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INTER SECTORAL RESOURCE TRANSFERS:
REPLY TO A CRITIQUE

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The inter sectoral transfer of resources can obviously be a magnitude of considerable importance for the process of industrialisation in agrarian economies like India. Nevertheless so far as I am aware my own estimate for the period 1951-52 to 1970-71 is unfortunately the only exercise yet available which attempts to construct a comprehensive time series of inter sectoral resource flows in India. There is ofcourse no such thing as a 'final' estimate in exercises of this kind. The adjustments and manipulations of available data that go into the construction of such a series always leave room for successive refinements. From this point of view the recent critique of my estimate (Mody 1979) is particularly useful^{1/}. But for this purpose it is necessary to distinguish between the conceptual issues raised in the critique, which appear to derive purely from a misunderstanding of my concepts or method, and the empirical remarks which need to be considered more seriously. In this note I have considered each of the four main points raised by Mody and also tried to underline some issues, other

^{1/}In his critique Mody has only referred to my Ph.D. thesis (Mundle 1977), which is not yet available in published form, and some published preliminary estimates of consumer goods flows (Mundle 1975) which I later revised. However the main empirical results of the thesis have in fact been published in Mundle (1977b) along with a brief description of my method; while my analysis of the implications of these estimates has been summarised in Mundle (1977a). A revised version of the full thesis is now in the press and should be available soon.

than those raised by Mody, which seem to me to be rather important for the purpose of further refinement of these estimates.

At the conceptual level Mody first questions the balance of trade approach which I used to measure intersectoral resource flow on the ground that an inconsistency arises with this approach when there are net transfers of 'Factor' income payments. Now the accounting system which Modi presents in developing this argument is his own accounting system not mine. And if there is any inconsistency then it is in these accounts and definitions which have nothing to do with my exercise.

In my own exercise inter-sectoral resource transfer was both defined and measured directly as the inter-sectoral balance of trade and not derived from the aggregate income and expenditures account of agricultural households as Modi seems to imply. I also demonstrated from the inter-sectoral balance of payments accounts, which Modi does not seem to have noticed even though these were explicitly laid out (Mundle 1977 Chapter II Section 1), that the inter-sectoral resource transfer $(R)^2$, defined as the balance of trade $(E - M)$, is equal to the sum of net current

2/ I am here using Modi's notation to avoid confusion. In my exercise the resource transfer at current prices is defined as $B = E - M$ where E & M are respectively the values of exports and imports from (by) agriculture to (from) non agriculture. The corresponding transfer at constant prices was defined as $R = E/p_1 - M/p_2$ where p_1 and p_2 are the price indices of agriculture and non agriculture. Incidentally the notion of resource transfer which I have employed is by no means original. For earlier applications see, among others, Ishikawa (1967) and Lee (1971).

transfers, including 'Factor' income payments, V and capital transfers K .

$$R = E - M = V + K$$

Both V and K can ofcourse take values which are positive, negative or zero. In the special case where $V = 0$, R is equal to the capital transfer K . Alternatively when $K = 0$, $R = V$. But in general $R = V + K$. In other words the balance of trade approach does not give rise to any inconsistency when there are inter sectoral 'Factor' income payments.

In fact it seems to me that even in Modi's way of setting out the accounts, where the resource transfer is defined in terms of the aggregate income and expenditure accounts of the agricultural sector, there is no real inconsistency but only a confusion in interpretation of the case where there is a net 'factor' income inflow (Modi seems to be ignoring all other current transfers or the possibility of a net 'factor' income outflow). Modi takes two cases, one where there is no net 'factor' income transfer and one where there is. Obviously in both cases the net resource transfer (R) is equal to the difference between aggregate expenditure (consumption plus investment) of the agricultural population and the income originating in agriculture (Y_A). However in the first case the difference between Y_A and aggregate consumption (C_A) and investment (I_A) on the right hand side of the identity:

$$R = Y_A - C_A - I_A \quad (2)$$

is simply the net capital transfer since 'factor' income transfers

are excluded by definition. This corresponds to my case where $V = 0$ such that $R = K$. In the second case the difference between Y_A and the sum of aggregate consumption and investment, which Modi now redefines as farm consumption (C_F) and farm investment (I_F), on the right hand side of the identity.

$$R = Y_A - C_F - I_F \quad (3)$$

is equal to the capital transfer minus the net 'factor' income which Modi assumes to be an inflow. This corresponds to my general case where $R = V + K$ with V being assumed to be negative.

There is thus no inconsistency arising here in terms of my definition of resource transfer but only in terms of Modi's erroneous interpretation of my definition. He says "the inconsistency arises on account of farm household consumption and investment being deducted from agricultural income as against total farm household income". If we did deduct farm household consumption and investment from total farm household income what we would then get is only the net capital transfer of the farm sector K . Modi thus seems to be interpreting my definition of resource transfer to mean capital transfers alone whereas I in fact define it as the sum of net current transfer and capital transfers as shown in identity (1) above.

In fairness to Modi it should be mentioned that the accounting system he uses to define R is similar to that used by

Ohkawa, Shimizu and Takamatsu, in a paper which Modi cites^{3/}, where they attempted a preliminary estimate of inter-sectoral resource transfer for Japan. Subsequently Ohkawa and I modified the conceptual framework and revised these estimates in collaboration with Shimizu & Takamatsu^{4/}. There can of course be a separate discussion about the validity of our revised estimates for the Japanese case. However this has no bearing on my estimates for the Indian case since the nature of the data available, and hence the estimation procedure employed, are quite different in the two cases.

2. The second conceptual point that Mody raises is about the handling of indirect taxes. He seems to be suggesting that in measuring resource transfers through the balance of trade approach I am unable to account for resource outflows from agriculture in the form of indirect taxes levied on agriculture's imports from the non agricultural sector-except in so far as my measure of resource transfers at base year prices incorporates the affect of changes in resource flows due to changes in indirect taxes. He then goes on to suggest his own solution to the problem viz. that the balance of trade should first be measured at border prices-defined as prices net of indirect taxes- and then the indirect tax burden in agriculture should be added on to it.

^{3/}See K. Ohkawa, Y. Shimizu & N. Takamatsu - Agricultural surplus in an overall framework of savings-investment performance. International Development Centre of Japan, Tokyo, 1978 (mimeo)

^{4/}See S. Mundle & K. Ohkawa - Agricultural Surplus in Japan : 1888-1939. Forthcoming, Developing Economies Feb. 1980.

All this it seems to me is again based partly on a confusion about the analytical significance of my concept of resource flow and partly on a misunderstanding of my method of estimation. So far as the conceptual issue is concerned the point is really quite simple. The indirect taxes levied on agriculture's imports as well as the trade and transport margins on these imports^{5/} are all payments which agriculture actually makes to non-agriculture, since government as well as trade and transport activities are all part of non-agriculture in my demarcation of sectors, and these should appear as such in the balance of trade account. Imports therefore need to be valued not at producer's prices but at purchase prices which include all these components. In other words there is nothing which prevents us from taking account of indirect taxes (or the other margins) in the balance of trade approach provided we are careful to use the appropriate set of prices.

In my own estimates in the case of consumer goods flows I used different rounds of the N.S.S. consumption expenditure surveys and the C.S.O. aggregate consumption expenditure estimates both of which are valued at purchase prices. In the case of producer goods flows I used only those input-output transaction tables which are in producers prices. However all these tables indicate the indirect tax components & distribution margins either in the square

5/ For some reason Mody mentions only the problem of indirect taxes but not the exactly analogous problem of handling these distribution margins.

matrix itself or at the bottom of the appropriate column. These components were flows incorporated while estimating the flows from non agriculture to agriculture. Thus both in the case of consumer goods as well as in the case of producer goods agriculture's imports are in fact valued at purchase prices which include the levy of indirect taxes on these imports along with the corresponding distributive margins. Mody appears to have missed this although my procedures were explicitly spelt out in the exercise (Mundle 1977, Mundle 1977b).

3. Mody's third major criticism, which seems to me to be quite valid, relates to a bias in NSS consumer expenditure estimates which would get built into my estimates where I have used the NSS data. This relates to the under estimation of expenditure on durable consumer goods and the over estimation of expenditure on foodgrains. These biases, both of which would tend to bias my estimate of the balance of trade in consumer goods in favour of the agricultural sector, are generally believed to derive from the under representation of rich consumers in the NSS data - a point that I myself discussed at some length (Mundle 1975, Mundle 1977). Unfortunately there is no statistically acceptable means of correcting the NSS data for this bias. Adjusting aggregate expenditure to match the CSO estimate, which I did attempt, doesn't really help since what we are concerned with here is the pattern and not just the aggregate. One is thus forced to live with this bias. The question then arises

about the quantitative importance of these distortions. The extreme inequality of consumption expenditure notwithstanding, the consumption of the rich is still a small proportion of total consumption expenditure either rural or urban. Foodgrains and expensive consumer durables again form only a part, though admittedly a substantial part, of total consumer expenditure of the rich. And the bias we are talking about would again be a proportion of this part. In other words it is a fraction of a fraction of a fraction of the total i.e. the error belongs to the third order of smallness. As such my own judgement, and I emphasise that this is only a judgement, is that this bias is unlikely to be so large quantitatively as to seriously distort the order of magnitudes involved.

4. Mody's last major point relates to my estimation of agriculture's imports from nonagriculture for capital formation. My estimates here were based on the estimates of capital formation in agriculture by Lal and Anjani (1974). While isolating that component of capital formation in agriculture which comes from nonagriculture I assumed that the labour input of capital formation in agriculture comes from agricultural households themselves. Mody argues that to the extent that labour input for public investment projects in agriculture are drawn from nonagriculture, my estimate of imports from nonagriculture is an under estimate. As will be obvious on a little reflection, the bias if any again belongs to the third order of smallness here. Capital formation expenditure

is only a very small component of aggregate imports from nonagriculture. And only one part of this is public investment of which again one part is labour input. An adjustment of this component would amount to such a tiny adjustment of agriculture's total import bill if any that it would make no significant difference to the resource flow estimates. Certainly no difference that would justify the enormous effort that would be required to measure and isolate the bias - if this were possible at all.

5. Apart from the issues raised by Mody, there are some other problems which appear to me to be quite serious. These certainly ought to be considered in any effort to improve my existing estimates of the intersectoral balance of trade.

a. The first and perhaps most serious among these is the problem of measuring commodity flows (including services) between agriculture and the service sector. These are nominally included in the NSS consumer expenditure data, input-output data or data on value added by industry of origin which go into the construction of the balance of trade estimates. But the conceptual basis and statistical reliability of these items is obviously very shaky. The problem is particularly dramatised when we think of unpriced or nominally priced government services like health, education, agricultural research and extension, etc. One way of dealing with the problem is to simply leave out the services sector entirely.^{6/} This would certainly give us much firmer estimates for the flows between agriculture and industry, but then this

^{6/} This was the procedure adopted by Manne & Rudra (1965) in the construction of their input-output table. Rudra has also advocated this procedure for the estimation of national income.

would not be an estimate of the total net resource inflow (or outflow) to (from) agriculture. I have found the problem intractable.

(b) An issue closely related to government services is government subsidies. If the observed prices include government subsidies, e.g. foodgrain, water rates etc. should the commodity flows be computed at observed prices? It is sometimes suggested that the estimates should be adjusted for such subsidies. But if some elements of the price vector are adjusted, then why not others? Why not adjust, for instance, for the higher effective rates of protection which are known to operate in the case of industrial goods in our foreign trade regimes (Bhagwati & Srinivasan 1974). Should every thing then be calculated at international prices? But why should international prices be taken to be a better set of prices when these are as much subject to different degrees of monopoly, government intervention, etc. as domestic prices. This is obviously an issue with ramifications much beyond the matter of measuring resource transfer. Once again one does not have clear answers.

(c) Finally, there is the problem of deflation when the resource transfer is sought to be measured in real terms. Clearly the absolute value of resource flow is not very meaningful when we deflate the current values at some base year prices since not only the actual magnitude but even the direction of net flow may vary with the choice of different base prices. Kurabayashi and

Net Resource Outflow from Agriculture

Year	Crores	
	Net Flow at 1960-61 prices	Net Flow at current prices
1951-52	-787.99	-926.33
1952-53	-952.97	-789.66
1953-54	-363.53	-204.98
1954-55	70.46	-7.66
1955-56	151.62	-5.37
1956-57	475.72	488.03
1957-58	367.88	289.34
1958-59	314.07	334.38
1959-60	515.14	533.59
1960-61	695.43	695.43
1961-62	751.77	773.93
1962-63	848.73	816.89
1963-64	946.10	902.65
1964-65	358.62	816.63
1965-66	256.87	1014.85
1966-67	-34.88	900.28
1967-68	-544.80	662.72
1968-69	-524.18	641.03
1969-70	-713.88	763.85
1970-71	-762.04	602.89

Source: S. Mandle, Intersectoral Resource Flows in Post Colonial India, Indian Economic Review, October 1977.

Courbis have independently derived a rule which in effect implies that the import price deflator should be used when there is a net export at current prices and vice versa.^{7/} This seems reasonable except when we have a current price time series which shows, as my estimates do, a net import for some years and a net export in others. Once again the problem is intractable.

CONCLUSION

The kind of issues I have raised above, it will be obvious, extend much beyond my estimates of inter-sectoral resource transfer. They apply in fact to the whole branch of National Income accounting and point to the conceptual fragility of much of our macro economic measurement. But we persist on the plea that crude estimates are perhaps better than no estimates. On the same plea I would retain my estimates, reproduced in the table here, till a more refined time series estimate becomes available.^{8/} And on the basis of these estimates I would maintain that there was a positive and increasing resource outflow from agriculture from the mid-fifties and onwards which started declining after reaching a peak around the mid-sixties.

^{7/}See Kurbayashi (1971, 1972) and Courbis (1972a, 1972b). I am indebted to Professor Suresh Tandulkar for originally drawing my attention to these papers.

^{8/}In this context it is necessary to refer to Modi's exercise. It would be premature to discuss any details of his estimate (such as the exclusion of currency transfers) since the estimate itself is yet to be published. However since Modi mentions it as counter evidence to my time series it is necessary to point out that what Modi attempts to measure for a few time points (of which only two are really comparable) is the net flow on capital account K. The time series which I have constructed measures, indirectly, the sum of net flows on capital account and net current transfers, including income transfers, (K+V). Clearly a negative estimated value for K is in no sense any counter evidence to positive estimated values for the sum (K+V).

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