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PROSPECTS OF COTTON EXPORT FROM PAKISTAN UP TO THE YEAR 2010

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Pakistan is pursuing the policy of export led economic growth. Present study is an attempt to assess the future prospects of raw cotton export from Pakistan up to the year 20 10. The data used in this study were collected from secondary sources like Pakistan Cotton Committee. Karachi Cotton Association, Export Promotion Bureau, etc.. Autoregressive integrated moving. average IARIMA) model was applied to the collected data. Various diagnostic checks were used for analysis of data which revealed that ARIMA 2.1,2 is an appropriate model for time series data on cotton export from 1947 to 1995~ The future forecasts exhibited that export of cotton up to the year 20 10 will either decline or remain stagnant.

Key words: cotton export, Pakistan, prospects. year 2010

INTRODUCTION

Pakistan like many other developing countries is facing serious balance of payment problem. Such problems arise mainly from the failure of the country to grow fast enough its exports to meet its import requirements. Cotton. silver fihre of the world, has been the main exchange earner of the country, The share of cotton sector in foreign exchange earned by Pakistan remained 64.35 0/c for the year 1995-96 (Anonymous, 1996-97). Almost 32-48 0/c of the total output of cotton crop is generally exported depending upon the level of internal production, domestic consumption and external demand. However, cotton crop has been passing through crisis situation, both in terms of productivity and overall production. Ever since 1990, the problem of fluctuating cotton production has caused a havoc in export earnings. Over the years cotton production has increased many times hut raw cotton export has not shown the same trend. Keeping in view the role of cotton crop in foreign exchange earnings , forecasts are very important for better future planning and development of the country,

METHODOLOGY

The proposed study was based on time series data related to export of raw cotton (1947-48 to 1995-96), which were collected from the agencies like Cotton Export Corporation, Pakistan Central Cotton Committee, Karachi Cotton Association, Export Promotion Bureau, etc. The data thus collected were thoroughly edited and discrepancies found were removed before their use to make forecasts for the export of cotton.

Forecasts can he obtained by various methods such as purely judgmental approaches, structural econometric models, univariate time series models and multivariate time series models. From the class of univariate time series models, the choice of auto regressive integrated moving average (ARIMA) model was made for working out cotton export forecasts.

The Autoregressive (AR) models were first introduced by Yule (1926) and later generalized hy Walker (1931). The moving average (MA) models were first introduced by Slutzky (1937) and Wold (1938) provided the theoretical foundations to a combined ARIMA process. The hasis of ARIMA approach of Box-Jenkins consisted of three phases namely identification (specification), estimation, testing and application (forecasting). This method has been used extensively in economic research (Lee and Chang, 198 I) and (Zhang, 1986). ARIMA model explains the movement of a time series (Zt). Unlike the regression model, here a set of explanatory variahles are not required. Instead Zt is related to its past values and to a weighted average of current and lagged random dis turbances (M uhammad *et al.,* 1992).

According to Box-Jenkins (1976), the ARIMA model is denoted hy ARIMA (p.d.q), where 'n is the order of the autoregressive process, 'd' is the order of homogeneity i.e. the number of differences to make the series stationary, and 'q' is the order of the moving average process.

The general form of the ARIMA (p.d.q) is

$$\nabla^d Zt \quad c + (\nu_1 \nabla^d Zt\ 1 + \ldots \nu_p \nabla^d Zt\ p) \quad (\nu_1 a_{t\ 1} + \ldots \nu_1 a_{t\ 1}) + a_t$$

Here 'C' is a constant, _ is a difference operator such that

$$6Z, = Z, - Z'.I , \qquad 6^2 Z'.I = c\ Z, - 6Z,.I.$$

and so on, Z,ol' ....., Z,op are past series values (lags). The <"i's are the coefficients, similar to regression coefficients, to be estimated of the autoregressive model where autoregressive (AR) model of order' P' denoted by AR (P) is

$$Z_t = C + \varnothing_1 Z_{t-1} + \varnothing_2 Z_{t-2} + \ldots\ldots + \varnothing_p Z_{t-p}) + a_t$$

at is a random variahle with zero mean and constant variance. <|>,'s are coefficients in the moving average (MA) model, where moving average model of order q or MA(q) is

$$Z_t = a_t - \Phi_1 a_{t-1} - \Phi_2 a_{t-2} - \ldots\ldots\ldots \Phi_q a_{t-q}$$

For the specification and estimation of model, edited time

For the specification and estimation of model., edited time series data were introduced in computer by using the "MINITAB" package. The results thus obtained were put to various diagnostic checks like Residual analysis, Normality tests and Goodness of fit.

Forecasts Ill!' 15 years ahead (i. e. up to 2010-11) were worked out.

To make the projections more precise and realistic. certain assumptions were made as under:

I) Absence of exogenous disturbances such as war., social upheavals and abnormal climatic conditions.

2) Relative price structure of agricultural commodities and agricultural policies will remain unchanged during the projected period.

") The projections will take into account those measures which have already been decided upon under the agricultural policy.

4) The cost of production and the price of output will generally remain the same as in the recent past.

5) The consumer preference will remain the same.

RESULTS AND DISCUSSION

Step I. Model Specification: The time series data were introduced in computer and" MINITAB" package specified the parameters p, d .q ami ARIMA (2.1,2) was considered an appropriate model.

Step 2. Model Estimation: The model ARIMA (2.1,2) was estimated using the same computer package. The brief output of the estimation is as under:

Final Estimates of Parameters

Type'	Estimate	St. Dev.	t-ratio
AR I	-0.1007	0.2157	-0.47
AR 2	0.3317	0.2232	1.49
MA I	-0.0074	0.1393	-0.05
MA 2	0.8902	0.1524	5.84

Differencing: I regular difference
No.ofObs.: Original series 49. after differencing 48
Residuals: SS = 22548766 (backforecasts excluded)
MS = 512472: OF = 44

Modified Box-Pierce chi-square statistic

Lag	12	24	36	48
Chi-square	45(DF=8)	80(DF=20)	13,4(DF=32)	*(DF=*)

Step 3. Diagnostic Checking: Different diagnostic checks were applied to the estimated model which revealed that the model was a good tit. The modified Box-Pierce statistic for the cotton export calculated in step 2 for lag 12 was 4.5 at 8 degrees of freedom which had the observed significance level 0.8041. which indicated that it was non-significant at 5 % significance level.. Hence the fit was proved good. The graph of the original and fitted values and forecasts is given in Fig 1. It is apparent from the graph that the forecasts arc acceptable. as observed and fitted values overlap to a greater extern

The model ARIMA (2. I ,2) was found appropriate for the data from 1947-48 to IY95-96. TIle 15 years ahead forecasts i.e. (up to 2(10) and their 95 % confidence intervals are given in Table I. Forecasts given in Table I indicate that in the year 1996-Y7. cotton export will be 1714.048 thousand bales with a minimum export of 310.657 thousand bales and maximum export of 3117.439 thousand bales. In the year 20 I0-11 cotton export will attain a level of 1526.902 thousand bales. whereas lower limit of export shows that cotton export may decline up to -639.8218 thousand bales and upper limit shows that it may increase up to 3693.6259 thousand bales.

Table I. Forecasts Ill!' cOllon export up to the \edr ~Q10-1 I

Years	Forecasts (000 baks).	Lower limit (000 bales)	Upper limit (000 bales)
1996-97	1714.04834	310.6571045	3117.43945
1997-98	1614.55298	-279.75	3508.85596
1998-99	1580.13916	-379.509888	3539.78809
1999-2000	1550.59961	-481.026855	358222607
2001-02	1542.15906	·508255737	359257373
2002-03	1533.20996	-541.16333	3607 .58325
2003-04	15313 i14	-5.'i5191:'28	3617.81445
2004-05	152853394	-57243335	3629.50122
2005-06	1528.18396	-583.672974	364CU)4102
2006-07	1527.29797	-596.460083	3651.05615
2007-08	1527.27124	-607.130371	3661.67285
2008-09	1526.9801	-618473755	3672.43408
2009-10	1527.00061	-629016968	3683.01807
2010-11	1526.90198	-639.821899	3693.62598

Suggestions: Future forecasts indicated that export of cotton. up to the year 2010. will either decline or remain stagnant. Considering the alarming situation. the following suggestions can be made to increase the export of cotton:

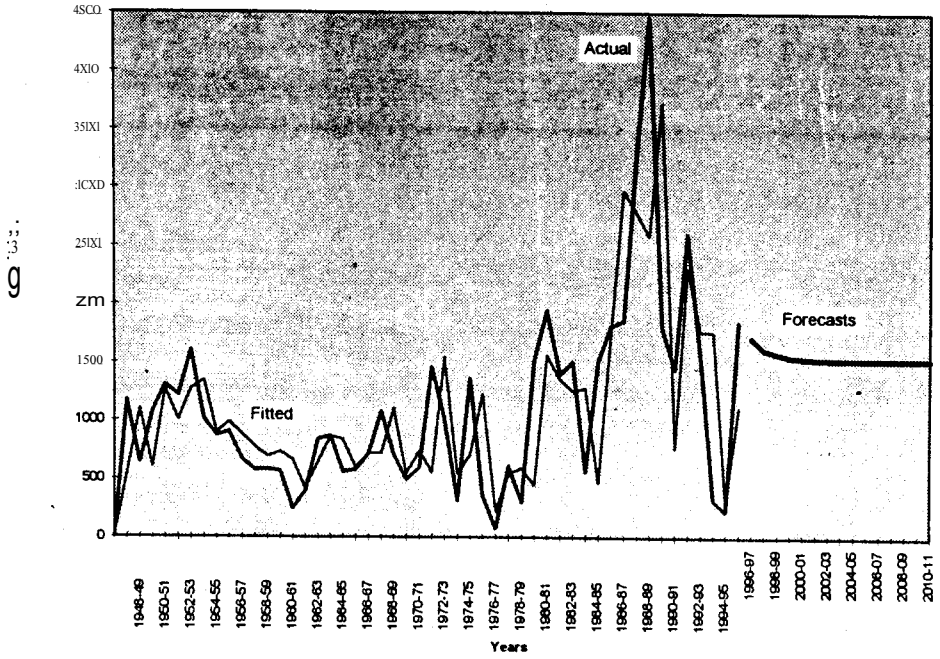
i) Inconsistency in the export policy in the past has adversely affected the exports. Therefore over the time. consistency in export policy is a dire need to improve the exports under all heads of cotton sector.

ii) Free trade policy must be opted to ensure international prices of cotton to cotton growers.

iii) Pakistan has taken the membership of [he World Trade Organization. In the new world trade scenario, all buyers will be free to import their requirements from an increasing number of suppliers. It seems that in the emerging trade system. Pakistan will have (o face high competition for its cotton export in international market. Therefore. commercial marketing policy must be thoroughly revamped to capture the new markets and strengthen the country position in existing market.

iv) Improved infra structural facilities right from the farm gate to the export market are necessary for the improvement of productivity of export sector.

v) Availability of adequate supply of export finance must be



hg. I. Time series plot of <K1uul1tnJ fitted values and forecasts \.)lcotton export

ensured, as it is very important to boost the export under the emerging new trade system.

VI) It is very important that eminent experts possesxrng technical know-how about the particular field .having up todate knowledge about the demand and supply situation of domestic as well as interuational market, and a keen interest to boost the export, he employed in the export office.

vin Availability of cotton is of prime importance for cotton exports under all heads. However, increase in cotton production will only he poxxible if cotton growers are given incentives like appropriate techniques and technology, required input package, credit and marketing facilities, etc.

viii) Recent agreement of Uruguay round conference has strong implications for all Pakistan exports. In order to earn high returns in the' form of t<lrei~ exchange and to earn good-will tor the country,, the growing needs of quality products specified under quality measures of 150-9000and 150-14000, for the interuational market must he fulfilled. In this context quality management of cotton is not only important for its export in raw form .but also tor its use as quality raw material to our cotton-based exportable manufactures. To achieve this end the following measures need to he taken:

(a) Mixing of different varieties of cotton must he avoided not only at growing hut also at ginning and packing levels. Different zones tor growing different cotton varieties should he extablixhed, If di fferent varieties are grown in one region then different vane ties of cotton must he ginned and pressed separately.

(h) Picking practices must he improved and picking morning time must he discouraged to avoid retention of extra moisture content in cotton.

(c) Cleanliness must he given proper weightage during picking and ginning. and procexsmg to avoid contamination of cotton with dust,, etc. Ttl keep the moisture content of cotton at proper level, care during storage is also imperative. For this purpose proper storage facilities must he provided.

(d) Quality of cotton is mostly deteriorated at ginning which affects the micronair quality. To achieve quality lint, ginning must he improved and for this purpose technical assistance to the employed labour and replacement of our dated machinery with modern machinery must he considered.

(e) To ensure marketing of good quality cotton, care should he taken during weighing, packing and labeling , etc. Packaging material must also he of good quality.

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