CHAPTER IV

EXPORT PERFORMANCE OF INDIA

A SHORT - RUN ANALYSIS

4.1: INTRODUCTION :

The analysis of the previous chapter has revealed that Indian exports have positively reacted on Indian economic development. It has also been mentioned earlier that the Approach Paper of the Fifth Plan has placed 'no net aid by 1978-79' as its main objective. Alternatively, it has placed greatest reliance on export earnings as a major means of financing much needed imports after 1978-79. It is against these background that Indian export performance is to be judged. As such the two chapters that follow shall try to answer the question: How far this optimistic outlook of future export capability fits with the facts of India's export performance during the past twenty years 1951-70. More specifically, the present chapter shall examine the short-run performance of Indian exports leaving its long-run analysis in the next chapter.

In the discussion that follows, three questions regarding short-run performance of Indian exports shall be

addressed : (i) Is there any instability (fluctuations)
in Indian exports? (ii) What are the causes of such
instability? and (iii) What are its consequences on
Indian economic development? This slight disgression is
essential because it is believed that there are severe
fluctuations in export earnings of the developing coun-
tries[1] and these have affected adversely their economic
development. In other words this chapter examines the
causes and consequences of the short-run performance of
Indian exports.

Accordingly, the next section 4.2 shall try to clarify
the basic concepts and methods of measurement of short-

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[1]U.N., Instability in Export Markets of Underdeveloped
Countries, (New York, 1952)

U.N., Commodity Trade and Economic Growth, (New York,
(1953)

U.N., International Compensation for Fluctuations in
Commodity Trade, (New York, 1961)

A.K. Cairncross, International Trade and Developments
in Factors in Economic Development, (London, 1962)

R. Nurkse, "Trade Fluctuations and Buffer Policies of
Low Income Countries", Kyklos, (fasc 2, 1958)

J.D. Coppock, International Economic Instability,
(New York, 1962)

Sir Sydney Caine, "Instability of Primary Product
Prices - A Protest and a Proposal", Economic Journal,
(September, 1954)

term fluctuations in export earnings; section 4.3 tries

to measure the extent of instability in Indian exports;

section 4.4 explores the possible causes of the instabi-

lity; this is followed by the consequences of export

instability of Indian economic development and conclusions

in sections 4.5 and 4.6 respectively.

**4.2: METHODS OF MEASUREMENT OF SHORT-TERM FLUCTUATIONS
IN EXPORTS :**

**4.2.1: MEANING OF SHORT-TERM FLUCTUATIONS
IN EXPORTS :**

The basic concept involved in the present chapter is

'short-term fluctuations in export earnings.' For our

purpose, short-term fluctuations are defined as year-to-

year deviations from the general trend in export earnings.

The main reason for removing trend from the series is to

isolate the fluctuations. This definition involves three

specific problems in measuring the short-term fluctuations:

(i) the first question is of measurement of export

earnings. While measuring export earnings, both earnings

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Footnote 1 continued

A.O. Hirschman, _The Strategy of Economic Developments,_
(New York, 1958)

A.I. Macbean, _Export Instability and Economic Develop-
ment,_ (Cambridge, Mass., 1966).

A.I. Macbean & J. Brodc, _A Note on Export Fluctuations
and Economic Growth,_ (Harvard Centre for International
Affairs, 1964).

in goods and services at current prices are taken into account. The export earnings are not adjusted for the changes in the value of money. This is because while correcting the export earnings through trend, we implicitly correct for secular inflationary or deflationary influences. (ii) The second question is the measurement period. In the present study, annual data is used. One of the main reasons for using annual data is that quarterly or monthly data on Indian export earnings are very difficult to get on a comparable basis. No doubt, the annual data clearly understate the actual fluctuations, (iii) the third question is the measurement of trend.

### 3.2.1: METHODS OF REMOVING TREND EFFECT IN EXPORT EARNINGS :

One method is to smooth out a trend line from the annual figures for export earnings plotted on a graph paper. Then the "relatives", corredted for the trend are obtained by expressing the actual value for each year as a percentage of the corresponding trend value; then the difference between the "relatives" for year 1 and year 2 expressed as a percentage of the relative for year 1, and likewise for other successive pairs of years; then the resulting year-to-year percentage changes are averaged. The result would be the average year-to-year percentage change, adjusted for trend. Seasonal influences would be eliminated by using

annual figures.

The second method involves obtaining the average of percentage deviations from the least-squares trend line through the actual annual values. By steps, first the least-squares trend line is obtained; second, the absolute deviation between the actual annual value and the trend value is obtained for each year; third, this absolute value is expressed as a percentage of trend value for each year; fourth, these percentage deviations from the trend are then summed up and divided by the number of years.

The third method used by Coppock[2] in his studies 'International Economic Instability' and which is less laborious and lends itself to machine method consists of the following :

(i) Logarithms were obtained for each annual value of a variable; (ii) successive first differences of the logarithms were obtained; (iii) the arithmetic mean of the logarithmic first difference was then obtained; (iv) this logarithmic mean was then subtracted from each year-to-year logarithmic first difference in order to obtain the logarithmic difference between the actual and the average (or trend) year-to-year logarithmic differences; (v) these logarithmic differences from the trend,

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[2] op. cit.

some +ve and some -ve, were then squared, summed up, and
*of*
divided by the number/years minus one, resulting into
what is referred to as the "log variance", (vi) finally
the square root of this log variance and anti-log of the
square-root value was founded out. Unity was subtracted
from the anti-log and the decimal moved two places to the
right. The resulting "instability index" is a close
approximation of the average year-to-year percentage
variation, adjusted for trend arrived at by the above
first two methods.

Algebricially:

The instability index (I-I) = anti-log $\sqrt{V_{log}}$

and $V_{log} = \frac{1}{N-1} \sum \left[ \log X_{t+1} - \log X_t - \frac{1}{N-1} \sum (\log X_{t+1} - \log X_t) \right]^2$

Where;

$X_t$ equal the value of the country's exports in year t.

N equal the number of years.

$V_{log}$ the logarithmic variance of the series.

The fourth method employed by McBean[3] in his studies
"Export Instability and Economic Development" is the average
percentage deviation of the export proceeds from their
five-year moving average centred on the mid-year. This

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[3] op. cit.

method can be employed with advantage where no single
linear trend can be fitted. However, it has the disadvan-
tage of losing two years at both the ends of the time
series and of being less convenient for computer calcu-
lation.

There is the fifth method which was used by the U.N.
Secretariat[4] in its 1952 study, "Instability in Export
Markets of Underdeveloped Countries," but it involves no
formal correction for trend. This method consists in
obtaining the absolute differences in values from year to
year, expressing these differences as a percentage of the
larger of the two annual values, and then averaging these
percentages. This method suffered from a major defect.
"For example, a steady increase of 10 % per year in the
values of a series, such as 100, 110, 121, etc. would,
according to the U.N. system, yield fractions like $\frac{10}{110}$,
$\frac{11}{121}$, etc. which, when averaged, would be less than the
conventional 10 %, but the resulting percentage would
indicate considerable instability when in reality these
would be none at all !" It is for this reason that the
U.N. system gives larger percentage figures for instability
than the measures which calculate the deviations around
a trend line, whatever the shape or shapes of the trend
line.

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[4] op. cit.

In the present study, annual export earnings from
goods and services taken as the principal values for
measuring the extent of the short-term fluctuations in
Indian exports. While the principal method used for
measuring the extent of the fluctuations is the percen-
tage deviations from the least square trend through the
actual annual value.

**4.3: EXTENT OF INSTABILITY IN INDIAN EXPORTS :**

The problem of instability of export earnings of
underdeveloped countries did not receive serious attention
during 1950 either by Governments, international organi-
zations or economists. No doubt, U.N. Secretariat, in
its"Instability of Export Markets of Underdeveloped coun-
tries", 1952, did touch upon the problem, but it was prin-
cipally in connection "with the low and unstable export
earnings" of some underdeveloped countries. It was J.D.
Coppock's 'International Economic Instability' which first
tried to study the problem of export instability of deve-
loped and underdeveloped countries rather systematically.
In fact,this is the first major analytical study in the
field that attempted (i) to find out the degree of insta-
bility in export earnings of different countries;  (ii) to
explain them in some rational fashion;  and (iii) to provide
a basis for appraising and devising policies for reducing
the instability. It used the data of exports of goods and

services - 1946 to 1958 for 83 countries for its analysis
and employed log-variance method to measure the fluctua-
tions in export proceeds.

The findings of the study relevant to our purpose
are summarized in Table 4.1. The table reveals the follo-
wing facts:  (i) the instability indices range from 73.8
(Iran) and 6.2 (Switzerland) for total value; 110.2 (Iran)
and 5.3 (Canada) for quantum; and 74.2 (Guatemala) and
3.0 (Switzerland) for unit value of exports. The corre-
sponding values for India were 16.2, 7.0 and 17.5 respe-
ctively;  (ii) in terms of ranking among the countries
in the ascending order, India ranked 31st, 4th and 49th
respectively, for total value, quantum, and unit value
instability indices of exports;  (iii) but the difference
between I-I of total value of Indian exports and that of
Median I-I is smaller than that of the former and the
mean I-I;  (iv) on the other hand, I-I of unit value of
Indian exports is greater than median and mean I-I for
67 countries;  (v) obviously the net effect of (iii) and
(iv) is relatively much less I-I for quantum of Indian
exports than that of median and mean I-I of quantum exports
of 70 countries.

Looked from the point of percentage[*] contribution of

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Table 8.1

International Export Instability (1946 to 1958)

| | Total value of exports | Quantum exports | Unit value exports | Total value Imports |
|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) |
| (i) Number of countries considered | 83.0 | 70.0 | 67.0 | 83.0 |
| (ii) World I-I | 9.1 | 4.2 | 7.6 | 7.4 (terms of trade) |
| (iii) Indian I-I | 16.2 | 7.0 | 17.5 | 11.9 |
| (iv) Maximum I-I | 73.8 (Iran) | 110.2 (Iran) | 74.2 (Guate- -mala) | 50.7 (Lebnon) |
| (v) Minimum I-I | 6.2 (Switzerland) | 5.3 (Canada) | 3.0 (Swits.) | 9.6 (Jordan) |
| (vi) Median I-I | 19.4 | 14.3 | 14.0 | 20.5 |
| (vii) Mean I-I | 21.8 | 17.1 | 15.4 | 22.8 |
| (viii) S.D. | 11.5 | 13.9 | 10.2 | 9.1 |
| (ix) Variance Squared | 133.9 | 194.7 | 104.7 | 83.5 |
| (x) Coefficient of variation | 52.9 | 81.4 | 66.2 | 40.1 |

Source: Coppock J.D., International Economic Instability, McGraw Hill, New York, 1962: Appendix Table of 2.

individual countries to world export instability, the study revealed that six countries supplied about half of the instability; seventeen countries supplied about two-third of the instability and twentyfive countries including India contributed about 85 % of the world export instability.

In short, the study revealed that instability of total value of Indian exports is slightly below median and mean I-I and ranked 31st among the 83 countries, while the instability of its unit value exports is above median and mean I-I and ranked 49th among 67 countries, while Indian exports contributed 1.1 % of the world export instability ranking 23rd among 83 countries considered by the study.

In the present study, instability indices of total unit and quantum values of Indian export earnings for three periods, 1948-49 to 1958-59; 1959-60 to 1969-70 and 1948-49 to 1969-70 are calculated. The following Table 4.2 shows the instability indices of exports for different periods.

The table reveals that I-I of total value and of unit value is greater during the whole period 1948-49 to 1969-70 than those of the two sub-periods. Further during all the three periods, I-I of total value of exports and of unit value exports are greater than that of quantum value exports.

Table 4.2

Instability Index of India's Exports
(1948-49 to 1969-70)

| Sr. No. | Period | I-I of total value of exports of goods & services | I-I of unit value of exports | I-I of quantum value of exports |
|---------|--------|-----------------------------------------------|------------------------------|--------------------------------|
| (1) | (2) | (3) | (4) | (5) |
| 1: | 1948-49 to 1958-59 | 11.20 | 10.50 | 9.30 |
| 2: | 1959-60 to 1969-70 | 8.70 | 11.20 | 4.85 |
| 3: | 1948-49 to 1969-70 | 16.70 | 13.60 | 7.98 |

Source: Estimated from Table I from the Appendix.

4.4: CAUSES OF FLUCTUATIONS IN INDIAN EXPORTS :

So far as the causes are concerned, it must be pointed
out that it is very difficult to explain the fluctuations

in export earnings since there may be innumerable factors, internal as well as external, which directly or indirectly contribute to such fluctuations. If one knows, which factors are dominent in determining them, a large part of the problem would be solved. The only point then remaining would be to measure their relative importance in explaining the fluctuations.

On theoretical, a prior ground, one can group the various factors involved, as was done by Coppock[5] into the following major groups :-

(i)    Economic level of a country;

(ii)   Size of a country;

(iii)  Growth of a country;

(iv)   Monetary factors of a country;

(v)    Size, growth, and importance of foreign trade of a country;

(vi)   Composition of exports;

(vii)  Direction of exports.

So far as the factors in each group are concerned, through correlation and regression analysis, Coppock study brought out 34 explanatory factors out of which only 12 variables

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[5] op. cit. p.81.

were considered most significant in explaining the export
instability of the countries considered. These were :

(a) National Income;

(b) GNP per capita;

(c) Foreign trade as per cent of GNP;

(d) Foreign trade per capita;

(e) Value of foreign trade;

(f) Import value instability index;

(g) Export quantum instability index;

(h) Export prices instability index;

(i) Logarithmic rate of growth of exports;

(j) Commodity export concentration index;

(k) Regional export concentration;

(l) Per cent of export trade to U.S.A.

In order to explain the instability in Indian export,
all the above variables, excepting the last one, are
considered. The last variable is replaced by 'world imports'
with the assumption that the fluctuations in total world
imports would explain the fluctuations in Indian exports
more vividly than country's exports to U.S.A. The result
of simple correlation analysis between India's export flu-
ctuations and other factors is summarized in Table 4.3
below :

## Table 4.3

### Correlation between Export Instability index and other variables of India

| Independent variable | Correlation coefficient (r) | Probable error of (r) | Six times probable error |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| (i) GNP | 0.600 | 0.095 | 0.570 |
| (ii) Per capita GNP | 0.590 | 0.096 | 0.580 |
| (iii) Instability in Imports of op. ser. | 0.090 | 0.140 | 0.840 |
| (iv) Value of Foreign Trade | 0.660 | 0.080 | 0.480 |
| (v) Foreign trade as % of GNP | -0.070 | 0.150 | 0.880 |
| (vi) Per capita Foreign trade | 0.570 | 0.090 | 0.570 |
| (vii) Rate of growth of exports | -0.230 | 0.140 | 0.820 |
| (viii) Unit value index of export | 0.520 | 0.110 | 0.650 |
| (ix) Fluctuation value index of exports | 0.060 | 0.150 | 0.880 |
| (x) Commodity concentration index | 0.560 | 0.100 | 0.590 |
| (xi) Regional concentration index | -0.005 | 0.150 | 0.900 |
| (xii) Instability of terms of trade | 0.490 | 0.110 | 0.670 |
| (xiii) World imports | 0.520 | 0.110 | 0.660 |

Source : Estimated from Tables I, II and XVII from the Appendix.

From the Table, it will be observed that correlation
coefficients/between export fluctuations and (i) GNP;
(r)
(ii) per capita GNP; (iv) value of foreign trade; (vi) per
capita foreign trade; (viii) unit value index of exports;
(x) commodity concentration index; (xii) instability of
terms of trade; and (xiii) world imports, are 0.5 or
greater than 0.5 implying some correlation between export
fluctuations and these factors. However, if one takes
into consideration the conventional rule that the correla-
tion between variables is significant if(r) greater than
Six times the probable error, then one finds that the corre-
lation between export fluctuations and (viii), (xii) and
(xiii) turned out to be insignificant. In short, one can
very well state that the most significant causal factors
of fluctuations in Indian exports are gross National Product,
per capita GNP, value of the foreign trade, and per capita
foreign trade. It may be pointed out that these observa-
tions run counter to the belief that the fluctuations in
export proceeds are due to the changing expectations of the
course                                               is
future/xxxxxx of export prices, which in turn/due to, in main,
oscillating market conditions abroad, and only in few cases
do home supplies have significant influence on the prices.

It should be noted there that the regional concentra-
tion index has very weak correlation with export fluctuations.
Moreoever( r) is greater than Six times the probable error

suggesting that whatever the correlation between them, is not significant. However, the sign of correlation coeffi-
negative
cient is/~~~ which suggests that higher the regional con-
centration, lower is the export fluctuations which is contrary to the usual hypothesis. On the other hand, the value of the correlation coefficient between commodity concentration index and export fluctuations is 0.56 and it is little less than 6 times probable error, signifying positive relation between them. In other words, while geographical concentration of Indian exports has no causal relation with the instability of Indian exports, commodity concentration effected ≠ export fluctuations.


**8.5: EXPORT INSTABILITY AND INDIA'S ECONOMIC GROWTH :**

**8.5.1: PREVIOUS STATISTICAL STUDIES :**

The most relevant question to be addressed is: how far this instability of export earnings has affected India's economic development? It was A.I. Macbean who tried to examine whether export instability has any adverse effect on economic development. The methodology of the study consists, briefly, first in examining various propositions about the causes or effects of export fluctuations in the context of underdeveloped countries; and then testing these propositions by a combination of cross-country regression

analysis and time-series analysis which are sometime presented formally in regression or correlation coefficients, sometimes in tabular comparison of direction or strength of change in one variable compared to another.

Macbean's study, tried to test the following two hypotheses: first by means of a simple cross-country correlation analysis and then by multiple cross-country regression analysis: (i) the first hypothesis is that countries which have highly unstable exports tend to invest a smaller proportion of national income than do countries with stable exports; (ii) the second hypothesis is that the countries with relatively unstable exports tend to have a slower rate of growth of fixed capital formation. With single cross-country analysis, the study revealed that the correlation coefficient between indices of fluctuations in the importing power of merchandise exports and the ratio of investment to income was found to be +0.05 which is non-significant and has the wrong sign. Similarly, the second hypothesis also gains no support from the simple correlation analysis which yields +0.17 correlation coefficient. On the contrary, some support for the possibility of a positive association between export instability and the rate of growth of fixed capital is revealed when the twenty-five countries are ranked by the degree of instability.

The multivariate analysis takes the following variables

as independent: (i) $X_1$ - the rate of growth of import capacity i.e. the total value of exports plus net invisibles and net capital transfers, divided by an index of import prices; (ii) $X_2$ - the instability of importing power of merchandise exports; (iii) $X_3$ - the rate of increase (or decrease) in reserves of gold and foreign exchange over the period; (iv) $X_4$ = the percentage change in ratio of capital goods imports to domestic fixed-capital formation; and (v) $X_5$ - the percentage change in the ratio of capital goods imports to total imports. The cross-country analysis was carried out by taking 25 underdeveloped countries for which the data were available. The results of the analysis are summarised below :

(i) $\dot{I} = -5.62 + 1.09X_1 + 1.21X_2 - 0.14X_3$ $\qquad R^2 = 0.30$

(ii) $\dot{I} = -4.59 + 0.71X_1 + 0.95X_2 + 0.10X_3 - 0.19X_4 + 0.16X_5$ $\quad R^2 = 0.81$
$\qquad\quad (0.24)\ (0.39)\ (0.10)\ (0.03)$

(iii) $\dot{I} = -4.14 + 0.84X_1 + 0.85X_2 - 0.19X_4 + 0.15X_5$ $\qquad R^2 = 0.81$
$\qquad\quad (0.19)\quad (0.38)\ (0.04)\ (0.02)$

(iv) $I/Y = 12.36 + 0.03X_1 + 0.038X_2 + 0.05X_4 - 0.05X_5$ $\qquad R^2 = 0.105$
$\qquad\quad (0.04)\ (0.081)\ (0.07)\ (0.05)$

Where,

$\dot{I}$ is the rate of growth of fixed capital formation. and $I/Y$ average investment to average income.

In the equation (i) variable $X_2$ has a positive value,
of the
though low,∕coefficient while the hypothesis requires a

negative sign. In the equation (ii) two more coefficients are added as they have sufficiently high simple correlation coefficient with $\overset{\bullet}{I}$. Even in this equation also the coefficient of $X_2$ is positive implying the greater the instability, the higher the rate of fixed-capital formation. In equation (iii) the variable $X_3$ is dropped as its coefficient is not significant at 005 level. Even then the new equation (iii) has positive coefficient of $X_2$. Finally, even though I/Y has a slightly-improved simple correlation with $X_2$, the coefficient of $X_2$ in the equation (iv)is again positive but well below the 0.05 significance.

Hence, the study remarks, both the simple correlations and the multiple regressions yield no support to either of the two of our hypothesis."

This conclusion is cross-checked by more direct method of examining the relationship between international export instability and economic growth in underdeveloped countries. Simple correlation analysis for 22 countries gave a correlation coefficient of -0.29. However, when the countries were ranked by the degree of instability of exports and grouped in thirds, the inverse correlation powers were confirmed but thEse were very weak. Further, when an additional variable, namely, the rate of growth of exports, was added,
the regression coefficient for instability of importing power of exports

became smaller and less significant. It is interesting to note that the rate of growth of exports was significantly associated with income growth. When the ratio of foreign trade to income and the rate of growth in reserves were added, the multiple regression equation became much less significant. The following regression equations were formed :-

$$\dot{Y} = 3.6 - .0082X_v + 0.4278\dot{X} \qquad\qquad R^2 = .4285$$

$$\dot{Y} = 4.1 - .0089X_v + 0.3021\dot{X} + 0.0002T + 0.1028R \qquad R^2 = .4837$$

Where,

$\dot{Y}$ denotes rate of growth of output;

$X_v$ instability of importing power of exports;

$X$ rate of growth of import capacity;

$T$ ratio of foreign trade to income;

$R$ change in reserve of foreign exchange in gold.

It will be observed that in neither of the equations $X_v$ the instability of exports is significantly related to the growth of GDP. The study, therefore, remarks that for these 22 countries, chosen only on the basis of available data, little or no relationships exist between short-term instability in their exports proceeds and the rate of growth of their national incomes.

**4.5.2: CASE STUDY OF INDIA :**

The analysis that follows has adopted the same methodology through which export-growth relationship in India has been examined in the previous chapter. In brief, it tries to examine the hypothesis of adverse consequences of export fluctuations on eéonomic growth of India through direct and indirect analysis using time-series method. For the purpose, time-series data (1950-51 to 1968-69) of Indian economy are used to test the following three hypotheses, one direct and the other two indirect: Fluctuations in Indian exports tend :

(i)   to discourage the growth of the economy;

(ii)  to lower the rate of growth of fixed capital function of the economy;

(iii) to discourage investment, decreasing the investment income ratio of the economy.

The results of correlation and regression analyses are presented in Table 4.4. In the Table, the following notations are used :

$\bar{Y}_{t+1}$ - Rate of growth of GNP at time t+1.

$Q_{t+1}$ - Change in per capita GNP at time t+1.

$I_{f(t+1)}$ - Fixed capital foundation at time t+1.

$I_t$ - Gross Invest at time t.

$\overline{I}_t$ - Rate of growth of $I_t$.

$X_t$ - Exports of goods and services at time t.

$\overline{X}_t$ - Rate of growth of $X_t$.

$A_t$ - Foreign aid at time t.

$E_t$ - Short-run fluctuations in $X_t$.

$F_t$ - Foreign exchange reserves at time t.

$\overline{F}_t$ - Rate of growth of $F_t$.

It may be observed from the table that three groups of equations, one for each of the above three hypotheses, are presented. The following observations may be drawn from the various equations: (1) the value of the coefficients of $E_t$ in all the three equations in group (1) are positive, which is sufficient to suggest that instead of being harmful, export fluctuations have helped the process of growth of Indian economy. (2) With addition of three more variables, the values of the constant term in the equations (ii) and (iii) have decreased. However, the values of $E_t$ in the equations are not significant as shown by the 't' score under the values of the coefficient. (3) The coefficient of correlation and of regression between export fluctuations and rate of growth of fixed capital function are +0.15 and +2.44 respectively. These values indicate that export fluctuations have helped the process

Table 4.2

Consequences of exports fluctuations on Indian economic development.

| Group No. | Sr. No. | Period | Regression equation | $R^2$ | D.-W. | Coe. of V. (%) |
|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| 1: | (i) | 1948-49 to 1968-69 | $\bar{Y}_{t+1} = 5.22 + 0.008E_t$<br>(.363) | -0.0614 | 1.5483 | 107.11 |
|  | (ii) | 1951-52 to 1967-68 | $\bar{Y}_{t+1} = 2.89 + .02\bar{I}_t + .001A_t + .32\bar{X}_t + .02E_t$<br>(.108) (.423) (1.968) (.822) | .0019 | 2.2941 | 103.86 |
|  | (iii) | 1951-52 to 1967-68 | $Q_{t+1} = 1.86 + .07\bar{I}_t + .00A_t + .35\bar{X}_t + .01E_t$<br>(.550) (.578) (2.357) (.549) | .1021 | 2.6124 | 141.68 |
| 2: | (iv) | 1950-51 to 1967-68 | $I_{f(t+1)} = 1215.64 + 2.44\ E_t$<br>(.878) | .0155 | .1487 | 54.46 |
|  | (v) | 1950-51 to 1967-68 | $\mathfrak{A}(\frac{I}{Y})_t = .13 + .13(\frac{A}{Y})_t + .001\bar{X}_c + .00004E_t - .0004\bar{F}_t$ | .1120 | 1.4356 | 14.30 |

Source: Estimated from Tables I to VI from the Appendix.

of fixed capital formation of Indian economy. No doubt, the values are not significant as shown by 't' scores of the coefficients. And (4) the coefficient of correlation and of regression (as shown in equation (v) of group (3) ) between export fluctuations and the ratio of investment to GNP are +0.58 and +.00004. These values also point out that export fluctuations have also enhanced the gross capital formation of the economy.

In short, the foregoing direct and indirect analyses have suggested that there is no tendency of any adverse effect of export fluctuations on Indian economic development.

## 4.6: SUMMERY AND CONCLUSION :

The foregoing analyses has addressed itself with three main questions concerning short-run performance of Indian exports:

(i) Is there any fluctuations in Indian exports ?

(ii) What are the causes of such fluctuations ? and

(iii) What are its consequences on Indian economic development ?

The analysis has revealed that, using log-variance method, instability indices of total, unit and quantum values of Indian export earnings during 1948-49 to 1969-70 have been 16.70, 13.60 and 7.60 respectively. While simple

correlation analysis has suggested that the most signifi-
cant causal factors of such fluctuations in Indian exports
have been, such internal factors as GNP, per capita GNP,
value of foreign trade and per capita foreign trade. This
revealation runs counter with the belief that fluctuations
in the exports of the developing countries are more due to
the oscillating market conditions abroad rather than the
internal factors mentioned above.

Finally, simple and multiple correlation and regression
analyses have revealed that the fluctuations in Indian
exports have not adversely affected Indian economic develop-
ment. This conclusion also runs counter to the general
belief that fluctuating export earnings of developing
countries have harmed the process of their economic develop-
ment.