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Constraints on Growth & Policy Options

A Reply to T.N. Srinivasan's Comment

By

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CONSTRAINTS OF GROWTH AND POLICY OPTIONS :
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Srinivasan's comment (EPW, November 2⌀, 1977) challenges pretty much everthing I had to say on the performance and prospects of the Indian economy in my two recent articles published in this weekly (Special number of August 1977 and the issue dated 17 September 1977). Although ostensibly a comment on my articles, he has also used the occasion to launch a more general attack on opinions (especially on the role of outward oriented growth strategy) which happen to differ from his. The following response is, however, limited to criticisms which directly relate to the arguments and judgements contained in my articles. These criticisms can be grouped broadly into **four** categories: (1) those relating to the explanations for the stagnation of the economy during the last decade; (2) those questioning the basis for my assessment that it is highly improbable that the rate of agricultural growth can be stepped up to anything like the targetted levels; (3) the potentials for export-led industrialisation and their implications; and (4) the role of anti-poverty programmes. I shall deal with them in the same order.

Recent Economic Stagnation

Srinivasan unquestioningly accepts the proposition that
the economy has been stagnating since 1966, but strongly disput
my contentions that (a) there has been a deceleration in food output
growth during the last decade; and (b) this is a major factor in
explaining the overall stagnation of the economy in this period.

The validity of using growth rates computed on the basis
of 3 or 5 year averages for establishing the stability or otherwise
of the behaviour of output trends was debated in the mid-sixties
apparently without clinching the issue.[1] It is of course better to
use the observed output levels for all the years covered by the
period under study and apply rigorous statistical tests to determine
whether the underlying trend is steady, accelerating or decelerating
Accordingly we have tested the goodness of fit of two types of
functions (namely $\text{Log } Y = a + bt$ and $\text{Log } Y = a + bt + ct^2$) to the
indices of aggregate real output, crop output and foodgrain output
for the period 1949-1975 as a whole, as well as for 1949-1964 and
1967-1975 separately.[2] The results of the exercises are summarised
in the Table below.

Trends in aggregate GNP, foodgrains production and total Crop output India 1949 - 1975

Variable (Y)	Period (t)	Estimated equation	R^2
Gross National Product	1949-1975	$\text{Log } Y = 4.5425 + .034275t^*$ $(.002565)$	.99
		$\text{Log } Y = 4.523024 + .038214t^* - .000135t^2$ $(.002565)\quad(.000085)$	.99
	1949-1964	$\text{Log } Y = 4.525106 + .036464t^*$ $(.001182)$	.98
		$\text{Log } Y = 4.567309 + .023137t^* + .000740t^{2*}$ $(.00369)\quad(.000199)$	.99
	1967-1975	$\text{Log } Y = 4.660399 + .029182t^*$ $(.0031)$	.93
		$\text{Log } Y = 3.687725 + .01187t - .001708t^2$ $(.052606)\quad(.001305)$	.94
Foodgrains:	1949-1975	$\text{Log } Y = 4.255399 + .026025t^*$ $(.001533)$	.93
		$\text{Log } Y = 4.212033 + .35121t^* - .000322t^2$ $(.006406)\quad(.000221)$	.93
	1949-1964	$\text{Log } Y = 4.229431 + .029528t^*$ $(.003316)$	.85
		$\text{Log } Y = 4.199951 + .39354t^* - .000578t^2$ $(.014410)\quad(.000824)$	.86
	1967-1975	$\text{Log } Y = 4.366734 + .020890t^*$ $(.008198)$	.48
		$\text{Log } Y = 4.839208 - .20719 + .000905t^2$ $(.179190)\quad(.003891)$	.86
All Crops	1949-1975	$\text{Log } Y = 4.249914 + .026393t^*$ $(.001236)$	.95
		$\text{Log } Y = 4.199336 + .036992t^* - .000376t^{2*}$ $(.004888)\quad(.000168)$	.96
	1949-1964	$\text{Log } Y = 4.212589 + .031582t^*$ $(.00234.1)$	.93
		$\text{Log } Y \; 1 \; 4.200313 + .035674t^* \; .000241t^{2*}$ $(.010297)\quad(.000589)$	.93
	1967-1975	$\text{Log } Y = 4.311225 + .023203t^*$ $(.006654)$	.63
		$\text{Log } Y = 4.879010 - .026799t + .001087t^2$ $(.144662)\quad(.003141)$	.64

In the case of foodgrain output, the hypothesis of decelera-
ting growth is not corroborated by the data. Taking the period
1949-1975 on a whole, the constant growth rate function fits the
data much better than the quadratic form. When we consider the
period 1949-1964 and 1967-1975 separately, the constant growth rate
hypotheses fits the data better in both periods. However, while the growth
rate in the latter period is lower than in pre-green revolution era, the
differences in growth rates are not statistically significant. The
picture is substantially the same for all-crops, with the difference
that though the differences in growth trends between the two periods
are not statistically significant, the hypothesis of deceleration is
supported by the results of regression for the period 1949-1975
taken as a whole: It will be seen that with the function Log Y =
$a + bt + ct^2$ (a) the R^2 is slightly higher; (b) the value of
coefficient 'C' is negative; and (c) all estimated coefficients are
statistically significant at the 5% level.

In the case of total GNP, we find that while the hypothesis
of deceleration cannot be sustained by the results of regression
for the period 1949-1975 as a whole, tests of homogeneity of
coefficients for the two sub-periods show that the differences between
the slope co-efficients are statistically significant at the 5% level.
Since the estimated growth rate for 1967-1975 is lower, the latter
findings would seem to support the hypothesis of deceleration, the
more so because the earlier period seems to have experienced an
acceleration of growth. I don't know if Srinivasan's assertion about
stagnation since 1966 (deceleration is obviously a more accurate
description of the phenomenon) was based on any such analysis. Be that

as it may, if despite the ambivalent results of the statistical-
tests,[2] he can maintain that aggregate growth in the post-1966
period has declined from the trends of the first three plans, I
suggest that there is at least equal justification for the propo-
sition that growth of total crop output (though not of foodgrain)
has decelerated. And, since population growth has been steadily
rising over the period, all this points to a significant decline
in growth of per capita food and crop output.[4] Srinivasan has to
come up with some convincing arguments before dismissing the
suggestion that the slower growth of agricultural production during
the so-called "green revolution" period, and the near stagnation of
per capita foodgrain supplies since 1966, were a significant
influence on the performance of the rest of the economy.

While asserting that "there could be no escape from the
stagnation which has characterised the economy since 1966 without
a change of economic policy", Srinivasan's policy prescriptions
are curiously ambivalent: As mentioned earlier, he dismisses the
behaviour of agricultural production as a factor of any major
consequence in explaining recent trends in the economy. Later on
he says that "by the middle sixties...... a bold thurst towards
liberalisation and export orientation' would have paid rich dividends
(emphasis mine) given the industrial base which had been built
by them, but the process of liberalisation initiated in 1966 was
not carried far enough.[5] These statements, however, do not seem
to quite sqare with his disclaimer earlier in the article[6] where
he says that for an economy of sub-continental dimensions "faster

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expc.. gro.th <u>by itself</u> (cannot) put the economy on a faster growth path.' and goes on to accuse those who are skeptical that " a more open and less inward looking strategy" will make a dramatic difference as being "naive" or being guilty of "mischievous misrepresentation". The debate, at any rate in my view, is precisely on how significant a difference will be made to overall economic performance by this (or any other alternative) strategy and whether it can be at all considered meaningfully in isolation from other dimensions of policy.

Prospects for further Agricultural Growth

Irrespective of whether or not the growth of foodgrain and agricultural outputs has decelerated in the past decade, the fact remains that the growth is very slow, and far below what has beend targeted. By the procedure Srinivasan himself prefers, the trend growth rates in foodgrain production (as well as total crop output) over the last 27 years has been barely 2.5 per cent a year. And it would call for a significant improvement over this performance to sustain the 3.2 per cent annual growth which form the basis of my assessment of the prospects for overall growth and which Srinivasan considers to be unduly pessimistic. He dismisses my calculations of feasible growth of foodgrain production too aggregative and as lacking in "any underlying explanatory mechanism or theory" to be taken seriously. And he cites his joint study with Parikh[7/] as establishing that 'asound technical basis for faster agricultural growth exists at present".

That the projections of production potentials in my paper are
based on a simplified view of the determinants of crop production,
that they do not take into account all the inputs which contribute
to output, and that calculations based on national averages of yield
responses to inputs in a country of India's size and diversity ought
to be treated with caution - these are all limitations
explicitly recognised in my article.[8/] Let me, however, also point
out that these limitations are in no way unique to my exercise. The
view of crop production as a function of the extent of total and
irrigated areas, their allocation between crops, the amount of
fertilisers used and the yield responses to irrigation and fertiliser,
is basically the same as the concept underlying the Parikh and
Srinivasan study. The latter, like mine, also assume additivity of
responses to different inputs. Incomplete coverage of crops and
inputs and failure to allow for differences in quality of irrigation
are common defects of both exercises.

The PS study is significant not because it demonstrates the
feasibility of large increases in agricultural production[9/], but
because it is far and away the most comprehensive and systematic
effort to estimate fertiliser response functions for different crop
varieties and regions and to work out, under specified constraints of
total crop and irrigated areas in different regions of the country,
the minimum requirements of fertiliser needed to sustain the Plan
targets of crop production for a given future date. In the latter
respect, it is a truly pioneering effort.

What is of interest for the present argument is its finding that, given (a) the limits of expansion of total crop and irrigated areas within the specified period of time (namely the fifth plan), (b) their respective regional distribution, and (c) the region-wise yield responses of different crops and varieties to the three principal sources of plant nutrients (namely N, P_2O_5, and K_2O), it is possible to realise the planned agricultural targets for 1978-79 with a substantially smaller volume of fertilisers than assumed by the planners. This would mean that under conditions of optimal allocation as shown by the exercise, the incremental responses of crop yields: per unit nutrient, and hence the rate of return to fertilisers, is more than implied in the plan calculations.

Moreover, if the response curves estimated by Parikh-Srinivasan held under conditions of mass application and we take the implied average yield response per unit of nutrient corresponding to their optimum solution, the increase in output corresponding to the increase in fertiliser and other inputs which actually occured in the past decade should have been much higher than my estimates. This only serves to reinforce the point that fertiliser response coefficients assumed in my calculations of production potential are on the conservative side.[10/] As a basis for forecasting, the PS model, for all its sophistication, is not demonstrably superior to my cruder attempt. It raises more questions than it answers.[11/]

That the potential output growth which should have been
expected on the basis of observed increases in various inputs seems to
bo much higher than increases in actual output in the last decade
strikes me as a significant finding deserving explanation. I
suggested that this divergence, as well as the fact that fertiliser
use has not been growing anywhere near as fast as expected, could
be explained by (or at is at least consistent with) the hypothesis
that the responses actually experienced by farmers under conditions
of mass application are not nearly as large as suggested by the
fertiliser trials. Since these trials are quite widespread and
scientifically designed, it is legitimate to assume that the data
are not vitiated by any conscious biases. Therefore, the apparent
discrepancy between potential and actual responses have to be
explained in terms of other factors which, both Parikh-Srinivasan
and I suggest, include the coverage and quantity of extension
services, the effectiveness of organisations for supply of inputs,
quality of irrigation, quality of management, and the like.

But such a list is no more than a restatement of generalities
which have become commonplace wisdom in the subject and simply
will not do as a guide for action. We need to know far more about
the relative importance of these different factors, as well as the
nature of corrective measures needed, than we seem to at present,
before concrete changes in those aspects of agricultural programmes
can be suggested. However, even when know that sort of changes are
needed, it is essential to recognise institutional constraints.

For instance the quality of irrigation, which everyone concedes
to be crucial, is far more difficult and time consuming than Srini-
vasan allows. I recall that Minhas, during his tenure in the
Planning Commission, headed a Task Force [12]/which made a persuasive
case for an integrated programme of consolidation, levelling and
shaping of land in command areas of irrigation projects as
essential preconditions for efficient use of water. On the
recommendati n of this Task Force, a few pilot schemes for such an
integrated effort in some irrigation project areas were also included
in the Fifth Plan. But, to my knowledge, none of these projects has
got off the ground, let alone making any significant progress in
actual implementation. These problems cannot be lightly dismissed,
and given our present state of ignorance, I am afraid it is a bit
too facile to assert, as Srinivasan does, that "there is no reason
why these (policy changes) cannot be implemented".

The Prospect of Export-led Growth

The other major thrust of Srinivasan's critique relates to my
judgements on the potential role of an export-oriented development
strategy. He argues that I, along with many others, are guilty of
seriously under-estimating the scope for increasing India's
manufactured exports: after all India at one time used to be a
leading exporter of manufacturers, and at present much smaller
countries like Korea and Taiwan export so much more than India with
a bigger and more diversified industrial base does. Though disclaimin
any intention to sug est that a more export-based strategy will
by itself generate faster overall rate of growth in India, he severely
chastises those who are skeptical of the relevance of the Korean and
Taiwanese experience to India.

The skeptics of the Korean and Taiwanese 'miracles (or rather their relevance to India) are reacting to the fervour - of which the Balassa piece which Srinivasan so enthusiastically commends is a good example · with which many international experts argue that all developing countries should emulate the Korean and Taiwanese examples and stand to gain dramatically by doing so. Skeptics are also reacting to the suggestion that all it takes to reproduce the Korean or the Taiwanese miracles is "right pricing policies". They suspect that the explanation for the extraordinary performance of these countries is rather more complex and that a proper, balanced, explanation of the Korea-Taiwan type of experience will have to take into account (a) the major role played by specialised export houses of Japan, as well as of the major distributive chains of US and Europe in providing the know-how and market outlets · least in the early stages of their export boom; (b) the role of ·e "special" political relations, again at least in the early sta ᵇ, between these countries and their major trading partners; and ·) the nature of social and political arrangements which one way or other, succeeded in achieving the necessary in·e ·l cohesion. By the same token it is also necessary to explain wh· ·her countries which followed the liberalisation.export- promot· policies (a.g. Pakistan) did not do so well.

Srinivasan dismisses the political aspects of the problem in · an altogether too cavalier fashion. That neither he nor I are experts in foreign policy or politics does not make these aspects unimportant

or irrelevant to the argument. It does not take much expertise in foreign policy to sense that international trade is very much a dimension of international politics. Nations prefer particular external political alignments which serve their interests, of which the economic welfare of the population as a whole is only one element But it would be the height of a naivette to suggest that foreign trade policies and strategy are decided purely on economic grounds (If it were so, how does one explain the reluctance of the advanced countries to permit liberal imports of labour-intensive manufactures from developing countries?) It is of course possible that Srinivasan considers the internal and external political consequences of a major change of development strategy in favour of exports will be justified by the economic gains. But he cannot brush aside those who want to know more about ramifications of such a shift in development strategy and those who have a different appreciation of the balance of gains and losses from such a shift. These are all perfectly legitimate concerns and to condomn those who voice such concerns as being naive, mis-informed or mischevious does not do credit to Srinivasan.

As for the specific case of India, I happen to agree with many of Srinivasan's propositions stated in general terms. For instance, I would agree that the manner in which the systems of controls and licensing has been actually operated, as well as the assymotry in the profitability of exports and import substitutes, have resulted in wasteful use of resources, distroted income

distribution, and contributed significantly to the erosion of the
integrity of our political and administrative process. A considerably
faster expansion of labour-intensive exports could also, in
principle, benefit the country by raising the overall rate of growth
of incomes and employment, and lowering capital output ratios.
While one may agree with such statements about the nature and
directions of the effects flowing from the policy package advocated
by Srinivasan, there are serious disagreements on the magnitude of
the potential gains. In my September 17 paper,[13] I have given some,
admittedly simplified, calculations to show the order of expansion
of exports as a whole, and of manufactured exports in particular,
which would be needed if the targetted growth rates of 5-5.5 percent
per annum in GDP were to be sustained in the face of a 3.2 percent
annual agricultural growth without sacrificing price stability.
Is this order of expansion in manufactured exports feasible? If
so under what conditions? What is the order of correction in the
exchange rate-tariff-subsidy structure needed? Is such correction
alone sufficient or do we need to back it up with conscious
planning of investment? And so on.

Srinivasan, however, studiously avoids committing himself
on these speifies and also on the question of how much of an improve-
ment over past performance is likely to be if his policies were
followed. Does he think that we can achieve the 7 per cent annual
growth rate (with agriculture growing at 4/2%) which the "wild
optimists" of the P.D (to which I was priviliged to belong at that
time) advocated so enthusiastically in the mid-sixties, and which

seen to have again become the magic numbers of the Janata Party's
economic programme? If there were a set of programmes which will
bring this to reality, one wo ld like Srinivasan to spell it out
I certainly would be happy to be proven wrong. But if all the
changes we are debating about adds, say, 1/2 to 1 percentage point to
be overall growth rate,.it makes but little difference to the speed
with w ich we can solve our central problem, namely removal of
abject poverty.

There is room for honest differences about the desirability
of export led industrialisation per se, and more importantly on the
limits within which it can help achieve a significantly higher growth
rate than in the past. Srinivasan and others of his persuasion would
be fairer to their critics, and more persuasive, if they went beyond
repeating the "mantrams" of decontrol, "right exchange rates" and
liberalisation to provide us a detailed and dispassionate examination
of the magnitude of the difference which a major shift to export-led
growth strategy could make for overall growth and the implications
of such a shift for the pattern of production, foreign trade strategy,
internal organisation of production, attitudes to multi-nationals, and
other related issues.

Anti-Poverty Programmes

It is in the context the difficulty of stepping up the overall
growth that I stressed the necessity for greater emphasis in
redistributive measures as a means of alleviating the conditions of
the poor, assuming of course that everyone is serious about it.

That this requires a far tougher and more purposive fiscal policy
aim.d at transferring incomes from the richer regions and classes to the
poorer segments is no more than stressing the obvious. The only
additional suggestion I made was that a substantial part of public
sector plan funds should be earmarked for development of areas where
the poor are concentrated. While I would certainly prefer these
anti-poverty programmes to be oriented to productive activities (in
which I would include education, health and water supply), I would
be willing to accept the eventuality that some of the expenditure
deteriorates into doles. How effectively these programmes can be
made to work in terms of ensuring productive use of funds and also
ensuring that the benefits really reach the poor depends ultimately
on the quality of local institutions, which raises questions beyond
the economists' competence but which are nonetheless central to
the problem!

Srinivasan says that the "anti-poverty" programme will itself
in due course generate faster agricultural growth and hence in
overall output as well. While this possibility cannot be ruled out,
I am more concerned in the present context with what can, and ought
to, be done in the next 5-10 years. And here, I still maintain
that the constraints on agricultural growth in the medium term are
so severe that to plan the scale and pattern of investment ignoring
them will only mean compounding the imbalances which have characterised
the economy for some time now. Srinivasan says that the existence

of a $7-8 billion reserve by way of food and foreign exchange makes
bold new departures possible.[14/] The departures he has in mind call
for full decontrol, liberalisation, exchange rate corrections, and
bolder public investment programmes. If public investment is to be
increased, how should the increase be allocated as between agricultur
heavy industry, light industry, social services and plain public
agriculture, heavy industry, light industry, social services and
plain public works? Unless there is clarity in these questions,
which I suggest cannot be obtained except in relation to a well-
defined judgement regarding agricultural and export prospects,
"bold initiatives" will indeed be taken only to find, in the not-to
distant future, that the reserves (which are not excessive in relation
to the volume of our foreign trade) have been sqandered to no purpose

As for Srinivasan's argument that the course of action
outlined in my paper is not politically any more feasible than
his package, I would readily grant that the political difficulties
of any major shift of policy are indeed great. But we are not
discussing how to bring about political changes, but seeking to
clarify the nature of the constraints and options available in the
weak, hope that debate can be made to focus on the relevant and
important issues.

N O T E S

I am grateful to T.N.Krishnan and I.S.Gulati for comments on an earlier draft; to Krishnan for expert advice in the statistical analysis of time series data and the application of various tests of significance; and to Purushothaman Nair for computational assistance. Responsibility for any errors are mine.

1. The joint article by Minhas and Srinivasan published in the Statesman, Nov.14, 1966 (referred to by Srinivasan) was in response to an earlier article (also published in the Statesman) by Ashok Mitra. In a subsequent piece Ashok Mitra raised some further questions about the validity of the procedure suggested by Minhas-Srinivasan.

2. The basic data used in these regressions are official estimates of GNP at constant prices, and official indices of foodgrain and of crop output.

    In all regressions, we have dropped 1965-66 and 1966-67 as being exceptionally bad years. This facilitates a more meaningful comparison of the "pre-green revolution" and "green revolution" periods. For, although the "green revolution" nominally started in 1965 (when the HYVs were introduced on a significant scale), the actual ouput in 1965 and 1966 were so low, due to adverse weather, that their inclusion as part of the "green revolution period" would seriously vitiate any analysis of output trends in this period. The homogeneity of the estimated intercepts, slopes and overall regressions for the two sub-periods have been tested in all cases using the Chow test. This test shows that (a) for all these variables under study, the differences in intercepts are statistically highly significant; and (b) the differences in slopes are not statistically significant in the case of foodgrains and crop output but they are significant at the 5 per cent level in the case of GNP.

3. The mere fact that form a purely statistical viewpoint the trends in two different periods are more or less the same is by itself insufficient basis to judge relative performance. If the objective conditions (by way of new technological developments, policy shifts, etc) in the two periods under comparison differ to such a degree as should have resulted in significant differences in performance, this fact needs also to be taken into account. Srinivasan himself implicitly recognises this when he introduces the distinction between the "pre-green revolution" and the "green revolution" periods.

4. Regressions of per capita food grain consumption with time suggest that the former was increasing, though at a modest rate, from 1951 through 1964. By contrast there was hardly any trend between 1967 and 1976. The estimated regression for 1951 and 1964 is

$$Log\ Y = 6.000975 + .010412t*\ (R^2 = .46)$$
$$(.003077)$$

The regression for 1967-76 is

$$Log\ Y = 6.087551 + .001344t\quad R^2 = (.006)$$
$$(.006014)$$

5. EPW, November 26, 1977, p.1989.

6. Ibid, p.1987

7. K.S.Parikh, T.N.Srinivasan, et al. Optimum requirements of Fertilisers for the Fifth Plan Period, Mimeo (ISI, New Delhi 1974).

8. EPW, Special Number, August 1977, pp.1357-1358.

9. Such "demonstration" has been made among others by NCAER (1962) the Perspective Planning Division(1964,1970) and most recently by the National Commission on Agriculture (1974). The question is not whether the technical potential exists but how rapidly it can be exploited.

10. I have made a rough computation of the average yield response of the five major cereals per unit of plant nutrient implied in two of the variants considered by Parikh and Srinivasan: (a) what they call the Reference case (Table 1. p.14) of the mimeographed version of the report); and (b) case corresponding to Table 4 which gives the lowest the fertiliser requirements to reach targetted output.

    The total output of the 5 cereals in 1970-71 was 89.6 million tonnes and the output in 1978-79 as estimated by the model is about 123 million tonnes. (In deriving the latter figure I have assumed a conversion factor of 66 2/3 between paddy and rice). The PS projections imply an addition of 6 million hectares to total area under these crops which, at the average yield level of early 1970's may contribute some 5 million tonnes additional output. PS's optimal solution seems to imply no additions to irrigated area under the cereal crops over the 1970 level. (In both cases the total irrigated area under these 5 cereals in 1978-79 is actually slightly less than in 1970-71). Their projections also do not show any significant shift in the relative proportion of area allocated to these 5

cereals(assuming that the proportion of total nutrients applied to these crops in 1970-71 is the same as implied in the PS estimates for 1978-79) ranges between 2.5 million tonnes in the reference case to 1.2 million tonnes in case 4. This gives an average incremental response of 12 to 23 tonnes of cereal per tonne of nutrient. If we were to err on the conservative side and assume that the proportion of irrigated area devoted to these 5 cereals will remain constant, about 5 million tonnes of additional output could be attributed to water (10 m. ha x 0.5t/ha) reducing the contribution of fertiliser response coefficient to 9 to 12 tonnes per tonne of nutrient. The weighted average response assumed in my calculations which, unlike the PS study, excludes K_2O , is 9 tonnes of grain per unit of nutrient. If K_2O were included, the potential additions to foodgrain output between 1960-61 and 1973-74 would be 30 million tonnes against 28 million tonnes shown in Table 1 of my paper on crop production.

11. The study for instance shows that estimates of minimum nutrient requirements is highly sensitive to whether or not scale factors are used to adjust base yield. The significance of this is hardly discussed in the Report. Nor is there any discussion of the high degree of variability in nutrient mix under different assumptions. It is mentioned that the scale factors were used to adjust base yields in such a way that fertiliser use in the base year as estimated by the model roughly corresponds to the actual. The NCAER has estimates of actual crop-wise allocation of fertilisers in 1970-71. It would be interesting to know how well the PS model predictions fit the actuals.

12. Planning Commission, _Interim Report on Integrated Agricultural Development Projects in Canal Irrigated Areas_ (1972)

14. I don't quite understand the import of Srinivasan's criticism of my arguments regarding the size of the reserves (see his foot note 4). If we make a distinction between operational and buffer stocks, the former must necessarily be a fraction of total reserves which only strengthens my point that the existing reserves are by no means extravagantly large.