

THE ROLE OF TRANSACTIONS IN KIND IN DEVELOPING ECONOMIES

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The paper is concerned with non-monetized transactions which are dimensionally important in developing countries. The notion of degree of monetization attaches to all real flows. It is necessary to analyze non-monetized transactions in order to have a better understanding of the producing and consuming activities of households which contribute a large part of national product in less developed countries. Among different non-monetized flows, particular attention is paid to the use of the output of own production for different purposes. A survey of Indian information on the degree of non-monetization shows that it is different for different flows: highest for consumption, intermediate for current inputs and lowest for investment. Cross section Indian data indicate that the degree of non-monetization is expected to fall with the improvement in the average household expenditure and urbanisation but it may rise if development occurs largely through agricultural improvement. Some of the Indian findings may apply to other developing countries as well. Normally, estimates of expenditure elasticities based on cross section data are obtained from consumption expenditure on a particular item (e) and the aggregate consumption expenditure (E) without going into the question of the degree of non-monetization of either element. Since traditional models of consumer behaviour apply only to the relation between money expenditure on a particular item (e_m) and the aggregate money expenditure (E_m), it is suggested that the relation between e and E should be broken down into relations between (i) e_m and E_m , (ii) e_k and E_k where these are the corresponding kind elements and (iii) among E , E_m and E_k . Some estimates of elasticity based on this scheme are presented indicating that the procedure is reasonable and suggesting that this type of analysis would probably furnish a suitable framework for answering relevant questions in the field.

1. INTRODUCTION

1. In national income accounting, no distinction is normally made between transactions in money and transactions in kind. This is permissible in developed countries where transactions are generally monetized. The position changes when we consider developing economies where transactions in kind form a significantly large proportion of total transactions. For such countries, the distinction between money and kind transactions becomes important. The reason for this is not far to seek. The framework of national income analysis with which we are familiar is suitable for dealing with monetized flows. The interrelations between money and kind flows yet remain unanalysed in micro-economics we know. Since laws governing kind flows may be different from those governing money flows, a full understanding of the functioning of many developing economies is not possible without a separate treatment of the flows in kind. In fact, micro-theory itself may need modification if we seriously want to accommodate the kind flows in the system. Some reference to the problem is made in the literature on growth of under-developed economies, and it is known that the role of transactions in kind progressively declines with development. But so far as I am aware, a concrete quantitative analysis of the problem has not been attempted, partly because of the lack of data and partly because of the absence of a suitable theoretical framework. I do not propose to try to bridge this major gap in the present paper. All we attempt here is

to pose some of the important questions relating to the problem and answer them in the light of Indian experience.

2. National income accounting is concerned with interrelations between real flows depicting production and use of commodities. Production, income, consumption and investment can all be regarded as real flows. A flow is also a transaction between groups of transactors. For example, household consumption is a transaction between enterprises producing and providing commodities and households acquiring commodities for purposes of consumption. A balancing money flow generally accompanies a real flow in all monetized transactions. Thus, households pay money to enterprises in exchange for consumer goods. The two groups of transactors, households and enterprises, are, however, not mutually exclusive. Some households may be engaged in enterprise activities. To the extent that the products of such household enterprises are purchased by enterprises and other households, we get a monetized transaction. However, a part of the output of a particular household enterprise may be consumed in the household itself. This gives rise to the most important form of non-monetized flow in less developed countries. In addition, a part of the output may be distributed in kind to enterprises and other households, giving rise to a non-money transaction. In advanced economies, such flows form a very small part of the national product, but in less developed countries they constitute a sizable part of the national product, and can by no means be neglected.

3. In general, it is ambiguous to talk in terms of the degree of monetization of an economy and to assert that one country is more or less monetized than another country. The term, degree of monetization, defined as the share of monetized transactions to total transactions, strictly applies only to the various flows in an economy. It is therefore possible to study separately the degree of monetization of flows such as production, income, consumption, investment, input of enterprises, etc. The degrees of monetization of these flows are, in general, different. Consequently, the degree of monetization at the national level can be defined in different ways. At one extreme, one could consider the totality of all real transactions and work out the share of kind transactions in the total. More conveniently, one could consider only the final expenditure and obtain the share of kind transactions in this. The share of income payments and accruals in kind in total income payments and accruals is another possible measure. This measure, however, should conceptually give more or less the same result as the previous one.

4. There are different types of non-money transactions. We have already considered consumption out of own production. The output of own production may, in addition, be used for capital investment and as input. All such uses may be out of barter, or out of factor payments (mainly, employee compensation) received in kind from other enterprises. There are instances also of borrowings and repayments in kind of non-productive loans. We shall not analyze the different types of kind transactions in this paper, and consider only the use in kind of output of own production for different purposes. This is partly for the sake of simplicity and partly because of the fact that other types of kind transactions are likely to be dimensionally unimportant in many less developed countries. A fuller analysis, however, should take cognisance of all types of kind transactions.

5. The flows we consider here may be indicated by giving a few illustrations,

Consumption out of own production is an example of non-monetized consumption. Incomes accrued or received in kind are non-monetized incomes. Creation of assets and addition to stocks out of own production are examples on non-monetized investment. Use of own produce as input in own enterprise is an example of non-monetized intermediate expenditure. The main phenomenon we consider, thus, is the use of own production for consumption of the household, or for investment or as current input in own enterprise. The various forms of kind transactions within the household sector may be summarized as follows: (i) a commodity or a service produced in one household is exchanged for a commodity or a service produced in another household, (ii) a commodity or a service produced in one household is exchanged for a factor service provided by another household, (iii) a factor service provided by one household is exchanged for a factor service provided by another household, (iv) a self-produced commodity (or service) is consumed, invested or used as an input in the own production-consumption activity of a household without any exchange, and (v) there is a loan or repayment transaction in kind between two households. As we have mentioned, we are concerned here mainly with (iv). We may conveniently call it the non-transacted part of the kind flow.

6. Certain definitional difficulties attach to flows of this type. A monetary purchase of a consumer good or an asset defines the time reference of the transaction irrespective of whether the article purchased has actually been used or not. Both the date of the transaction and the date of actual use could be taken for deciding about the time reference of all above transactions except (iv). For (iv), the only available criterion is the notion of actual use. That is, an item is consumed, invested or used as an input on a particular date provided it is physically consumed, used as an asset or used as an input on that date. Thus, for consumption expenditure of a less developed country, the monetized part of the transaction has to be defined in one way, the transacted part of the kind transaction possibly in another way and the non-transacted part of the kind transaction in yet a third way. What definitional simplifications would be desirable for obtaining quantitative estimates of national consumption expenditure in less developed countries is a matter which requires considerable attention.

7. To obtain macro-aggregates like national income, GNP, etc., it is necessary to impute value to non-money transactions. Imputation is usually done at the price of the marketed part of the output whenever possible, and at the cost of the resources used up, when no market exists for the commodity under consideration. In either case, the value attributed to a non-money transaction remains arbitrary, and our subsequent analysis is subject to this systematic limitation.

8. A study of transactions in kind is important in a less developed country for several reasons. First, to make income and allied estimates of less developed countries comparable with those of advanced countries, it is necessary to ensure that commodities obtained in kind in former countries are appropriately and comparably valued. Second, for comparability of national income statistics over time in a less developed country, since non-money transactions may have a tendency to become progressively monetized with economic growth, it is necessary to ensure that these flows are fully included in the earlier years. Third, a study of non-money transactions is important for an understanding of the producing and consuming

activities of households. Household enterprises contribute a large part of national product in less developed countries. The tendency to use a money rather than a kind transaction may depend on several factors other than the overall level of income of the households, and here one should consider both economic and non-economic determinants of household behaviour. Persons engaged in agriculture may have greater scope for making kind transactions than persons engaged in industry. Caste affiliation, nature of the region, and various other non-economic factors may have important roles to play. In spite of the difficulty, an understanding of the problem is necessary because without this, it is not possible to assess fully the effect of various monetary measures as well as monetized developmental measures on household behaviour in less developed countries. Finally, the money supply in an economy should largely relate to the monetized output rather than total output. Thus, at a somewhat superficial level, some variant of the measure giving the share of monetized transactions to total transactions becomes a useful variable for determining the proximate level of money supply of the country at a future date. The need of money increases with the increase in this ratio, even when national product is not expanding. Since the share is likely to show an increasing trend in a developing economy, it is, in general, possible to have recourse to deficit financing to the extent of this without any fear of inflationary consequences. However, for this, it is important to be able to assess at what rate monetization is increasing in the country. Whatever be the definition of the measure of monetization we adopt, one could think of certain patterns of future development in which the rate of monetization would decrease in the initial phases of growth. For example, if growth is accompanied by a rapid development of traditional agriculture, monetization in agriculture may decline as a result of the improvement of middle peasants partially replacing agricultural workers who frequently depend on money wages. The overall effect of this would be to pull down the rate of monetization in the economy since agriculture is likely to be a predominantly important sector in many less developed countries.

9. We have presented the available Indian information on the topic in the next section of the paper. Section III is concerned with some cross section analysis of the Indian data relating to household consumption expenditure leading to certain interesting results. Certain comments are reserved for the concluding section IV.

II. A SURVEY OF RECENT INDIAN DATA ON TRANSACTIONS IN KIND

10. Taking consumption first, we find that about 36 to 37 per cent of household consumption expenditure in India is in kind, a predominantly large part of this being consumption out of own production. The percentages, however, vary widely between rural and urban areas, the rural percentages lying between 43 and 44 and the urban between 8 and 11. This general picture emerges from data collected in three different rounds of the National Sample Survey¹ (NSS) relating to the period

1. Third Round, August–November, 1951; Fourth Round, April–September, 1952; and Thirteenth Round, September 1957–May 1958. See NSS Report No. 18: Tables with Notes on Consumer Expenditure, Fourth Round, April–September 1952, Government of India, 1959 and NSS Report No. 71: Consumer Expenditure by Levels of Household Expenditure, Thirteenth Round, September 1957–May 1958, Government of India, 1962.

1951-52 to 1957-58. Thus, the extent of non-monetization is large, particularly in rural areas, and can by no means be neglected. The shares of kind transactions are different for different commodities. The position in respect to the three rounds studied may roughly be summarized as follows:

TABLE I
NON-MONETIZED CONSUMPTION AS PERCENTAGE OF TOTAL
CONSUMPTION FOR SELECTED ITEMS OF CONSUMPTION

Items	Rural	Urban
(1)	(2)	(3)
	(percent)	(percent)
1. Cereals	63-73	12-22
2. Pulses	47-66	8-23
3. Milk and milk products	70-80	17-22
4. Fuel and light	70-78	17-36
5. Vegetables	39-40	2- 5
6. Meat, fish, eggs	28-31	6- 8
7. Fruits	35-46	7-12
8. Tobacco	10-23	2- 6

Source: See footnote 1.

It is interesting to note that transactions in kind are sizable for several items of urban consumption. Regarding trend, urban percentages show some decline between 1951-52 and 1957-58. The rural ratios, on the other hand, do not show any declining trend, except for pulses and tobacco, but several all-India ratios drop a little by virtue of the urban shift. But even at the all-India level, there appears to be no change for vegetables, and milk and milk products show some increase. For aggregate consumption expenditure, the rural ratio shows negligible decline between 1951-52 and 1957-58. The corresponding urban ratio, however, declines considerably and there is consequently a small decline in the all-India ratio (Appendix Table 1).

11. There is also large regional variation in the ratio as certain tabulations for the 13th round clearly indicate. The maximum ratio for total consumption expenditure for rural areas is 61 per cent in one state while the minimum is only about 24 per cent, against the all-India average of about 43 per cent. The urban all-India ratio is about 8 per cent with a maximum of 19.6 per cent and a minimum of 4.6 per cent. The statewide ranks of the urban and rural ratios are widely different. (Appendix Table 2).

12. The ratio of non-monetized consumption to total consumption also varies with the changes in the aggregate household expenditure. The relevant facts are presented in Table 2 below. The estimates are based on NSS 13th round data relating to 1957-58.

The figures show that in rural areas the degree of non-monetization increases for cereals and milk and milk products with an increase in the average household

TABLE 2
NON-MONETIZED CONSUMPTION AS PERCENTAGE OF TOTAL CONSUMPTION BY HOUSEHOLD EXPENDITURE CLASSES

Household Expenditure Classes (Rs. per month)	Cereals	Milk and Milk Pro- ducts	Pulses	Vege- tables	Fruits	Meat, Fish, Eggs	To- bacco	Fuel and Light	All Items
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rural									
1- 50	57.3	61.9	48.8	45.2	50.0	22.7	11.5	78.0	47.9
51-100	58.1	74.1	49.1	39.0	25.0	28.2	8.8	72.5	44.2
101-150	62.8	81.7	48.7	37.0	33.5	25.0	7.7	70.2	44.2
151-300	69.1	82.5	43.5	38.8	40.0	22.5	8.2	68.5	42.9
301 and above	72.2	85.0	46.5	31.9	45.1	39.8	9.4	59.1	34.2
All classes	62.8	80.0	47.1	38.8	38.5	27.7	10.5	71.2	42.7
Urban									
1- 50	12.5	18.4	10.5	10.5	12.5	2.9	2.1	28.1	14.7
51-100	10.2	22.8	5.0	4.8	7.7	8.5	4.1	21.4	10.0
101-150	9.2	24.8	4.3	3.7	8.0	6.2	1.9	0.0	7.1
151-300	13.3	22.4	8.9	2.0	5.6	8.5	1.9	15.4	7.7
301 and above	15.2	20.3	15.7	0.0	6.0	2.6	0.0	9.3	5.7
All classes	11.8	22.4	8.5	2.3	6.7	6.2	1.9	16.8	8.2

Source: NSS Report No. 71: Consumer Expenditure by Levels of Household Expenditure, 1962.

expenditure.² In contrast, there is some reduction in fuel and light and vegetables. The other percentages do not show a clear tendency, but there appears to be some decline for pulses and tobacco and some increase for meat, fish and eggs. For urban areas, cereals, pulses, milk and milk products, and meat, fish and eggs probably show a stable ratio in a rough way, and all other items exhibit a reduction. When we observe the aggregate consumption expenditure, we note a sharp reduction in the degree of non-monetization in urban areas, and a somewhat smaller but sizeable reduction in rural areas. It is possible to combine the urban and rural ratios on a rough basis and the resulting figures are given in Table 3 below along with the rural and urban figures.

Thus, the degree of non-monetization declines at the all-India level with an increase in the average household expenditure. To sum up, one may assert that both improvement in the level of living and increase of urbanization would have a tendency to reduce the ratio in future. The effect of differences in the rates of growth of different states would also have an impact, but it is not possible to assess the extent of this in the absence of a clear picture of the inter-regional pattern of growth in

2. Level of living is probably measured better by per capita household expenditure than by aggregate household expenditure. A study like this based on households classified by per capita expenditure could have been more interesting. Tabulations giving details about non-monetization, however, only exist by the classification given here. Also, aggregate household expenditure is a meaningful and unambiguous measure of household level of living.

TABLE 3
DEGREE OF NON-MONETIZATION (PERCENTAGES) BY SIZE
CLASSES OF HOUSEHOLD EXPENDITURE: RURAL, URBAN
AND ALL-INDIA

Household Expenditure Classes (Rs. per month)	Rural	Urban	All-India
(1)	(2)	(3)	(4)
0- 50	47.9	14.7	43.2
51-100	44.2	10.0	38.5
101-150	44.2	7.1	36.8
151-300	42.9	7.7	34.7
301-over	34.2	5.7	26.3
All levels	42.7	8.2	35.5

future. However, since poorer states are probably more non-monetized today, if the national policy aims at larger rates of growth in poorer states than in comparatively richer ones, the effect of the regional growth would be to help in the reduction of non-monetization. But normally some rich states are likely to have larger rates of growth in the initial phase of development irrespective of the national policy. Consequently, the overall effect of inter-regional development may not be large. Similarly, growth of larger cities having a very low non-monetization ratio (about 4 per cent) may not have a sizeable dimensional effect.

13. Available information on other flows in kind is meagre in India. But some data are available on capital expenditures, inputs of household enterprises, personal incomes, etc., apart from certain other bodies of suggestive data. In a study undertaken by Tiwari,³ the non-monetized part of gross domestic capital formation was found to be about 10 per cent. But for some of the rural activities, the percentages were found to be 25 or more. Upadhyay's estimates of gross non-monetized investment and some of its components are lower and probably not very accurate.⁴ If we accept Tiwari's figure, one question can easily be posed. Why should the degree of non-monetization in investment flows be substantially lower than that in consumption flows? Most of the rural capital formation is not necessarily dependent on cash outlays. Could it be a result of the fact that construction of assets is mainly undertaken by the rich whose other transactions are also highly monetized?

14. We may next consider the inputs of household industries. NSS data relating to the 7th and 8th rounds⁵ show that about a third of the industrial input in rural areas is non-monetized. In contrast, the input of household industries in urban areas is almost entirely monetized. Cattle-feed is the only urban input which

3. S. G. Tiwari: "Indian Gross Capital Formation Including Non-Monetized Parts," *Asian Studies in Income and Wealth*, Asia Publishing House, Bombay, 1965, pp. 168-179.

4. P. K. Upadhyay: "Non-monetized Investment," 3rd Indian Conference on Research in National Income, 1961 (Mimeo).

5. NSS Report No. 42: Report on Small-scale Manufactures: 7th and 8th rounds, Government of India, 1961. (7th round: October 1953-March 1954, 8th round: July 1954-March 1955).

is sizably non-monetized. On the other hand, 25 to 35 per cent of raw materials, about 40 per cent of fuel and about 80 per cent of cattle-feed are obtained in kind in rural areas. Thus, the degree of non-monetization of rural inputs and rural consumption expenditure are dimensionally of the same order, but inputs of urban household industries are generally monetized even though there is a fair degree of non-monetization in urban consumption flows. Little information is available on the degree of monetization of other major inputs. However, it may be reasonable to make some surmises here. Agricultural input is likely to be even more non-monetized than the input of rural household industries. On the other hand, the degree of non-monetization should be negligible for organized industries and all types of urban enterprise activities. Since the cost ratio in agriculture is low, the overall degree of monetization of intermediate transactions should be lower than that of household consumption in spite of the large weight of agriculture in the national product.

15. The ratio of cash farm expenditure to total farm expenses has been used as an indicator of monetization in the All-India Rural Credit Survey.⁶ This information is useful for inter-regional studies. But one cannot get a picture of the time trend of the ratio, because the Rural Credit Follow-up Surveys⁷ do not present this information. The only index that can be used for a study of the trend is the ratio of cash sales to gross value of produce available in the main survey relating to 1951-52 as well as in the Follow-up Surveys conducted in 1957-58, 1958-59 and 1959-60. However, in the Follow-up Surveys, the measure is available only for a few districts that are not representative of the country. But in spite of these difficulties, Rangarajan,⁸ after a study of the material, comes to the conclusion that there cannot have been any marked increase in the degree of monetization between 1951-52 and 1957-58. His results, thus, do not contradict our earlier finding that there is a small reduction in the degree of non-monetization of consumption expenditure in rural areas.

16. The ratio of non-money factor incomes to total private income, according to one source,⁹ was in the range of 36 to 39 per cent, during the period 1950-51 to 1957-58. Since the estimates here depend largely on NSS consumption expenditure data, it is not possible to regard the information as independent evidence pertaining to the subject.

17. Other direct and indirect measures of the degree of monetization have been considered in the Indian context. Several Marketing Reports released by the Directorate of Marketing and Inspection of the Ministry of Food and Agriculture furnish some information on the market surplus of various crops. The figures, however, do not have adequate empirical basis, and hence cannot be used as independent evidence. An indirect measure is furnished by the share of output (or employment) generated in activities that are, by and large, non-monetized. Such measures are useful for inter-regional studies and can be furnished as additional

6. All-India Rural Credit Survey, The Survey Report, Vol. I, Part I (Rural families), Reserve Bank of India, Bombay, 1956.

7. Rural Credit Follow-up Surveys, General Review Reports and Statistical Reports, Reserve Bank of India, Bombay . . . relating to 1957-58, 1960: 1958-59, 1961 and 1959-60, 1962.

8. C. Rangarajan: Demand for Money: Some Empirical Estimates Relating to India, Fifth Indian Econometric Conference, 1955 (mimeo).

9. Report of the Working Group on Flow of Funds, Central Statistical Organization, Government of India, 1963 (mimeo).

evidence in support of more direct findings. For example, one would expect a larger share of agriculture in a state in which a large part of consumption is non-monetized. But the measure is unlikely to be safe for a study of the temporal shift in the degree of non-monetization. Most transactions, even in traditional sectors, are only partially non-monetized and the degree of non-monetization is expected to change with time even within sectors that are predominantly non-monetized in the base period.

18. This survey of available Indian information enables us to make a few generalizations. First, it is clear that the degree of non-monetization is different for different flows. In the Indian context, it is highest for consumption, intermediate for inputs of household industries and probably also for all inputs put together and lowest for investment, the degrees being different for different components of these major flows. A development process with emphasis on investment and more round-about modes of production would, therefore, bring about a decline in the degree of non-monetization of the totality of real transactions. Second, since the degree of non-monetization is highest in villages, intermediate in urban areas and lowest in larger cities it would naturally decline with progress in urbanization. Its regional distribution is also far from even and the regional pattern of development would influence it to some extent. Third, the degree of non-monetization of aggregate consumption declines with the improvement in the level of living as measured by household consumption expenditure, slowly in rural areas but more rapidly in urban areas. But there are certain major components of consumption, e.g., cereals and milk and milk products, for which the degree of non-monetization appears to increase with the increase in average household expenditure. Thus, a flourishing of the agriculture sector with an improvement in the smaller industrial enterprises may have a tendency to reduce monetization. Finally, at the national level, there is some small reduction in the degree of non-monetization of consumption expenditure in India during the period studied.

19. Some of the Indian findings may hold for other less developed countries as well. For example, the fact that the degree of monetization differs for different flows, the urban-rural variation, the tendency of monetization of consumption expenditure to increase with the improvement in the level of living and the general tendency of non-monetization to decrease when all real flows are taken together may be of fairly universal applicability. On the other hand, the explicit levels of monetization of major Indian flows cannot hold in other less developed countries. Also, the tendency of non-monetization to increase with the improvement in the level of living observed in respect of some of the Indian consumption flows may not apply to other developing countries. But the tendency may manifest itself in some traditional agricultural economies in the process of development. Finally, inter-regional variations may be expected to be sizeable in all large underdeveloped countries.

III

20. In analyzing kind transactions of a less developed country, one should seek to answer questions such as these: At what rate are the degrees of monetization of consumption, investment and intermediate flows likely to increase in future,

given a specified rate of development of national income? Given a certain rate of increase of income, at what rates are the cash and kind consumption of particular items of consumption expected to change? Answers to these questions are important not only in the context of monetary policy, but also for working out other details of long range development plans. This is because planned increase in income and planned provision of goods and services usually relate to the value of monetized transactions while the aggregate provision of goods and services partly met out of own production should be the real objective of development.

21. As we have mentioned earlier, all we propose to do in this paper is to analyze the implications of some of these questions and suggest tentative answers under simplifying assumptions. The present state of our knowledge about the economic behaviour of households in less developed countries is not adequate and more definitive answers are not possible in view of this. It may be noted that most kind transactions relate to households as producing and consuming units, and activation of households remains an important and perhaps the most difficult goal of development policy of poorer nations. Seeking answers to these questions helps one to understand the functioning of the household units better.

22. While planning production, a typical household has to think about its consumption needs, its need of current inputs and its need of investment goods. What parts of these needs could be met out of own output, and what parts have to be purchased by cash? The cash required has also to come largely from the added value of household enterprises supplemented by other direct cash earnings of the household. During any period of time, say a month or a year, the household gets a certain collection of consumption, investment and intermediate goods from its own production, and some cash out of sales proceeds, and factor earnings, etc. The cash income is distributed among purchases of consumer goods, investment goods and intermediate goods during the period. The position may be depicted as follows in an accounting framework:

Receipts		Expenditure	
<i>Home Supplied</i>		<i>Home Supplied</i>	
Inputs	M_k	Inputs	M_k
Consumption Goods	E_k	Consumption Goods	E_k
Investment Goods	I_k	Investment Goods	I_k
<i>Sales for Cash and other</i>		<i>Monetary Purchases from</i>	
<i>Monetized Incomings</i>	S_m	<i>other Enterprises</i>	
(= $M_m + E_m + I'_m$)		Inputs	M_m
		Consumption Goods	E_m
		Investment Goods	I_m
	T'		T

We do not know clearly what determines the total cash incomings corresponding to a certain level of total income. But given this, the allocation of sales proceeds and other cash earnings between purchases of consumer goods, investment goods

and inputs during a period of time will depend on the availability of these products from own enterprises during the period. The accepted theoretical model determining consumer purchase of individual commodities thus applies only to the monetized purchases of consumer goods when we take E_m to be given for a particular period.¹⁰ This implies that the above allocation is prior and made on other considerations. The relation between E_k and its components obviously does not follow the accepted theory of consumer behaviour. Likewise the accepted theory determining the level of production cannot apply in the case of household enterprises, in which a sizeable part of the production is not for sale and caters to own needs. Further progress in analysis thus is not possible without some simplification. In view of this, we shall analyze the situation in respect of the behaviour of households as consumers only.

23. From the above accounts, we can take out monetized and non-monetized inputs from both sides. Then on the expenditure side we get E_k, I_k, E_m and I_m . Also $E_k + E_m = E$ (say) gives the total consumption of the household and $I_k + I_m = I$, the total investment. Since a part of the cash received may be hoarded or exchanged for financial assets or alternatively, some investment may be made out of borrowed funds, we have distinguished between I'_m and I_m . We need, however, be concerned only with E and its components from now on. As we have already admitted, the relation between E_m and its components (e_{mi}) is likely to conform to the traditional theory. On the other hand, the law governing the relation between E_k and e_{ki} is not known. Still in a mechanical way, we make the same assumption about this relation as about the earlier one, i.e., we set

$$e_{mi} = \alpha_{mi} E_m^{\eta(e_{mi}, E_m)} \text{-----} (1)$$

$$e_{ki} = \alpha_{ki} E_k^{\eta(e_{ki}, E_k)} \text{-----} (2)$$

where $\eta(X, Y)$ stands for the elasticity of X in respect of Y , and α_{mi} and α_{ki} are constants. The assumption (2) can be reduced to one of simple proportionality by regarding $\eta(e_{ki}, E_k)$ as unity. Finally since the degree of monetization is likely to increase progressively in a less developed country with development, we may again mechanically set $E_k = A_k \cdot E_m^{\eta(E_k, E_m)}$ defining the relation between E_k and E_m (or for that matter between E, E_m and E_k).

24. The usually available estimate of elasticity is given by $\eta(e, E)$ in our notation and this can be obtained in the following way in a situation in which money expenditure shows a specified rise. From $\eta(E_k, E_m)$ we first compute the rise in kind consumption taken as a whole, and $\eta(e_{mi}, E_m)$ and $\eta(e_{ki}, E_k)$ now enable us to compute the changes in the cash and kind consumptions of the (i)th item. Adding these, we get the change in e and we can now obtain $\eta(e, E)$ because the change in E_m is given and the change in E_k has already been computed. This roundabout way of obtaining $\eta(e, E)$ is considered superior to the customary way of directly obtaining

10. Since consumers can be supposed to have some notion of their aggregate income and expenditure at a point of time, it is possible to use a less extreme assumption in which individual consumer purchases (e_{mi}) depend on E and not on E_m . We then have two sets of relations: (i) those between e_{mi} and E and (ii) those between E_k and E . Here the accepted model can be supposed to hold for (i) but not for (ii). We propose to follow up this approach in future.

$\eta(e, E)$ because the known behaviour parameter $\eta(e_m, E_m)$ is separated, and the other two relevant parameters $\eta(e_k, E_k)$ and $\eta(E_k, E_m)$ could be separately observed and studied, and it is possible to assess the roles of the three parameters in the overall change in consumption.

25. For studying any item of consumption, we could compute 36 elasticities, $\eta(X, Y)$, X and Y in turns standing for E, E_m , E_k , e, e_m , e_k . Since the diagonal elements of the resulting matrix are all unity and elements in the (ij)th cells are reciprocals of elements in (ji)th cells, the basic elasticities reduce to the following 15:

$$\begin{array}{ccccccc}
 \eta(E_m, E) & & & & & & \\
 \eta(E_k, E) & \eta(E_k, E_m) & & & & & \\
 \eta(e, E) & \eta(e_m, E_m) & \eta(e, E_k) & & & & \\
 \eta(e_m, E) & \eta(e_m, E_m) & \eta(e_m, E_k) & \eta(e_m, e) & & & \\
 \eta(e_k, E) & \eta(e_k, E_m) & \eta(e_k, E_k) & \eta(e_k, e) & \eta(e_k, e_m) & &
 \end{array}$$

Of these, $\eta(E_m, E)$, $\eta(E_k, E)$ and $\eta(E_k, E_m)$ are the same for all commodities e_i . Further, $\eta(e_m, e)$, $\eta(e_k, e)$ and $\eta(e_k, e_m)$ are not of any analytical importance. The elasticities in the bottom left hand corner, however, are useful for analytical purposes. Not all of them need be computed separately because the elasticities have some simple relations among themselves under a reasonable assumption.¹¹ To give typical examples, it is easy to see that

$$\left. \begin{array}{l}
 \eta(e_m, E) = \eta(e_m, E_m) \cdot \eta(E_m, E) \\
 \text{or, } \eta(e, E_m) = \eta(e, E) \div \eta(E_m, E) \\
 \text{or } \eta(e_k, E_m) = \eta(e_k, E_k) \cdot \eta(E_k, E_m)
 \end{array} \right\} \dots (3)$$

26. The estimates presented in Table 4 below and in Appendix Table 3 are all based on NSS 13th round data relating to 1957-58. The NSS report presents estimates of total consumption and the part of consumption expenditure made in money for individual items as well as for the aggregates. The difference thus gives consumption in kind obtained mainly from self-production. The figures are available by size classes of total household expenditure (E).¹² Thus for each size class of E, we have E_m and E_k , as well as e_m and e_k for individual items. We have used a weighted double-log method for working out the different elasticities on the basis of this information. It should be noted that elasticities in respect of items other than total expenditure are based on data available by size classes of total expenditure. This shows the rather crude nature of our calculations. We have computed elasticities for one individual item (cereals) and two aggregative items (food and non-food). The figures are given below:

11. The assumption involved, in terms of regression coefficients, is that $b_{xy} \cdot b_{yz} = b_{xz}$ provided $b_{x,y} = 0$.

12. The particular tabulation used in this paper is by size classes of total household expenditure. A study like this based on data on households classified by per capita expenditure would have been more satisfactory.

TABLE 4
ESTIMATES OF ELASTICITIES

		Food	Cereals	Non-Food
$\eta(e, E)$: Rural	0.7861	0.5557	1.5023
	Urban	0.6636	0.2379	1.5551
	All-India	0.7625	0.4903	1.5183
$\eta(e_m, E_m)$: Rural	0.5885	0.2280	1.6031
	Urban	0.6634	0.2000	1.5168
	All-India	0.6485	0.2814	1.5333
$\eta(e_k, E_k)$: Rural	1.0629	0.8607	0.6427
	Urban	0.9831	0.9907	1.2904
	All-India	1.0697	0.8502	0.5938
$\eta(E_m, E)$: Rural	1.1180		
	Urban	1.0771		
	All-India	1.1568		
$\eta(E_k, E)$: Rural	0.8429		
	Urban	0.2696		
	All-India	0.7272		
$\eta(E_k, E_m)$: Rural	0.7539		
	Urban	0.2503		
	All-India	0.6286		

27. The conclusions which emerge from a perusal of this table are summarized below:

(i) Estimates of $\eta(E_k, E_m)$, $\eta(E_m, E)$ and $\eta(E_k, E)$ show that the degree of the monetization of aggregate consumption expenditure increases more than proportionately in relation to total consumption expenditure both in rural and urban areas and at the all-India level. It follows that the share of consumption in kind in total consumption must drop with a growth in total consumption. The drop is sharper in urban areas.

(ii) In general, estimates of $\eta(e_k, E_k)$ are close to unity barring irregular fluctuations in certain cases. This suggests that for major components of consumption, e_k and E_k may have a simple relation of proportionality. In this case, $\eta(e, E)$ may be regarded as a function of two parameters, the elasticity of the aggregate monetized consumption, $\eta(E_m, E)$ and the elasticity of the monetized consumption of the particular commodity $\eta(e_m, E_m)$. As normally only $\eta(e, E)$ is computed, this enables us to obtain $\eta(e_m, E_m)$ in which we are interested, given the overall rate of change of monetization in the economy.

(iii) The percentage increase in monetized demand for monetized consumption of cereals for which $\eta(e, E) < 1$, as a consequence of a specified percentage increase in total money expenditure, is far less than the percentage increase in total demand of cereals as a result of the same specified increase in total consumption. Even for total food, the percentage increase in money demand is somewhat less than the percentage increase in total demand. For high elasticity non-food items, on the other hand, the percentage increase in money demand is generally larger than the per-

centage increase in total demand given the same specified percentage increases in total money expenditure and total consumption.

IV. CONCLUDING REMARKS

28. Since development measures in countries with sizeable non-monetized transactions are generally monetized, elasticities of the type $\eta(e, E)$ are only remotely linked with the actual process of utilization of income for consumption purposes. A more realistic procedure would be to regard the overall relation between e_t and E as depending on three different relations: (i) between e_m and E_m , (ii) between e_k and E_k and (iii) among E , E_k and E_m . We have indicated in this paper that out of these, the relation between e_m and E_m can only be supposed to be known. The other two relations require further study, but some reasonable assumptions about the relations can be made on the basis of a study of cross section data. The position can be summarized in the relation given below:

$$\eta(e, E) = \frac{e_m}{e} \eta(e_m, E_m) \cdot \eta(E_m, E) + \frac{e_k}{e} \eta(e_k, E_k) \cdot \eta(E_k, E) \dots (4)$$

where e , e_m , e_k stand for base period consumptions. The change in consumption of a particular commodity here is seen to depend upon the proportion of monetized to total consumption of the commodity in the base period and the behaviour parameters $\eta(e_m, E_m)$, $\eta(e_k, E_k)$ and $\eta(E_m, E)$ or $\eta(E_k, E)$. Since $\eta(E_m, E)$ and $\eta(E_k, E)$ are interrelated, either of the parameters may be used, or another parameter $\eta(E_k, E_m)$ may serve the purpose. While we have achieved little that is definitive, we have probably succeeded in selecting the relevant parameters necessary for answering the questions raised (in the field of consumption) and isolating one among these about which we have some knowledge. The analysis further probably gives a framework necessary for answering many of the relevant questions in the field.

APPENDIX TABLE 1

PERCENTAGE SHARE OF NON-MONEY TRANSACTIONS IN CONSUMPTION EXPENDITURE
IN THREE NATIONAL SAMPLE SURVEY ROUNDS

Items	Rural			Urban			All-India		
	3rd round	4th round	13th round	3rd round	4th round	13th round	3rd round	4th round	13th round
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	(percentages)								
1. Cereals	64.8	72.6	62.8	22.4	21.3	11.8	60.1	66.3	58.2
2. Milk and milk products	70.3	70.5	80.0	17.3	20.3	22.4	57.3	57.2	65.4
3. Pulses	60.9	66.5	47.1	23.3	12.6	8.5	54.8	58.3	39.7
4. Vegetables	38.8	40.2	38.8	3.7	5.3	2.3	29.5	30.6	29.1
5. Fruits	35.0	46.2	38.5	11.9	11.1	6.7	26.9	35.0	31.2
6. Meat, fish, eggs	31.0	28.8	27.7	6.0	7.5	6.2	23.9	22.2	21.8
7. Tobacco	23.0	17.9	10.5	5.9	3.0	1.9	19.4	14.8	7.5
8. Fuel and light	77.7	70.2	71.2	36.2	24.1	16.8	69.8	60.2	58.8
9. Total expenditure	43.1	44.3	42.7	11.4	9.2	8.2	36.9	36.8	35.5

Source: NSS Report No. 18: Tables with Notes on Consumer Expenditure, 4th round, Government of India, 1959 and NSS Report No. 71: Consumer Expenditure by Levels of Household Expenditure, 13th round, Government of India, 1962. Reference periods for the three rounds are as follows. 3rd round: August–November 1951; 4th round: April–September 1952; and 13th round: September 1957–May 1958.

APPENDIX TABLE 2

STATEWISE INFORMATION ON PERCENTAGE OF CONSUMPTION
IN KIND TO TOTAL CONSUMPTION
NSS 13TH ROUND: SEPTEMBER 1957–MAY 1958

	Rural	Urban
(1)	(2)	(3)
1. Andhra Pradesh	38.8	8.7
2. Assam	36.1	12.9
3. Bihar	45.5	7.3
4. Bombay	40.6	5.6
5. Jammu and Kashmir	60.9	11.7
6. Kerala	24.3	19.6
7. Madhya Pradesh	46.5	4.7
8. Madras	30.8	9.6
9. Mysore	34.5	11.0
10. Orissa	54.2	8.6
11. Punjab	41.3	15.9
12. Rajasthan	41.8	11.4
13. Uttar Pradesh	53.5	10.1
14. West Bengal	43.3	4.6
15. All India	42.7	8.1

Source: NSS Report No. 71: Consumer Expenditure by Levels of Household Expenditure, 13th Round, September 1957–May 1958, Government of India, 1962.

APPENDIX TABLE 3
ESTIMATES OF ELASTICITIES

Type of Elasticity	Cereals			Food			Non-Food		
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Rural	Urban	All-India	Rural	Urban	All-India	Rural	Urban	All-India
1. $(\epsilon_r E)$	0.5557	0.2379	0.4903	COMPUTED DIRECTLY					
2. (ϵ_{mE})	1.1180	1.0771	1.1568	0.7861	0.6636	0.7625	1.5023	1.5551	1.5183
3. (ϵ_{rE})	0.8429	0.2696	0.7272	1.1180	1.0771	1.1568	1.1180	1.0771	1.1568
4. (ϵ_{mE_m})	0.2280	0.2000	0.2814	0.8429	0.2696	0.7272	0.8429	0.2696	0.7272
5. (ϵ_{rE_r})	0.8607	0.9907	0.8502	0.5885	0.6634	0.6485	1.6031	1.5168	1.5333
6. (ϵ_{mE})	0.2502	0.2104	0.3228	1.0629	0.9831	1.0697	0.6427	1.2904	0.5938
				0.6597	0.7141	0.7487	1.7999	1.6553	1.7720
				COMPUTED BY USING RELATIONS (3)					
7. (ϵ_{mE})	0.2549	0.2154	0.3255	0.6579	0.7145	0.7502	1.7923	1.6337	1.7737
8. (ϵ_{rE})	0.7255	0.2671	0.6183	0.8959	0.2650	0.7779	0.5417	0.3479	0.4318
9. $(\epsilon_r E_m)$	0.4970	0.2209	0.4238	0.7031	0.6161	0.6591	1.3437	1.4438	1.3125
10. $(\epsilon_r E_r)$	0.6593	0.8824	0.6742	0.9326	2.4614	1.0485	1.7823	5.7682	2.0879
11. $(E_r E_m)$	0.7539	0.2503	0.6286	0.7539	0.2503	0.6286	0.7539	0.2503	0.6286
12. (ϵ_{rE_r})	0.6489	0.2480	0.5344	0.8013	0.2461	0.6724	0.4845	0.3230	0.3733
13. (ϵ_{mE_r})	0.3024	0.7990	0.4477	0.7806	2.6504	1.0317	2.1264	6.0599	2.4732

Note: A comparison of lines 6 and 7 shows that the use of relations (3) gives approximately the same results as obtained by direct computation.

L'article traite des transactions non monétaires dont l'importance est grande dans les pays en voie de développement. Le concept de degré de monétisation est attaché à tout flux réel. Il est nécessaire d'analyser les transactions non monétaires si l'on veut mieux comprendre les activités de production et de consommation des ménages qui, dans les pays sous-développés, contribuent pour une large part au produit national. Parmi les différents flux réels, il convient de prêter une particulière attention à l'utilisation des fruits de la production domestique à diverses fins.

Une étude de l'économie Indienne montre que le degré de monétisation diffère selon les flux: le plus élevé pour la consommation, moyen pour la production courante, le plus bas pour les investissements. Les données d'une "cross section" effectuée en Inde laisse espérer que le degré de nonmonétisation baissera avec l'accroissement des dépenses moyennes des ménages et l'urbanisation, mais il peut très bien augmenter si le développement entraîne un gros progrès dans le secteur agricole. Certaines de ces conclusions, tirées à propos de l'Inde, peuvent aussi s'appliquer à d'autres pays en voie de développement.

Normalement, les estimations des élasticités-dépense, basés sur les données d'une "cross section", sont calculées pour les dépenses de consommation d'un bien particulier (e) et pour les dépenses de la consommation (E); cela, sans soulever la question du degré de nonmonétisation de l'une ou l'autre. Etant donné que les modèles traditionnels de comportement du consommateur s'appliquent seulement à la relation entre dépense monétaire d'un bien particulier (e_m), et la dépense monétaire de l'ensemble (E_m), il est suggéré de séparer la relation entre e et E en relations entre (i) e_m et E_m , (ii) e_k et E_k qui sont des éléments du genre correspondant, et (iii) entre E , E_m , et E_k . Des estimations d'élasticités, basées sur ce schéma, sont présentées, montrant ainsi que le procédé est raisonnable et suggérant que ce type d'analyse fournirait probablement une base convenable pour répondre aux questions touchant à ce domaine.