# A NOTE ON COTTON PRICES IN INDIA IN RELATION TO THE SUPPLY FACTOR.

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The present note gives a preliminary study of the interrelations between the supply and price of cotton in India. It is generally believed that the supply of American cotton exerts a greater influence on Indian prices than the home supply. Some very significant and highly interesting figures were quoted in the Report of the Tariff Board (Cotton Textile) Inquiry, 1927, (pp. 31-32), where it was shown that a large American crop depressed the Indian prices during the next year whereas a short crop in America is followed by the opposite effect. In view of the importance of the question, a preliminary attempt has been made in this paper to estimate the effects of American supply and of Indian supply separately on the Indian price of cotton.

The necessary data, which are shown in the appended table, have all been gathered from official sources. The production figures for American Cotton have been taken from the Year-Book of Agriculture published by the U.S. Department of Agriculture. As regards the Indian supply, the production figures, as officially reported, are generally believed to be underestimates. It has therefore been thought advisable to use instead the visible supply, which is made up of the quantity actually exported, and the quantity consumed in the mills and for which accurate data are available. The price taken is that of 'Broach' Cotton, which is the most widely representative variety in India. The quotations are of wholesale prices in Bombay, the most important cotton market in the country. The period chosen is from 1891-92, the earliest year for which figures are available, till 1911-12, for in this preliminary study it was thought desirable to avoid the extreme fluctuations of the war and the post-war periods. Corrections for the variation in the purchasing power of money during the period were thus not of great importance. In any case, the method of percentage variations adopted in the present paper must to some extent allow for changes in the value of money from one year to the next.

Denoting the percentage change in price by $p$, that in American supply by $x$ and that in Indian supply by $y$, the following multiple regression equation[1] is obtained:—

$$p = 6.83 - 0.56 (x) - 0.22 (y)$$

with the multiple correlation $R(1.23) = 0.79$. If the coefficients of determination of American and Indian supplies are calculated, it is seen that about 53 per cent. of the variance in the cotton price is attributable to the first, and only 10 per cent. to the second. To what extent these two factors in combination can explain the fluctuation in the price of cotton is made clear in the chart, where the actual prices are shown side by side with the estimates made from the above regression equation.

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[1] With two variates and $n = 20$, the one per cent. value of the multiple correlation coefficient is 0.6468. The observed correlation of 0.79 is definitely significant. (J. Wishart, *Quar. Jour. Roy. Met. Soc.*, Vol. LIV, July, 1928, p. 289).

Actual and Estimated Price of Cotton
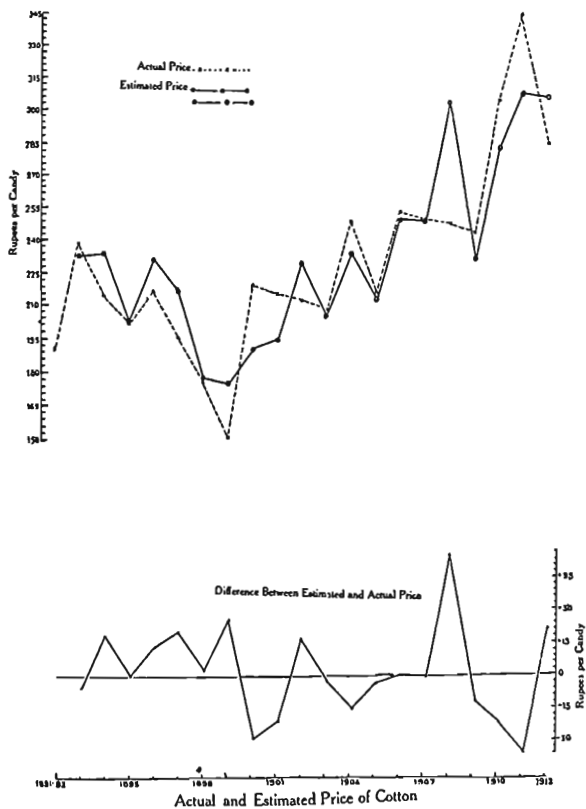
TABLE. SUPPLY AND PRICE OF COTTON IN INDIA.

| Years | Price of Broach Cotton in Bombay (in rupees per Candy of 786 lb) | American Cotton Production (in lakhs of bales) | Visible supply of Indian Cotton net exports plus Mill Consumption (in ten thousand bales) | Percentage Variation over preceding year | | | Estimated price of Cotton | Difference between Actual and Estimated Price |
|---|---|---|---|---|---|---|---|---|
| | | | | Price Col. (2) | American Production Col. (3) | Indian Production Col. (4) | | |
| (1) | (2) | (3) | (4) | (5) = p | (6) = x | (7) = y | (8) | (9) |
| 1891-92 | 191 | 90 | 229 | | | | | |
| -93 | 239 | 67 | 232 | +25·1 | −25·6 | − 1·0 | 229 | − 6 |
| -94 | 213 | 75 | 256 | −10·0 | +11·9 | +10·3 | 234 | + 19 |
| -95 | 202·5 | 95 | 224 | − 5·8 | +26·7 | −12·5 | 203 | + 0·5 |
| -96 | 217·2 | 72 | 283 | + 7·3 | −24·2 | +26·6 | 231 | +13·7 |
| -97 | 196 | 85 | 247 | − 9·8 | +18·1 | −14·2 | 217 | +21·0 |
| -98 | 175 | 109 | 249 | −10·7 | +28·2 | + 0·8 | 178 | + 8 |
| -99 | 130·5 | 112 | 296 | −14·0 | + 2·3 | +18·9 | 177 | +26·5 |
| 1900 | 219 | 93 | 166 | +45·5 | −17·0 | −43·9 | 190 | − 29 |
| -01 | 215 | 101 | 268 | − 1·8 | + 8·6 | +61·4 | 194 | − 21 |
| -02 | 212 | 95 | 317 | − 1·4 | − 5·9 | +16·4 | 220 | + 17 |
| -03 | 207·3 | 106 | 360 | − 2·2 | +11·6 | +13·4 | 205 | − 2·3 |
| -04 | 248 | 98 | 335 | +19·6 | − 7·5 | − 7·2 | 233 | + 15 |
| -05 | 215·5 | 134 | 340 | −13·1 | +36·7 | + 4·5 | 212 | − 3·3 |
| -06 | 232 | 106 | 372 | +16·0 | −20·0 | + 0·6 | 232 | 0 |
| -07 | 248·5 | 133 | 419 | − 1·8 | +25·5 | +18·3 | 249 | − 0·5 |
| -08 | 246·5 | 111 | 353 | − 0·9 | −16·5 | −24·3 | 302 | +55·5 |
| -09 | 242 | 132 | 375 | − 1·8 | +18·9 | +12·6 | 230 | −17·0 |
| -10 | 303 | 100 | 418 | +25·2 | −24·3 | +19·5 | 281 | − 22 |
| -11 | 312 | 116 | 385 | +12·9 | +16·0 | −14·1 | 400 | − 76 |
| -12 | 283 | 157 | 354 | −17·2 | +35·3 | − 5·1 | 304 | + 21 |

Mean value of p $= m_p = 2·12$    Standard Deviation of p $= s_p = 15·70$

  " of x $= m_x = 4·92$             " $x = s_x = 20·50$

  " of y $= m_y = 6·30$             " $y = s_y = 21·50$