in sericulture. The research indicated that the sericulture activity provides employment for 607 man days and 827 women days, besides a net income ofRs. 7018.72 per hectare of cocoon production**Rajapurohit and Govindaraju (1986).**

In this connection,**Rama Rao (1978)** examined the impact of mulberry cultivation on employment generation and found that mulberry cultivation and silkworm rearing on one hectare landwould have power to provide employment for at least two families of five persons each, that is to say earning for 10 people. In addition to it, **Jaganathan L. (1992),** indicated that sericulture provided more employment opportunities to family labour that is 70 **%** of total labour compared to alternative crops 44 **%** only.

Chandrashekar Reddy R. (1990), observed that sericulture is a highly labour intensive enterprise requiring about 538 man days of labour per acre in comparison to the requirement of labour 252 man days for the cultivation of the alternative crops.

Kumara Swamy B.K. (1993)observed that sericulture is being labour intensive, it is eminently suited to the economy of the small farms ensuring high employment opportunities to 664 man days of family labour to total labour per acre as compare to only 381 for alternative crops.

Hajare, *et. al.(2007)*stated thatSilk production has the potential to make a significant contribution to the economy of many countries where there is surplus labour, low-cost of production and willingness to adopt new technologies.

Best & Maier (2007) also found Sericulture industry to an extremely labor intensive industry and occupies a pivotal position from the point of providing employment and additional income to weaker sections.

Sericulture in India is a fairly organized activity that is in the cottage industry segment and is largely rural based and labour intensive. Cultivation is spread Over 22 states. Covering 172000 hectares across 54000 villages operating 258000 handlooms and 29340 power looms **Dewangan and***et. al.,* **(2011).**

RESEARCH METHODOLOGY

This study is explorative in nature and completely based on secondary data. District wise Cocoon production and employment datasets which lasts from 2008 to 2019 are extracted from Sericulture Development Department J&K. In order to measure the output elasticity of demand among the districts of Jammu Division, dummy ANCOVA regression model is employed. The mathematical equation of the model is given below:

$$Log\_Y_{it} = \beta_0 + \beta_1 D_i + \beta_2 Log\_X_{it} + \beta_3 (D_i * Log\_X_{it}) + \mu_t$$

Where, Log_Y_{it} is the logarithmic series of dependent variable i.e. Employment level of ith district over the period of time t.

Log_X_{it} is the logarithmic series of independent variable i.e. Cocoon Production of ith district over the period of time t.

β_0 is intercept term, which shows the overall mean value of the series.

D_i is dummy for districts where the lower grades (B, C and D together) quality cocoon production has raised more than 75 per cent with the passage of time. Three districts namely Kathua, Udhampur and Reasi were registered high growth in lower grades (B, C and D together) quality cocoon production by 80 per cent; 271 per cent and 78 per cent respectively.

β_1 shows the change in mean value for dummy category. Positive value shows the mean of reference category is lower than dummy category, while negative reveals the reverse.

β_2 is the employment elasticity of cocoon production.

β_3 Interactive term is product of dummy and Xvariable, which capture the employment elasticity of cocoon production for the identified districts where the value of dummy is 1.

Output and Employment Level in Sericulture Industry in Jammu Division

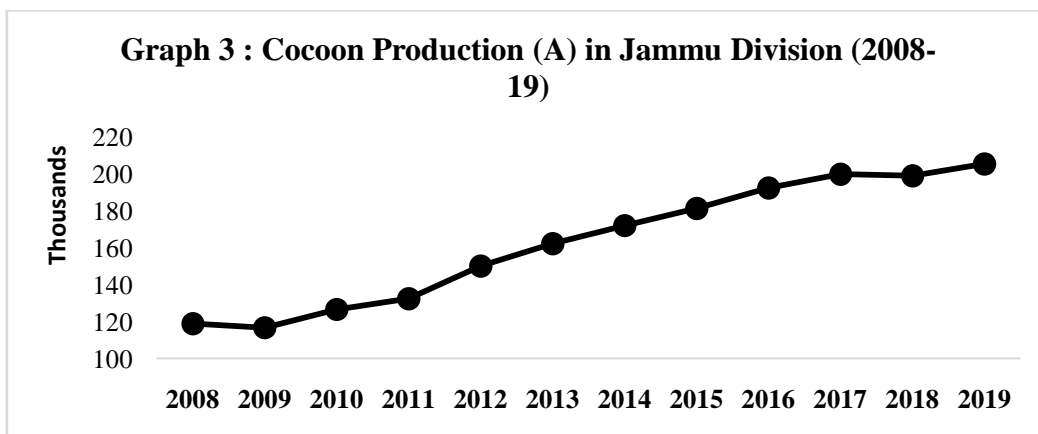**Graph 1: Cocoon Production in Jammu Division (2008-19)**
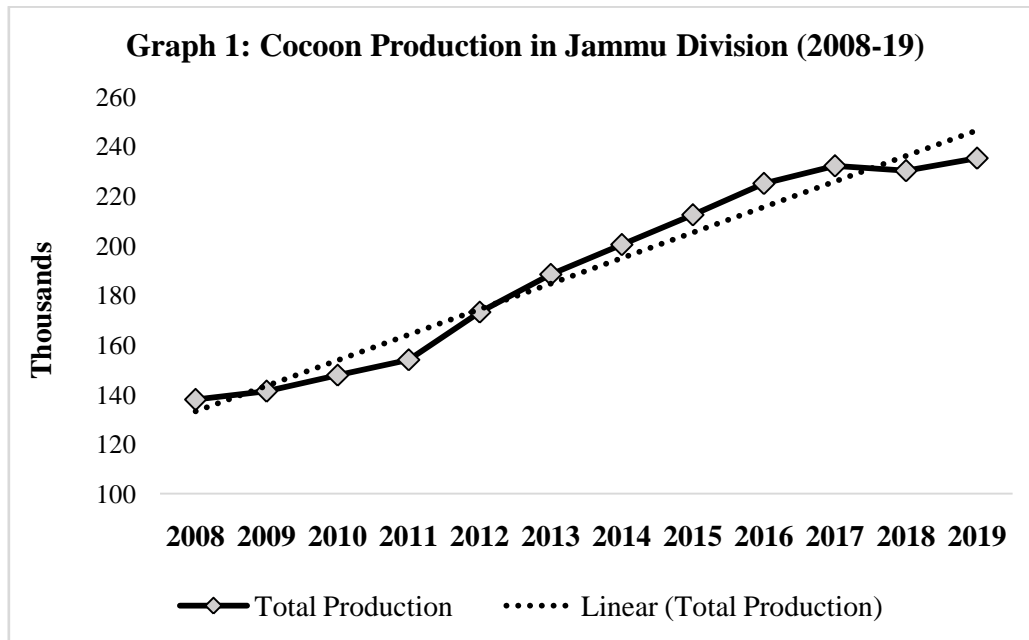
The **Graph 1**mirrors the production of cocoon in Jammu division over the period of 11 years from 2008 to 2019. Overall, it can be seen that the graph of cocoon production shows upward trend with some fluctuations during the year 2010-2011 and 2018-2019. The reason behind these fluctuations might be climate change related issues. The cocoon production during 2008-19 has grown up by 70 per cent from 140 thousands in the year 2008 to 240 thousands in the year 2019, with the pace of 6.5 per cent per annum. Though, the rate of change became steeper after 2011 and remained somewhat stable during 2017-19. Largely, the production over the period of time has been increasing.

In general, the cocoon has four types of varieties namely A, B, C and D, these varieties can also be termed as grading of cocoon production wherein, A is the superior quality, while D is the lower grade quality. Concerning the same, following **Graph 2** exhibits the quality wise composition of cocoon production in Jammu division during the same time period. From the graph, it is visible that A grade quality cocoon covers the major share of around 85 per cent in total production. While the proportion of B , C and D is almost equal.

**Graph 2: Composition of Cocoon Production Category-wise in Jammu Division**
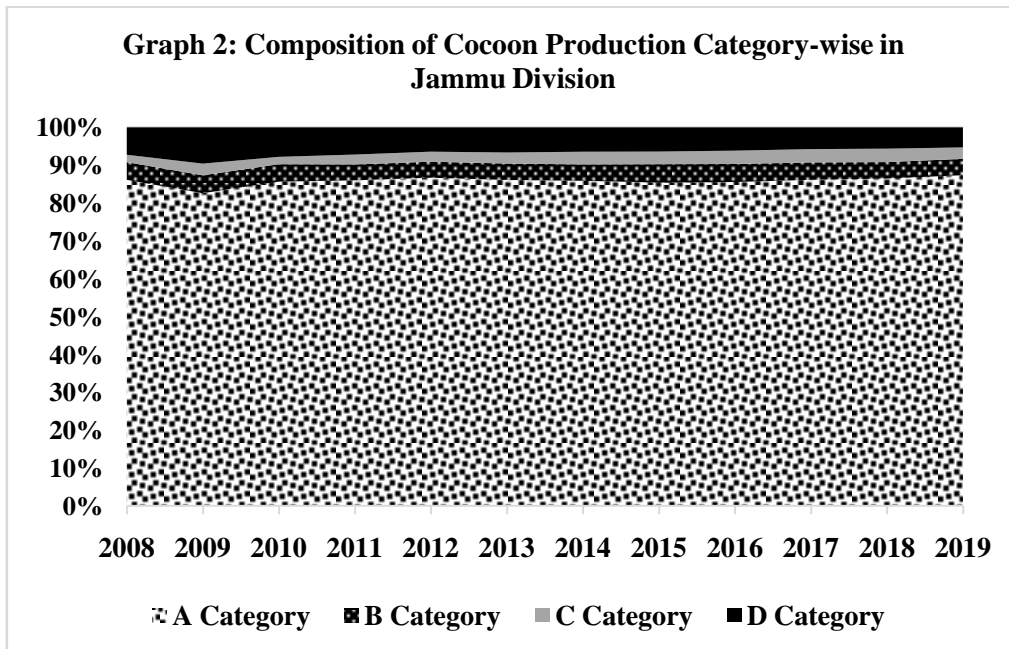
Moreover, it can also be seen that the grade wise composition of cocoonremained the same during 2008-2019, thus, there is a pressing need to focus on that specific 15% of production which belongs to lower grade quality to transform into superior quality. Yet, it is remarkable to note that major portion in total cocoon production is of A grade.

In **graph 2,** relative share has been displayed, so in order toobserve the absolute trend of compositional cocoon production, individual grade wise line graph has been displayed.

Graph 3 : Cocoon Production (A) in Jammu Division (2008-19)

Graph 3 shows A Grade Cocoon production in Jammu division during 2008 to 2019. It is clear from the graph that the overall trend is upward with some fluctuation in the year 2009 and 2018. The graph of A Grade Cocoon production exactly resembles total cocoon production's graph. However, the overall growth in A-grade cocoon production is of 72 per cent from 110 thousands in 2008 to

210 thousands in 2019, with lit bit downfall in year 2009 and 2018, otherwise the overall performance of production of A quality is increasing, which is positive sign.

Graph 4 : Cocoon Production (B, C & D) in Jammu Division (2008-19)
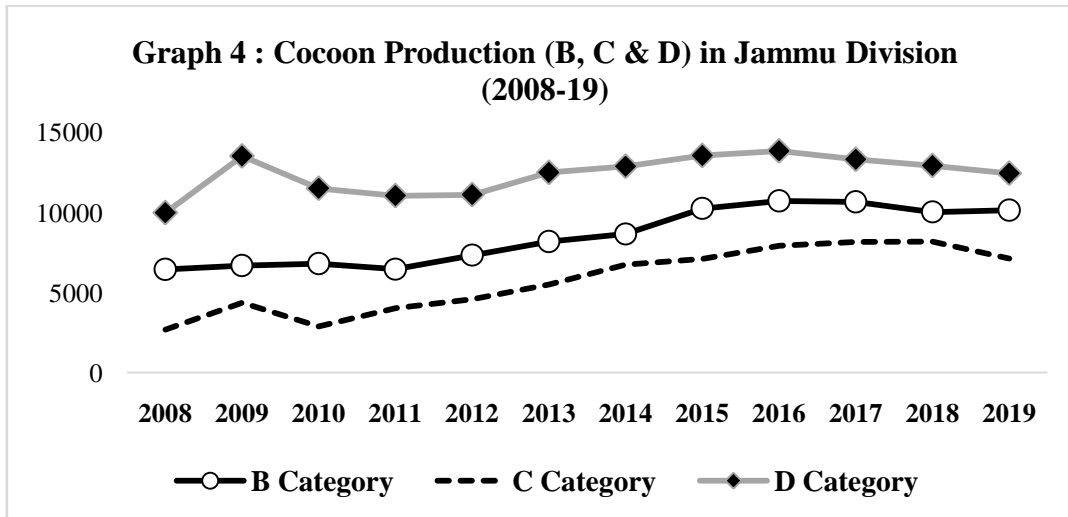
In connection to it, Graph 4 shows cocoon production of B,C and D grade over the period of 10 years from 2008 to 2019. It can be seen that thepace ofB and C category is steeper than that of D grade.

Likewise, Employment in sericulture in Jammu Division has also been displayed in **Graph 5**from 2008 to 2019. In general, the graph of employment shows upward trend from 2008 till 2017 and somewhat become stable during 2018 - 2019. The level of employment in Jammu division was 25 thousand in 2008 and kept increasing till 2012 and reached 30 thousand, then a slight decrease of two thousands was seen in the year 2013. Thereafter, it again started increasing graduallytill 2016 and thereafter it decreased and reached to the level of 24 thousand, which is lower than the level from where, it had started.

Graph 5 : Employment in Sericulture in Jammu Division (2008-19)
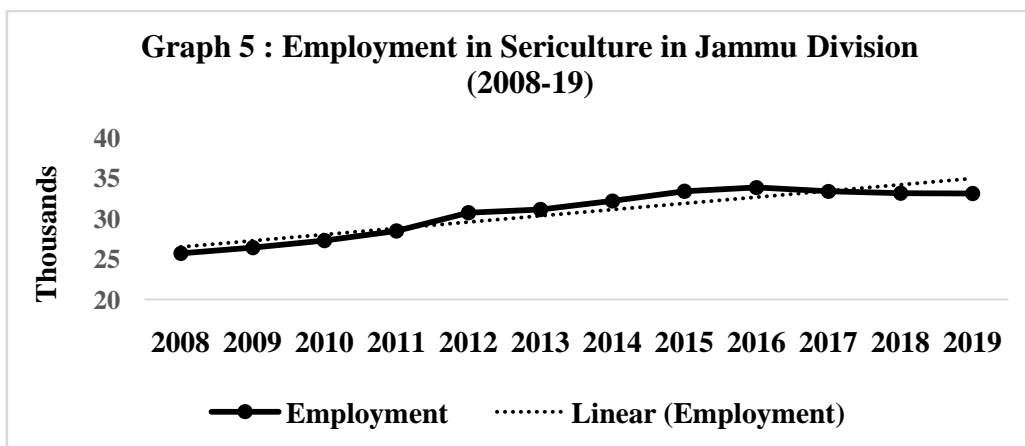
After observing trend of cocoon production and Employment through graphical illustration, it can be stated that the pace of cocoon production is steeper than employment trend. In order to know the employment elasticity of output and reasons behind the slow employment growth, ANCOVA regression model has been employed. The results are displayed in table 1.

Table 1: ANCOVA Regression Output				
Dependent variable	**Employment Level in Sericulture**			
Type of Data	Balanced Panel			
Time Period	2008-2019			
Districts	10 Districts of Jammu Division			
	Coefficients	P-value	Standard Error	t Stat
Intercept	-0.40	0.58	0.71	-0.56
Cocoon Total Production (1)	0.90	0.00	0.17	5.38
Dummy	0.42	0.61	0.83	0.51
Dummy Interaction (2)	-0.085	0.66	0.20	-0.44
(1) + (2)	0.81			
R Square	**0.45**	**Significance F**	**0.000**	
Adjusted R Square	**0.43**	**Observations**	**120**	
				Author's Calculations

The results of the regression analysis interprets that the employment elasticity of output is 0.90 which is closer to the unit elasticity value denoting that one unit increase in production attracts employment with almost same degree. While dummy of the districts where the production of B, C and D quality cocoon has increased significantly, shows the negative sign of coefficients representing that low quality cocoon production retards the employment generation in sericulture industry.

CONCLUSION

From the ongoing district-wise analysis of Jammu division from 2008 to 2019, it can be stated that production of cocoon especially A quality cocoon production has been increasing with the pace of 6.5 per cent per annum. Moreover, employment in this industry is also enlarging, though the pace is somewhat low that production's pace. Ancova regression analysis suggests that employment

elasticity of output is closer to the unit elastic value, whilein dummy analysis of the districts where the production of B, C and D quality cocoon has increased magnificently, it is found low quality cocoon production retards the employment generation in sericulture industry. Thus, this research paper hereby suggests that focused should be given on the technology advancements and risk management for sericulture industry so that problem of low quality cocoon production could be fixed, which will ultimately help in generating the employment especially women employment in this sector.

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